Building Bridges, Blurring Boundaries: The Contribution of Multiethnic Individuals to Intergroup Relations

Angelika Love
St John's College
University of Oxford

A thesis submitted for the degree of
Doctor of Philosophy

Michaelmas 2020

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Abstract

Multiethnic people constitute an increasingly prominent share of the population in the UK and beyond. Nevertheless, most research on intergroup relations continues to focus on people on either side of a clearly defined group divide. The aim of this thesis is to integrate multiethnic populations into research on intergroup relations and to investigate a question that is often raised about multiethnic individuals: whether they build bridges between members of different monoethnic groups. Chapter 1 outlines the theoretical and empirical context of my research, as well as the multi-method approach adopted throughout this thesis. Across three empirical chapters, I then present research on monoethnic individuals' context-level exposure to multiethnic people, and on their individual-level contact experiences with multiethnic friends. This thesis includes research conducted in England, South Africa, and the US, and combines experimental, social network, and multi-level survey data. Chapter 2 investigates whether the presence alone of multiethnic individuals in a social environment can improve relations between members of different monoethnic groups. I report that context-level exposure to multiethnic people is unlikely to affect monoethnic individuals' intergroup relations. Chapter 3 addresses further the bridge-building potential of multiethnics by studying their location within friendship networks and how they are evaluated by monoethnics. I find that multiethnics tend to be evaluated with intermediate levels of favourability, that they often occupy broker positions within their friendship networks, but that this may have both positive and negative implications for intergroup relations. Chapter 4 focusses on monoethnic individuals' contact experiences with multiethnic friends and suggests that the bridge-building potential of multiethnic individuals may be realised most effectively through direct and indirect intergroup contact. I discuss these findings further in Chapter 5, which also addresses the implications of my research for our understanding of intergroup relations in the increasingly heterogeneous societies of the 21st century.

Für meine Großeltern

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Abstract

Multiethnic people constitute an increasingly prominent share of the population in the UK and beyond. Nevertheless, most research on intergroup relations continues to focus on people on either side of a clearly defined group divide. The aim of this thesis is to integrate multiethnic populations into research on intergroup relations and to investigate a question that is often raised about multiethnic individuals: whether they build bridges between members of different monoethnic groups. Chapter 1 outlines the theoretical and empirical context of my research, as well as the multi-method approach adopted throughout this thesis. Across three empirical chapters, I then present research on monoethnic individuals' context-level exposure to multiethnic people, and on their individual-level contact experiences with multiethnic friends. This thesis includes research conducted in England, South Africa, and the US, and combines experimental, social network, and multi-level survey data. Chapter 2 investigates whether the presence alone of multiethnic individuals in a social environment can improve relations between members of different monoethnic groups. I report that context-level exposure to multiethnic people is unlikely to affect monoethnic individuals' intergroup relations. Chapter 3 addresses further the bridge-building potential of multiethnics by studying their location within friendship networks and how they are evaluated by monoethnics. I find that multiethnics tend to be evaluated with intermediate levels of favourability, that they often occupy broker positions within their friendship networks, but that this may have both positive and negative implications for intergroup relations. Chapter 4 focusses on monoethnic individuals' contact experiences with multiethnic friends and suggests that the bridge-building potential of multiethnic individuals may be realised most effectively through direct and indirect intergroup contact. I discuss these findings further in Chapter 5, which also addresses the implications of my research for our understanding of intergroup relations in the increasingly heterogeneous societies of the 21st century.

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Chapter 1: Introduction

When Meghan Markle married Prince Harry in the summer of 2018, many commentators in the Anglosphere treated the integration of a self-identified biracial woman into the British Royal Family as a moment of enormous cultural significance; a moment that would provide "the royal family a unique opportunity to open itself up and show the country and the world that it can more than just tolerate diversity and modernity -- it can live it" (Hazarika, 2018, para. 6). Ten years prior and across the Atlantic, the election of Barack Obama as President of the United States had similarly been hailed as "a marker of post-racialism in America" (Shand-Baptiste, 2019, para. 2), and Obama's wide-reaching popularity was attributed by some, at least partially, to his Black and White heritage (Coates, 2017).

The intense optimism with which the public initially viewed these two moments was soon dampened by the reality of ongoing racial discrimination and inter-ethnic conflict; as I complete this DPhil thesis, Meghan and Harry are preparing to withdraw formally from public life, while the President of the United States, Donald Trump, is telling US congresswomen of colour to "go back" to the "totally broken and crime infested places from which they came" (Trump, 2019). Nevertheless, identities which challenge traditional group boundaries are increasingly part of a wider conversation about belonging. This was demonstrated, for example, by the popularity of the Twitter hashtag #MeTwo in Germany in 2018, which people with migration background used to share their experiences of being dually identified. The success of recent bestsellers such as Brit(ish) by British journalist Afua Hirsch and Born a Crime by the South African comedian Trevor Noah further highlights that questions which arise from growing up with multiple cultural, racial, or ethnic frames of reference have broad appeal.

The aim of this thesis is to investigate a question that is often raised about multiethnic individuals – namely, whether they can help to build bridges between members of different monoethnic groups – and, in the process, to integrate the study of multiethnic populations into social psychological research on intergroup relations. Across three empirical chapters, I present research on both monoethnic individuals' context-level exposure to multiethnic

people, and on their individual-level contact experiences with multiethnic friends. In Chapter 2 I start to address the question of whether the mere presence of multiethnic individuals in a social environment can improve relations between members of different monoethnic groups. Next, Chapter 3 investigates the bridge-building potential of multiethnic individuals further by studying multiethnic individuals' location within their relationship networks and the implications of the presence of multiethnic intermediaries for intergroup relations. Chapters 2 and 3 both address the contribution of multiethnics to intergroup relations independently of monoethnic individuals' contact experiences with them. Chapter 4 then builds on this research and goes beyond context-level exposure, addressing the implication of individual-level contact experiences with multiethnic friends for relations between monoethnic groups.

Before I outline the theoretical and empirical context of this approach to the bridge-building potential of multiethnic individuals, the following sections provide, first, an outline of demographic changes which highlight the growing presence of multiethnic individuals, and, second, clarify the terminology used throughout this thesis to refer to multiethnic individuals .

Demographic Changes

Demographic trends in the UK and US suggest that people of mixed heritage make up an increasingly prominent share of the population. In the US, where Americans have the option of selecting multiple race categories in the Census, the population choosing both Black and White categories more than doubled in size between 2000 and 2010, while the Asian-White population increased by 87% (Jones & Bullock, 2012). In the UK, the Census offers four ethnic identity categories to people who wish to self-categorise as multiethnic (White and Black Caribbean, White and Asian, White and Black African, Other Mixed). Between 2001 and 2011, the number of people who ticked one of these boxes almost doubled, growing from 660,000 to 1.2 million and thus forming 2.2% of the population

(Jivraj, 2012).[1] This makes the multiethnic population one of the fastest growing groups in Britain (Coleman, 2010).

In both the US and the UK, multiracial or multiethnic populations are also disproportionately young. Awareness of this section of society is therefore likely to increase markedly in the near future. In 2011, 45% of the UK's multiethnic population was under the age of sixteen, compared to 19% of the overall population, and 7% of dependent children lived in interethnic households (Office for National Statistics, 2014, see also Muttarak, 2014). In the US, 10% of babies born in 2013 had parents of different races, although this count only included children living with both parents and is therefore likely an underestimation (Pew Research Centre, 2015). Relatedly, interethnic marriages and partnerships are becoming increasingly common. In the US, the number of multiracial marriages has risen almost fourfold between 1980 and 2013, from 1.6% to 6.3% (Pew Research Centre, 2015). The 2011 UK Census suggested that 9% of people who were living as part of a couple were in an interethnic relationship, an increase of 2% since 2001 (Office for National Statistics, 2014).

It should be noted that these population estimates suffer from a considerable degree of uncertainty. Counting multiracial or multiethnic populations is complicated by the fact that, firstly, not everyone of mixed parentage identifies as multiracial and, secondly, that racial or ethnic identification can change across the lifespan. In a representative study of US American adults, the Pew Research Centre (2015) found that 61% of people of mixed racial parentage do not identify as multiracial, while 29% of adults with a multiracial background have, over their lifetime, fluctuated between monoracial and multiracial self-identification. Estimates by the U.S. Census Bureau that, in 2013, 2.1% of the US population was multiracial, therefore likely reflect merely a conservative estimate of the share of the population that could be considered multiracial and might identify as such at some point in their life (Pew Research Centre, 2015). Similar challenges likely apply in the UK, where analyses of UK Household Longitudinal data suggested that only 30% of people with parents

[1] Data based on England and Wales.

of different ethnic identities self-categorised as mixed (Nandi & Platt, 2012). Estimates of the UK's multiethnic population therefore also likely represent an undercount of the population of mixed parentage who could self-identify as multiethnic but, at least on official forms, may choose not to (Nandi & Platt, 2012; Song, 2018).

Despite such uncertainty about the actual size of the population with mixed parentage, the official estimates outlined here are valuable because they highlight a larger trend: that monoethnic individuals are increasingly likely to encounter multiethnic individuals, and that the experience of navigating multiple group memberships which were previously thought mutually exclusive is becoming increasingly common. Much has been made of this demographic transition towards societies that no longer obey neat racial or ethnic category boundaries. In her book Mixed Feelings: The Complex Lives of Mixed-Race Britons, journalist Yasmin Alibhai-Brown poignantly summarised the pervasive controversy around mixed-race populations: "Interracial relationships, it seems, are a problem (the racist view), have unspeakable difficulties (the pessimistic liberal view) or provide a pretty coffee-coloured solution for all the world's problems (the view of hopeful liberals)" (Alibhai-Brown, 2001, p. 4). Before returning to this debate and to monoethnic individuals' interactions with multiethnic people, I will briefly discuss the challenges and inadequacies of the vocabulary used to discuss 'mixed' individuals and set out the terminology used throughout the remainder of this thesis.

Terminology to Describe Individuals of 'Mixed' Heritage

> *"It's curious that the English language of the British Isles has, so far, spectacularly failed to come up with any linguistic solutions to the full-bodied, multilayered, many-textured world of mixed and multiple identities. There has been very little progress in resolving the unsatisfactoriness of our current vocabulary."*
>
> – (Hirsch, 2018, p. 163)

How to refer to individuals of multiple racial or ethnic backgrounds is a vexed subject that taps into complex and potent issues ranging from "racial essentialism through cultural absolutism to an implicit genetic determinism" (Gilbert, 2005, p. 59; see Ifekwunigwe, 2001; Parker & Song, 2001b; Root, 1992, 1996; Spencer, 1999). We are challenged to consider, for example, whether parentage determines categorisation, whether to refer to race or ethnicity, and if either can ever be mixed. Neither of these questions have universally satisfactory answers, and as we try to navigate this multi-ethnic, multi-racial social environment in our interactions, it seems most appropriate to leave it to the people we encounter to self-identify (Gilbert, 2005). When it comes to counting populations, however, or quantifying contact experiences with people belonging to these more complex social categories, choosing a single category label to refer to a population that may identify in a variety of ways is an inevitability.

Throughout the remainder of this thesis I refer to multiethnic identities and people, except where I reference existing research that relies on different terminology. The term multiethnic deviates from the predominantly US American research literature on mixed-race, multiracial, or biracial identities (e.g., Pauker, Meyers, Sanchez, Gaither, & Young, 2018). Mixed-race in particular has also been adopted as an identity by several of the UK-based authors already referenced in this chapter (see Hirsch, 2018) and has appeared in the titles of books on British multicultural society (e.g., Alibhai-Brown, 2001). It is a problematic term, however, in that it implicitly recognises the concept of "racial purity" (Song, 2017, p. 2334), by suggesting that supposedly distinct racial boundaries can be crossed, when in fact such boundaries have no basis in biology but are instead socially constructed (Ifekwunigwe, 1999; Mills, 1998; Parker & Song, 2001; see Barling, 2015). British journalist Kurt Barling succinctly summarised the problem: "Mixing evoked for me visions of watering down on the one hand and racial purity on the other. Neither of which seemed to me to have the slightest credibility in a world that had suffered the homicidal madness unleashed by the mythology of racial purity in Hitler's Germany" (Barling, 2015, p. xvi).

Barling's comment also highlights that discussions on terminology are influenced by historical and cultural contexts. Unlike in the US American scholarship, where terms such as biracial or multiracial are common, European researchers and official bodies are keen to avoid the language of race altogether. Instead, in order not to perpetuate the perception that physical differences demarcate innate and natural differences in character and ability (Ifekwunigwe, 2001; Morning, 2000; Song, 2018), European scholarship prefers "proxies" of race, including ethnicity (Song, 2018, p. 1135).

Google's NGram function, which provides insights into the occurrence of specific words in books published at different times in the US and the UK (Michel et al., 2011), illustrates this cultural difference. A cursory analysis of the relative frequency of various terms commonly used at different times to refer to multiply identified people, highlights how publications in British English have preferred the term multiethnic over multiracial since the 1990s, while the pattern is reversed in American English publications (see Figure 1.1). In choosing ethnicity over race, I seek to integrate my research within the European literature, including the approach of the UK's Office for National Statistics (ONS) which refers consistently to ethnicity rather than race.

The ONS, which conducts the UK Census and thus shapes our understanding of demographic change, describes ethnicity as a concept that is "very diverse, encompassing common ancestry and elements of culture, identity, religion, language and physical appearance" and "something that is self-defined and subjectively meaningful to the person concerned" (Office for National Statistics, 2019, para. 45-6). It collects data on eighteen different ethnic categories in England and Wales, which are summarised under the broader categories 'White', 'Mixed', 'Asian', 'Black', or 'Other'. Nevertheless, although the available data affords some degree of nuance where ethnicity is concerned, popular discourse on discrimination in the UK – and, relatedly, social psychological research on interethnic relations in the UK (e.g., Al Ramiah, Schmid, Hewstone, & Floe, 2015; Turner, Hewstone, Voci, & Vonofakou, 2008) – mostly centres on the broad ethnic categories of White, Black, and Asian. This popular and rather cursory notion of ethnicity is also salient in the ONS' approach to multiethnic identities.

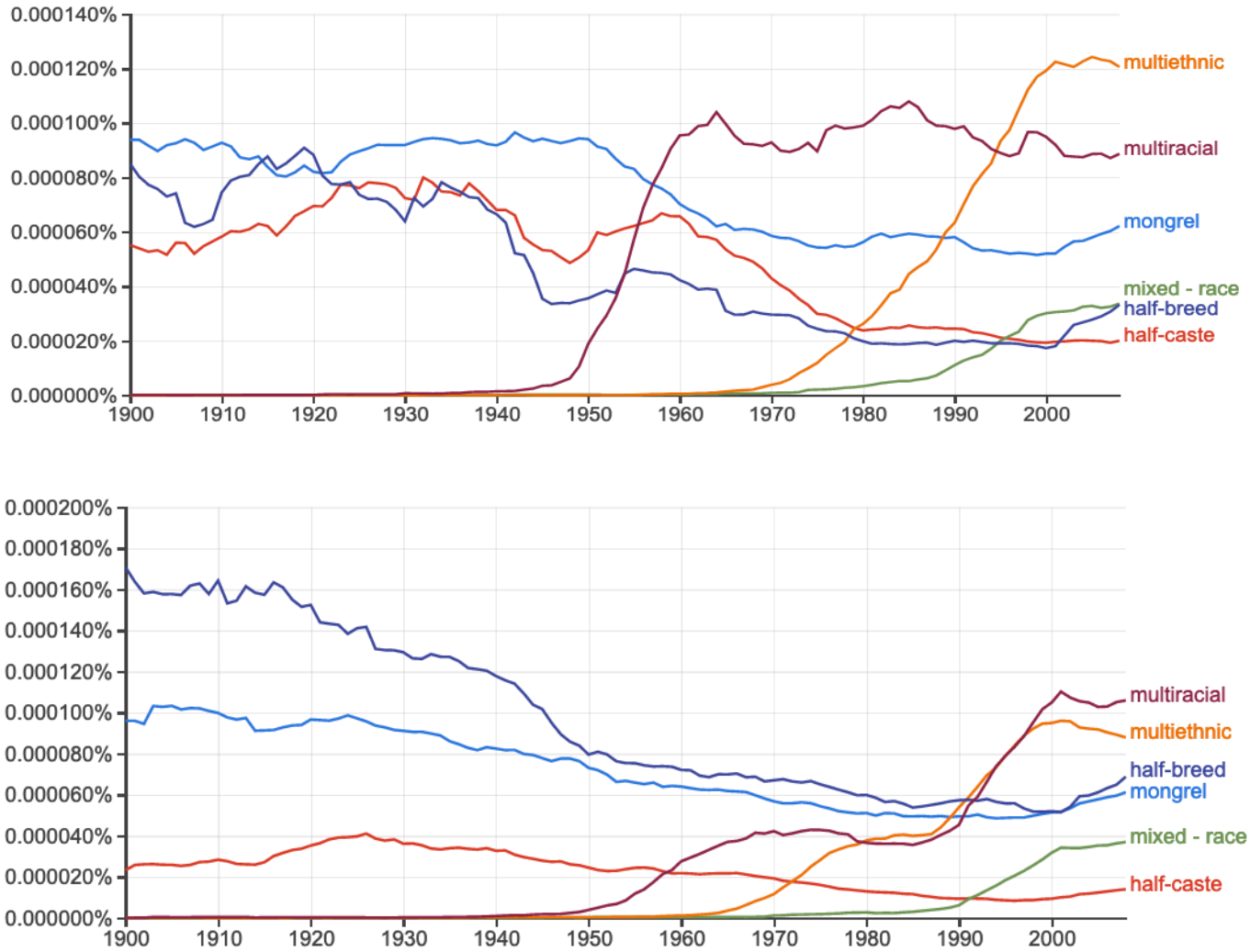

Figure 1.1. The occurrence of different terms to refer to multiethnic individuals in the British English (top) and American English (bottom) corpora of books digitised by Google Books and published between 1900 and 2008. Included in the count were singular and plural versions of each term (e.g., multiethnic and multiethnics).

According to the ONS, interethnic relationships are defined as unions between people where each partner identifies with a different ethnic group, and these ethnic groups can fall within the same broader category (e.g., White British and White Irish) or different broader categories (e.g., White British and Pakistani) (Office for National Statistics, 2014). Children from any interethnic union as defined by the ONS could thus be considered multiethnic. Nevertheless, and somewhat inconsistently, the ONS offers only three specific category options for people who wish to self-identify as multiethnic in the Census: 'White and Black Caribbean', 'White and Black African', and 'White and Asian'. Therefore, where self-categorisation is concerned, only individuals whose ancestry straddles large and likely visible ethnic boundaries set out by the ONS are prompted to identify with a specific 'Mixed' category.[2] Clearly, this approach obfuscates differences in culture, identity, religion, and language that lie at the heart of ethnicity as defined by the ONS. Rather, it focuses the discourse around multiethnic populations in the UK on those who *appear* to others as neither Black, nor White, nor Asian. This reflects the approach to race, more prominent in the US than the UK, as a social construct that "continues to represent social relations between different groups of people along the colour line" (Barling, 2015, p. 54, emphasis added) and is thus an idea that is based on observable difference, on "what we can see on the surface of the body" (p. 49). Consequently, multiethnic populations in the UK, as recognised officially in the Census, are not dissimilar from populations identified as multiracial in the US.

The language of *ethnicity* and *multiethnic identities* (as opposed to race and multiracial identities) avoids naturalising race and goes some way to affirming that research about interethnic conflict and prejudice is concerned with "a classification process, not (…) a primordial essence" (Lubbers, Molina, & McCarty, 2007, p. 722). Nevertheless, as this discussion of official approaches to ethnicity in the UK has highlighted, the way multiethnic populations are counted in the UK produces a conceptual resemblance between the multiracial populations that are the subject of US American research, and the English multiethnic populations that feature in large parts of the research presented in this thesis.

[2] Others have the option of identifying as 'Other Mixed'.

Therefore, even though the terminology of ethnicity chosen here deviates from the largely US-based literature on mixed-race, my research on interethnic relations between monoethnic and multiethnic individuals can be understood with reference to the available research literature on mixed race. In the remainder of this introduction, I first provide a brief overview over the broad theoretical frameworks that underpin my research, and then outline the research landscape that provides the specific backdrop to this thesis.

Theoretical Frameworks

Social Identity Theory. My research of the involvement of multiethnic individuals in intergroup processes draws on the theoretical frameworks set by Social Identity Theory (Tajfel & Turner, 1979) and Self-Categorization Theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). These frameworks established the now extensively tested and confirmed assumption that the quality of intergroup relationships results from social categorization processes (see also Brewer, 1991). An intergroup relation is here defined as the relation which exists between individuals belonging to different groups and - importantly - is framed by their social, rather than their personal, identity (see Sherif, 1966). A social identity is conceptualized as "that part of the individual's self-concept which derives from his or her knowledge of membership to a social group (or groups) together with the value and the emotional significance attached to it" (Tajfel, 1981, p. 255). Social identities are the product of "categorizations of the self into (…) inclusive social units that depersonalize the self-concept, where *I* becomes *we*" (Brewer, 1991, p. 474) and other ingroup members are perceived as interchangeable with the self. A social identity is therefore distinct from a personal identity and "those characteristics that differentiate one individual from others within a given social context" (p. 476).

Social Identity Theory considers social identity to be the consequence of an individual's natural and "psychologically *useful*" (Crisp & Hewstone, 2007, p. 219) tendency to categorize their social world into discrete categories and considers categorization central to our understanding of intergroup relations. "One of the most robust findings in research on intergroup relations" (Crisp & Hewstone, 2007, p. 177) is that ingroups are generally

evaluated more positively than outgroups (Hewstone, Rubin, & Willis, 2002; Mullen, Brown, & Smith, 1992; Tajfel, Billig, Bundy, & Flament, 1971). Several experimental studies have suggested that the mere categorization of subjects into distinct groups is sufficient to elicit discriminatory intergroup behaviour that positively distinguishes the ingroup from the outgroup (see Spears & Otten, 2017). Intergroup Contact Theory, which is relevant throughout the thesis but the specific focus of Chapter 4, addressed ways of reducing such intergroup discrimination.

Intergroup Contact Theory. The intergroup contact hypothesis, formulated by Allport in 1954, proposed that positive face-to-face interactions between members of different groups can reduce the intergroup discrimination that results from social categorisation. In the over six decades since its formulation, a wealth of cross-sectional (e.g., Islam & Hewstone, 1993; Tausch, Hewstone, Schmid, Hughes, & Cairns, 2011; Voci, Hewstone, Swart, & Veneziani, 2015), longitudinal (e.g., Levin, van Laar, & Sidanius, 2003; Swart, Hewstone, Christ, & Voci, 2011; Wölfer, Schmid, Hewstone, & van Zalk, 2016), and experimental (e.g., Bettencourt, Brewer, Croak, & Miller, 1992; Page-Gould, Mendoza-Denton, & Tropp, 2008; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997) research has lent considerable support to the contact hypothesis (see meta-analysis by Pettigrew & Tropp, 2006). Intergroup contact is now understood to affect a range of affective, cognitive, and behavioural indicators of prejudice and for various intergroup contexts (e.g., Swart et al., 2011; Tropp & Pettigrew, 2005b; Wolsko, Park, Judd, & Bachelor, 2003). Furthermore, additional insights have been gained into the processes that underpin contact effects, including: increased trust, empathy, and perspective-taking; reduced intergroup anxiety and threat perceptions, a distancing from the ingroup, greater awareness of one's own multiple and complexly interrelated social identities; and, identification with a more inclusive 'superordinate' social category (see Love & Hewstone, *in press*, for an overview over mediators). Variables that limit contact-induced prejudice reduction, including low group membership salience, have also been studied (see Dovidio, Love, Schellhaas & Hewstone, 2017; Love & Hewstone, in press), and together these developments have taken Allport's proposition from a hypothesis to a more comprehensive intergroup contact theory (Hewstone & Swart, 2011).

The influence of context. Despite its application across many intergroup environments, intergroup contact research has been criticised for becoming "detached from (and sometimes irrelevant to) everyday life in divided societies" (Dixon, Durrheim, & Tredoux, 2005, p. 697), and specifically for ignoring the social context in which intergroup contact is more or less likely (Christ & Wagner, 2013). While the contribution of contextual variables to the effectiveness of contact experiences, most notably the significance of institutional support for contact, was implicit in early formulations of the contact hypothesis (Allport, 1954), only a handful of studies to date have considered contextual moderators of contact effects (see Love & Hewstone, *in press*). Research on the effectiveness of more indirect contact experiences, including extended contact where knowledge of an ingroup member's outgroup contact affects outgroup attitudes (Wright et al., 1997; Vezzali, Hewstone, Capozza, Giovannini, & Wölfer, 2014), has begun to study the context of contact experiences. For example, Christ et al., (2010) found that extended contact effects are stronger when segregation or low diversity limit opportunities for direct contact experiences (see also Wölfer et al., 2016).

A recent methodological development that promises to advance our understanding of the contexts in which intergroup relations unfold, is the integration of social network analysis (SNA) into social psychological research on intergroup relations. Because the research presented in this thesis draws frequently on social network data, I discuss this approach in greater detail in the section on research methodology at the end of this chapter. Generally speaking, however, social network-based research typically asks whether the structure of an individual's social environment explains something about them individually (Borgatti, Mehra, Brass, & Labianca, 2009; Wölfer et al. 2017). Sociological research has long acknowledged that the properties of individuals' relationship networks, including how dense they are (i.e., the number of existing connections relative to the number of possible connections) and whether they are characterised by homophily (i.e., including mostly ingroup members), influence life experiences. For example, disadvantages of low socioeconomic status have been attributed to the properties of people's social networks (e.g., their lack of social ties through which they can access career opportunities; Ashley, Duberly, Sommerlad, & Scholarios, 2015; Bradley & Corwyn, 2002; Hunt et al., 2009). While SNA is

still only rarely applied in research on intergroup relations (but see Wölfer et al., 2017, 2019), it promises to provide greater insights into the contextual backdrop of intergroup relations – including the opportunities for intergroup contact experiences present in a given environment.

In this thesis I consider contextual influences on intergroup relations, specifically whether the mere presence of multiethnic individuals in an intergroup environment affects relations between monoethnic groups (Chapters 2 and 3), as well as the role of intergroup contact, especially between multiethnic and monoethnic individuals (Chapter 4). In the following two sections, I outline the specific research contexts of both of these approaches to multiethnic individuals' involvement in intergroup relations. Firstly, I address the literature that informs Chapters 2 and 3 on the view that the growth of multiethnic populations will increase intergroup harmony. Secondly, I consider how multiethnic individuals might be integrated into intergroup contact research, which is the focus of Chapter 4.

Context-Level Exposure: Intergroup Harmony Through the Mere Presence of Multiethnic Individuals?

> *"I'm somewhat wary of biracial people being (…) portrayed in the media as the answer to racism and other troubling issues. I don't want to be labeled as the nouveau wonder recipe – 'mix and you'll end racism.'"*
>
> – Mitzi Uehara Carter, 23 (in Gaskins, 1999, p. 251)

In the UK, unlike in the US, interethnic marriages were never illegal, but they were nevertheless long met with public outrage (Alibhai-Brown, 2001; Gilbert, 2005). And just as interethnic couples were condemned for transgressing what were deemed natural boundaries, their multiethnic children were often considered marginal figures, leading a socio- and psycho-pathological, "blighted, cramped existence" (Lawless, 1995, p. 182). Recently, however, more careful consideration of research on the psychosocial health of

multiethnic individuals delegitimised so-called "hybrid degeneracy theories" (Gilbert, 2005, p. 61) of the early 20th century (e.g., Shih & Sanchez, 2005). Meanwhile, public narratives about the social significance of multiethnic individuals have changed: from outrage and rejection to a more optimistic view.

Today, multiethnic individuals are frequently hailed as harbingers of a "basically harmonious society" (Richards, 1994, p. 83) and described as people with "the potential to undermine various forms of racism" (Lal, 2001, p. 168; see Gilbert, 2005). These notions are embraced by some multiethnic individuals and rejected by others, as the quotation at the beginning of this section illustrates. Empirically, however, as the following discussion of research on the involvement of multiethnic individuals in intergroup processes will highlight, the argument that their mere presence will undermine discrimination is at best speculative and potentially "grossly naïve" (Gilbert, 2005, p. 58).

Mere presence effects have mostly been discussed with reference to the de-essentialisation of racial or ethnic categories (Pauker, Meyers, et al., 2018) and an increase of perceived intergroup similarity (Wilton, Sanchez, & Giamo, 2014). However, and as I discuss in detail below, the presence of multiethnic individuals in intergroup contexts could also influence wider intergroup relations by altering low-level perceptual processes, specifically cognitive fluency, and by affecting perceived intergroup norms. So far, although such processes have been discussed as mediators of improved intergroup relations in the literature, most research has treated cognitive changes such as de-essentialisation as outcomes of exposure to multiethnic stimuli and *inferred*, rather than *studied*, their possible downstream consequences for intergroup relations. In fact, the following discussion of the available research literature highlights that a positive relationship between the increased presence of multiethnic individuals and intergroup relations, through the proposed mediating processes, is far from guaranteed.

De-essentialising ethnic categories. 'Psychological essentialism' (Medin & Ortony, 1998) describes the view that social categories are characterised by underlying immutable, intrinsic, and natural features or essences (e.g., Bastian & Haslam, 2006; Haslam, Rothschild,

& Ernst, 2000). Haslam et al. (2000) speculated that any reduction of psychological essentialism, and consequently an improvement in intergroup relations which have been negatively associated with essentialism (Bastian & Haslam 2006; Kung et al., 2018; Verkuyten, 2003; Williams & Eberhardt, 2008), would involve "reducing the reification of the category in question by showing its internal diversity, its similarity to and overlap with other categories, and its lack of any underlying distinctness" (p. 125). Several researchers on multiracial or multiethnic populations have suggested that therein lies the potential of mixed individuals to foster more positive intergroup relations.

Pauker, Meyers et al. (2018) suggested that the ambiguous appearance of many multiethnic individuals might challenge core elements of essentialism, for example the view that category boundaries are discrete. In line with this argument, Sanchez, Young, and Pauker (2015, Study 1) found that their White US American participants who reported having more racially ambiguous-looking acquaintances also reported a greater reduction in racial essentialism over the course of two weeks. However, it is unclear whether this finding was underpinned by exposure alone, or whether, rather, it reflected intergroup contact experiences between monoethnic participants and their racially ambiguous acquaintances. Furthermore, it is questionable whether the category membership of these acquaintances actually remained ambiguous to monoracial participants.

In contradiction to Sanchez et al. (2015), the de-essentialising effect of exposure to multiethnic or multiracial individuals has also been shown to be conditional on the salience of multiethnic individuals' multiple heritage (see Pauker, Meyers, et al., 2018). This argument was supported by a recent study by Gaither, Babbitt, and Sommers (2018), which found that interactions with multiracial confederates whose race was left undeclared and ambiguous enhanced rather than reduced participants' racial essentialism, and that interactions with multiracial individuals were beneficial only when the confederate's multiracial identity was declared. However, Gaither et al. (2018), arguably like Sanchez et al. (2015), went beyond exposure to passive multiracial individuals and studied contact experiences. Other experimental studies which have shown that relations between ingroup and outgroup are positively affected by the presence of a truly passive third group, provided

its social identity overlapped with both ingroup and outgroup, did not test racial essentialism as a possible mediator of such effects (Levy, Saguy, van Zomeren, & Halperin, 2017). This leaves open the possibility that exposure to multiethnic individuals alone, brought about simply through their presence in a social environment, is not enough to reduce essentialism, and that it might even enhance essentialism where category membership remains ambiguous.

Young, Sanchez, and Wilton (2013) provided more direct support for the claim that exposure to a salient dual identity, not to ambiguous category memberships, catalyses de-essentialisation. In an experiment that involved showing faces of racially ambiguous individuals to monoracial participants, they found that exposure to stimuli that were clearly labelled "biracial" was associated with weaker endorsement of essentialist views, compared to exposure to the same faces labelled as "monoracial". Because this design did not include a no-label condition, it remains unclear whether exposure to passive ambiguous-looking stimuli whose category membership remained unclear would similarly have reduced essentialism. Sanchez et al.'s (2015) and Gaither et al.'s (2018) findings suggest that this is unlikely, as does the related literature on cognitive costs of disfluent social categorisation processes, which I discuss next.

Cognitive fluency. The negative implications of ambiguous category membership, highlighted, for example, by Gaither et al. (2018), are consistent with research on the negative consequences of disfluent stimulus processing. Stimuli that can be recognised and judged fluently (i.e., quickly and with little effort) tend to be evaluated more positively than stimuli that evoke disfluent processing (see Lick & Johnson, 2015). Racially or ethnically ambiguous face stimuli tend to be processed more disfluently than unambiguous face stimuli, as evidenced by slower categorisation rates (Halberstadt & Winkielman, 2014, Study 3) and more frequent category shifts as perceivers arrive at a categorisation outcome (Freeman, Pauker, & Sanchez, 2016). Such disfluency, in turn, predicts more negative affect (Halberstadt & Winkielman, 2014, Studies 3-4) and less trust towards multiethnic targets (Freeman et al., 2016, Study 2). Exposure to people of ambiguous social category membership might therefore affect the intergroup climate negatively, not positively.

However, negative consequences of disfluent information processing are not inevitable and may even be alleviated by the growth of multiethnic populations. For example, Freeman et al. (2016) found that cognitive disfluency in the processing of ethnically ambiguous face stimuli was less prevalent among individuals who live in neighbourhoods with larger ethnic outgroup populations. Freeman et al. (2016) did not study exposure to specifically multiethnic populations, and also did not distinguish between context-level exposure effects and the potential contribution of individual-level contact with multi- or monoethnic outgroup members in more diverse environments. Nevertheless, these findings suggest that greater familiarity with ethnic outgroups could ameliorate the potential backlash of having to categorise ethnically ambiguous individuals.

Furthermore, Halberstadt and Winkielman (2014) also found that multiethnic targets were judged more favourably than monoethnic targets when they were processed fluently – in the case of their experiment, when the category membership of face stimuli was made salient and participants did not themselves have to categorise the stimuli. This finding suggests that if monoethnic individuals are familiar with the social identity of ethnic outgroup members within their social environment and categorise them fluently, this could positively affect how multiethnic individuals are seen.

Nevertheless, whether these effects generalise to other uninvolved outgroups remains unclear. While Lick and Johnson (2015) speculate that disfluency marks effortful processing which then hampers an individual's ability to down-regulate prejudice in general, others suggest that occasional bursts of cognitive disfluency could even encourage perceivers to delay stereotype-driven impression formation (Alter, 2013). Overall, research on the contribution of lower-level perceptual aspects such as fluency to effects of the presence of multiethnic individuals on wider intergroup relations, is far from straightforward. As was suggested by research on racial essentialism, such effects likely depend on a host of individual-level variables, including familiarity with multiethnic individuals and these individuals' salient identities.

Perceived intergroup similarity. Related to the hypothesis that the presence of multiethnic people alone might reduce essentialist views, Pauker, Meyers et al. (2018) also argued that multiethnic individuals might serve as reminders of the permeability of group boundaries, which in turn might lead to greater perceived similarity between groups (see also No et al., 2008; Tawa, 2016). In line with this argument, Wilton et al. (2014) found that exposure to face stimuli that were clearly labelled as 'biracial Asian-White' caused White participants to perceive greater similarity between Whites and Asians. However, this effect only emerged for participants who identified weakly with their White ingroup, which suggests that there may be a limit to the effectiveness of exposure to biracial individuals.

Notably, although Wilton et al. (2014) argued that "social contexts that encourage and promote biracial labels have the potential to improve intragroup (sic) relations by reinforcing the commonalities among groups"[3] (p. 131), the relationship between intergroup similarity and intergroup relations is not actually unconditionally positive. Jetten, Spears and Postmes' (2004) meta-analysis of research on intergroup similarity suggests that a high level of intergroup similarity only promotes more positive intergroup relations when individuals identify weakly with their ingroup. Conversely, a high level of intergroup similarity is perceived as threatening and will motivate more intergroup discrimination among individuals who identify strongly with their ingroup (see also Jetten & Spears, 2003). Importantly, this insight accounts for different outcomes of research on artificial compared to real-life groups. In real-life settings, where group identification is assumed to be relatively high (Jetten & Spears, 2003), greater intergroup similarity tends to be associated with more, not less, intergroup discrimination (e.g., Jetten, Spears, & Manstead, 1996, Experiment 2; Roccas & Schartz, 1993). However, the reverse is found in research conducted in the lab and on artificial groups, where participants' ingroup identification is assumed to be weaker (e.g., Jetten et al., 1996, Experiment 1). In so far as the presence of multiethnic individuals increases perceived intergroup similarity among monoethnic individuals, this literature highlights that greater perceived similarity does not necessarily produce better intergroup relations.

[3] The context of Wilton et al.'s (2014) writing suggests strongly that they refer to inter- rather than intra-group relations.

Signalling positive intergroup norms. As I have outlined above, most research on exposure to multiethnic individuals has focused on the essentialism-reducing potential of such experiences and related cognitive changes, while few studies have studied the consequences of exposure to multiethnics for intergroup relations directly. Nevertheless, the argument that attributes of a social context can affect an individual's relations with members of different groups is not new in social psychology and not limited to discussions about the growing size of multiethnic populations. Most notably, research on contextual effects of intergroup contact has suggested that living in a neighbourhood where intergroup contact is common predicts holding more positive outgroup attitudes because intergroup norms are perceived to be more positive in such environments (Christ et al., 2014). Importantly, this effect was independent of an individual's own intergroup contact experiences, which suggests that intergroup relations are not only influenced by our individual intergroup experiences, they can also be shaped by the wider intergroup climate within our social environment.

The presence of multiethnic individuals within a social context could, in principle, contribute to such positive context-level effects. Multiethnic individuals are likely to have frequent positive contact with both parents' monoethnic groups, and they have been found to hold both less essentialist views than monoethnic individuals (Bonam & Shih, 2009; Shih, Bonam, Sanchez, & Peck, 2007) and intermediate intergroup attitudes that fall between the ingroup and outgroup attitudes of monoethnic individuals (Stephan & Stephan, 1991). Whether, given that the size of the multiethnic population is still small, monoethnic individuals will notice and be affected by a subtle shift in intergroup norms related to the presence of multiethnic others, remains unclear.

Contributions of This Research

This review of the literature on exposure to multiethnic stimuli has highlighted several caveats that need to be addressed in new research on whether the growth of multiethnic populations will in fact improve intergroup relations. I have already highlighted the need for research that measures intergroup relations rather than scholars inferring them on the basis of conceptually rather distant proxies like racial essentialism. Furthermore, and relatedly,

research on intergroup similarity and dual identity salience in particular, highlighted the need to test whether benefits of the presence of multiethnic individuals emerge not only in tightly controlled experiments but also in real-life settings. For example, and by extension of Jetten et al.'s (2004) findings, the reportedly positive effects of the presence of dually identified individuals for intergroup relations (e.g., Levy et al. 2017; Wilton et al., 2014) may be limited to the artificial research settings where, one might argue, individuals are relatively weakly invested in their category memberships. Similarly, artificial kinds of exposure to multiethnic individuals – for example, the presentation of labelled face stimuli – might positively affect participants' social cognition because they make salient and disambiguate group membership. However, this may not be a valid reflection of how monoethnic perceivers respond to multiethnic individuals in less structured real-life contexts. Unlike the vast majority of available research on the contribution of multiethnic individuals to wider intergroup relations, the research presented in this thesis is largely based on data collected in real-life contexts (English high schools, a South African university). Nevertheless, in an attempt to replicate the positive effect of a passive multiethnic group in an experimental setting, I also conducted an online experiment among White US Americans.

Arguably, multiethnic individuals' multiple backgrounds should be more salient in some real-life social contexts than others; where they are located within their friendship networks likely plays an important role in that regard. Social experiences are known to affect identity development in the first place (see Leszczensky, Jugert, & Pink, 2019; Umaña-Taylor et al., 2014; Verkuyten, 2016), but who we choose as friends also expresses social identity to others (Alba, 1990; Leszczensky et al., 2019). A growing body of research on dual identification supports the argument that mixed backgrounds are reflected in individuals' social networks and therefore expressed to others. For example, a recent study of friendship networks at ethnically diverse schools in Germany highlighted that individuals who were dually identified with both a German national identity and a minority ethnic identity were equally likely to select ethnic majority (German) and minority peers as friends (Jugert, Leszczensky, & Pink, 2018). Furthermore, Muttarak's (2014) study of interethnic friendship patterns across a large representative UK sample suggested that coming from an ethnically heterogeneous household increased the likelihood of having interethnic friendships but that

multiethnic individuals were particularly likely to nominate as friends members of the ethnic groups that form the components of their multiethnic background. Friendship networks are therefore an arena wherein multiethnic individuals who identify as mixed enact this identity and where they can make the duality of their background explicit to others. As I outline in more detail later in this chapter, this thesis tested not only the implications of multiethnic individuals' presence in an environment but also, drawing on social network analysis, the implications of multiethnic individuals' exact location within that environment for wider intergroup relations.

A further caveat concerning most discussions of the contribution of multiethnic individuals to intergroup relations must be that they rarely distinguish clearly between individual- and context-level effects. Specifically, they seldomly separate processes related to the growth of multiethnic populations that predicate intergroup contact from processes that truly reflect context-level effects which are independent of contact experiences. A similar conflation of individual- and context-level processes also plagued research on the implications of neighbourhood diversity for intergroup relations. This was until Putnam's (2007) claim that diversity undermines trust prompted social psychologists to point out that it is "methodologically flawed" (Schmid & Hewstone, 2010, p. 303) to infer a relationship between context-level variables (e.g., diversity) and individual-level psychological processes (e.g., trust) without also measuring individual-level experiences of diversity (e.g., intergroup contact, Schmid, Al Ramiah, & Hewstone, 2014; see also Semyonov, Raijman, Tov, & Schmidt, 2004). Similarly, to truly test the claim that the presence of multiethnic individuals – a context-level feature of the social environment – helps improve wider intergroup relations, we need to disentangle the contribution of this contextual variable from associated individual-level experiences, including direct contact experiences with multiethnic individuals. This will be the focus of research reported in Chapter 2 and will be addressed further in Chapter 3.

From Passive Exposure to Active Engagement: Intergroup Contact with Multiethnic Individuals

Demographic changes mean that not only passive exposure to but also contact with multiethnic individuals will become increasingly common. Considering these changes, I argue that it is important to take intergroup contact research beyond, literally, black and white thinking and to begin to incorporate multiethnic populations into the study of the effects of such intergroup contact experiences. In the following section, I introduce several ways this could be achieved. This discussion of contact between mono- and multiethnic people provides the theoretical background to research presented in Chapter 3 on how monoethnic individuals perceive multiethnic others, and Chapter 4, which includes first empirical evidence on the implications of friendship contact between mono- and multiethnic individuals for wider intergroup relations.

As I outlined earlier, the intergroup contact hypothesis, formulated initially by Allport in 1954, proposes that positive interactions between members of different groups can reduce intergroup prejudice. A wealth of research now supports this proposition (see meta-analysis by Pettigrew & Tropp, 2006). The effects of intergroup contact can be described as essentially social psychological; they do not merely affect the individuals engaged in an interaction, but influence thought and emotion directed towards whole groups and their members. Whether and how contact experiences generalise in this way – from inter-individual encounters to changes in inter-group relations – varies considerably with the social identities that are salient during the encounter and how individuals relate their own social identity to the group membership(s) of their contact partners (Brown & Hewstone, 2005; Crisp & Hewstone, 2007; Schmid & Hewstone, 2010; van Oudenhoven, Groenewoud, & Hewstone, 1996). As the following discussion highlights, the potential of multiethnic individuals to affect relations between monoethnic groups and the processes underpinning any such effects, likely also depend on how multiethnic individuals are categorised in interactions: as monoethnic or multiethnic, and as ingroup or outgroup members.

Categorisation as monoethnic. Conceivably, monoethnic individuals' contact with multiethnic individuals could influence their emotions, cognitions, and behaviours towards

monoethnic outgroups if they categorise multiethnic people as monoethnic. "Multiple identity blindness" (Kang & Bodenhausen, 2015, p. 565) and the associated (mis-) categorisation of mixed individuals as monoethnic are pervasive when discrete, non-overlapping monoethnic categories are the norm. Studies on the categorisation of multiethnic, and therefore often phenotypically ambiguous, targets show that monoethnic perceivers tend to assign them to a monoethnic category and remain unaware of the mixed background of their multiethnic interaction partners or, in the face categorisation task, of multiethnic facial stimuli (Ho, Kteily, & Chen, 2017; Ho, Sidanius, Levin, & Banaji, 2011; Peery & Bodenhausen, 2008; Sanchez, Good, & Chavez, 2011).[4] Furthermore, where multiethnic targets are categorised as such, this seems to be a disfluent and effortful process (Chen & Hamilton, 2012; Freeman, Pauker, Apfelbaum, & Ambady, 2010; Kang & Bodenhausen, 2015). Together, these findings suggest that monoethnic categories are more accessible than multiethnic categories, and that multiethnic individuals are therefore likely to be categorised by monoethnic perceivers as monoethnic ingroup or outgroup members.

Monoethnic outgroup. Research on intergroup contact has shown that the way perceivers categorise their interaction partners shapes how that contact experience affects intergroup relations. Contact improves outgroup attitudes and behaviours most effectively when contact partners are categorised as outgroup members (Brown & Hewstone, 2005; Harwood, Hewstone, Paolini, & Voci, 2005; McIntyre, Paolini, & Hewstone, 2016; van Oudenhoven et al., 1996; Voci & Hewstone, 2003). Therefore, where monoethnic individuals categorise their multiethnic contact partners as monoethnic outgroup members, such interactions have the potential to affect monoethnic individuals' relations with this monoethnic outgroup in the same way that contact with monoethnic outgroup members would.

What may limit the effectiveness of contact with multiethnic individuals who are mis-categorised as monoethnic outgroup members is that the perceived fit of an interaction partner

[4] In many studies on categorisation of multiethnic targets, such (mis-)categorisation is a foregone conclusion because experimental designs often do not allow participants to categorise a target as mixed (e.g., Freeman et al. 2016; Gaither, Pauker, Slepian, & Sommers, 2016; Peery & Bodenhausen, 2008; Young, Sanchez, & Wilton, 2017). Instead, participants are often forced to assign targets to one of two pre-set monoethnic categories. This challenges the external validity of such findings.

with an outgroup prototype moderates intergroup contact effects (Rothbart, 1996; Rothbart & Lewis, 1988). If the encountered outgroup member is not sufficiently associated with a mental representation of the outgroup, inter*personal* experiences can fail to generalise to improved inter*group* relations (see Brown & Hewstone, 2005). Research on the categorisation of multiethnic individuals suggests that they are associated less strongly with a monoethnic category than monoethnic individuals and could be considered atypical representatives of that monoethnic group. As I have outlined already in my discussion of the potential mechanisms underpinning any mere presence effect, the categorisation of multiethnic faces seems to be imbued with heightened uncertainty (Freeman et al., 2016; Pauker et al., 2009, Study 3). For example, when they are categorised as monoethnic by monoethnic perceivers, this categorisation decision has been shown to be slower than the categorisation of unambiguously monoethnic targets (Blascovich, Wyer, Swart, & Kibler, 1997; Knowles & Peng, 2005). Furthermore, multiethnic targets are perceived to fit monoethnic stereotypes less well than monoethnic targets (Sanchez et al., 2011). Therefore, the well-documented categorisation of multiethnic contact partners as monoethnic outgroup members should only have positive implications for intergroup relations if they are also considered close enough to a monoethnic outgroup prototype and are not discounted as exceptional outgroup members.

Monoethnic ingroup. Research on intergroup contact has shown that knowing ingroup members who themselves have outgroup contact, so-called extended contact experiences, can also improve intergroup relations (Wright et al., 1997). Extended contact has been shown to increase willingness to engage in direct outgroup contact (Wölfer et al., 2019) and improve outgroup evaluations, including attitudes, trust, and anxiety (Gomez, Tropp, & Fernandez, 2011; Mazziotta, Rohmann, Wright, De Tezanos-Pinto, & Lutterbach, 2015; Vezzali et al., 2014). By virtue of their background, multiethnic individuals are often well connected to members of two or more monoethnic groups, and they are therefore likely facilitators of extended contact with monoethnic outgroup members. Where multiethnic friends are categorised as ingroup members and have direct contact with the monoethnic outgroup, contact with such multiethnic friends could improve intergroup relations through extended contact processes.

Importantly, however, greater ingroup contact could also be detrimental to ingroup-outgroup relations because it is inevitably associated with less outgroup contact due to cognitive and social constraints. Evidence for this contact capacity concept remains scant (Bracegirdle, 2017; see also Pfister, Wölfer, & Hewstone, 2019). However, Sidanius and colleagues, in a five-wave longitudinal study tracing the development of friendship among US college students, found that having more ingroup friends increases intergroup bias and reduces the formation of new outgroup friendships (Levin et al., 2003). A reduction of ingroup contact has also been suggested to improve intergroup relations through a process of deprovincialisation, a distancing from the ingroup (Kauff, Schmid, Lolliot, Al Ramiah, & Hewstone, 2016; Pettigrew, 1997). Therefore, if multiethnic friends are mis-categorised as monoethnic ingroup members, such friendship contact could conceivably also lead to less positive intergroup relations.

Categorisation as multiethnic. Even though monoethnic categories are still the norm, perceivers are capable of more complex social categorisation. And, at least in the US context, they often do categorise multiethnic individuals as mixed, especially if more deliberate processing is possible (Chen & Hamilton, 2012, Experiment 5; Peery & Bodenhausen, 2008, Experiment 2; Willadsen-Jensen & Ito, 2006). What is less clear, however, is how monoethnic perceivers relate the multiethnic background of a contact partner to their own ethnic group membership. They could experience the multiethnic identity as an outgroup in its own right, as a group that partially overlaps with the ingroup, or as a background that is ambiguous and may even weaken ethnic categorisation more generally.

A distinct multiethnic outgroup. While research on the perception of multiethnic targets often operationalised multiethnic or multiracial identities as the combination of two monoethnic or monoracial categories (e.g., Peery & Bodenhausen, 2008), it is not clear whether perceivers can simultaneously hold active two categories that are usually thought of as mutually exclusive (Nicolas, de la Fuente, & Fiske, 2017). Alternatively, multiethnic individuals whose multiethnic background is salient could be associated with a distinct 'Mixed' outgroup. In this case, contact with multiethnic individuals might affect relations between monoethnic groups through a process known to involve two outgroups, only one of which is directly involved in the contact experience: secondary transfer, whereby contact improves not only evaluations of the contacted

'primary' outgroup, but also of 'secondary' outgroups (e.g., Lolliot et al., 2013; Pettigrew, 2009). This secondary transfer effect is strongest if both outgroups are perceived to be similar (Harwood, Paolini, Joyce, Rubin, & Arroyo, 2011, albeit for imagined contact; Lolliot, 2013; Swart, 2008), as is likely the case for multiethnic and monoethnic outgroups.[5] Contact with multiethnic individuals might thus improve evaluations of a distinct multiethnic outgroup, which then transfer across to the similar monoethnic outgroup.

Partial overlap with ingroup. When multiethnic individuals' multiple heritage is salient, this could also highlight both shared and unshared ethnic backgrounds. Research on intergroup relations in the context of multiple simultaneously held group memberships from different "categorical spaces" (Nicolas et al., 2017, p. 622; e.g., gender, ethnicity), specifically research on crossed-categorisation, has highlighted that awareness of shared category memberships can benefit intergroup relations. Members of an outgroup on one dimension are generally evaluated more positively if they are also ingroup members on another dimension; such partial ingroup members are generally treated more favourably than individuals who share no category memberships and are thus full outgroup members (see Crisp & Hewstone, 2007).

Research on the perception and evaluation of individuals of multiethnic background suggests that monoethnic perceivers could categorise them as partial ingroup members, in which case the crossed categories would stem from within the same categorical space (i.e., two ethnicities, one of which is shared with the monoethnic perceiver). In line with the hypothetical categorisation of multiethnic individuals as partial ingroup members, Stephan and Stephan's (1991) research on intergroup relations in Hawaii and Mexico suggested that members of single-heritage groups had better relations with members of multiple-heritage groups than with members of other single-heritage groups.[6] Gaither et al.'s (2018, Study 2) finding that White

[5] Unlike previous research on mere presence effects, which suggested that the presence of multiethnics might enhance the perceived similarity between *monoethnic ingroup* and *monoethnic outgroup* (e.g., Wilton et al., 2014) and thus treated similarity as a *dependent variable* and proxy to intergroup relations, secondary transfer research is concerned with the *moderating* effect of similarity between *multiethnics* and the *monoethnic target outgroup*.

[6] This research is limited, though, by Stephan and Stephan's (1991) definition of mixed category membership as having less than 90% of one's heritage derived from a single group, and thus not on the basis of self-categorisation or how individuals are seen by others (i.e., not based on social identity).

participants rated Black-White targets as more similar to themselves than Black targets, further supports the argument that a partially shared background – especially where it is salient – translates into more favourable relations between monoethnic and multiethnic individuals. However, since the crossed categorisation and intergroup contact literatures have not yet been fully integrated, it remains unclear whether contact with partial ingroup members can improve relations between full ingroup and full outgroup members; for example, whether contact between White and Black-White individuals affects how Whites relate to Blacks (see also Love & Levy, 2019).

As this discussion has highlighted, intergroup contact research has revealed several social-categorisation related processes of intergroup contact that can also be applied to research on group members whose backgrounds straddle established group divides. These processes are unlikely to represent the full spectrum of possible psychological mechanisms underpinning any hypothetical effect of contact between mono- and multiethnic individuals. The development of intergroup contact theory more generally is likely to raise further possible ways multiethnic populations could be integrated into intergroup contact research. For example, the effect of contact on the re-drawing or even the dissolution of intergroup boundaries remains a possibility that has rarely been tested empirically (see Dovidio, Gaertner, Saguy, & Halabi, 2008; Dovidio et al., 2017).

Furthermore, how monoethnic individuals categorise their multiethnic contact partners is likely to vary inter-individually – conceivably, for example, as a function of how monoethnic individuals relate to their own multiple group memberships (Roccas & Brewer, 2002; Schmid, Hewstone, Tausch, Cairns, & Hughes, 2009) – and cross-situationally. Differences in the categorisation of multiethnic individuals are likely to shape not only the effects of direct face-to-face contact with multiethnic contact partners. Rather, the categorisation-dependent processes outlined above can also be applied to extended contact with multiethnic people, the experience of merely knowing about ingroup members' contact with multiethnic individuals (Wright et al., 1997). In this case, monoethnic individuals would be influenced by how their ingroup friend categorises their multiethnic contact partner.

The role of group status. To date, most research on the perception and evaluation of multiethnic individuals has focused on monoethnic majority perceivers. However, recent research comparing minority and majority perceivers' categorisation of multiethnic targets suggests that, while both minority and majority perceivers are more likely to categorise multiethnic targets as monoethnic minority than majority group members, social categorisation is influenced by how motivated perceivers are to define their ingroup in more or less inclusive terms (Castano, Yzerbyt, Bourguignon, & Seron, 2002; Gaither et al., 2016; Ho et al., 2017; Knowles & Peng, 2005; Roberts & Gelman, 2015). This is likely to differ with group status.

Specifically, low status minority group members, especially if they experience discrimination and social exclusion, adopt more liberal ingroup inclusion criteria, whereas high status majority group members define their ingroup in more narrow terms (Gaither et al., 2016; Ho et al., 2017). Therefore, in a way that meets differing needs for social belonging, ethnic minorities tend to categorise ambiguous targets as ingroup members (thus boosting ingroup size), whereas ethnic majority group members tend to categorise them as outgroup members (thus protecting ingroup privileges). What remains to be tested, though, is whether such differences can be replicated in different cultural contexts, and what their implications are for the relations between monoethnic majority and minority monoethnic groups. By including data collected across both monoethnic majority and minority group members and in a variety of real-life contexts, I begin to address these questions in the research presented throughout this thesis. In the following section, I build on the literature reviewed throughout this chapter and outline in more detail the aims and approach, both structural and methodological, chosen for this thesis.

Thesis Aims, Structure, and Method

Aims and structure. As my review of the research literature highlights, a small but growing number of studies specifically on reactions to multiethnic individuals now suggests that the growth of multiethnic populations in the US, the UK, and beyond could benefit wider intergroup relations (for a review, see Pauker, Meyers, et al. 2018). However, three core limitations of the available research leave unanswered the question of whether the presence of multiethnic individuals really translates into more intergroup harmony.

Firstly, the experimental designs of most studies to date are of limited ecological validity and cannot speak to the effect of exposure to multiethnic individuals in real-life environments and over time (e.g., Levy et al., 2017; Young et al., 2013). In fact, several studies highlighted the need for multiethnic identities to be unambiguously salient for positive exposure effects to emerge (e.g., Gaither et al., 2018), a condition that may often not be met in complex real-life settings. Secondly, research on the involvement of multiethnic individuals in intergroup processes rarely distinguishes between individual- and context-level effects. Research on intergroup relations more generally is beginning to emphasise that intergroup cognition and behaviour are uniquely affected by attributes of the social environment (e.g., Christ et al., 2014; De Tezanos-Pinto, Bratt, & Brown, 2010; Semyonov et al., 2004; Wagner, Christ, Pettigrew, Stellmacher, & Wolf, 2006). A full understanding of the implications of demographic changes for intergroup relations clearly needs to account both for context- and individual-level variables. Finally, even though many studies on the involvement of multiethnic individuals in intergroup processes are framed in terms of their contribution to intergroup harmony, these studies often do not include measures that necessarily index positive intergroup relations. The research presented throughout this thesis begins to address these shortcomings by adopting mostly multilevel designs conducted in real-life settings across a variety of intergroup contexts, and by including both context- and individual-level social network data, as well as well-validated survey-based measures of intergroup relations.

In Chapters 2 and 3, I consider the implications that exposure to multiethnic individuals has for wider intergroup relations. In order to test the argument that the growth of multiethnic

populations would itself increase intergroup harmony, I isolate contextual variables, like the number of multiethnic individuals within a social context, from individual-level variables, most notably from intergroup contact experiences with multiethnic individuals. The aim of Chapter 2 was specifically to test whether the mere presence effect observed by Levy et al. (2017) in several experimental studies and proposed by commentators who celebrate multiracial and multiethnic individuals as transgressors of group divides (see Parker & Song, 2001), can be replicated both in a real-life setting (Study 2.1), in the more tightly-controlled but artificial context of an online experiment (Study 2.2). Chapter 3 moves beyond the mere presence of multiethnic individuals in real-life social environments and investigates the claim that multiethnic individuals can be considered "the perfect cultural bridge" between different ethnic or racial groups (Padilla, 2006, p. 491; Stephan & Stephan, 1989, 1991). In Chapter 3, I explore the bridge-building potential of multiethnic people from two points of view: considering whether they occupy bridging positions within their networks of friendship relations and are thus 'contextually intermediate' (Studies 3.1, 3.2, and 3.4); and then whether they are perceived with intermediate levels of favourability relative to a monoethnic ingroup and monoethnic outgroup (Study 3.1 and 3.4). Chapter 3 also includes first tests of the implications of contextual intermediacy for intergroup relations (Studies 3.2 and 3.3).

The analyses presented in Chapters 2 and 3 set the stage for Chapter 4 of this thesis, which focuses not on passive exposure to multiethnic individuals but on positive contact experiences between monoethnic and multiethnic individuals. Chapter 4 investigates whether the potential of multiethnic individuals to affect wider intergroup relations actually lies in personal interethnic encounters. Specifically, I consider the effect of monoethnic individuals' direct (Studies 4.1, 4.2, and 4.3) and extended positive contact (Studies 4.2 and 4.3) with multiethnic friends on evaluations of monoethnic outgroup members. In Chapter 4, I thus begin to integrate multiethnic individuals into the intergroup contact literature. As my review has highlighted, although this is a literature which may have focused on individuals on either side of a clearly defined group divide, it nevertheless has the potential to accommodate experiences with individuals whose social identities blur those established intergroup boundaries.

Methods. The questions raised in this thesis warrant my taking account of both the attributes of monoethnic individuals' social environment and the intergroup experiences they have within this environment. The research presented throughout the remainder of this thesis therefore draws on data that provides insights into both the meso level (social context) and the micro level (individuals and their individual experiences) of intergroup relations: social network data in combination with survey data, integrated in cross-sectional and longitudinal multilevel models and complemented by data from a pilot experiment.

Survey data. Most studies included in this thesis are based on survey data collected in England (Studies 2.1, 3.1, 3.2, 4.1, and 4.2) and South Africa (Studies 3.4 and 4.3). Where research on intergroup relations is conducted in the field, most social psychological studies rely on surveys as the methodology of choice, even though this approach can only reveal correlations between variables, not their causal relationship. Nevertheless, surveys constitute a particularly accessible form of data collection that can be administered across large samples. Indeed, the survey-based research presented throughout this thesis includes samples ranging in size from $n = 552$ (Studies 3.4 and 4.3) to $n = 2697$ (Studies 2.1 and 3.2). All datasets included in my research comprised well-validated and established measures of intergroup experiences and relations, which allowed me to integrate my findings with the larger research literature (see Lolliot et al., 2015, for an overview over the most common measures).

The English data set that forms the basis of Studies 2.1, 3.2, and 4.1 was collected as part of the CILS4EU project (Kalter et al., 2016a, 2016b, 2016c), a multi-wave study conducted across high schools in Sweden, the Netherlands, Germany, and England. My analyses focused on the English dataset which included, amongst others, measures of ethnic identity, self-reported intergroup experiences, psychosocial health, as well as indices of attitudes and values. Because variables of interest were not measured across all waves, most analyses presented throughout this thesis were based on cross-sectional data or, where possible, incomplete longitudinal data, which provides somewhat greater confidence in the direction of any association between variables (see Pettigrew, 2008). Studies 3.1 and 4.2 were based on a dataset collected as part of a continuation of the CILS4EU project in England led by Ralf Wölfer. It again included data collected across high schools in England. Studies 3.4 and 4.3,

on the other hand, were collected as part of a new research collaboration with Stellenbosch University in South Africa. Here, I collected data across lecture groups among Economics students at Stellenbosch University. From these latter two research projects, this thesis includes only one wave of data and is thus limited to cross-sectional analyses.[7]

The survey data included in this thesis was collected across students in different classrooms (Studies 2.1 and 3.2), year groups at school (Studies 3.1 and 4.2), or lecture groups at university (Studies 3.4 and 4.3). The data therefore had a 'nested' structure (e.g., students nested within classrooms) which violates the independence assumption of statistical analyses like Analysis Of Variance (ANOVA) and Ordinary Least Squares (OLS) multiple regressions (Peugh, 2010). Where possible, therefore, I used hierarchical linear models to test my hypotheses (see Raudenbush & Bryk, 2002). A multilevel model partitions the total variance in an outcome variable into variation across individual participants and variation across contexts. Thus, it takes account of the uneven distribution of variance in the outcome measure across contexts (i.e., people sampled from within the same context being more similar than people sampled from different contexts).

Accounting for the nested structure of data, hierarchical linear models facilitate research into the association between context-level predictors (e.g., the presence vs. absence of a group) and individual-level outcome variables (e.g., outgroup attitudes). But, when individuals are nested within larger units, they are equally relevant in research on the association between individual-level predictor and outcome variables (e.g., the association between contact with group X and attitudes towards group X). The research presented throughout this thesis addresses questions that, where the structure of the data affords multilevel analyses, warrant this analytical approach. My analyses are not, however, limited to survey data – they also include social network data which, as I outline below, complements self-report based measures of intergroup experiences and can be incorporated into the same multilevel analyses.

[7] Each dataset included in this thesis was used across several studies, albeit to answer separate questions and often including distinct variables of interest.

Social network analysis. The datasets outlined briefly above also included measures of social network data. Although its application in social psychological research on intergroup relations is still nascent, social network analysis (SNA) can provide insight into contextual and individual-level variables that likely shape intergroup dynamics (Carrington & Scott, 2011; Wölfer, Faber, & Hewstone, 2015; Wölfer & Hewstone, 2017). This thesis adopts a socio-centric approach to social networks and thus includes data on a defined set of individuals ('nodes') and their interconnections ('ties'). Where network data is collected on the social connections between all or most individuals within a circumscribed environment (e.g., a school class, a workplace), members of that environment are required to nominate others in this context (e.g., classmates, colleagues) with whom they share a specific type of relationship (e.g., friendship, people they meet outside work).

The social network data garnered from this so-called friendship nomination procedure, can then help provide insights into individual network members' direct and extended intergroup contact experiences, as well as the reciprocity of such connections (see Wölfer et al., 2015). Social network data thus complements more commonly used contact measures that rely on self-report (Wölfer et al., 2017). In Chapter 4, I combine survey and social network data to measure monoethnic individuals' direct and extended contact with multiethnics.

Furthermore, SNA can be applied to quantify attributes of a social environment as a whole, including: what proportion of possible connections are present (network density); and, if information on the attributes of most network members (e.g., ethnicity) is also collected, what proportion of ties connect members of the same ethnic group (homophily); group norms (e.g., ingroup members' average outgroup contact); segregation; and the opportunity for specific intergroup contact experiences (see also Dovidio et al., 2017; Wölfer & Hewstone, 2017). SNA also facilitates research on the significance of occupying specific strategic locations within a network, including locations that connect otherwise disconnected parts of a network, so-called 'broker' positions (Gould & Fernandez, 1989). These aspects of SNA are particularly relevant in Chapters 2 and 3, where I include measures of network attributes as context-level dependent variables in my analyses on mere

presence effects. Furthermore, in Chapter 3, I quantify the extent to which multiethnic individuals broker relations between monoethnic groups, and I study the implications of the presence of multiethnic brokers for relations between members of different monoethnic groups.

Overall, SNA helps generate "a comprehensive picture of the entire social system" (Wölfer, Bull, & Scheithauer, 2012, p. 144) that accounts for both context-level and individual-level variables. It is therefore particularly relevant in the study of multiethnic individuals' involvement in intergroup processes both at the contextual level (e.g., mere presence effects, Chapters 2 and 3) and at the individual level (e.g., in intergroup contact, Chapter 4).

Experimental data. As the discussion of the research background to my thesis has highlighted, many social psychological studies on multiethnic populations adopted experimental designs, including the face categorisation task (e.g., Chen & Hamilton, 2012) and variations on the minimal group paradigm (Levy et al., 2017). While experimental designs are less common in intergroup contact research, a handful of experimental studies have lent support to the conclusion drawn from cross-sectional and even longitudinal survey data, that positive contact with outgroup members can improve intergroup relations (e.g., Bettencourt et al., 1992; Ioannou, Al Ramiah & Hewstone, 2018; Page-Gould et al., 2008).

Experimental manipulations of the variable of interest, for example the presence vs. absence of multiethnics within a social context, are the method of choice for testing causal effects. Nevertheless, as my discussion has highlighted, experimental designs often lack external validity and benefit from being complemented with data collected in real-life contexts, such as survey and social network data. In addition to survey and social network data, which constitute the bulk of this thesis, I also pilot a new online experimental paradigm testing the effect of the presence vs. absence, and of the social network location, of multiethnic individuals in an intergroup context on participants' evaluations of social environments (Studies 2.2 and 3.3). While the experimental context was highly artificial, the results of Studies 2.2 and 3.3 nevertheless add insights on causal effects to the analyses of more

ecologically valid survey and social network data. In the following chapter, Chapter 2, I use social network, survey, and experimental data to study the influence of the mere presence of multiethnic individuals on intergroup relations.

The research presented throughout this introductory chapter highlights a growing need for considering the contribution of multiethnic individuals in intergroup processes. Findings collected largely in experimental studies and commentators' individual experiences have inspired some to respond with considerable optimism to the growth of multiethnic populations. Nevertheless, I have argued that much of the research conducted thus far on the involvement of multiethnic individuals in intergroup processes, suffers from multiple shortcomings, notably low levels of ecological validity and often very indirect measures of intergroup relations. I begin to address some of these shortcomings in the research presented in the following three empirical chapters of this thesis, using four different datasets across nine studies. The following chapter, Chapter 2, builds directly on the literature outlined in detail in this introduction and considers whether mere presence effects emerge outside the laboratory, in real-life settings. It thus sets the scene for further research, presented in later parts of this thesis, on more active engagement – specifically intergroup contact – between monoethnic and multiethnic individuals, and begins to answer the question whether multiethnic individuals can build bridges between members of different monoethnic groups.

Chapter 2: Mere Presence Effects

In Chapter 1, I outlined how the public discourse about interethnic relationships and multiethnic individuals has shifted: from hybrid degeneracy theories to a distinctly optimistic view of multiethnic individuals as signposts of integration (Alibhai-Brown, 2016) and catalysts of greater intergroup harmony. That the rapid growth of multiethnic populations in the US and the UK (Jivraj, 2012; US Census Bureau, 2012) could benefit intergroup relations appears to be supported by a small but growing number of studies that focus specifically on reactions to multiracial individuals (see review by Pauker, Meyers et al., 2018). This argument is supported further by recent research on intergroup relations more widely, which has highlighted that an individual's intergroup cognition and behavior are uniquely affected by the attributes of their social environment (e.g., Christ et al., 2014; De Tezanos-Pinto et al., 2010; Semyonov et al., 2004; Wagner et al., 2006). However, as my review in Chapter 1 of the literature on multiethnic identities and reactions to multiethnic social stimuli highlighted, the available research suffers several significant shortcomings. Overall, it leaves unanswered the question of whether the increased presence of multiethnic individuals really translates into better intergroup relations.

This chapter addresses three main limitations of prior research in this area (I also note, below, how I introduce social network analysis to try to overcome the potential limitation of socially desirable responding). The first limitation that I address throughout this chapter is the fact that most research on the potential of multiethnic individuals to improve intergroup relations has been conducted in artificial and tightly controlled experimental settings. Findings garnered from this research therefore have questionable ecological validity. For example, Levy et al. (2017, Study 2) adapted the minimal group paradigm to test whether knowledge alone of the presence of a multiply-identified group positively affects intergroup behaviour. Within this traditionally two-group research paradigm (e.g., Brewer & Silver, 1978), they found that the mere presence of a third group which shared attributes with the participants' ingroup and as well as the outgroup

prompted fairer resource allocation and greater outgroup contact intentions, compared to a control condition that substituted the dually identified group with an unrelated third group.

However, it would be premature to conclude from this experiment and others with even more abstract designs – including experiments based on computerised face categorisation tasks (e.g., Young et al., 2013) – that the presence of multiethnic individuals in an intergroup setting facilitates more intergroup harmony in general, and that this effect lasts over time in particular. Research where participants were exposed to multiethnic face stimuli or engaged in interactions with multiethnic individuals finds that such experiences produce more positive intergroup cognition, affect, and behavior only when stimuli or contact partners are clearly identified as 'mixed' rather than remaining racially or ethnically ambiguous (e.g., Levy et al., 2017, Study 4; Levy, Halperin, van Zomeren, & Saguy, 2019; Gaither et al., 2018). However, research on the disfluency with which monoethnic perceivers process multiethnic stimuli (e.g., Freeman et al., 2016), and the frequent mis-categorisations of multiethnics discussed in Chapter 1, suggests that ambiguous categorisation may be the hallmark of monoethnic individuals' experiences of multiethnic others. The positive short-term effects of the mere presence of multiethnic individuals within an intergroup context may thus fail to replicate in real-life settings over time where category membership is likely less salient and more ambiguous than experiments would suggest.

The second limitation addressed in this chapter and throughout my thesis is that research on 'mixed race' rarely distinguishes between individual- and context-level effects. To conclude that because exposure to multiethnic stimuli positively affects social cognition the growth of multiethnic populations will reduce prejudice and intergroup conflict, is to draw a direct line between a context-level predictor (the presence of multiethnics) and an individual-level outcome (e.g., prejudice) without modelling the relevant effects on the respective levels on which they occur. In the, to my knowledge, only study thus far which jointly considered contextual exposure to and individual-level contact experiences with multiethnics, Pauker, Carpinella, Lick, Sanchez, and Johnson (2018) found that the high

proportion of multiethnics in Hawaii (vs. California) was significantly and positively associated with fewer instances of hypodescent. However, this effect disappeared when the relationship between a context that provides more opportunities for contact with multiethnics and the prevalence of such contact experiences were both considered. Pauker, Carpinella et al.'s (2018) findings suggest that the presence of multiethnics alone is not enough to affect social cognition. While this study did not include outcome measures of intergroup relations and also compared only two contexts, it nonetheless highlighted that both context and experiences within a given context (e.g., contact) need to be considered simultaneously if we want to understand whether demographic changes affect intergroup relations. Of the studies presented here, Study 2.1 in particular, by combining social network and survey data in hierarchical linear models, distinguished clearly between individual- and context-level effects and considers them across more environments than previous research.

Finally, although many studies on exposure to multiethnics have been framed as research on intergroup harmony, some include outcome measures that are not necessarily indices of positive intergroup relations. Wilton et al. (2014), for example, found that exposure to pictures of biracial-labelled faces reduced participants' perceived distance between the two monoracial groups that were combined in the biracial face. However, as I have discussed in Chapter 1, greater intergroup similarity is not always associated with more positive intergroup relations. Among individuals who identify strongly with their ingroup, it may even be perceived as threatening and could promote more, not less, intergroup discrimination (Jetten & Spears, 2003; Jetten et al., 2004). Furthermore, the relationship between racial essentialism and negative outgroup attitudes, albeit often implied in the discussion of research on racial essentialism, is also not always significant (see Haslam, Rothschild, & Ernst, 2002). The studies presented here include a number of well-validated self-report- and social network-based indices of intergroup relations that can further our insights into the social psychological implications of the growing presence of multiethnic individuals.

The Present Research

The aim of the two studies presented in this chapter was to test whether the mere presence effect reported by Levy et al. (2017), and proposed by commentators on mixed-race who celebrate multiethnic individuals as transgressors of interethnic divides (see Parker & Song, 2001), can be replicated in a real-life setting when also controlling for individuals' contact experiences with multiethnic individuals.

Study 2.1 was conducted in high school classrooms in England. In this study, I made use of hierarchical linear modeling to account for the nested nature of the data (individuals within classrooms) and to distinguish context- from contact-effects. Study 2.2, conversely, was conducted as an online experiment and therefore matched more closely the majority of existing research on multiethnic populations. It included a repeated-measures design and participants' evaluations of social environments in which biracial individuals were either present in or absent from social network diagrams. Both studies thus provided insight into how the actual (Study 2.1) or perceived (Study 2.2) demographic makeup of an environment relates to intergroup relations within it.

Study 2.1

Aims and Hypotheses

Study 2.1 tested, in a real-life setting, the hypothesis that the mere presence of multiethnic individuals within an intergroup context positively affects intergroup relations. To this end, I used a combination of survey data and data on complete social networks in clearly defined environments (classrooms across schools in England) and compared intergroup relations in environments where multiethnic individuals were present vs. absent. Importantly, the nested data structure enabled me to test whether the presence of multiethnics within a set context affected intergroup relations while controlling for individual-level contact experiences with multiethnic friends.

Social network analysis contributed two key elements towards the aim of this study: Firstly, as I outlined in Chapter 1, a participant's social ties offer a way of quantifying inter- and intra-group contact without relying on that participant's awareness of their contact partner's social identity. Rather, inter- and intra-group ties are classified based on the self-categorisation of each individual within a given dyad. The indirect nature of this contact measure is particularly useful for researchers interested in relationships with individuals whose category membership appears ambiguous and who may be hard to categorise, including contact with multiethnic individuals. In this study, I relied on social network data to quantify monoethnic participants' contact with multiethnic individuals – a key control variable in Study 2.1. Secondly, the structural properties of complete social networks offer insights into the social climate within a set environment that go beyond the reported perceptions of network members. In Study 2.1, I used socio-structural indicators of social relations to complement more established indicators that rely on self-report methodology.

Method

Dataset and sample. Participants were monoethnic majority and minority students at high schools in England who participated in the Children of Immigrants Longitudinal Survey in Four European Countries, CILS4EU (Kalter et al., 2016a, 2016b, 2016c). This ongoing project included both survey data and data on classroom-based social networks. I only considered data from the English CILS4EU subsample because in the other national samples, participants did not have the opportunity to self-categorise as being of mixed background. Information on parental countries of birth is an unreliable proxy of ethnic or racial identity (Parameshwaran & Engzell, 2015) – especially in countries with a long history of immigration (e.g., England) and for individuals of multiethnic or multiracial background. Parental origin was therefore not considered a viable alternative to self-categorisation.

For the analyses of context-level (socio-structural) indicators of intergroup relations, I used survey data from wave 1 and social network data from waves 1 and 2. For the

analyses of individual-level indicators, I used survey data from waves 1 and 3, and social network data from wave 1. I could not consider wave 2 in my analyses of individual-level indicators of intergroup relations because, with the exception of ethnic identity, the variables of interest were not measured at wave 2. The measure of ethnic identity, however, was not included in wave 1 and was therefore added to the dataset from wave 2. No social network data was available at wave 3. The distribution of context- and individual-level dependent variables across waves is summarised in Table 2.1.

Table 2.1
Distribution of Classroom-Level and Individual-Level Dependent Variables Across Waves 1-3

Analysis	Measure	Wave 1	Wave 2	Wave 3
Classroom-level	Positive tie density	√	√	
	Negative tie density	√		
	Ethnic homophily	√	√	
	Attitudinal intergroup climate	√		
Individual-level	Outgroup attitudes	√		√
	Outgroup friendship	√		√

Wave 1 data were collected in the school year 2010/2011, wave 2 data in the school year 2011/2012, and wave 3 data in the school year 2012/2013. At waves 1 and 2, data were collected at school; at wave 3, data were collected from the same target population through a mixed-mode survey (telephone, post, web) because participants had transitioned from school to vocational training or the labour market between waves 2 and 3. Schools were selected for participation with a view to oversampling ethnic minority students. To reflect the minority population in each school, each school was assigned to one of four mutually exclusive strata according to their proportion of minority students (1 = 0 to 10%, 2 = 10 to 30%, 3 = 30 to 60%, 4 > 60%; see CILS4EU, 2016a, for details on data collection).

Participation rates at wave 1 were as follows: school participation = 66%; class participation within participating schools = 100%; student participation within

participating classes = 81%. Given participation at wave 1, wave 2 participation rates were as follows: 86% school participation; 77% student participation. At wave 2, no class participation rates could be calculated due to the restructuring of classes in some schools. However, non-response rates at the classroom level were considered "not to be a major problem" (CILS4EU, 2016b, p. 5). At wave 3, given participation in wave 1 or 2, the student participation rate was 52%. Overall, data were collected from $N = 4315$ students at wave 1; $N = 3304$ student at wave 2; and $N = 2227$ at wave 3 (CILS4EU, 2016a, 2016b, 2017a).

In line with previous analyses of this dataset (e.g., Wölfer et al., 2019; Wölfer et al., 2016) and in order to have sufficient power for analysing the social networks, I included participants from classrooms with more than fifteen students. At wave 1, this amounted to $n_{schools}= 96$ and $n_{classrooms} = 163$ (82% of all classrooms sampled at wave 1), and at wave 2, data from $n_{schools}= 77$ and $n_{classrooms} = 105$ (80% of all classrooms sampled at wave 2). Furthermore, I considered only participants who self-identified as a monoethnic majority group member, White British ($n = 1689$), or as a member of one of two broadly defined monoethnic minority groups, Asian British ($n = 617$) and Black British ($n = 252$).[1] These participant groups were included because they constituted by far the largest ethnic groups in the dataset (and in England more generally), and because their identity mapped onto the wording of the available survey items on intergroup contact and attitudes described below. Two multiethnic populations, mixed Asian-White ($n = 41$) and mixed Black-White ($n = 98$), were also included in the data as members of the classroom networks.[2] Sample demographics are summarised in Table A2.1.

[1] Participants were considered Asian British if they said they belonged to one of the following groups: 'Asian or Asian British: Indian', 'Asian or Asian British: Pakistani', and 'Asian or Asian British: Bangladeshi'. Participants were considered Black British if they said they belonged to one of the following groups: 'Black or Black British: Caribbean' and 'Black or Black British: African'. For readability, I omit 'British' when referring to all groups in the sample.

[2] This research focuses on the perceptions and experiences of monoethnic majority and minority group members and how they are affected by multiethnic others. Multiethnic individuals in the dataset were therefore not included as a separate group of participants in the analyses. This research focus-led decision was further supported by the small size of the multiethnic population in the English CILS4EU datasets.

Measures

The CILS4EU questionnaires contained a variety of measures, including indicators of interpersonal and intergroup experiences and attitudes (CILS4EU, 2016c, 2016d, 2017b). At waves 1 and 2, participants also completed a social network survey that asked them to nominate individuals in their classroom with whom they share a specific type of relationship. Here, I focus on two forms of relationships: friendship, assessed at waves 1 and 2, and conflict, assessed only at wave 1. All measures included in the analyses are described below.

Multiethnic presence. The presence vs. absence of multiethnic individuals was treated as the binary predictor variable. I distinguished between classrooms that included only monoethnic students and classrooms that included at least one Asian-White or Black-White student.

Positive tie density. Participants nominated up to five best friends among their classmates, a process referred to as the friendship nomination procedure that yielded outdegrees (the number of nominations made) between 0 and 5. Positive tie density, a context-level measure, reflects the number of reported friendship ties relative to the number of possible friendship ties within a classroom.

Negative tie density. Participants could nominate up to 25 people "who were sometimes mean" to them. Negative tie density reflects the proportion of all possible negatively connoted ties within a classroom that are also present.

Homophily. To consider specifically intra-group relations within a classroom, and thus homophily (McPherson, Smith-Lovin, & Cook, 2001), I calculated the proportion of friendship ties in a given classroom where the participant's ethnicity matched that of their nominated friend. I only considered intra-group friendship ties among Asian, Black, and White individuals in this approach.[3]

[3] To match the available self-report measures on contact with and attitudes towards specific groups, the categories 'Asian British', 'Black British' and 'White British' were very broadly defined. It is therefore

Attitudinal intergroup climate. To reflect the attitudinal intergroup climate within a classroom, I calculated the classroom-level average of outgroup attitudes across monoethnic majority and minority students. On separate 11-point feeling thermometers, White, Asian, and Black participants indicated their attitudes towards White, Asian, and Black people (0 = *Negative*, 100 = *Positive*). The scale mid-point was labelled *neutral*. I then aggregated White participants' attitudes towards Asian and Black British people, Black participants' attitudes towards White and Asian British people, and Asian participants' attitudes towards Black and White British people, to reflect the mean level of outgroup attitudes within a given classroom. Because participants had left their classroom groups at wave 3, this context-level variable could only be calculated at wave 1.

Outgroup attitudes. The outgroup ratings used to calculate classroom-level outgroup attitudes were also treated as an individual-level dependent variable. To indicate their attitudes towards White, Asian, and Black people, participants rated how positively they feel about each group. This data was collected at waves 1 and 3. I treated outgroup ratings at wave 3 as a dependent variable in my analyses of individual-level indicators of intergroup relations.

Self-reported outgroup friendship. To indicate how much positive outgroup contact they have, participants reported on their number of friends from the target monoethnic outgroup ("Thinking now about all of your friends. How many of them have a [Black/ Asian/ White] background?", 1 = *None or very few*, 5 = *Almost all or all*). Wave 3 self-reported outgroup friendship was treated as another dependent variable in my analyses of individual-level indicators of intergroup relations.

Covariates. Across all analyses, I controlled for gender, age, and parental socioeconomic status[4] at the participant level, and network size at the classroom level. Furthermore, to

possible that this measure classified some dyads as 'intra-group' where individuals within those dyads might not consider each other as ingroup members (e.g., individuals of Pakistani and Bangladeshi origin).

[4] SES reflected parental occupation, measured through the International Socio-Economic Index of Occupational Status (ISEI-08, Ganzeboom, 2010) which runs from 10 through 90. I created a sum score reflecting both parents' occupations; the maximum possible score was 180. If a parent was not currently in

account for erroneously set network boundaries across a small number of classrooms during data collection, I also included an indicator-coded variable reflecting network boundary (0 = year group and 1 = classroom).[5]

Context-level analyses. In the analyses on context-level indicators of intergroup relations, in order to account for differing opportunities for intergroup contact across classrooms I also included a variable that reflected the proportion of minority ethnic students at the school from which a given classroom was drawn. This variable, stratum, had been generated in the course of selecting schools for the CILS4EU project and assigned each school to a stratum according to its proportion of minority students (1 = 0 to 10%, 2 = 10 to 30%, 3 = 30 to 60%, 4 > 60%; see CILS4EU, 2016a).[6]

Individual-level analyses. Across analyses on individual-level indicators of intergroup relations, I controlled for participants' friendship ties to classmates who identified as mixed Asian-White or mixed Black-White at wave 1. At the classroom-level, these analyses also controlled for the number of target outgroup students in class. Where wave 3 self-reported outgroup contact was the dependent variable, I further controlled for each participant's self-reported friendship ties to the target outgroup at wave 1. Where wave 3 outgroup attitudes were the dependent variable, I controlled for wave 1 outgroup attitudes.

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employment, their most recent occupation was coded. If they had never been in employment, they received a score of 0.

[5] During data collection, social network boundaries were erroneously set at the year group-, instead of the classroom-, level at a small number of schools ($N_{schools}$= 10, $N_{classrooms}$ = 20, $N_{participants}$ = 332). This had previously warranted precautionary exclusion of English network data from analyses (e.g., Wölfer et al., 2016), but I was now able to identify the relevant networks and could include this variation as a covariate.

[6] This approach follows previous research which also controlled for contextual contact opportunities using the strata variable (e.g., Wölfer et al., 2016, 2019). Other classroom-based indices of opportunity for intergroup contact were considered, most notably Simpson's Index of Diversity (see Laurence & Bentley, 2016). However, these sociological measures of diversity were developed to reflect the fractionalisation of rather larger social contexts (e.g., the neighbourhood) and seem to be inappropriate for smaller social networks such as the classroom.

Analysis Strategy

Study 2.1 focuses first on context-level (socio-structural) indicators of intergroup relations. The comparisons of the social networks in classrooms with vs. without multiethnic students rely on data collected at wave 1 and wave 2. For several classrooms, network boundaries were inconsistent across waves (e.g., because at one wave but not the other nomination lists were merged when multiple classrooms were surveyed together, or because students migrated from one class to another between waves). Therefore, I analysed data from each wave cross-sectionally, calculating separate between-subjects MANCOVAs with multiethnic presence as the independent variable. At wave 1, positive tie density, negative tie density, homophily, and attitudinal intergroup climate were included as dependent variables to indicate social climate. At wave 2, the dependent variables were homophily and positive tie density. All analyses included network size, stratum, and network boundary as covariates.

At the end of this first section, I include an exploratory longitudinal analysis of the small subset of classrooms with consistent network boundaries. To explore the relationship between the mere presence of multiethnic classmates at wave 1 and social climate at wave 2, I conducted a MANCOVA with multiethnic presence at wave 1 as the predictor variable and positive tie density and homophily at wave 2 as the dependent variables. Positive tie density and homophily at wave 1 were included as covariates.

The second part of Study 2.1 addresses the longitudinal relationship between the presence vs. absence of multiethnics in class and individual-level indicators of intergroup relations. These multilevel analyses, which include wave 1 and wave 3 data, distinguish clearly between context and individual contact effects.

Results and Discussion

Context-Level Mere Presence Effect

Outliers. To identify univariate outliers on the dependent variables, I inspected the standardised scores of each dependent variable. Following Tabachnik and Fidell's (2007)

recommendations, I excluded cases with z-scores ≥ |4|. Considering wave 1 data, I excluded $n = 2$ classrooms on this basis (positive density: $n = 1$, attitudinal intergroup climate: $n = 1$). No univariate outliers were identified for wave 2. Furthermore, to identify multivariate outliers, I calculated Mahalanobis distances for the planned multivariate analyses. Considering both wave 1 and wave 2 data separately, no multivariate outliers were identified. Descriptives and inter-item correlations are summarised in Table A2.2.

Wave 1. The omnibus test of the within-subjects multivariate effect approached statistical significance, $F(4, 142) = 2.11$, $p = .083$, $\eta^2 = .06$. Separate follow-up ANCOVAs and inspection of estimated marginal means of the individual dependent variables suggested that the mere presence of multiethnic individuals was marginally significantly related to positive tie density, $F(1, 145) = 3.04$, $p = .083$, $\eta^2 = .02$, and homophily, $F(1, 145) = 3.30$, $p = .071$, $\eta^2 = .02$. However, it was unrelated to the attitudinal intergroup climate, $F(1, 145) = 0.18$, $p = .672$, $\eta^2 = .00$, and negative tie density, $F(1, 145) = 0.81$, $p = .369$, $\eta^2 = .01$.

Inspection of estimated marginal means showed that positive tie density tended to be higher when multiethnic students were absent ($M = 0.64$, $SE = 0.02$, 95% CI 0.61, 0.67) than when they were present ($M = 0.60$, $SE = 0.02$, 95% CI 0.57, 0.63). Similarly, ethnic homophily tended to be higher in classrooms without multiethnic students ($M = 0.46$, $SE = 0.03$, 95% CI 0.41, 0.52) than classrooms where they were present ($M = 0.39$, $SE = 0.03$, 95% CI 0.34, 0.45). These group differences are displayed in Figure 2.1.[7]

Wave 2. The omnibus test of the within-subjects multivariate effect was significant, suggesting that indicators of social climate overall differed between classes with vs. without multiethnic students, $F(2, 99) = 5.51$, $p = .002$, $\eta^2 = .12$. Follow-up ANCOVAs and inspection of estimated marginal means suggested that the mere presence of multiethnic students was significantly associated with homophily, $F(1, 100) = 11.38$, $p = .001$, $\eta^2 = .10$, and that homophily was greater in classrooms where multiethnic students

[7] Means displayed in all figures differ slightly from estimated marginal means. Estimated marginal means are calculated under consideration of the grand mean of each covariate. They are only identical to predicted means if the means of covariates within each group also equal their grand means.

were absent (M = 0.65, SE = 0.02, 95% CI 0.61, 0.69) than in classrooms where they were present (M = 0.61, SE = 0.02, 95% CI 0.58, 0.64). This group difference is displayed in Figure 2.2. The univariate effect of mere presence on positive tie density was not significant, $F(1, 100) = 1.90$, $p = .171$, $\eta^2 = .02$.

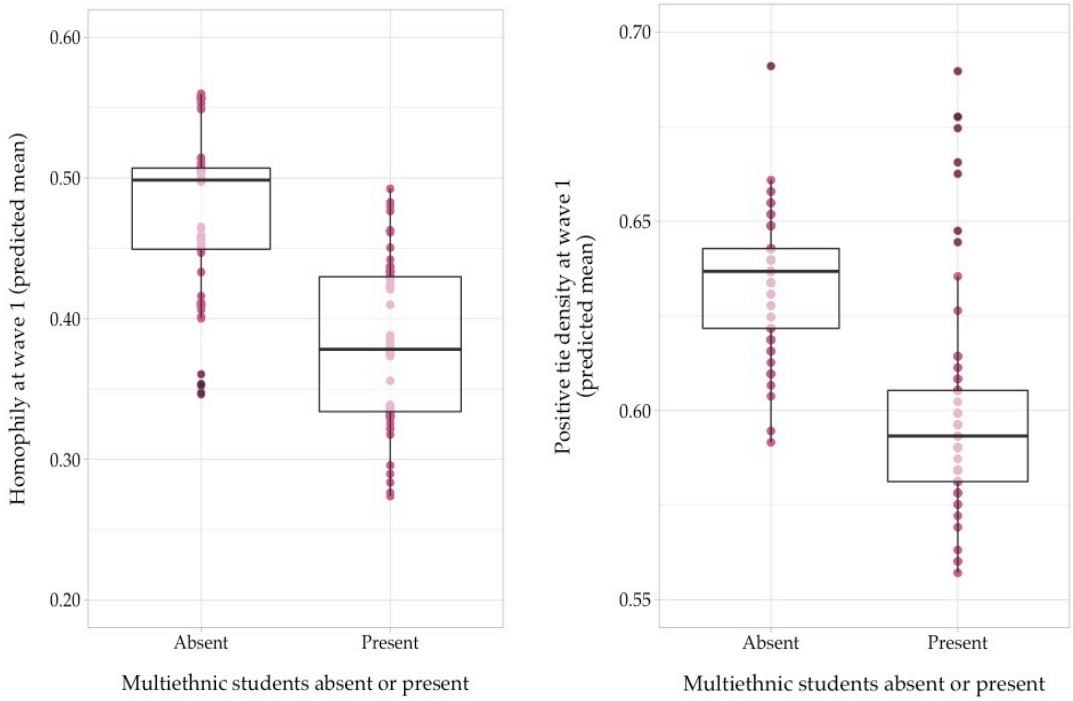

Figure 2.1. Average predicted homophily (left) and positive tie density (right) at wave 1 in classrooms with and without multiethnic students at wave 1, taking into account each case's individual covariate scores.

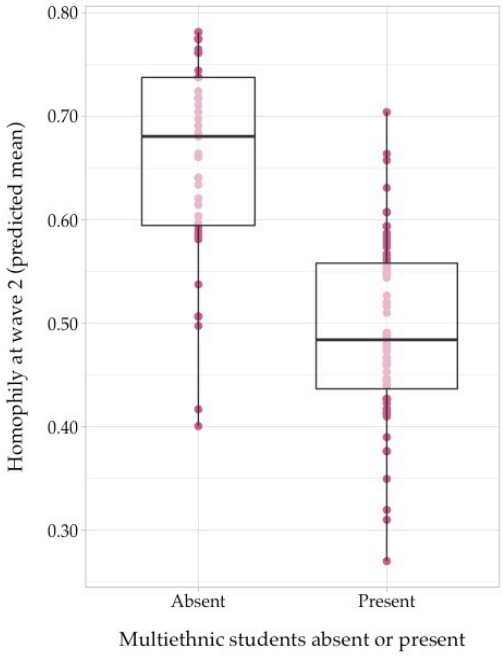

Figure 2.2. Average predicted homophily at wave 2 in classrooms with and without multiethnic students at wave 2, taking into account each case's individual covariate scores.

Longitudinal analyses. These analyses were of an exploratory nature because, due to changing network boundaries between waves 1 and 2, only a very small subset of classrooms could be included: those where classroom boundaries remained consistent across waves and that included more than 15 students at both time points (n = 37; no multiethnic students: n = 18; multiethnic students present: n = 19). At best, therefore, these analyses only provide insights into longitudinal trends.

The multivariate omnibus test was not significant, $F(2, 32) = 0.19$, $p = .194$, $\eta^2 = .10$, nor were the follow-up ANCOVAs, positive tie density: $F(1, 33) = 1.11$, $p = .299$, $\eta^2 = .03$; homophily: $F(1, 33) = 2.14$, $p = .153$, $\eta^2 = .06$. Inspection of the estimated marginal means, however, suggested that the observed trends using cross-sectional analyses at wave 1 and wave 2 could be replicated longitudinally. Classrooms that included multiethnic students at wave 1 did not tend to have lower levels of positive tie density at wave 2 (M = 0.65, SE = 0.02, 95% CI 0.61, 0.69) than classrooms where multiethnic students were absent (M = 0.68, SE = 0.02, 95% CI 0.64, 0.73). However, homophily tended to be lower in classrooms that included multiethnic students (M = 0.57, SE = 0.03, 95% CI 0.51, 0.64) compared to classrooms that did not (M = 0.64, SE = 0.03, 95% CI 0.58, 0.71). These group differences are displayed in Figure 2.3.

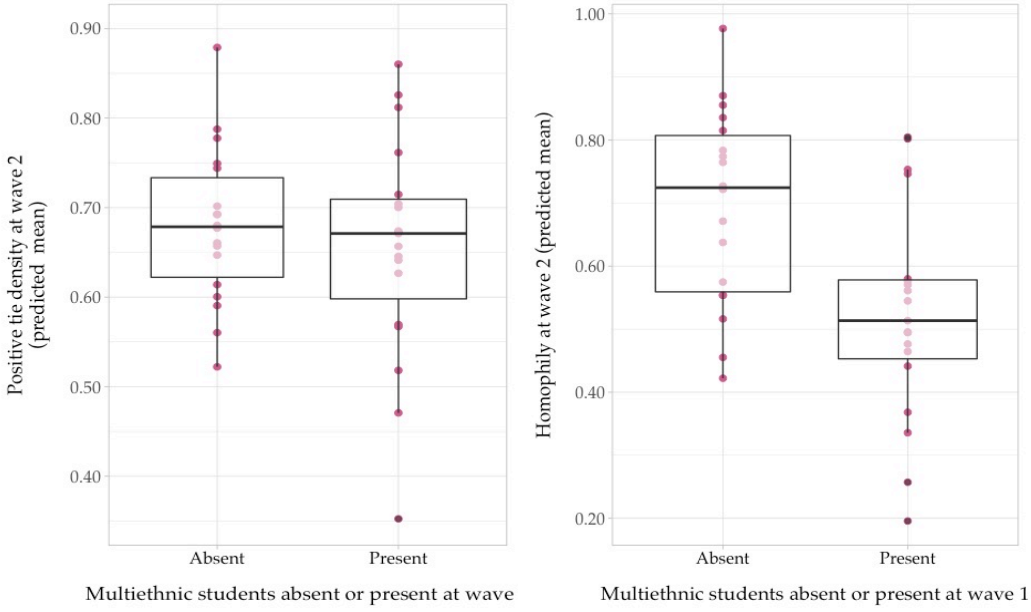

Figure 2.3. Average predicted positive tie density and homophily at wave 2 in classrooms where multiethnic students were present or absent at wave 1, taking into account each case's individual covariate scores.

Individual-Level Mere Presence Effect

In this second part of Study 2.1, I tested the association between the presence of multiethnic individuals and monoethnic individuals' self-reported intergroup relations, specifically intergroup friendship and outgroup attitudes. Taking account of the nested structure of the data (individuals within classrooms), I conducted random-intercept hierarchical linear models with maximum likelihood estimation (Collins, Schafer, & Kam, 2001; Raudenbush & Bryk, 2002). Analyses were run separately for majority and minority monoethnic participants. Throughout, the presence vs. absence of multiethnic classmates was treated as a classroom-level independent variable. The self-reported number of friendships with and attitudes towards the monoethnic outgroup were treated as individual-level dependent variables.

To test whether any hypothetical effect of multiethnic presence did not in fact reflect contact with multiethnic students which resulted from their classroom presence, I also included contact with multiethnics as an individual-level predictor at the second step of each analysis. Therefore, my analyses address whether the presence of multiethnic peers in class affects intergroup relations independently of an individual's direct positive contact with multiethnic classmates. Descriptives and inter-item correlations are summarised in Tables A2.3 and A2.4.

Outgroup attitudes. Among both majority and minority participants, the presence of multiethnic classmates at wave 1 was not significantly associated with monoethnic outgroup attitudes at wave 3; neither when individual-level direct contact with multiethnics was left unaccounted for (majority: b = -0.43, p = .509; minority: b = -0.33, p = .669), nor when it was included in the model (majority: b = -.61, p = .368; minority: b = -.13, p = .880). Separate model comparisons for majority and minority participants indicated that the addition of contact with multiethnics did not significantly affect the overall model fit (see Table 2.2).[8]

[8] I also explored the association between the number of multiethnic classmates at wave 1 and outgroup attitudes at wave 3 (majority participants: b = -1.40, p = .085; minority participants: b = -0.08, p = .912).

Table 2.2
Wave 3 Outgroup Attitudes Among Monoethnic Participants

	Majority participants							Minority participants						
	Unconditional Model	Model 1: W3 Outgroup attitudes			Model 2: W3 Outgroup attitudes			Unconditional Model	Model 1: W3 Outgroup attitudes			Model 2: W3 Outgroup attitudes		
		b	*p*	*SE*	*b*	*p*	*SE*		*b*	*p*	*SE*	*b*	*p*	*SE*
Level 1: *Participants*														
Age		-0.28	.669	0.65	-0.27	.674	0.65		-0.94	.281	0.87	-0.97	.264	0.87
Gender		0.88	.136	.59	0.87	.135	0.58		1.04	.310	1.02	1.01	.325	1.03
SES		0.54	.373	0.61	0.51	.404	0.61		0.47	.542	0.77	0.47	.539	0.91
W1 Outgroup attitudes		6.02	<.001	0.78	6.04	<.001	0.79		4.56	<.001	1.06	4.55	<.001	1.06
Multiethnic friends					0.47	.513	0.72					-0.57	.534	0.91
Level 2: *Classrooms*														
Network size		-1.32	.128	0.86	-1.35	.124	0.88		-1.31	.273	1.19	-1.35	.263	1.20
Network boundary		-1.09	.258	0.96	-1.20	.221	0.98		-1.96	.062	1.04	-1.92	.071	1.05
Target outgroup students		-3.32	.002	1.03	-3.43	<.001	1.01		1.52	.129	0.99	1.52	.130	0.99
Multiethnic presence		-0.43	.509	0.65	-0.61	.368	0.67		-0.33	.669	0.77	-0.13	.880	0.87
L1 Variance σ^2 (*SE*)	393.50 (17.47)	355.14 (17.00)			354.96 (16.99)			361.75 (22.72)	328.55 (23.53)			328.24 (23.51)		
L2 Variance τ (*SE*)	15.96 (7.68)	2.87 (5.77)			2.83 (5.76)			3.21 (8.15)	.26 (5.52)			.27 (8.52)		
Deviance (*df*)	9950.41 (3)	8456.58 (11)			8456.00 (12)			4987.18 (3)	3867.67 (11)			3867.27 (12)		
ΔDeviance from previous model χ^2(*df*), *p*	–––	1493.83 (8), <.001			.58 (1), >.500			---	1119.51 (8), <.001			.40 (1), >.500		

Note. W3 = Wave 1, SES = Socioeconomic status, L1 = level 1, L2 = level 2, *SE* = Standard error. *n* = 970 students, *n* = 136 classrooms. All predictors were z-standardised.

Outgroup friendship. Among majority participants, the presence of multiethnic classmates at wave 1 was significantly and positively associated with minority outgroup friendship at wave 3. This effect emerged both when individual-level contact with multiethnics was unaccounted for (b = 0.16, p = .002) and when it was included in the model (b = 0.13, p = .012). A comparison of the two models suggested that model fit was improved significantly by the inclusion of contact with multiethnics (see Table 2.2). Among minority participants, however, the presence of multiethnic individuals at wave 1 was unrelated to friendship contact with Whites at wave 3; both when individual-level contact was unaccounted for (b = -0.02, p = .726) and when it was included in the model (b = 0.00, p = .986). Inclusion of contact with multiethnics did not significantly affect model fit (see Table 2.3).[9]

Overall, analyses of the association between the presence of multiethnic individuals within a social context and context-level indicators of social relations suggest that the mere presence of multiethnic individuals is unrelated to the general social climate within that context. However, the presence of multiethnics tends to be associated with a lower proportion of intra-group friendship ties (my measure of ethnic homophily). This positive association with intergroup relations manifested only in friendship ties and not intergroup attitudes, because the classroom-level attitudinal intergroup climate (mean outgroup attitudes held across students within a given class) was unrelated to the presence of multiethnic students. Analyses of individual-level indicators of intergroup relations matched those context-level analyses and suggested that multiethnic presence is unrelated to outgroup attitudes but, among majority group members, predicts more intergroup contact over time.

[9] Analyses of the association between the number of multiethnic classmates at wave 1 and outgroup friendship at wave 3 revealed the same pattern of results (majority participants: b = 0.17, p = .002; minority participants: b = 0.03, p = .508).

Table 2.3
Wave 3 Monoethnic Outgroup Friendship Among Monoethnic Participants

	Majority participants							Minority participants						
	Unconditional Model	Model 1: W3 Outgroup contact			Model 2: W3 Outgroup contact			Unconditional Model	Model 1: W3 Outgroup contact			Model 2: W3 Outgroup contact		
		b	*p*	*SE*	*b*	*p*	*SE*		*b*	*p*	*SE*	*b*	*p*	*SE*
Level 1: *Participants*														
Age		0.02	.537	0.04	0.02	.507	0.04		-0.10	.013	0.04	-0.10	.011	0.04
Gender		-0.04	.261	0.00	-0.04	.272	0.04		0.01	.845	0.05	0.01	.885	0.05
SES		-0.04	.316	0.04	-0.04	.275	0.04		0.11	.009	0.04	0.11	.008	0.04
W1 Outgroup contact		4.14	<.001	0.04	0.14	<.001	0.04		0.31	<.001	0.05	0.31	<.001	0.05
Multiethnic friends					0.07	.035	0.03					-0.06	.311	0.06
Level 2: *Classrooms*														
Network size		-0.09	.329	0.09	-0.10	.303	0.09		-0.21	.022	0.09	-0.21	.021	0.09
Network boundary		-0.07	.458	0.09	-0.09	.350	0.09		-0.08	.356	0.08	-0.07	.384	0.08
Target outgroup students		0.39	<.001	0.09	0.37	<.001	0.09		0.40	<.001	0.07	0.40	<.001	0.07
Multiethnic presence		0.16	.002	0.05	0.13	.012	0.05		-0.02	.726	0.05	0.00	.986	0.06
L1 Variance σ^2 (*SE*)	1.17 (0.05)	1.12 (0.05)			1.12 (0.05)			1.03 (0.07)	0.89 (0.06)			0.89 (0.06)		
L2 Variance τ (*SE*)	0.31 (0.06)	0.14 (0.04)			0.14 (0.04)			0.34 (0.08)	0.06 (0.03)			0.06 (0.03)		
Deviance (*df*)	3472.95 (3)	3021.75 (11)			3017.96 (12)			1729.72 (3)	1372.53 (11)			1370.84 (12)		
ΔDeviance from previous model χ^2(*df*), *p*	---	451.20 (8), <.001			3.80 (1), .048			---	357.19 (8), <.001			1.69 (1), .191		

Note. W3 = Wave 1, SES = Socioeconomic status, L1 = level 1, L2 = level 2, *SE* = Standard error. *n* = 997 students, *n* = 136 classrooms. All predictors were z-standardised.

Study 2.2

Aims and Hypotheses

The primary aim of Study 2.2 was to pilot a new experimental paradigm that builds on the social network approach of Study 2.1. By placing participants in the position of external observers of social networks and asking them to judge the intergroup climate and attractiveness of each network, this study had both an explicit intergroup focus and made the presence and social identity of multiethnics more salient than would likely be the case when participants are themselves embedded within a network. Under these conditions of low ambiguity, common for lab-based studies on the effect of multiracial or -ethnic individuals on intergroup processes (Levy et al., 2019; Young et al., 2013), I expected to replicate the finding that the presence of individuals with mixed or multiple background within a social environment has positive effects on intergroup relations.

A secondary aim of Study 2.2 was to explore whether the hypothesised mere presence effect was moderated by two individual-difference variables: social dominance orientation (SDO) and ingroup identification. SDO describes the "preference for hierarchical over egalitarian relations between groups" (Kauff et al., 2016, p. 2) and a desire "that one's in-group dominate and be superior to out-groups" (Pratto, Sidanius, Stallworth, & Malle, 1994, p. 742). In the research literature on group-based prejudice and intergroup relations, SDO has been associated with higher levels of prejudice, the endorsement of inequality-legitimising beliefs, and lower levels of support for equality-enhancing social policies (Knowles, Lowery, Hogan, & Chow, 2009; Pratto et al., 1994). Among majority group members, higher levels of SDO have also been associated with more negative attitudes towards interracial dating and marriage, and transracial adoption (Lalonde, Giguere, Fontaine, & Smith, 2007; Pratto et al., 1994).

In so far as multiethnic individuals blur the boundaries between established social categories (Pauker, Meyers, et al., 2018), monoethnic individuals who have a strong preference for clear group hierarchies might be less attracted to, and perceive intergroup relations to be more fraught in, environments that include multiethnic individuals. On the other hand, the

salience of multiethnic identities might also, by way of introducing a third group to the intergroup context, emphasise the distinction between ingroup and outgroup members. This in turn could be associated with more favourable evaluations of the social environment. In line with this latter prediction, Levy et al. (2018) recently found that SDO moderates reactions to the presence vs. absence of multiracial individuals. Only among participants with high SDO was priming with both monoracial and multiracial stimuli associated with reduced symbolic racism and greater outgroup contact motivation. In light of the novelty of the primary research question and this paradigm, and considering inconsistent findings on the moderating role of SDO in the intergroup contact literature (see Kauff et al., 2016), I proposed no directional hypotheses regarding the role of SDO in this particular study. Instead, I hypothesised that SDO moderates reactions to the presence vs. absence of multiethnic indiviuals in a social network.

As I have outlined in Chapter 1, ingroup identification could also moderate reactions to the presence of multiethnic individuals. Weakly and strongly identified individuals have been found to react to increased intergroup similarity with reduced and enhanced intergroup discrimination respectively (Jetten & Spears, 2004). Therefore, if the presence of multiethnic individuals reinforces commonalities among groups (Wilton et al., 2014), this may negatively affect the intergroup relations of strongly identified individuals. To my knowledge, no published research has to date tested the association between the presence of multiethnics and intergroup relations as a function of ingroup identification. Therefore, I also test an exploratory hypothesis regarding the role of ingroup identification.

Method

Sample

Prior to data collection, I used G*Power software to determine the target sample size. To obtain .90 power for the detection of a medium effect size of $f = 0.3$ at the standard .05 alpha error probability, the target sample size was set at $N = 171$. In anticipation of attrition due to incomplete data, consent withdrawal and unreasonably short completion times, I collected data from $N = 200$ participants.

In exchange for financial reward, I collected data from participants who were registered on the online data collection platform Prolific and who had, upon registration, indicated that they were White/Caucasian US citizens and above 18 years of age (at the time of data collection, 9,355 of 69,566 registered users met these criteria). Following Prolific's ethical payment plan, participants were paid $1.10 for the ca. 10 minutes required for study completion. Of the full sample, n = 11 participants were excluded because they had completed less than 50% of the study; a further n = 7 participants' data was excluded because they withdrew consent following the end-of-study debrief.[10] I also excluded data from n = 7 additional participants who completed the study faster than 1 *SD* below average time to completion (M = 653.99 sec, SD = 359.99). Finally, I excluded data from one additional participant who did not confirm their racial identity at the end of the study. The final sample of n = 176 exceeded the pre-determined target sample size (gender: 85 males, 87 females, 4 other or missing; age in years: M = 35.31, SD = 13.01).

Design

This study had a within subjects repeated-measures design with one experimentally manipulated factor with three levels that were presented in random order to participants: network type ('biracial'[11] nodes absent, biracial nodes present and in broker positions,[12] biracial nodes present and not in broker positions). Study 2.2 focuses on one manipulation within this design: the presence vs. absence of explicitly biracial nodes. This focus allowed me to test for mere presence effects. An additional manipulation – the location of these biracials within their relationship network – is the focus of Study 3.3 in Chapter 3. Here, although I introduce the complete study design and report omnibus tests that include all experimental conditions, I focus on post-hoc analyses which juxtapose the condition where biracial nodes were absent from the network with a combination of the two conditions

[10] Seven additional participants also withdrew consent but revoked this decision in the end-of-survey comments box. Their data was included in the study.

[11] The term 'biracial' reflects common usage in the US American context where this research was conducted.

[12] Because it is the focus of Chapter 3, I provide a detailed introduction to brokerage there. In summary, individuals in broker positions connect members of two other groups (e.g., a Black-White individual connecting Black and White network members).

where biracial nodes were present. The two primary dependent variables were: perceived network attractiveness and perceived intergroup climate.

Stimuli and Procedure

Stimuli. Twelve images of social networks were generated using the igraph package in R (Csardi & Nepusz, 2006; R Core Team, 2017); each network included 100 nodes connected by ties. Four social networks were generated per experimental condition. Nodes were coloured green, blue, and yellow and, as indicated by a legend adjacent to each network, reflected biracial, White, and Black individuals, respectively. Across all networks, the number of nodes (100), the total number of ties (150), and the number of direct ties between White and Black individuals (5) were equivalent. Accordingly, significant network attributes such as density and per-node average degree were consistent across all diagrams. The only attributes that differed across networks were the presence and location of biracial network members.

In the biracials absent-condition ('BA condition'), each network included 50 blue and 50 yellow nodes. The consistently low number of intergroup ties meant that the networks appeared largely segregated, as one would expect to find in real life given individuals' strong preference for homophily (McPherson et al., 2001). In the two other conditions that include biracial nodes, each network consisted of 40 blue, 40 yellow, and 20 green nodes. When generating networks that included biracial nodes in broker positions ('BBr condition'), network settings permitted green nodes to have ties to both yellow and blue nodes. In the resultant networks, green nodes thus tended to be located between the larger clusters of blue and yellow nodes. In the condition where biracial nodes were present but not in broker positions ('BNBr condition'), 50% of green nodes were constrained to ties to blue nodes only, and 50% constrained to ties to yellow nodes only. In the resultant networks, each green node therefore appeared to be embedded within the larger blue and yellow clusters. Example networks are displayed in Figure 2.4.

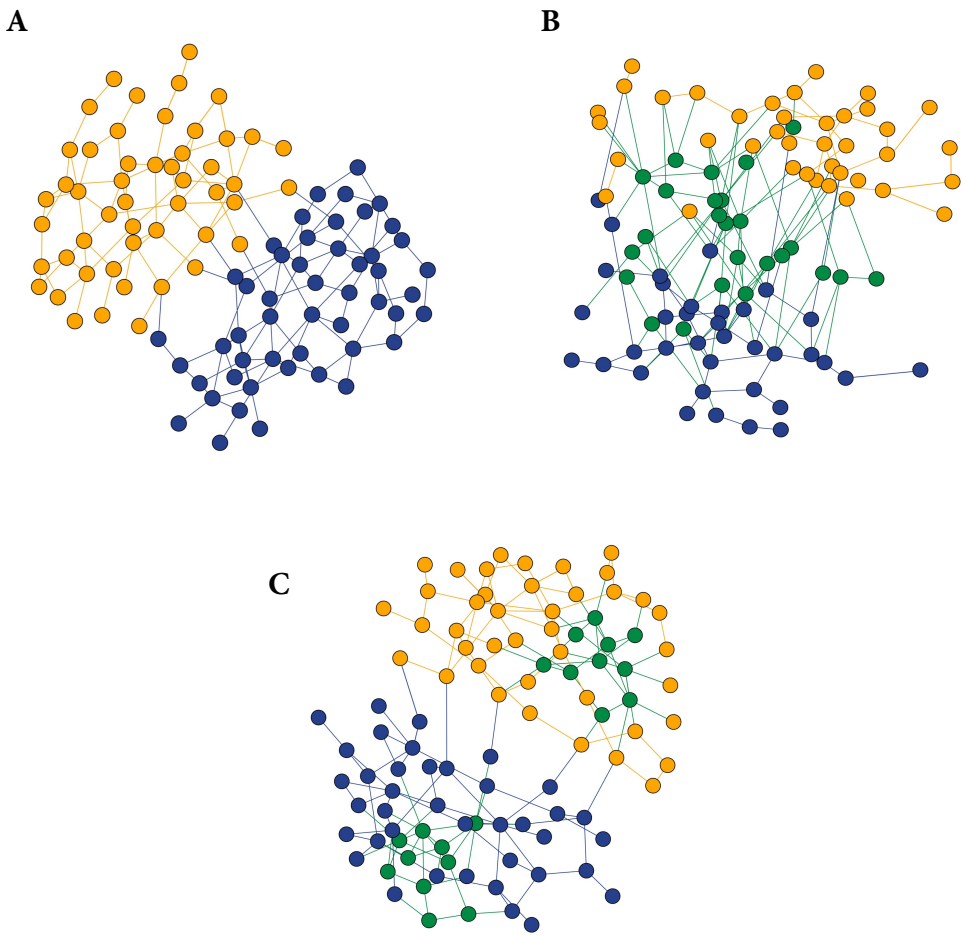

Figure 2.4. Example stimuli from the 'biracials absent' condition (A), the 'biracials in broker positions' condition (B), and the 'biracials not in broker positions' condition (C).

Procedure. Prior to the study, participants were told that they would be shown diagrams of relationship networks depicting the friendship relations of White, Black, and biracial Black-White Americans in major US cities, and that data for these networks had been collected in a previous study on the American neighbourhood. At the beginning of the study, participants completed a short survey on individual-difference measures outlined below. They were then, consecutively, shown 12 diagrams of relationship networks that included White, Black, and biracial individuals. Except for the first diagram, which was accompanied by a question ascertaining whether participants correctly perceived the different groups within the network, diagrams were presented in a random order. Each diagram was accompanied by questions on the dependent variables and a manipulation check on the perceived location of biracial nodes in the network. At the end of the study, participants were shown a matrix of all four networks where biracial nodes occupied broker positions.

They were asked to indicate whether they considered biracial individuals 'brokers' or 'barriers' within these networks. Finally, participants provided demographic information on their age, gender, and race. They were thanked and debriefed about the purposes of the study and the artificiality of the networks.

Measures

I report all variables included in the full study but limit my analyses and discussion to the variables and effects of relevance to this chapter, focused on the replicability of the mere presence effect. All further analyses are included in Chapter 3.

Perceived intergroup climate. For each network diagram, participants were asked to rate how warm or cold they would describe the relations between Black and White people in the displayed social environment. Ratings were made using an 11-point feeling thermometer (0 = *Very cold* to 10 = *Very warm*). I averaged ratings across each set of four networks per experimental condition (BA condition: Cronbach's α = .89; BBr condition: Cronbach's α = .88; BNBr condition: Cronbach's α = .90).

Network attractiveness. Participants indicated how strongly they would be interested in or opposed to living in a social environment like the one displayed in each given diagram. Ratings were given on 6-point scales (1 = *Very opposed*; 6 = *Very interested*). For further analyses, responses were averaged across each set of four networks per experimental condition (BA condition: Cronbach's α = .94; BBr condition: Cronbach's α = .84; BNBr condition: Cronbach's α = .93).

SDO. SDO was measured using the Short Social Dominance Orientation scale by Pratto et al. (2013). It contains four items including "Superior groups should dominate inferior groups". All items were rated on 6-point scales (*1 = Strongly oppose; 6 = Strongly favour*). Principal components analysis confirmed that all items loaded strongly on a single factor (see Table A2.4). Cronbach's α = .83 indicated satisfactory scale reliability, and items were thus averaged to create a single SDO score.

Ingroup identification. The Single Item Social Identification measure (Postmes, Haslam, & Jans, 2013) measured participants' identification with their racial ingroup: "I identify as White" (1 = *Fully disagree;* 6 = *Fully agree*).

Identification of biracial nodes. To ensure participants could correctly identify biracial nodes in the networks, I asked "What color represents biracial individuals in this network?" (g*reen; yellow; blue*). To limit survey length, this question was only included with the first network.

Identification of biracial node location. To test whether participants correctly noted the absence, or presence, and location of biracial nodes, each network was accompanied by the question, "In this network, do most biracial individuals have friendships with both White and Black individuals at the same time?" (*Yes, most biracials have both Black and White friends; No, biracials have either Black or White friends, but not both; There are no biracials in this network*).

Characterisation of biracial brokers. Participants were shown a matrix of all four stimuli from the biracials in broker positions-condition. They were asked to indicate whether they considered biracial individuals 'brokers' or 'barriers' within these networks.

Covariates. I asked participants to provide information on their age, gender, and race. This allowed me to confirm that all participants met the inclusion criteria of being 18 years or older and identifying as Caucasian/White US citizens, and to include up-to-date demographic information as covariates in the analyses.

Results and Discussion

Manipulation Checks

All participants correctly identified the nodes representing biracial Black-White individuals in the first network. For each of the networks in the BA condition, between 171 (97%) and 174 (99%) participants correctly identified the absence of biracials. For each of the networks

in the BBr condition, between 156 (89%) and 160 (91%) participants correctly identified that biracials had mostly both Black and White friends. Finally, for each of the networks in the BNBr condition, between 156 (89%) and 163 (93%) participants correctly identified that biracials had either Black or White friends, but not both.

In the BA condition, 172 (98%) participants correctly identified the situation of biracials in at least two out of four networks. The same was true for 168 (95%) participants in the BBr condition and 163 (93%) participants in the BNBr condition. Because the findings based on the full sample and based only on participants who had correctly identified at least 50% of networks in each condition did not differ, I report findings based on the full sample.

Outliers

To identify univariate outliers on the dependent and moderator variables, I inspected the standardised scores of each dependent and moderator variable in each condition and excluded participants with z-scores ≥ |4|. On the dependent variables, I excluded $n = 1$ participant. One additional univariate outlier was identified on the ingroup identification variable, which was excluded for the relevant analyses.

Furthermore, to identify multivariate outliers, I calculated Mahalanobis distances for each of the experimental conditions and taking into account each planned combination of variables for the planned multivariate analyses. I identified $n = 1$ multivariate outlier when SDO was included in the combination of variables of interest. This case was excluded from the relevant analyses but otherwise included. No other multivariate outliers were found. The final sample size for the analyses reported in this chapter was $n = 175$. Descriptives and inter-item correlations of all variables described above are summarised in Table A2.5.

Main Effects

I ran a repeated-measures MANCOVA with condition as the three-level independent variable and perceived intergroup climate and network attractiveness as the dependent variables. Age and gender were included as between-subjects covariates. The omnibus test of

the within-subjects multivariate effect suggested that the dependent variables differed significantly across conditions, $F(4, 672) = 7.00$, $p = .001$, $\eta^2 = .04$.

To investigate this effect further, I conducted separate post-hoc ANCOVAs. A significant Mauchly's test for both dependent variables indicated that sphericity could not be assumed (network attractiveness: Mauchly's W = .77, χ^2 (2) = 42.93, $p < .001$; perceived intergroup climate: Mauchly's W = .78, χ^2 (2) = 41.07, $p < .001$). I therefore report findings with Greenhouse-Geisser corrections. Controlling for age and gender, I found that both network attractiveness, $F(1.63, 273.91) = 14.21$, $p < .001$, $\eta^2 = .08$, and perceived intergroup climate, $F(1.64, 275.86) = 6.72$, $p = .003$, $\eta^2 = .04$, varied significantly across the experimental conditions.

To test for mere presence effects and thus whether the dependent variables differed between conditions where biracials were present (BBr and BNBr) vs. absent (BA), I first calculated estimated marginal means based on the average dependent variables ratings in the BBr and BNBr conditions.[13] I then conducted within-subjects pairwise comparisons of estimated marginal means of network attractiveness and perceived intergroup climate, comparing ratings of networks where biracials were present (combining BBr and BNBr conditions) to ratings of networks where biracials were absent (BA condition).

Networks including biracial nodes were rated as significantly more attractive ($M = 3.09$, $SE = 0.06$, 95% CI 2.97, 3.22) than networks without biracial nodes ($M = 2.45$, $SE = 0.08$, 95% CI 2.30, 2.60), $p < .001$, 95% CI 0.53, 0.76. Similarly, participants perceived the intergroup climate as significantly more positive in networks with biracial nodes ($M = 3.01$, $SE = 0.12$, 95% CI 2.78, 3.24) than in networks without biracial nodes ($M = 2.03$, $SE = 0.12$, 95% CI 1.79, 2.26), $p < .001$, 95% CI 0.73, 1.24. Group differences are displayed in Figure 2.5.

[13] This was done by computing an additional MANCOVA where the dependent variables were averaged across the BBr and BNBr conditions and experimental condition was entered as a two-level independent variable (BA condition; joint BBr and BNBr condition).

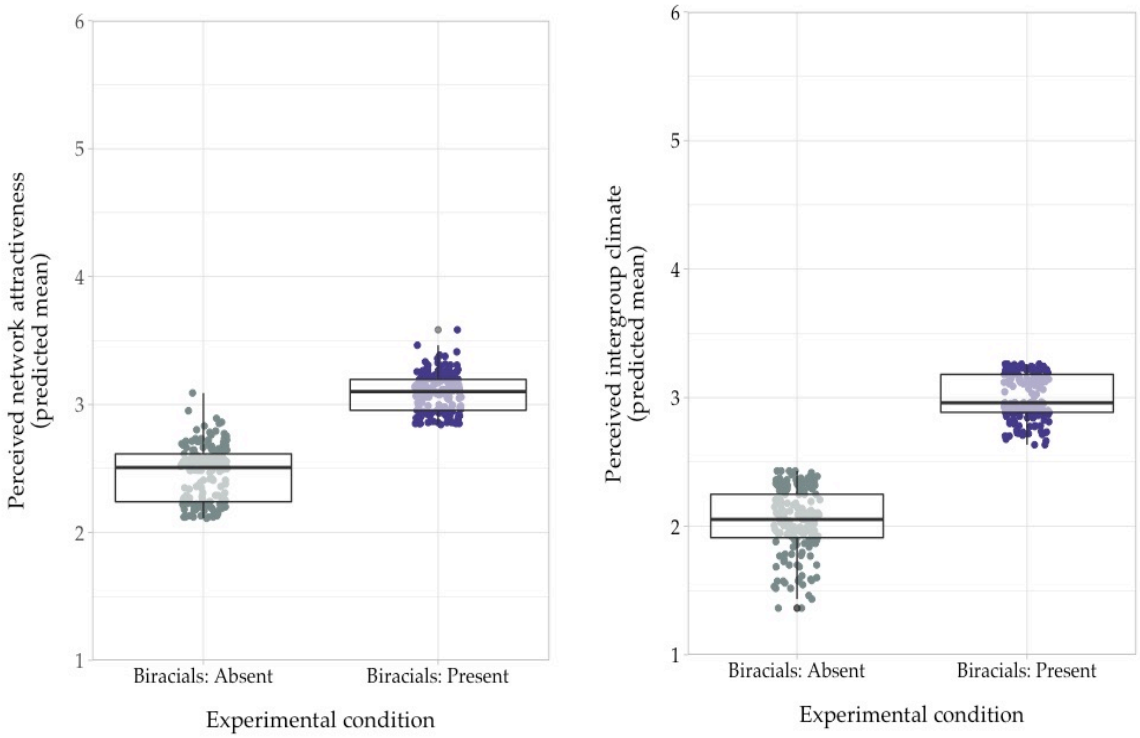

Figure 2.5. Predicted mean ratings of network attractiveness and intergroup climate when biracial nodes were absent or present, taking into account each case's individual covariate scores.

Interaction Effects

To test the moderating effects of SDO and ingroup identification, I conducted two-condition within-participant statistical moderation analyses using the MEMORE macro in SPSS (Montoya, 2019; Montoya & Hayes, 2017). This macro estimates regression coefficients and conditional effects of independent on dependent variables in repeated-measures designs, moderated by a between-participant variable (Montoya, 2018; see also Judd, Kenny, & McClelland, 2001; Judd, McClelland, & Smith, 1996). The functionality creates a within-participant difference score between conditions as the dependent variable (here: biracials present - biracials absent). Moderators were mean-centered such that 0 reflected the sample mean. I probed the direction of any significant interaction effect at the 25th, 50th and 75th percentile of the moderator.

SDO. SDO moderated the effect of biracial presence on network attractiveness (b = -0.18, SE = 0.07, 95% CI -0.05, -0.50), $t(172) = 2.72$, $p = .007$. As the values of the main effect of biracial presence at the 25th, 50th, and 75th percentile of SDO show (Table 2.4), the difference

in network attractiveness when biracials were present vs. absent was smaller at higher levels of SDO. Nevertheless, the overall direction of the mere presence effect on network attractiveness ratings was consistent across SDO levels. SDO did not moderate the effect of experimental condition on perceived network climate (b = -0.10, SE = 0.15, 95% CI -0.40, 0.20), $t(172)$ = -.64, p = .520.

Table 2.4
Effect of Presence vs. Absence of Biracials on Network Attractiveness at Different Levels of SDO

	SDO	Main effect	*SE*	t	*p*	95% CI
25th percentile	-0.77	1.04	0.17	6.01	<.001	0.70; 1.39
50th percentile	-0.27	0.99	0.13	7.43	<.001	0.73; 1.26
75th percentile	0.48	0.92	0.15	6.27	<.001	0.63; 1.21

Note. SDO = Social dominance orientation, *SE* = standard error, CI = Confidence interval. Confidence intervals were calculated as percentile bootstrap CIs with 5000 bootstrap iterations.

Ingroup identification. Ingroup identification did not significantly moderate the effect of mere presence on perceived network climate (b = 0.07, SE = 0.20, 95% CI -0.32, 0.46), $t(171)$ = .36, p = .717. It also did not moderate the effect of mere presence on network attractiveness (b = 0.02, SE = 0.09, 95% CI -0.15, 0.19), $t(171)$ = 0.21, p = .832.

As expected, the presence of biracials was associated with more positive network ratings among majority White perceivers. They reported feeling less attracted to social environments which included only White ingroup and Black outgroup members than environments that also included biracial individuals. Furthermore, they perceived intergroup relations to be more positive when biracials were included in the network.

Study 2.2 also offered some insights into the conditionality of mere presence effects. Unexpectedly, I found that reactions to the presence vs. absence of biracials were unrelated to different levels of ingroup identification. Furthermore, I found the overall positive direction of the mere presence effect to be independent of participant SDO; the presence of biracial individuals did not produce a backlash among individuals who prefer strong group hierarchies and clear intergroup boundaries. Rather, SDO seemed to diminish the difference in evaluations of networks with vs. without biracial nodes.

General Discussion

The rapid growth of multiethnic or multiracial populations in both the UK and the US is raising questions about the implications of this demographic change for intergroup relations. A quickly growing body of social psychological research, conducted primarily in the US, seems to suggest that even passive exposure to multiethnic social stimuli can catalyze cognitive changes which translate into greater intergroup harmony (Pauker, Meyers et al., 2018). However, the artificial setup of most recent experiments on mixed race – especially when it disambiguates what are often perceived to be ambiguous multiethnic social identities (Young et al., 2013) – calls into question the ecological validity of such findings. Additionally, few studies go beyond inference and measure explicitly the association between exposure to multiethnic stimuli and intergroup relations (but see Levy et al., 2017). My aim for this chapter was to try to replicate, in a real-life setting (Study 2.1) and a more tightly controlled but less ecologically valid online experiment (Study 2.2), the finding that the presence of multiethnic individuals within a social context has positive implications for wider intergroup relations.

Study 2.1 moved beyond a previous study on mere presence effects in real-life settings (Pauker, Carpinella et al., 2018) by comparing a large number of real-life social environments, investigating intergroup relations explicitly, considering both self-report and social network-based indicators of social relations, and distinguishing context- from contact-effects. Among a population of high school students in England, I found that the presence of multiethnic students in the classroom was unrelated to both the overall social climate of the classroom and intergroup attitudes.

Among majority monoethnic participants, however, the presence of multiethnic classmates predicted lower levels of homophily two years later. Importantly, this limited mere presence effect was independent of Whites' direct contact with multiethnic friends. Thus, whether they had little or frequent contact with multiethnic peers, being in a classroom that included multiethnic students facilitated a diversification of majority individuals' friendship groups. While I did not find direct mere presence effects on attitudes, such a reduction in homophily might eventually translate into more positive outgroup attitudes – provided it is

associated with more positive, rather than more negative, outgroup contact (see Love & Hewstone, *in press*).

Importantly, the mere presence effect on homophily among majority participants was also present while controlling for both the opportunity for contact with the target monoethnic outgroup and actual contact experiences at wave 1. However, Study 2.1 could not rule out the possibility that majority participants in particular might have included multiethnic friends in their self-reported contact with monoethnic minority group members at wave 3. Future research on mere presence effects on homophily will have to distinguish between contact with multiethnic and contact with monoethnic friends as dependent variables in order to account for the tendency of both majority and minority perceivers to categorise multiethnic individuals as monoethnic minority group members (Gaither et al., 2016; Ho et al., 2017) – and thus the tendency of majority (but not minority) group members to experience contact with multiethnic people as outgroup contact.

Generally, evidence from Study 2.1 for an at-best partial mere presence effect accords with, and builds on, previous lab-based research which suggested that the presence of a dually identified group does not significantly affect outgroup attitudes but promotes higher intergroup contact intentions (Levy et al., 2017). However, the fact that outgroup attitudes were unaffected and that there were no effects among minority monoethnic participants also highlights that simple exposure to multiethnic individuals is unlikely to produce greater intergroup harmony. This has also been highlighted by previous research on cognitive processes that might underpin mere presence effects, most notably reduced racial essentialism, which are not always significantly associated with prejudice (see Haslam et al., 2002). By using social network data in Study 2.1 to capture exposure to and contact with multiethnic individuals, I was able to study mere presence effects without predicating that monoethnic participants perceived multiethnic peers as multiethnic. In light of previous research which failed to find positive mere presence effects when the category membership of a multiracial stimuli remained ambiguous (Gaither et al., 2018; Sanchez et al., 2015), the largely non-significant findings of Study 2.1 are unsurprising.

Study 2.2 focused on mere presence effects when, in the setting of an experiment that affords insights into causality but is of lower ecological validity than field studies, group memberships are salient and unambiguous. In this study, which conceptually resembled previous lab-based research that did find positive mere presence effects (e.g., Levy et al., 2017), social contexts which included biracial individuals were connoted positively and perceived to be both more attractive and (albeit marginally significantly) characterised by more positive intergroup relations. Study 2.2 focused on participants' *perceptions of* an environment rather than their behaviour, cognition, or affect *within* that environment. Therefore, these findings do not show directly that the presence of multiethnic or multiracial individuals affects perceivers' own intergroup relations. Nevertheless, perceived attributes of a social context have previously been linked to actual intergroup cognition and behaviour. For example, intergroup norms, which individuals can discern from contextual attributes of a social environment, predict outgroup attitudes (e.g., Christ et al., 2014; De Tezanos-Pinto et al., 2010). Furthermore, the perceived, but not actual, size of an outgroup predicts threat perceptions and exclusionary attitudes (e.g., Semyonov et al., 2004). Overall, therefore, if individuals perceive certain environments to be more attractive and characterised by more positive intergroup relations, such perceptions could also affect the experiences individuals actually have within those environments.

Importantly, the findings of Study 2.2 emerged while other network-based indicators of intergroup relations and social climate were invariant across conditions, including intergroup contact. They can therefore not be attributed to different levels of indirect intergroup contact across conditions (see Vezzali et al., 2014). Because of the repeated-measures design of this study, findings also do not reflect differing contact experiences or attitudes across participants. Rather, Study 2.2 suggests that participants draw inferences about the general attractiveness of, and ingroup-outgroup relations within, a social environment from information on the presence vs. absence of a third biracial group.

It could be argued that the effects found in Study 2.2, and to some extent the more limited effects reported in Study 2.1, reflect a positive outlook on more ethnically diverse spaces in general, rather than the unique contribution of multiethnic individuals. Findings from

Study 2.2 in particular might reflect a preference for three-group over two-group contexts. However, past experimental research found that mere presence effects do not emerge when the third group in an intergroup context is unrelated to the other two groups in that context (Levy et al., 2017). Furthermore, findings from Study 2.1 emerged independently of the opportunity for contact with monoethnic outgroup members and the representation of ethnic minorities at participants' schools. Nevertheless, future research ought to ascertain whether the observed effects are indeed unique to a multiethnic third category in a monoethnic intergroup context – for example, by comparing evaluations of networks that include three unrelated groups to evaluations of networks that include monoethnic and multiethnic groups.

Conclusion

The research presented in this chapter cautions against an overly optimistic and "grossly naïve" (Gilbert, 2005, p. 58) view that the growth of multiethnic populations will automatically bring about greater intergroup harmony. It highlights the need to study experiences with multiethnic individuals – whether passive as in the research presented here, or more active in the form of contact with multiethnics – in complex real-life environments, triangulated with experimental designs. In environments where group membership likely often remains ambiguous and where multiethnic backgrounds might remain invisible (Kang & Bodenhausen, 2015), the potential of multiethnic individuals can fail to translate into improved intergroup relations.

Unlike context-level exposure, more direct and intimate interactions between monoethnic and multiethnic individuals are more likely to disambiguate social identities and reveal shared category memberships. Such interactions, specifically friendship contact, are the subject of Chapter 4. First, however, I address the question of whether it matters not just *whether* multiethnics are present in an environment, but also *where* they are in their relationship networks. Chapter 3 thus offers an empirical perspective on frequent anecdotal reports of multiethnic individuals and their location in society: in liminal spaces, at the thresholds between monoethnic groups, as mediators and brokers.

Appendix Chapter 2

Table A2.1.
Study 2.1: Descriptives of Sample Demographics by Participant Ethnicity

	White			Asian			Black			Asian-White			Black-White		
	W1	W2	W3	W1	W2	W3	W1	W2	W3	W1	W2	W3	W1	W2	W3
M age in years (*SD*)	15.07 (0.37)	15.89 (0.36)	17.19 (0.32)	15.09 (0.40)	15.92 (0.38)	17.21 (0.35)	15.10 (0.38)	15.92 (0.36)	17.16 (0.34)	15.08 (0.35)	15.94 (0.30)	17.16 (0.32)	15.08 (0.45)	15.89 (0.32)	17.13 (0.26)
% female	48%			46%			54%			56%			55%		
M SES (*SD*)	87.98 (38.95)			72.29 (40.31)			85.16 (40.20)			95.27 (48.98)			71.21 (39.80)		

Note. W1 = wave 1; W2 = wave 2; W3 = wave 3; SES = socioeconomic status; *M* = mean; *SD* = standard deviation. Gender split and average SES were calculated from W1 data.

Table A2.2
Study 2.1: Means, Standard Deviations and Inter-Item Correlations of Variables for Context-Level Analyses

	Variable	*M*(*SD*)	1	2	3	4	5	6	7	8
1	Multiethnic presence (W1)	0.51 (0.50)	-	-.13	.05	-.20*	.01	1.00**	-.09	-.38*
2	Positive density (W1)	0.62 (0.13)		-	.35**	.12	.10	.11	.75**	-.13
3	Negative density (W1)	0.03 (0.02)			-	.02	-.01	.18	.24	-.20
4	Homophily (W1)	0.43 (0.24)				-	-.02	-.30	.08	.79**
5	Attitudinal intergroup climate (W1)	70.97 (10.66)					-	.09	.25	.19
6	Multiethnic presence (W2)	0.61 (0.49)						-	-.09	-.28*
7	Positive density (W2)	0.63 (0.14)							-	.06
8	Homophily (W2)	0.56 (0.23)								-

Note. *M* = mean, *SD* = standard deviation, W1 = wave 1, W2 = wave 2, $p < .05$ *, $p < .001$ **. Correlations between W1 and W2 variables are based on the classrooms included at both waves, while *M* and *SD* of W2 variables are based on all classrooms included at wave 2.

Table A2.3
Study 2.1: Means, Standard Deviations and Inter-Item Correlations of Key Variables for Individual-Level Analyses among Majority Participants

	Variable	Mean (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12
1	Age	180.86 (4.41)	-	-.08**	-.04	.00	-.04	.04	.05	-.02	-.08**	.05*	-.05*	.03
2	Gender	1.46 (0.50)		-	.03	.13**	.11**	-.07**	-.02	.02	-.11**	.10**	.01	.00
3	Socioeconomic status	87.97 (38.95)			-	.21**	.09**	-.01	.00	.07**	.07**	-.02	.01	.02
4	Attitudes towards minority (W1)	72.54 (8.45)				-	.42**	-.05*	.01	.01	-.02	.07**	-.22**	-.01
5	Attitudes towards minority (W3)	79.19 (7.18)					-	-.15**	-.06*	-.04	-.20**	.16**	-.33**	-.10**
6	Friendship ties to minority (W1)	0.29 (0.66)						-	.23**	.01	.12	.00	.44**	-.01
7	Self-reported friendship contact with minority (W3)	1.73 (0.60)							-	.11**	.10**	-.10**	.28**	.15**
8	Friendship ties to multiethnics (W1)	0.11 (0.34)								-	.01	.033	.10**	.30**
9	Network size (W1)	25.37 (9.27)									-	-.97**	.33**	.36**
10	Network boundary (W1)	0.88 (0.32)										-	-.28**	-.34**
11	Number of minority students (W1)	3.36 (4.16)											-	-15**
12	Multiethnic presence (W1)	0.53 (0.50)												-

Note. *SD* = standard deviation, W1 = wave 1, W3 = wave 3, $p < .05$ *, $p < .001$ **.

Table A2.4
Study 2.1: Means, Standard Deviations and Inter-Item Correlations of Key Variables for Individual-Level Analyses among Minority Participants

	Variable	Mean (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12
1	Age	181.14 (4.72)	-	-.05	.00	-.01	-.07	.00	-.05	.00	-.24**	.15**	-.09**	.03
2	Gender	1.47 (0.50)		-	.08*	.08*	.01	-.13**	-.07	.03	.025	-.07	-.09**	.11**
3	Socioeconomic status	75.87 (40.66)			-	.10**	.05	.22**	.19**	.034	-.09**	.08*	.15**	-.11**
4	Attitudes towards Whites (W1)	67.68 (25.71)				-	.25*	.25**	.22**	.04	.03	-.05	.19**	.09*
5	Attitudes towards Whites (W3)	77.41 (19.12)					-	.10*	.22**	-.03	.03	-.04	.07	.03
6	Friendship ties to Whites (W1)	0.60 (1.00)						-	.43**	.01	-.09**	.06	.53**	-.06
7	Self-reported friendship contact with Whites (W3)	2.59 (1.15)							-	-.01	-.08	.05	.41**	-.02
8	Friendship ties to multiethnics (W1)	0.12 (0.36)								-	-.09**	.09**	.03	.30**
9	Network size (W1)	26.51 (8.40)									-	-.84**	.28**	.10**
10	Network boundary (W1)	0.87 (0.34)										-	-.26**	-.08*
11	Number of White students (W1)	6.47 (7.15)											-	.11**
12	Multiethnic presence (W1)	0.55 (0.50)												-

Note. *SD* = standard deviation, W1 = wave 1, W3 = wave 3, $p < .05$ *, $p < .001$ **.

Table A2.4
Factor Loadings for the Short Social Dominance Orientation Scale

#	Item	Factor
1	We should not push for group equality.	.90
2	Superior groups should dominate inferior groups.	.71
3	In setting priorities, we must consider all groups.*	.79
4	Group equality should be our ideal.*	.87

Note. Asterisks (*) mark reverse coded items.

Table A2.5
Study 2.2: Means, Standard Deviations and Inter-Item Correlations of Key Variables

	Variable	Mean (*SD*)	1	2	3	4	5	6
1	Perceived intergroup climate	2.67 (1.32)	-	.44**	.11	.11	-.10	-.14
2	Perceived network attractiveness	2.89 (0.84)		-	.25**	.22**	.09	-.10
3	SDO	1.77 (0.83)			-	.04	.13	-.18*
4	Ingroup identification	5.66 (0.54)				-	-.05	-.06
5	Age	35.29 (13.04)					-	.12
6	Gender	1.53 (0.53)						-

Note. *SD* = Standard deviation; * $p < .05$; ** $p < .001$

Chapter 3: Structural and Evaluative Intermediacy

"If you are mixed race, you belong in two (or more) cultural traditions, which may be mutually contradictory, you just have to find that middle space."

–Bisi (in Ifekwunigwe, 2001, p. 54)

"I had six really close friends; half of them were white and half of them were African-American. They never hung out together. It felt like it was my job to be a bridge between my white friends and my black friends. (…) I tried to get rid of the stereotypes they had about each other and mediate or ease the tension. If it wasn't for myself and my peers who are biracial, the two groups would probably have never gotten along."

– Erica Koji Stowe, 26, (in Gaskins, 1999, p. 247-8)

Bicultural individuals, people of multiethnic background among them, have been described as having internalised multiple cultures (Nguyen & Benet-Martinez, 2007). This has been illustrated most vividly by research on cultural frame switching, the ability to selectively activate different culture-specific cognitive schemas, or frames, and to flexibly adapt cognition and behaviour to the dominant cultural group in a given context (Hong, Morris, Chiu, & Benet-Martinez, 2000; Ng, Han, Mao, & Lai, 2010). Poignant evidence for the significance of such flexibility for intergroup relations was provided by Gaither et al. (2013), who primed either the Black or White background of biracial Black-White participants prior to an interaction with a Black or White confederate. When the primed monoethnic background matched that of the confederate, participants' nonverbal behaviour during the interaction was more positive and generally resembled intra-group behaviour, compared to when their primed background did not match that of the confederate. Cultural cues have also been shown to affect how strongly bicultural individuals identify with each of their

cultural backgrounds (Gaither et al., 2013; Verkuyten & Pouliasi, 2006). Frame switching has been described as a form of multicultural "identity performance" (Wiley & Deaux, 2011, p. 629), and may elicit recognition and confirmation of multiethnic individuals' multiple identities as well as inclusion in a greater diversity of contexts (Barreto, Spears, Ellemers, & Shahinper, 2003; Benet-Martinez, 2012; Schindler, Reinhard, & Stahlberg, 2016).

This ability to relate to multiple groups has led to multiethnic people being described as "the perfect cultural bridge" between different ethnic or racial groups (Padilla, 2006, p. 491; Stephan & Stephan, 1989, 1991). In this chapter, I consider the bridge-building potential of multiethnic people from two points of view, considering first whether multiethnic people occupy bridging positions within social networks ('contextual intermediacy'), and then whether they are perceived with intermediate levels of favourability relative to a monoethnic ingroup and monoethnic outgroup ('evaluative intermediacy'). As I argue below, both kinds of intermediacy have important implications for the contribution of multiethnic people to intergroup relations. In this chapter, I not only assess contextual and evaluative intermediacy, but also present first tests of the implications of contextual intermediacy for intergroup relations between members of different monoethnic groups.

Contextual Intermediacy

Even though, as discussed in Chapter 1, lab-based research has provided some insight into the potential of multiethnic individuals to affect intergroup relations, Study 2.1 also highlighted that exposure to multiethnic people alone is unlikely to build bridges and produce greater intergroup harmony. Study 2.1 differed from previous research because it focused on the contribution of multiethnic individuals to intergroup relations in the real-life context of the classroom, where multiethnic identities may be less salient than in many lab-based studies (e.g., Halberstadt & Winkielman, 2014; Young et al., 2013). The null results reported in Study 2.1 raise the intriguing question of whether multiethnic individuals can affect intergroup relations in contexts where their affiliation with multiple monoethnic groups is more visible. In this chapter, I focus on what Wilton et al. (2014) called "social contexts that encourage and promote biracial labels" (p. 131) by studying the contribution

of a particularly visible form of relational bridge: multiethnic individuals in so-called liaison broker positions within their friendship networks.

The composition and structure of an individual's friendship network not only affect identity development but also serve as a way to expresses a social identity to others (Alba, 1990; Coleman, 1988; Leszczensky et al., 2019; Mok, Morris, Benet-Martinez, & Karakitapoğlu-Aygün, 2007; Repke & Benet-Martinez, 2017). While social network research has only recently begun to consider dually identified individuals' networks in greater detail, it provides important tools to indirectly assess the visibility of multiethnic identities. A number of studies now suggest that friendship networks are arenas in which multiethnic individuals who identify as mixed can, and do, enact this identity in a way that is visible to others. For example, a recent study of friendship networks at schools in Germany highlighted that individuals who were dually identified with both a German national identity and a minority ethnic identity were equally likely to select ethnic majority (German) and minority peers as friends (Jugert et al., 2018). Furthermore, Muttarak's (2014) analyses of friendship patterns across a large representative UK sample suggested that multiethnic individuals were particularly likely to nominate friends from the monoethnic groups that form the components of their mixed background. These findings suggest that research on the composition and structure of social networks could offer important insights into the visibility of mixed backgrounds within a given context – even to perceivers who themselves may not have direct contact with multiethnic people.

In this chapter, I investigate multiethnic individuals' location in friendship networks and test whether they are, in fact, in socio-structural terms, the relational bridges that research on frame switching and exposure to multiethnic stimuli suggests they could be. I first consider how centrally multiethnic people are located within their wider relationship networks and thus test whether they are rejected by majority and minority groups, and hence appear at the margins of the network – in line with the now-discredited marginal man hypothesis (Park, 1928; Stonequist, 1935; see also Alibhai-Brown, 2001; Benet-Martinez, 2012; Root, 1998). I then consider multiethnic individuals' social network location through a network measure that, to my knowledge, has not yet been used in research on intergroup

processes, but which has a clear intergroup dimension: 'Liaison brokerage' (Gould & Fernandez, 1989) describes a triadic relationship involving individuals from three different groups where the 'broker' is the individual located in the middle of this triadic relationship and the other two individuals are connected to each other via the broker, located in the middle of this 'triad' (see Figure 3.1).[1] This network measure can quantify the extent to which multiethnic individuals can be considered 'gateways' (Levy et al., 2017; Love & Levy 2019) between different monoethnic groups. Unlike other social network-based measures of the bridge-building potential of individuals, such as 'betweenness centrality' (Freeman, 1978), liaison brokerage is directly relevant for the social psychological study of intergroup relations and multiethnic constellations in particular because it, by definition, involves members of three different social groups. It therefore offers a way to operationalise multiethnic experiences such as those quoted at the beginning of this chapter.

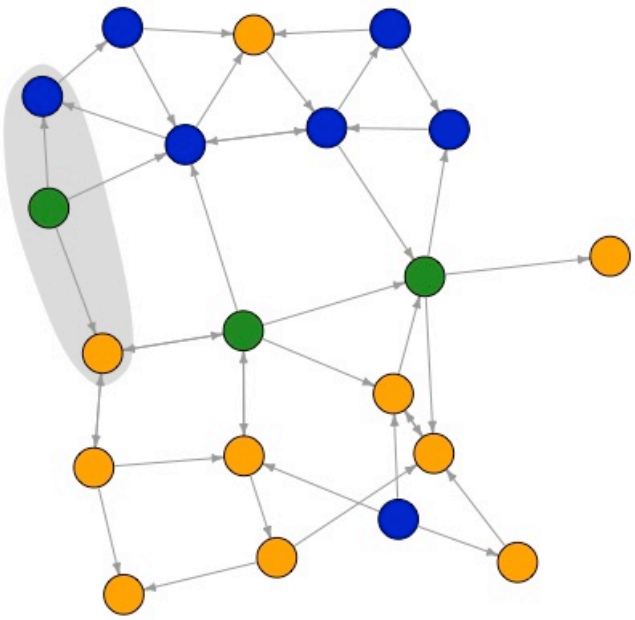

Figure 3.1. Network including individuals from three different groups (yellow, green, blue) to illustrate liaison brokerage. An example liaison brokerage triad is highlighted in grey; the green node in the middle of this triad is the broker, connecting a yellow and a blue node.

[1] A less strict definition of liaison brokerage allows for all individuals to also be connected directly to one another, making the triad closed as opposed to open.

The analyses presented throughout this chapter focus on social environments wherein network members know one another, regularly observe each other's social relations, and where they spend a significant proportion of their waking hours – the year group at school (Study 3.1), the classroom (Study 3.2), and a university lecture group (Study 3.4). Therefore, these are environments where multiethnics in broker positions could increase the salience of multiethnic identities, and they are thus environments that allow me to expand on the research presented in Chapter 2 by asking whether the presence of multiethnic brokers in particular affects wider intergroup relations.

As I have outlined in Chapter 1, relations between monoethnic groups can be positively affected by increased salience of multiethnic identities. In lab-based research, exposure to unambiguously biracial social stimuli has, for example, been associated with reduced racial essentialism (Young et al., 2013) and greater perceived intergroup similarity (Wilton et al., 2014). Similarly, multiethnic individuals who actively and visibly blur intergroup divides by occupying bridge-building positions within their friendship networks might challenge the usefulness of these divides and thus de-essentialise racial or ethnic categories more generally. They might also highlight similarities between different groups and model positive intergroup norms by integrating members of different backgrounds into their immediate friendship group. However, it is far from certain that these processes should translate into more positive intergroup relations between monoethnic groups. Conceivably, multiethnic individuals in broker positions could also be seen to threaten intergroup distinctiveness, which in turn has been associated with *increased* intergroup discrimination – especially in real-life research contexts where group identities are likely to be particularly meaningful to participants (e.g., Jetten et al., 1996, Experiment 2; Roccas & Schwartz, 1993). Through a combination of social network and survey data (Study 3.2) and data collected in an online experiment (Study 3.3), the present chapter includes first tests of these competing hypotheses.

Evaluative Intermediacy

In this chapter, I not only examine whether multiethnic individuals occupy contextually intermediate positions within their social networks and how this affects wider intergroup

relations, but I also test whether multiethnic people are evaluated with intermediate levels of favourability by monoethnic perceivers. As I outlined in Chapter 1, research on the perception and social categorisation of multiethnic targets often suggest that monoethnic majority and minority group members tend to associate multiethnic people with a monoethnic minority category (see Pauker, Meyers, et al., 2018). Conceivably, however, the ability of multiethnic people to adjust their social identification and intergroup behaviour to different monoethnic contexts (e.g., Gaither et al., 2013; Verkuyten & Pouliasi, 2006) could also, among monoethnic perceivers, lead to the simultaneous association of multiethnics with ingroup and outgroup membership. In fact, experimental research on the categorisation of multiethnic targets has suggested that monoethnic perceivers are able to make multiethnic categorisations, especially when closer consideration of the target's group membership is possible (Peery & Bodenhausen, 2008).

Most research on the categorisation of multiethnic targets has been conducted in the US where, throughout the 19th and 20th centuries, hypodescent, the categorisation of multiethnic individuals as members of the "socially subordinate" parent's group (Harris, 1964, p. 56), was not only a social but also a political and legal reality (e.g., Alibhai-Brown, 2001). Whether the monoethnic categorisation of multiethnic targets is also prevalent in other intergroup contexts is less well established. However, as outlined in Chapter 1, how multiethnic people are perceived has important implications for their contribution to relations between monoethnic groups (see also Love & Levy, 2019). Considering intergroup relations in both England (Study 3.1) and South Africa (Study 3.4), in the present chapter I investigate how monoethnic majority and minority group members relate to multiethnic people; whether they extend ingroup favouritism to multiethnic people, discriminate against them to the same extent as they discriminate against monoethnic outgroup members, feel intermediate levels of closeness to multiethnics, or whether they even seek to distance themselves further from multiethnics than monoethnic outgroup members (possibly as a means to reassert category boundaries, e.g., Jetten, Summerville, Hornsey, & Mewse, 2005). While the reported analyses cannot provide direct insight into how monoethnic individuals categorise multiethnic people, they nevertheless indirectly suggest whether multiethnic people are treated more like ingroup or outgroup members, or

whether they are treated as a separate group in their own right. These analyses then set the stage for the final part of this thesis, when I consider not passive exposure to multiethnic people – which is again the focus of this chapter – but direct and indirect contact experiences between monoethnic and multiethnic individuals.

The Present Research

In this chapter, I present findings from four studies conducted across three different intergroup contexts. Studies 3.1 and 3.2 include two multilevel samples of students at English high schools. Study 3.3, which includes further analyses from the online study introduced in Chapter 2, presents data from a convenience sample of White US Americans. It thus addresses the effect of multiethnic brokers in a context that forms the backdrop to most research on multiethnic individuals. Finally, in Study 3.4, I present data from a multilevel sample of South African university students that complements the English datasets by providing insights into a slightly older population also sampled from an educational setting. Unlike the other contexts included in this chapter, the South African intergroup context includes a multiethnic population that is sizeable and very visible although not directly related to the two largest monoethnic groups in South Africa: Black and White South Africans. Study 3.4 therefore allows me to assess the intermediate status of a monoethnic group that is considered a group in its own right.

Throughout this chapter, the combination of survey and social network data collected in field research (Studies 3.1, 3.2, and 3.4) and data collected in an online experiment (Study 3.3) allows me to approach intermediacy both in terms of multiethnics' socio-structural position as brokers (Studies 3.1, 3.2 and 3.4), and in terms of how they are perceived by monoethnic majority and minority group members (Studies 3.1 and 3.4). Furthermore, I present first empirical research that considers whether multiethnics who are brokers have a beneficial effect on wider intergroup relations (Studies 3.2 and 3.3). Therefore, this chapter develops further the argument introduced in Chapter 2, that the presence of multiethnic people in a social environment can affect intergroup relations independently of direct contact experiences with multiethnics. It also sets the scene for research presented in

Chapter 4 on the contribution of multiethnic people to intergroup relations through intergroup contact.

Study 3.1

Aims and Hypotheses

Study 3.1 sought to test the intermediary status of multiethnic individuals in a sample of students at English high schools. The first part of Study 3.1 focused on contextual intermediacy. I first tested the hypothesis that multiethnic individuals are situated less centrally within their social networks than monoethnic individuals, as research on the marginal status of multiethnics has argued in the past (H1). I then considered their tendency to build intergroup bridges from a socio-structural point of view and tested the hypothesis that multiethnic individuals are brokers more often than are monoethnic majority and minority group members (H2). More specifically, I tested the hypotheses that more Asian-White participants are brokers in triads involving Asian, White, and Asian-White individuals than are Asian or White participants (H2.1), and that more Black-White participants are brokers in triads involving Black, White, and Black-White individuals than are Black or White participants (H2.2). I also assessed whether the number of broker positions occupied by Asian-White and Black-White individuals exceeded brokerage levels expected under a chance model (H3).

Referring to a number of evaluative indicators of intergroup relations (attitudes, trust, anxiety, and friendship), the second part of Study 3.1 addressed evaluative intermediacy, i.e., the intermediate status of multiethnics from the point of view of monoethnic majority and minority group members. Specifically, I tested the hypothesis that monoethnic majority and minority group members relate more positively to multiethnic people than they relate to members of their component monoethnic outgroups but less positively to multiethnic people than they relate to monoethnic ingroup members (H4).

Method

Dataset and sample. Data were collected as part of a continuation of the CILS4EU project in England, under the umbrella of the new research project Social Integration in Diverse Societies conducted by Ralf Wölfer and Miles Hewstone. As in Study 2.1, participants were monoethnic majority (White, n = 692) and minority (Asian, n = 493; Black, n = 161) students at secondary schools in England. In the school year 2017/2018, participants were recruited within the same school-based stratified sample that provided the basis for the CILS4EU sample included in Study 2.1. Unlike in Study 2.1, where participants' data were nested within classrooms, participants' data in Study 3.1 were nested within schools and collected from a whole year group in each of the ten participating schools. Participation rates were as follows: school participation = 19%; student participation within participating schools = 91%. Data were collected through paper-pencil surveys completed at school, which included a range of indicators of interpersonal and intergroup experiences. Descriptive information on the sample is provided in Table 3.1.

Table 3.1
Study 3.1: Descriptives of Sample Demographics by Participant Ethnicity

	White	Asian	Black
M age in years (*SD*)	14.51 (0.51)	14.53 (0.56)	14.56 (0.50)
% female	47.8%	52.7%	51.6%
M weekly pocket money[2] (*SD*)	12.26 (33.06)	14.12 (29.85)	13.47 (11.12)

Note. *M* = Mean, *SD* = Standard deviation

[2] Because no direct measure of socioeconomic status (SES) was included in the study, I used weekly pocket money, scored in Pounds (£), as a proxy for parental socioeconomic status (see West, Sweeting, Young, & Robins, 2006). The relationship between children's disposable income and household indicators of SES has received little empirical attention. The most robust evidence to date that also concerns the British context and my own participants' age group, was provided by West et al.'s (2006) longitudinal analysis of the 'West of Scotland 11 to 16 Study' (West & Sweeting, 1996). Considering multiple indicators of household socioeconomic status (e.g., residential deprivation code, parental occupation, means tested benefits), they consistently found a significant inverse relationship between SES and children's disposable income. Children of higher socioeconomic background had less disposable income. Although this finding may seem counterintuitive at first, it accords with other research on the subject, which West et al. (2006) discuss in detail. In my analyses, I reverse-scored weekly pocket money to index socioeconomic status.

Measures

Contextual Intermediacy

Network centrality. This measure is based on the social network data provided by participants through the friendship nomination procedure as outlined in Study 2.1. Average reciprocal distance (ARD) is a network measure of closeness centrality that expresses how centrally each network member is located within the whole network. It is based on the Freeman closeness measure, which uses geodesic distances (*d*) to express the shortest path distance between an actor (*i*) and all other actors in the network (*j*):

$$Freeman\ closeness\ (i) = \sum\nolimits_j \left[\mathrm{d_{ij}}\right]^{-1} = \frac{1}{\sum_j d_{ij}}$$

However, Freeman's measure of closeness centrality is not valid in networks that include isolates or disconnected subgroups, which would be infinitely distant from all other network members. The ARD measure circumvents this limitation by focusing not on the sum of an actor's geodesic distances ($\sum_{\mathrm{j}} d_{ij}$) but the sum of an actor's inverse (or 'reciprocal') geodesic distances. Because the inverse of an infinitely large number approximates zero, this measure can accommodate disconnected networks (Everton, 2012):

$$Reciprocal\ distance\ (i) = \sum\nolimits_j \frac{1}{d_{ij}}$$

Finally, ARD also accounts for differing network sizes within a multi-network dataset. Average reciprocal distance is thus calculated as:

$$Average\ reciprocal\ distance\ (i) = \frac{\sum_{j=1}^{n} \frac{1}{d_{ij}}}{n-1}$$

ARD was calculated in UCINet6 software for Windows (Borgatti, Everett, & Freeman, 2002).

Liaison brokerage. A network member's liaison brokerage score describes how often they are situated in the connecting (or 'broker') position within a relationship triplet where all actors differ on a key attribute (here, ethnicity). I considered triads involving Asian, White, and mixed Asian-White individuals ('Asian-White brokerage') and triads involving Black, White, and mixed Black-White individuals ('Black-White brokerage') separately. An Asian individual, for example, occupies an Asian-White broker position if they connect a White and an Asian-White individual (see also Figure 3.1).

I counted the number of liaison broker positions that students occupied by using UCINET6 for Windows (Borgatti et al., 2002). Due to the small number of multiethnic network members and thus the expectation that brokerage would be rare, all triplets containing a liaison broker were included, regardless of the direction of ties to and from that broker. To this end, network matrices were symmetrised prior to analyses. Although brokerage was initially described as a connection between otherwise disconnected individuals (Gould & Fernandez, 1989), the small number of multiethnic network members, high levels of transitivity in highly localised friendship networks (Davis, 1970; Holland & Leinhardt, 1971), and the novel nature of this research, led me to include both open and closed triads in the analyses.

Evaluative Intermediacy

Among White majority participants, measures referring separately to Asian and Black outgroups were combined into self-reports on monoethnic minority group members. I chose this approach because the dataset did not include separate evaluations of Asian-White and Black-White target groups but, rather, referred to 'Mixed British' people in general. I could therefore not relate Whites' evaluations of Asian-White (Black-White) individuals to their evaluations of Asians (Blacks). Rather, I compared White participants' evaluations of the Mixed target group to their evaluations of the White ingroup and a minority monoethnic outgroup.

Outgroup attitudes. The outgroup attitudes measure was identical to Study 2.1 and referred to White, Asian, Black, and Mixed people separately. To assess whether an aggregate score

for attitudes towards monoethnic minorities could be used as a dependent variable, I conducted an exploratory factor analysis on White participants' attitudes towards Asians and Blacks (see Table A3.1). A one-factor solution (Scree-plot criterion) and inter-item correlation of $r = .77$ provided adequate support for creating an aggregate attitude score towards monoethnic minorities.

Intergroup trust. One item was used to measure trust towards each of the target ethnic groups: "Thinking about [White/Asian/Black/Mixed] people, how many of them do you think can be trusted?" Answers were given on five-point scales (1 = *None*; 5 = *All*). An exploratory factor analysis on White participants' trust towards Asians and Blacks (see Table A3.2) produced a one-factor solution (Scree-plot criterion). The inter-item correlation was $r = .83$. These findings supported creating an aggregate trust score towards monoethnic minorities.

Intergroup anxiety. Four items (Stephan & Stephan, 1985) were used to measure anxiety towards the target ethnic groups (Whites, Asians, Blacks, Mixed). Participants indicated how strongly they would expect to feel anxious, confident (reverse coded), relaxed (reverse coded), and self-conscious if they were interacting with a person from a given target group for the first time. Responses were given on five-point scales (1 = *Not at all*; 5 = *Extremely*); higher scores indicated higher levels of intergroup anxiety.

Exploratory factor analyses for anxiety towards Whites and multiethnics respectively (Tables A3.3 and A3.4), indicated one-factor solutions (Scree-plot criterion). Considering White participants' anxiety towards Asians and Blacks together, a two-factor solution emerged (Scree-plot criterion). However, inspection of factor loadings did not suggest separate scales for Black and Asian target groups (Table A3.5). In line with the other dependent variables, for White participants I therefore combined anxiety measures referring to Black and Asian people (Cronbach's $\alpha = .90$).

Across the other target groups, Cronbach's alphas also indicated satisfactory scale reliabilities (anxiety towards Whites: $\alpha = .72$; anxiety towards multiethnics: $\alpha = .71$; anxiety

towards Asians: $\alpha = .72$; anxiety towards Blacks: $\alpha = .73$). Factor loadings for the scales referring to Asian and Black target groups are provided in Tables A3.6 and A3.7. Item scores were averaged to create further aggregate anxiety measures: towards Whites, multiethnics, Asians, and Blacks, respectively.

Self-reported friendship contact. Participants reported on how much positive intergroup contact they have by indicating how many of their friends are [White/Black/ Asian/Mixed] (1 = *None or very few*, 5 = *All or almost all*).

Analysis Strategy

The first part of Study 3.1 focused on the contextual intermediacy of multiethnics both in terms of their overall network centrality and of their brokerage. First, I conducted a one-way analysis of variance (ANOVA) to compare network centrality scores across ethnic groups. Next, I computed repeated-measures t-tests to compare, within a given network, the proportion of Asian-White (Black-White) participants in Asian-White broker positions (Black-White broker positions) to the proportion of Asian (Black) and White participants in such positions. Finally, I tested whether Asian-White and Black-White individuals' brokerage scores differed from the brokerage scores that would be expected under a chance model. This allowed me to assess whether multiethnics' broker positions are likely the outcome of a systematic structuring of the social network.

In the second part of Study 3.1, which focused on evaluative intermediacy of multiethnic people, I tested whether monoethnic majority and minority individuals relate more positively to multiethnics than to monoethnic outgroup members, and less positively to multiethnics than to monoethnic ingroup members. To this end, I conducted one-way repeated measures ANOVAs with target ethnicity as the within-subjects factor. This approach allowed me to assess each participant's evaluations of multiethnics in direct relation to their evaluations of their ingroup and a monoethnic outgroup. Among White participants, this monoethnic outgroup was defined as the monoethnic minority (i.e.,

evaluations of Asians and Blacks combined), and among Black and Asian participants the outgroup was the monoethnic majority (i.e., Whites).

Results and Discussion

Are Multiethnic People Located in Intermediary Positions in their Networks?

Where Levene's test was significant and homogeneity of variances could thus not be assumed, I report Welch's F-ratio and post-hoc tests with Games-Howell correction.

Network centrality. A one-way ANOVA comparing ARD scores across ethnic groups revealed a significant effect of participant ethnicity, and thus suggested that ARD scores varied across participant groups (Levene's Statistic = 8.46, $p < .001$), $F(4, 82.34) = 6.97$, $p < .001$. Descriptive statistics and all intergroup comparisons are summarised in Table 3.2. Post-hoc comparisons indicated that Asian-White participants' network centrality did not differ significantly from the centrality of White participants ($p = .869$, 95% CI -.02, .11, Cohen's $d = .27$) or Asian participants; $p = .135$, 95% CI -.01, .06, Cohen's $d = .49$. Similarly, Black-White participants' centrality did not differ significantly from the centrality of White participants ($p = .371$, 95% CI -.11, .03, Cohen's $d = .52$) or Black participants; $p = .954$, 95% CI -.09, .05, Cohen's $d = .20$. Contrary to H1, these findings suggest that multiethnic individuals are not situated less centrally in their friendship network than members of the monoethnic groups that converge in their multiethnic identity.

Table 3.2
Average Reciprocal Distance by Participant Ethnicity

White	Asian-White	Asian	Black	Black-White
.35[a] (.074)	.37[ab] (.046)	.34[b] (.062)	.33[b] (.094)	.31[ab] (.13)

Note. Standard deviations are included in parentheses. Within the same row, differing superscripts indicate significant differences at $p < .05$ after Games-Howell correction.

Liaison brokerage. I assessed Asian-White brokerage and Black-White brokerage separately and, among the ten year groups included in this dataset, considered only data from year groups where student demographics implied that the type of brokerage under consideration was possible. For Asian-White brokerage, this meant that I only included year groups that

included Asian, White, and Asian-White students ($n_{\text{year groups}} = 7$, $n_{\text{participants}} = 1043$). Conversely, my analyses of Black-White brokerage only considered data from year groups that included Black, White, and Black-White students ($n_{\text{year groups}} = 6$, $n_{\text{participants}} = 688$). Descriptive information on mean Asian-White and Black-White brokerage scores across ethnic groups are displayed in Table 3.3.

Table 3.3
Mean Asian-White and Black-White Brokerage Scores Across Ethnic Groups

	White	Asian-White	Asian	Black	Black-White
Asian-White brokerage	0.22 (0.97)	7.59 (8.72)	0.23 (1.14)		
Black-White brokerage	0.19 (.91)			0.96 (2.83)	5.50 (6.96)

Note. Standard deviations are included in parentheses

Asian-White brokerage. Following a one-way ANOVA with participant ethnicity as the independent and Asian-White brokerage as the dependent variable, inspection of the distribution of residuals suggested that the data violated the assumption of normality. Furthermore, score distribution histograms, skewness and kurtosis indices highlighted that Asian-White brokerage scores were non-normally distributed. Additionally, the standardised brokerage scores of all participants who occupied one or more brokerage positions marked these cases as univariate outliers. Square root transformations of brokerage scores did not resolve this issue.

To compare the occurrence of Asian-White brokerage across participant groups, I therefore dichotomised Asian-White brokerage, distinguishing only between individuals in no or some Asian-White broker positions. Per year group, I then calculated the proportion of White, Asian, and Asian-White students respectively, who occupied no vs. some broker positions. Repeated-measures *t*-tests indicated that, within a given year group, the proportion of Asian-White participants who occupied one or more broker positions ($M = .56$, $SD = .42$) was significantly higher than both the proportion of White students in broker positions ($M = .083$, $SD = .088$, $t(6) = 3.35$, $p = .015$, Cohen's $d = 1.57$)

and the proportion of Asian students in broker positions (M = .067, SD = .087), $t(6)$ = 3.60, p = .011, Cohen's d = 1.63.[3]

Black-White brokerage. Similar to Asian-White brokerage scores, Black-White brokerage scores violated the normality assumption. I therefore adopted the same analytic approach to compare Black-White brokerage scores across participant groups. Repeated-measures t-tests suggested that, within a given year group, the proportion of Black-White participants who occupied one or more broker positions (M = .45, SD = .40) was significantly greater than the proportion of White students in such positions (M = .11, SD = .10), $t(5)$ = 2.66, p = .045, Cohen's d = 1.17. However, it did not differ significantly from the proportion of Black students in Black-White broker positions (M = .27, SD = .30), $t(5)$ = 1.90, p = .115, Cohen's d = .51.[4]

Observed vs. expected brokerage. Brokerage scores can be expected to vary with the sizes of both the network and the relevant subgroups within it. Therefore, to test whether multiethnic participants' brokerage scores likely reflect a "systematic structuring of relations" (Gould & Fernandez, 1989, p. 115) rather than chance, I tested whether the observed brokerage scores differed from the brokerage scores that would be expected under a chance model. Such a chance model would be a network that matches the actual network in density and subgroup size but where ties are distributed randomly across all available actors.[5]

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[3] I also conducted non-parametric Kruskal-Wallis tests to compare the median number of Asian-White broker positions across Asian, White, and Asian-White participants. This revealed the same pattern as the within-class comparisons. A significant Kruskal-Wallis test statistic indicated that brokerage scores differed significantly with participant ethnicity, $\chi^2(2) = 90.90$, $p < .001$. Post-hoc pairwise comparisons of mean Asian-White brokerage rank scores with Bonferroni correction suggested that mixed Asian-White participants occupied significantly more brokerage positions than White participants ($M_{\text{Asian-White}} = 835.91$, $M_{\text{White}} = 520.03$, $p < .001$) and Asian participants ($M_{\text{Asian}} = 512.98$), $p < .001$.

[4] Additionally, I again used the non-parametric Kruskal-Wallis test to compare the median number of Black-White broker positions across Black, White, and Black-White participants. Mean rank brokerage scores differed significantly with participant ethnicity, $\chi^2(2) = 98.20$, $p < .001$. Post-hoc comparisons of mean Black-White brokerage rank scores with Bonferroni correction indicated that Black-White participants occupied significantly more brokerage positions than White participants ($M_{\text{Black-White}} = 516.45$, $M_{\text{White}} = 321.76$, $p < .001$) and Black participants ($M_{\text{Black}} = 383.04$), $p < .001$.

[5] See the first two equations in Table 1 (p. 106) in Gould and Fernandez (1989) for a formalised description of the liaison brokerage chance model.

I used UCINet6 software's *G&F Brokerage roles*-functionality to calculate brokerage scores expected under a chance model and to compare them to the observed scores (Borgatti et al., 2002). Following Gould and Fernandez's (1989) formal approach to brokerage, this functionality standardises each actor's brokerage score:

$$\beta = \frac{b - \mu_b}{\sigma_b}$$

where b is the number of broker positions occupied, μ_b its expected value under a chance model, and σ_b the standard deviation of b under the chance model. UCINet6 also provides a test statistic for the comparison of observed and expected brokerage scores for each individual participant. This affords comparisons of actors across networks even if these networks have different global characteristics. Brokerage scores expected under a chance model varied across classrooms; in Table A3.8 I summarise the highest and lowest scores expected for each ethnic group and for both Asian-White and Black-White brokerage.

To inspect whether multiethnic individuals tend to occupy more brokerage positions than expected under a chance model, I mapped the *p*- and *t*-value, resulting from the comparison of observed and expected brokerage scores, of each participant from each relevant ethnic group. Results for the assessment of Asian-White Brokerage scores are displayed in Figure 3.2, and results for the assessment of Black-White Brokerage scores can be seen in Figure 3.3. Positive t-values below $p = .05$ would suggest that an individual occupies more broker positions than expected by chance. As Figures 3.2 and 3.3 show, no Asian-White participants and only one Black-White participant occupied more broker positions than would be expected by chance.

In line with H2, these analyses consistently place more multiethnic individuals in liaison broker positions than monoethnic majority and minority group members. The findings reported here thus support the hypothesis that multiethnic people can be described as 'intermediate' in terms of their social network location (H2). However, these findings do not suggest that participants systematically structure their social relations; for example, that multiethnic individuals seek out or are pushed into broker positions. Rather, the observed

brokerage scores are consistent with a model where friendship ties are distributed randomly across the classroom. Whether multiethnic brokers nevertheless influence wider intergroup relations within the classroom, is a question I return to in Study 3.2.

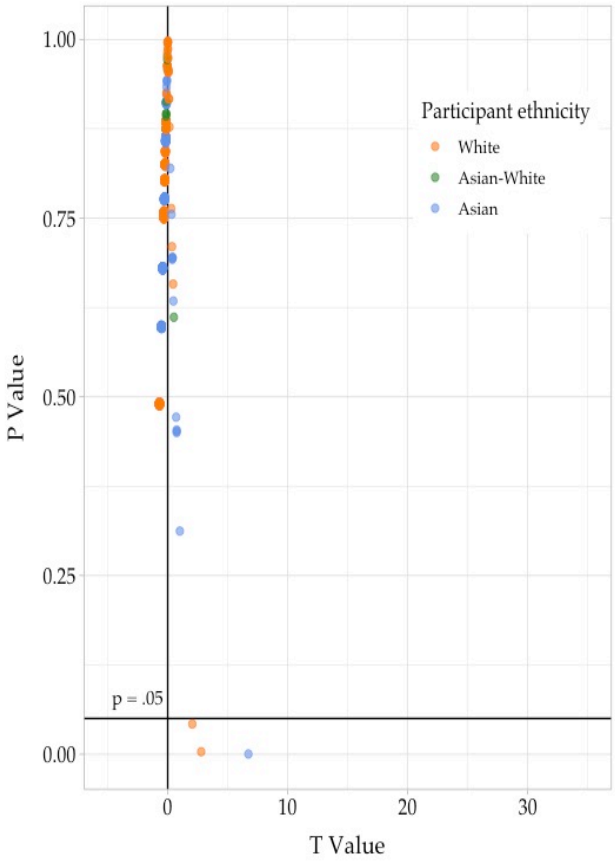

Figure 3.2. Comparison of observed and expected Asian-White Brokerage scores for White, Asian-White, and Asian participants.

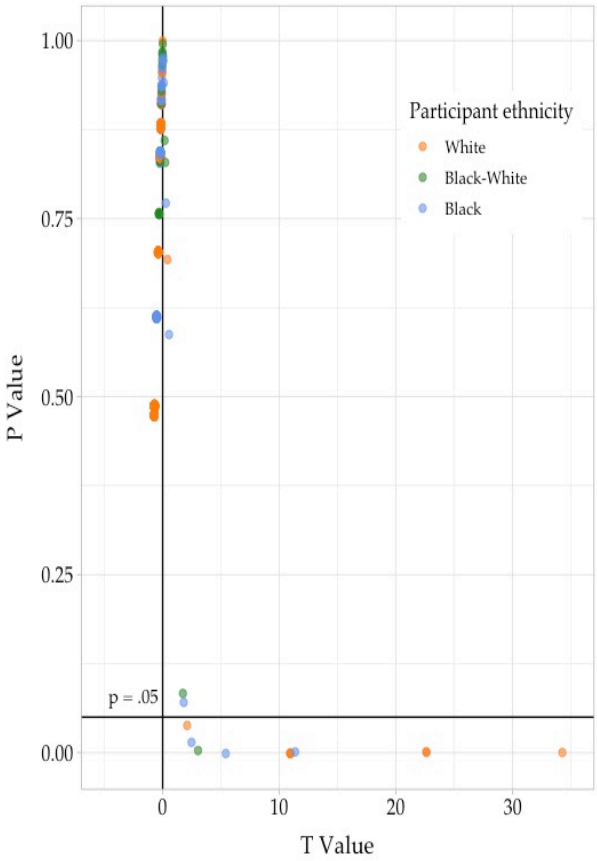

Figure 3.3. Comparison of observed and expected Black-White Brokerage scores for White, Black-White, and Black participants.

Are Multiethnic People Seen as 'Intermediate'?

I conducted repeated-measures one-way ANOVAs to compare participants' intergroup evaluations across target groups. Where the Mauchley's test of a given repeated-measures ANOVA was significant, within-subjects effects will be reported with Greenhouse-Geisser correction. Descriptives and inter-item correlations are summarised in Tables A3.9-11.

White participants. Comparisons of White participants' attitudes towards different ethnic groups revealed a significant within-subjects effect of target ethnicity (Mauchley's W = .82, $\chi^2(2) = 134.09$, $p < .001$), $F(1.70, 1149.46) = 91.95$, $p < .001$, $\eta^2 = .12$. Within-subjects

contrasts indicated that White participants had more positive attitudes towards Whites than towards multiethnics (M_{White} = 80.84, SD = 19.20; $M_{multiethnic}$ = 73.77, SD = 21.70), $F(1, 678)$ = 11884.47, $p < .001$, $\eta^2 = .95$. However, Whites' attitudes towards multiethnics did not differ significantly from their attitudes towards the monoethnic minority ($M_{minority}$ = 73.06, SD = 20.45), $F(1, 678) = 2.18$, $p = .141$, $\eta^2 = .00$.

Comparisons of White participants' trust towards different groups also indicated that trust levels varied with target groups (Mauchley's W = .84, $\chi^2(2) = 116.86$, p < .001), $F(1.72, 1156.85) = 23.86$, $p < .001$, $\eta^2 = .03$. Within-subjects contrasts suggested that White participants trusted ingroup members significantly more than they trusted multiethnics, although this effect was small (M_{White} = 3.68, SD = .87; $M_{multiethnic}$ = 3.56, SD = .93), $F(1, 671)$ = 26.22, $p < .001$, $\eta^2 = .04$. However, Whites' trust towards multiethnics did not differ from their trust towards the monoethnic minority ($M_{minority}$ = 3.54, SD = .88); $F(1, 671) = .84$, p = .361, $\eta^2 = .00$.

The effect of target ethnicity on intergroup anxiety was also significant (Mauchley's W = .71, $\chi^2(2) = 229.29$, $p < .001$), $F(1.55, 1042.31) = 61.21$, $p < .001$, $\eta^2 = .08$. Within-subjects contrasts indicated that Whites reported significantly greater anxiety towards multiethnics than towards ingroup members (M_{White} = 2.26, SD = 0.88; $M_{multiethnic}$ = 2.36, SD = 0.86), $F(1, 672) = 52.36$, $p < .001$, $\eta^2 = .07$. However, they reported less anxiety towards multiethnics than towards monoethnic minorities ($M_{minority}$ = 2.40, SD = 0.85), $F(1, 672) = 18.51$, $p < .001$, $\eta^2 = .03$. While these effects were significant, they were again small.

Finally, White participants' self-reported friendship contact also varied significantly with target ethnicity (Mauchley's W = .71, $\chi^2(2) = 229.44$, $p < .001$), $F(1.55, 1040.34) = 480.61$, $p <$ .001, $\eta^2 = .61$. Within-subjects contrasts indicated that White participants reported having significantly more ingroup than multiethnic friends (M_{White} = 4.03, SD = 1.04; $M_{multiethnic}$ = 2.08, SD = 1.03), $F(1, 671) = 2553.72$, $p < .001$, $\eta^2 = .62$. Furthermore, they reported having significantly more multiethnic than monoethnic minority friends ($M_{minority}$ = 1.91, SD = 0.83), $F(1, 671) = 23.83$, $p < .001$, $\eta^2 = .03$.

Asian participants. A significant within-subjects effect of target ethnicity indicated that Asian participants' intergroup attitudes varied across target groups (Mauchley's W = .92, $\chi^2(2) = 42.68$, $p < .001$), $F(1.84, 888.55) = 137.60$, $p < .001$, $\eta^2 = .22$. Within-subjects contrasts showed that Asians' attitudes were more positive towards Asians than towards multiethnics ($M_{Asian} = 81.48$, $SD = 19.53$; $M_{multiethnic} = 67.85$, $SD = 22.09$), $F(1, 482) = 174.95$, $p < .001$, $\eta^2 = .27$. However, attitudes towards multiethnics and Whites did not differ significantly ($M_{White} = 66.61$, $SD = 21.94$), $F(1, 482) = 2.15$, $p = .144$, $\eta^2 = .00$.

Comparisons of Asian participants' trust towards different groups also revealed a significant, albeit small, within-subjects effect of target ethnicity (Mauchley's W = .91, $\chi^2(2) = 43.36$, $p < .001$), $F(1.84, 887.49) = 51.96$, $p < .001$, $\eta^2 = .10$. Within-subjects contrasts indicated that Asian participants trusted ingroup members significantly more than they trusted multiethnic people ($M_{Asian} = 3.60$, $SD = 0.93$; $M_{multiethnic} = 3.28$, $SD = 1.04$), $F(1, 482) = 65.22$, $p < .001$, $\eta^2 = .12$. However, trust towards multiethnics did not differ from trust towards Whites ($M_{White} = 3.24$, $SD = 1.01$), $F(1, 482) = 1.87$, $p = .173$, $\eta^2 = .00$.

Similarly, Asian participants' intergroup anxiety levels were also were marked by a small but significant within-subjects effect of target ethnicity (Mauchley's W = .84, $\chi^2(2) = 82.73$, $p < .001$), $F(1.72, 818.86) = 83.53$, $p < .001$, $\eta^2 = .15$. Within-subjects comparisons showed that Asians reported significantly more anxiety towards multiethnics than towards Asians ($M_{Asian} = 2.08$, $SD = 0.79$; $M_{multiethnic} = 2.32$, $SD = 0.75$), $F(1, 475) = 87.74$, $p < .001$, $\eta^2 = .16$. However, they reported less anxiety towards multiethnics than towards Whites ($M_{White} = 2.40$, $SD = 0.76$), $F(1, 475) = 13.67$, $p < .001$, $\eta^2 = .03$.

Finally, Asian participants' levels of self-reported friendship contact also varied with target ethnicity (Mauchley's W = .91, $\chi^2(2) = 43.86$, $p < .001$), $F(1.84, 878.81) = 480.61$, $p < .001$, $\eta^2 = .50$). Within-subjects comparisons indicated that Asians reported significantly more friendship contact with Asians than with multiethnics ($M_{Asian} = 4.01$, $SD = 1.08$; $M_{multiethnic} = 1.99$, $SD = 1.09$), $F(1, 478) = 833.51$, $p < .001$, $\eta^2 = .64$. Furthermore, they reported significantly less contact with multiethnics than with Whites ($M_{White} = 2.34$, $SD = 1.08$), $F(1, 478) = 33.21$, $p < .001$, $\eta^2 = .07$.

Black participants. Black participants' intergroup attitudes varied with target ethnicity (Mauchley's W = .91, $\chi^2(2) = 14.98$, $p = .001$), $F(1.84, 293.61) = 64.27$, $p < .001$, $\eta^2 = .29$. Within-subjects contrasts indicated that attitudes were significantly more positive towards ingroup members than multiethnic people ($M_{Black} = 81.48$, $SD = 20.72$; $M_{multiethnic} = 69.27$, $SD = 24.44$), $F(1, 160) = 62.44$, $p < .001$, $\eta^2 = .28$. Furthermore, Black participants' attitudes were significantly more positive towards multiethnic people than towards Whites ($M_{White} = 61.60$, SD = 25.40), $F(1, 160) = 19.60$, $p < .001$, $\eta^2 = .11$.

Black participants' trust also varied across target groups (Mauchley's W = .84, $\chi^2(2) = 26.78$, $p < .001$), $F(1.73, 269.27) = 10.43$, $p < .001$, $\eta^2 = .06$. Probing this small yet significant effect of target ethnicity, within-subjects contrasts suggested that Black participants trusted ingroup members more than they trusted multiethnics ($M_{Black} = 3.24$, $SD = 1.12$; $M_{multiethnic} = 2.94$, $SD = 1.13$), $F(1, 156) = 18.36$, $p < .001$, $\eta^2 = .11$. However, trust towards multiethnics did not differ significantly from trust towards Whites ($M_{White} = 2.89$, $SD = 1.13$), $F(1, 156) = .43$, $p = .513$, $\eta^2 = .00$.

A similar pattern emerged for Black participants' anxiety towards different ethnic groups, which was again marked by a small but significant within-subjects effect of target ethnicity; (Mauchley's W = .80, $\chi^2(2) = 34.30$, $p < .001$), $F(1.67, 264.16) = 9.80$, $p < .001$, $\eta^2 = .06$. Within-subjects contrasts suggested that anxiety was greater towards multiethnic people than towards ingroup members ($M_{Black} = 2.05$, $SD = 0.81$; $M_{multiethnic} = 2.20$, $SD = 0.77$), $F(1, 158) = 13.07$, $p < .001$, $\eta^2 = .08$. However, anxiety towards multiethnics did not differ from anxiety towards Whites ($M_{White} = 2.27$, $SD = 0.81$), $F(1, 158) = 2.26$, $p = .135$, $\eta^2 = .01$.

Finally, Black participants' self-reported friendship contact also varied with target ethnicity (Mauchley's W = .92, $\chi^2(2) = 14.54$, $p = .001$), $F(1.85, 885.93) = 115.96$, $p < .001$, $\eta^2 = .43$. Within-subjects comparisons indicated that Black participants reported significantly more friendship contact with ingroup members than with multiethnic people ($M_{Black} = 4.07$, $SD = 1.10$; $M_{multiethnic} = 2.62$, $SD = 1.18$), $F(1, 155) = 196.25$, $p < .001$, $\eta^2 = .56$. However, they reported significantly more friendship contact with multiethnics than with Whites ($M_{White} = 2.34$, $SD = 1.22$), $F(1, 155) = 4.96$, $p = .027$, $\eta^2 = .03$.

To summarise, all monoethnic participant groups displayed consistent ingroup preference over multiethnics, an effect that manifested most strongly in measures of attitudes and intergroup friendship and more weakly (yet significantly) across trust and anxiety measures. This suggests that neither majority nor minority group members include multiethnic people in their ingroup. Instead, multiethnic people and the monoethnic outgroup were either evaluated equally, or the multiethnic target group attracted intermediate levels of favourability. H2 was therefore only partially supported.

Study 3.2

Aims and Hypotheses

The aim of Study 3.2 was to test whether the contextual intermediacy of multiethnic people reported in Study 3.1 could be replicated in a separate sample of students at English high schools. Study 3.2 includes two waves of social network data, collected across consecutive years. It therefore provides insight into the stability of the patterns reported in Study 3.1 throughout later adolescence when questions of group identity and intergroup relations are known to gain in prominence (e.g., Umaña-Taylor et al., 2014). Furthermore, compared to Study 3.1 the data included in Study 3.2 were collected across a considerably larger number of contexts. In conjunction with the longitudinal properties of this dataset, the multilevel structure of the dataset therefore affords analyses of the implications of multiethnic brokers for intergroup relations as indicated not only by individual-level but also context-level measures. No data were available on the evaluation of multiethnic people by monoethnic majority and minority group members.

The hypotheses tested here were largely identical to the hypotheses tested in Study 3.1:

H1. Multiethnic individuals are located less centrally within their networks than minority and majority group members.

H2. Multiethnic individuals are brokers more often than monoethnic majority and minority group members.

H2.1: More Asian-White participants are brokers in triads involving Asian, White, and Asian-White individuals than are monoethnic Asian or White participants.

H2.2: More Black-White participants are brokers in triads involving Black, White, and Black-White individuals than are monoethnic Black or White participants.

H3. The number of broker positions occupied by Asian-White and Black-White individuals exceeds brokerage levels expected under a chance model.

H4. Monoethnic individuals in classrooms where multiethnics are present and in broker positions have more positive intergroup relations (more contact, more

positive attitudes) than individuals in classrooms where multiethnics are present but not in broker positions.

Method and Measures

Because Study 3.2 is based on the same dataset and sample as Study 2.1, I refer the reader to Chapter 2 for details on the methodology. As outlined in Study 2.1, participants reported on their attitudes towards, and friendship contact with, Asian, Black, and White British people. Data on intergroup attitudes were collected at wave 1 and wave 3, whereas data on self-reported intergroup friendship were available at waves 1, 2, and 3. All waves were collected one year apart.

Furthermore, the multilevel analyses of the implication of brokerage for intergroup relations reported here also included the following individual-level covariates as outlined in Study 2.1: *age*, *gender*, *socioeconomic status*, and *friendship ties to multiethnic classmates*. At the classroom-level, these analyses also included the following measures detailed in Study 2.1: *network boundary, the number of target outgroup students in class*, and *the number of multiethnic students in class*. All individual- and classroom-level variables were measured at wave 1. Additional measures not reported in Study 2.1 are outlined below.

Network centrality. The measure of network centrality reported in Study 3.1, average reciprocal distance (ARD), was again used in Study 3.2. ARD scores were calculated separately for wave 1 and wave 2 friendship network data.

Liaison brokerage. The liaison brokerage measure was identical to the liaison brokerage measure reported as part of Study 3.1. As in Study 3.1, I distinguished between triads involving Asian, White, and Asian-White individuals ('Asian-White brokerage') and triads involving Black, White, and Black-White individuals ('Black-White brokerage'). Brokerage scores were obtained at wave 1 and wave 2.

Analysis Strategy

Unlike Study 3.1, Study 3.2 study did not include any data on how multiethnics are perceived by monoethnic individuals and instead focused on multiethnic individuals' location within their friendship networks. It first addresses the question of whether multiethnic individuals are situated more or less centrally within these networks than monoethnic individuals. For wave 1 and wave 2 data separately, I conducted a one-way ANOVA with participant ethnicity as the independent and average reciprocal distance (ARD) as the dependent variable. Following the analytic approach outlined in Study 3.1, I then assessed whether multiethnic individuals occupy intermediate positions within their networks. Specifically, I compared the proportion of multiethnic and monoethnic individuals who occupy liaison broker positions and compared each participant's number of broker positions to the broker positions expected under a chance model.

Study 3.2 also further develops the analyses reported in Chapter 2 and considers whether multiethnic individuals can positively influence intergroup relations when they occupy broker positions. Considering only classrooms where multiethnic brokerage was possible, I focused on context-level indicators of intergroup relations first and, as in Study 2.1, conducted several independent sample t-tests to compare positive tie density, negative tie density, homophily, and attitudinal intergroup climate across classrooms where multiethnics did vs. did not occupy broker positions. These analyses were conducted separately for wave 1 and, where possible, wave 2.

I then turned to individual-level indicators of intergroup relations. In light of the nested structure of the data (individuals nested within classrooms), I conducted random-intercept hierarchical linear models with maximum likelihood estimation. In these models, I assessed the conjoint effect of the number of multiethnic students in class at wave 1 and whether or not they occupied broker positions on participants' outgroup contact and outgroup attitudes at wave 1 and wave 3. Similar to Study 2.1, these analyses included as covariates self-reported friendship with multiethnic people to isolate the contextual effect of multiethnic classmates, the opportunity for contact with target outgroup members, and participant demographics. Analyses were run separately for majority and minority participants and

considered only classrooms where classroom demographics indicated that liaison brokerage was possible.

Results and Discussion

Are Multiethnic Individuals Located in Intermediary Positions in their Networks?

Network centrality. Analyses of network centrality, conducted separately for wave 1 and wave 2, were based on classrooms including fifteen students or more. This approach follows the cut-off set by previous social network analyses using the same dataset and ensures sufficient power for social network analyses (e.g., Wölfer et al., 2016, 2019). Descriptive statistics and all intergroup comparisons for both waves are included in Table 3.4. At wave 1, the main effect of participant ethnicity on ARD was not significant, indicating that an individual's centrality within their classroom friendship network was unrelated to ethnicity (Levene's Statistic = 2.32, $p = .055$), $F(4, 2670) = .49$, $p = .810$, $\eta^2 = .00$. At wave 2, however, the association of participant ethnicity and ARD was significant if small (Levene's Statistic = 6.96, $p < .001$), $F(4, 2411) = 3.52$, $p = .007$, $\eta^2 = .01$. Post-hoc comparisons showed that mixed Black-White participants were located less centrally in their friendship network than White participants, $p = .021$, 95% CI -.10, .01, Cohen's $d_s = .35$. Their ARD scores were also lower than those of Black participants, $p = .005$, 95% CI -.11, -.01, Cohen's $d_s = .48$. However, mixed Asian-White participants' network centrality did not differ from that of White participants ($p = .366$, 95% CI -.02, .10, Cohen's $d_s = .29$) or Asian participants, $p = .543$, 95% CI -.03, .09, Cohen's $d_s = .23$. These results largely replicate findings reported in Study 3.1. Contrary to H1, although in line with findings reported in Study 3.1, they suggest that, with the exception of Black-White individuals at wave 2, multiethnic people are located as centrally within their friendship networks as are monoethnic majority or minority group members.

Table 3.4
Average Reciprocal Distance by Participant Ethnicity at Wave 1 and Wave 2

	White	Asian-White	Asian	Black	Black-White
Wave 1	.42 [a] (.15)	.43 [a] (.16)	.42 [a] (.16)	.41 [a] (.17)	.41 [a] (.16)
Wave 2	.41 [a] (.14)	.45 [a] (.12)	.42 [a] (.13)	.42 [a] (.11)	.36 [b] (.16)

Note. Standard deviations are included in parentheses. Within the same row, differing superscripts indicate significant differences at $p < .05$ after Bonferroni correction (wave 1) and Games-Howell correction (wave 2).

Liaison brokerage. For both wave 1 and wave 2 data, I assessed Asian-White brokerage and Black-White brokerage separately. These analyses included data from classrooms with 15 students or more and where the classroom demographic indicated that the type of brokerage under consideration was possible (Asian-White brokerage: $n_{\text{classrooms}} = 27$, $n_{\text{participants}} = 518$; Black-White brokerage: $n_{\text{classrooms}} = 42$, $n_{\text{participants}} = 650$). Descriptive information on mean Asian-White and Black-White brokerage scores across ethnic groups are displayed in Table 3.5.

Table 3.5
Mean Asian-White and Black-White Brokerage Scores Across Ethnic Groups

	White	Asian-White	Asian	Black	Black-White
Asian-White brokerage	0.08 (0.36)	0.15 (0.60)	0.91 (1.92)		
Black-White brokerage	0.02 (0.17)			0.26 (0.97)	1.52 (2.76)

Note. Standard deviations are included in parentheses

Asian-White brokerage. Both at wave 1 and at wave 2, the distribution of residuals following a one-way ANOVA with participant ethnicity as the independent and Asian-White brokerage as the dependent variable suggested that the data violated the assumption of normality. Furthermore, score distribution histograms as well as skewness and kurtosis indices indicated that Asian-White brokerage scores were clearly non-normally distributed. Additionally, the standardised brokerage scores of all participants who occupied one or more brokerage positions marked these cases as extreme univariate outliers. Square root transformations of brokerage scores did not resolve this issue.

To compare the occurrence of Asian-White brokerage across participant groups, I therefore followed the same approach outlined in Study 3.1; within a given classroom, I compared the proportion of White, Asian, and Asian-White students respectively, who occupied no vs. some broker positions. At wave 1, repeated-measures t-tests indicated that, within a given classroom, the proportion of Asian-White students who occupied one or more broker positions (M = .29, SD = .43) was significantly higher than both the proportion of White students in broker positions (M = .07, SD = .10, $t(25) = 2.99$, p = .006, Cohen's d = .71) and the proportion of Asian students in broker positions (M = .15, SD = .29), $t(25) = 2.12$, p = .044, Cohen's d = .38.

The same pattern emerged at wave 2. Within a given classroom, the proportion of Asian-white students who occupied one or more broker positions (M = .35, SD = .48) was significantly greater than the proportion of White students in broker positions (M = .08, SD = .09), $t(21) = 2.93$, p = .008, Cohen's d = .78. It also tended to be greater than the proportion of Asian students in broker positions (M = .18, SD = .35), but this difference was not statistically significant, $t(21) = 1.68$, p = .107, Cohen's d = .38.[6]

Black-White brokerage. Both at wave 1 and at wave 2, the attributes of Black-White brokerage scores closely resembled those of the Asian-White brokerage scores discussed above. Therefore, I followed the same analytic approach outlined above for Asian-White brokerage scores. At wave 1, repeated-measures t-tests suggested that, within a given classroom, the proportion of Black-White students who occupied one or more broker positions (M = .25, SD = .20) was significantly greater than the proportion of White students in broker positions (M = .10, SD = .20, $t(40) = 2.60$, p = .013, Cohen's d = .49) and greater

[6] I also conducted non-parametric Kruskal-Wallis tests to compare the median number of Asian-White brokerage positions across Asian, White, and Asian-White participants. This revealed the same pattern as the within-class comparisons. At wave 1, brokerage scores differed significantly with participant ethnicity, $\chi^2(2) = 15.16$, p = .001. Post-hoc pairwise comparisons of mean Asian-White brokerage rank scores with Bonferroni correction suggested that Asian-White participants occupied significantly more brokerage positions than both White participants ($M_{\text{Asian-White}} = 295.75$, $M_{\text{White}} = 248.94$, $p < .001$) and Asian participants ($M_{\text{Asian}} = 251.85$), p = .002. At wave 2, a significant Kruskal-Wallis test again suggested that Asian-White brokerage scores vary with participant ethnicity, $\chi^2(2) = 21.19$, $p < .001$. Post-hoc comparisons of mean Asian-White brokerage rank scores with Bonferroni correction showed that Asian-White participants occupied significantly more brokerage positions than White participants ($M_{\text{Asian-White}} = 327.90$, $M_{\text{White}} = 262.81$, $p < .001$) and Asian participants ($M_{\text{Asian}} = 265.85$), $p < .001$.

than the proportion of Black students in broker positions, albeit not significantly (M = .16, SD = .31), $t(40) = 1.78$, p = .083, Cohen's d = .26.

At wave 2, the pattern was again similar. Repeated-measures t-tests suggested that, within a given classroom, the proportion of Black-White students in broker positions (M = .33, SD = .44) was significantly greater than the proportion of White students in broker positions (M = .092, SD = .19), $t(33) = 3.09$, p = .004, Cohen's d = .70. The proportion of Black-White students in broker positions also tended to be greater than the proportion of Black students in such positions (M = .24, SD = .38), but this difference was not statistically significant, $t(33) = 1.28$, p = .209, Cohen's d = .22.[7]

Observed vs. expected brokerage. To assess whether multiethnic individuals tended to occupy more brokerage positions than expected under a chance model, I followed the analytic approach outlined in detail in Study 3.1. For each participant of the relevant ethnic groups, and separately for wave 1 and wave 2 data, I mapped the p- and t-values of the comparison of observed and expected Asian-White and/or Black-White brokerage scores. The highest and lowest Asian-White and Black-White brokerage scores expected under a chance model are summarised in Table A3.12. Results for the assessment of wave 1 Asian-White Brokerage scores are displayed in Figure 3.4, and results for the assessment of wave 1 Black-White Brokerage scores can be seen in Figure 3.5. Findings based on wave 2 data are displayed in Figures 3.6 and 3.7. Positive t-values below p = .005 would suggest that an individual occupied more broker positions than expected by chance. As Figures 3.4 and 3.5 show, at wave 1 this was only the case for three individuals, none of whom were multiethnic.

[7] I again conducted additional non-parametric Kruskal-Wallis tests to compare the median number of Black-White brokerage positions across Black, White, and Black-White participants. This revealed the same pattern as the within-class comparisons. At wave 1, the Kruskal-Wallis test showed that Black-White brokerage scores varied significantly with participant ethnicity, $\chi^2(2) = 50.49$, $p < .001$. Post-hoc pairwise comparisons of mean Black-White brokerage rank scores with Bonferroni correction showed that Black-White participants occupied significantly more brokerage positions than White participants ($M_{\text{Black-White}} = 246.5$, $M_{\text{White}} = 187.09$, $p < .001$) and Black participants ($M_{\text{Black}} = 203.86$), $p < .001$. At wave 2, this finding could largely be replicated. Brokerage scores varied with participant ethnicity, $\chi^2(2) = 14.80$, $p = .001$. Planned post-hoc comparisons with Bonferroni correction of mean Black-White brokerage rank scores suggested that Black-White participants occupied significantly more brokerage positions than White participants ($M_{\text{Black-White}} = 138.83$, $M_{\text{White}} = 107.75$), $p = .002$. However, the difference between Black-White and Black participants was not significant ($M_{\text{Black}} = 121.68$), p = .251.

The pattern was similar at wave 2, when neither Black-White nor Asian-White participants occupied more brokerage positions than would be expected by chance.

Replicating the findings reported in Study 3.1, these analyses suggested that multiethnics are brokers more often than monoethnic majority and minority group members. Their location within friendship networks can therefore again be described as that of an intermediary, or broker. Furthermore, and again in line with results from Study 3.1, the observed brokerage scores do not suggest that participants systematically structure their social relations. Rather, these results are consistent with a model where friendship ties are randomly distributed across students within the classroom.

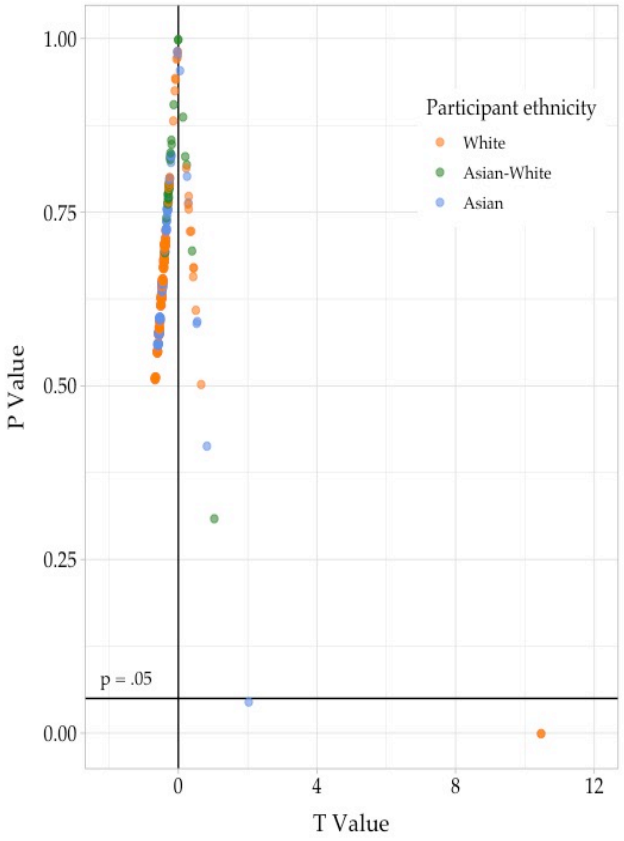

Figure 3.4. Comparison of observed and expected Asian-White brokerage scores for White, Asian-White, and Asian participants at wave 1.

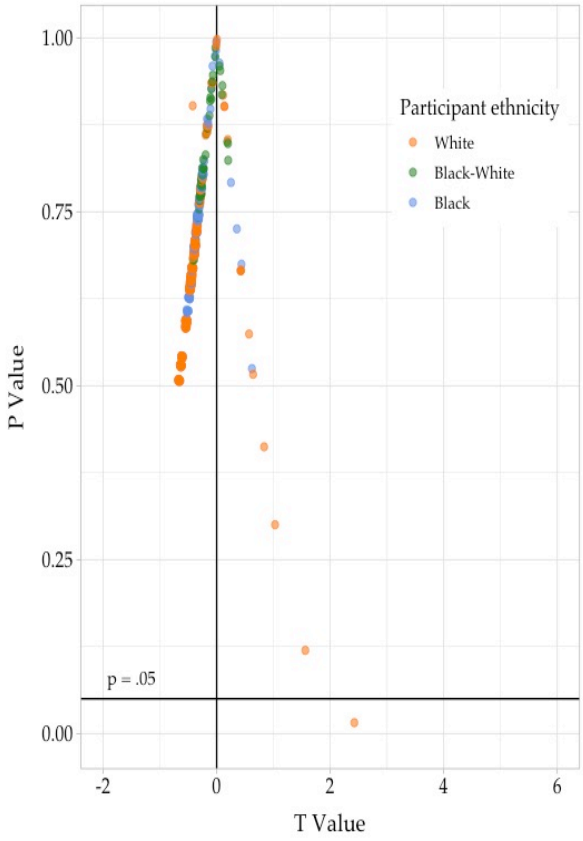

Figure 3.5. Comparison of observed and expected Black-White brokerage scores for White, Black-White, and Black participants at wave 1.

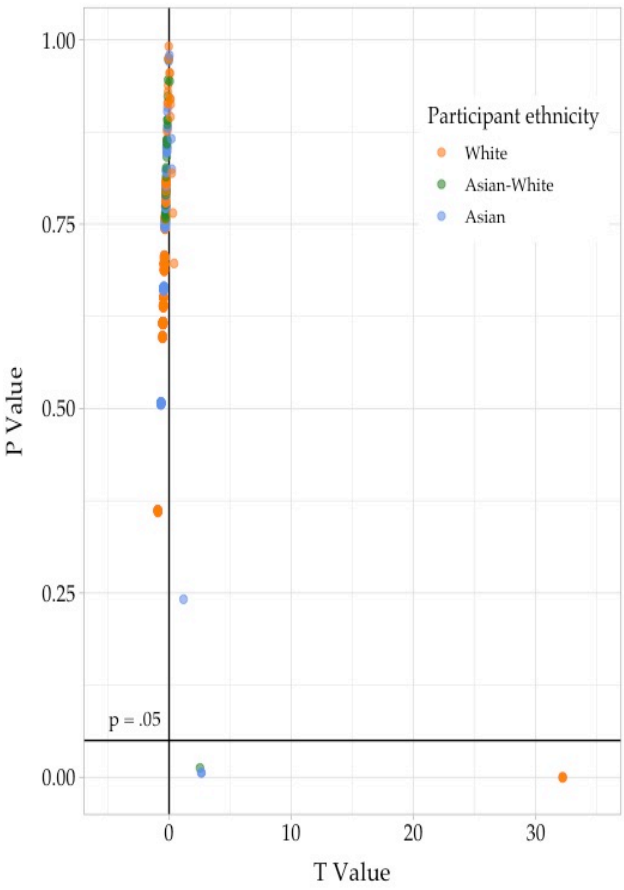

Figure 3.6. Comparison of observed and expected Asian-White brokerage scores for White, Asian-White, and Asian participants at wave 2.

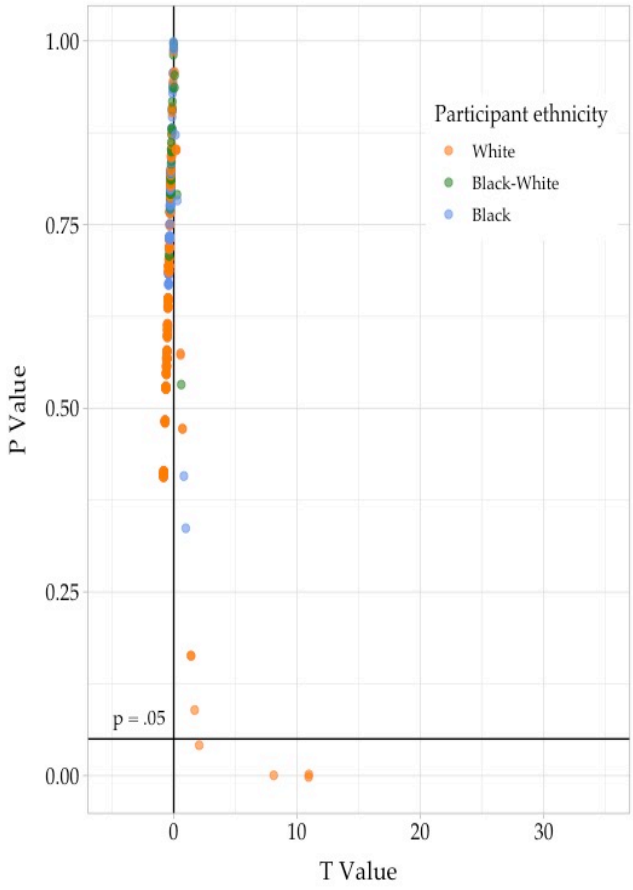

Figure 3.7. Comparison of observed and expected Black-White brokerage scores for White, Black-White, and Black participants at wave 2.

Do Multiethnic Brokers Affect Intergroup Relations?

Context-Level Indicators

Wave 1. At wave 1, inspection of mean scores suggested that intergroup relations tended to be more positive in classrooms where multiethnics occupied broker positions, where positive relations are indexed by higher positive density, lower negative density, lower levels of homophily, and a more positive attitudinal intergroup climate (Table 3.6). However, none of these context-level indicators of intergroup relations differed significantly between classrooms where multiethnics occupied broker positions and classrooms where they did not (positive density: $t(47) = 1.34$, $p = .187$; negative density: $t(47) = .20$, $p = .844$; homophily: $t(47) = .19$, $p = .854$; attitudinal intergroup climate: $t(47) = 1.80$, $p = .079$).

Table 3.6
Wave 1 Descriptives of Context-Level Indicators of Intergroup Relations in Classrooms With and Without Multiethnic Brokers

	Positive density	Negative density	Homophily	Attitudinal intergroup climate
Brokers	.65 (.14)	.03 (.02)	.36 (.15)	71.43 (6.56)
No Brokers	.59 (.13)	.03 (.01)	.37 (.20)	67.48 (8.32)

Note. Standard deviations are included in parentheses.

Wave 2. At wave 2, positive tie density did not differ significantly between classrooms where multiethnics occupied broker positions and classrooms where they did not, $t(42) = .60$, $p = .552$. However, homophily was weaker in classrooms where multiethnics occupied broker positions than it was in classrooms where they did not, $t(42) = 2.66$, $p = .011$. No data on negative tie density and attitudinal intergroup climate were available at wave 2. Means and standard deviations are summarised in Table 3.7.

Table 3.7
Wave 2 Descriptives of Context-Level Indicators of Intergroup Relations in Classrooms With and Without Multiethnic Brokers

	Positive density	Homophily
Brokers	.63 (.13)	.40 (.18)
No Brokers	.65 (.11)	.55 (.17)

Note. Standard deviations are included in parentheses.

Individual-Level Indicators

Descriptives and inter-item correlations are summarised in Tables A3.13 and A3.14.

Outgroup attitudes. Among majority participants, I found no evidence for a significant interaction between the number of multiethnic students in a classroom and whether or not they occupied broker positions at wave 1, and attitudes towards monoethnic minorities at wave 1 or wave 3. Similarly, among minority participants, no significant interaction effect was found on attitudes towards Whites at wave 1 (see Tables 3.8 and 3.9).

However, considering minority participants' wave 3 attitudes towards Whites, the interaction effect between the number of multiethnic classmates and multiethnic brokerage at wave 1 was significant, $b = -1.96$, $p = .007$. Notably, this longitudinal effect emerged after

accounting for participants' outgroup attitudes and the opportunity for contact with Whites, as well as friendship ties to multiethnics at wave 1. Post-hoc inspections of simple slopes in classrooms with and without multiethnic brokers indicated that minority students' outgroup attitudes at wave 3 tended to be more positive when, at wave 1, they were in classrooms with more multiethnic students but these students did not occupy broker positions (no brokerage: simple slope = 0.54, t = .50, p = .619; see Figure 3.8). Conversely, minority participants' wave 3 outgroup attitudes tended to be more negative when, at wave 1, they had been in classrooms with more multiethnic students and these students did occupy broker positions (some brokerage: simple slope = -1.42, t = 1.15, p = .254).

Outgroup friendship. Among majority participants, the combined effect of the number of multiethnic classmates and whether or not they occupied broker positions was unrelated to self-reported friendship with minority group members at wave 1 and wave 3. Similarly, for minority participants, no significant interaction effect emerged regarding self-reported friendship with Whites at wave 1 (see Tables 3.8 and 3.9).

However, among minority students, I found an interaction effect of the number of multiethnic classmates and multiethnic brokerage on their friendship with Whites at wave 3 that merely approached significance, b = -0.10, p = .068. This longitudinal effect again emerged after accounting for minority participants' friendship with Whites and multiethnics as well as the opportunity for contact with Whites at wave 1. Post-hoc inspections of simple slopes indicated that having more multiethnic classmates was significantly and negatively associated with friendship with Whites at wave 3 when these multiethnic classmates occupied broker positions (some brokerage: simple slope = -0.18, t = 2.18, p = .035; see Figure 3.9). However, the number of multiethnic classmates was unrelated to friendship with Whites at wave 3 when these multiethnic classmates occupied no broker positions (no brokerage: simple slope = -0.07, t = 1.29, p = .205). Overall, therefore, an individual's intergroup relations do not seem to benefit from social environments where multiethnic individuals occupy liaison broker positions. Indeed, although all interaction effects were small, over time such environments may even have detrimental effects on

minority group members' intergroup relations. These findings therefore lead me to reject H4.

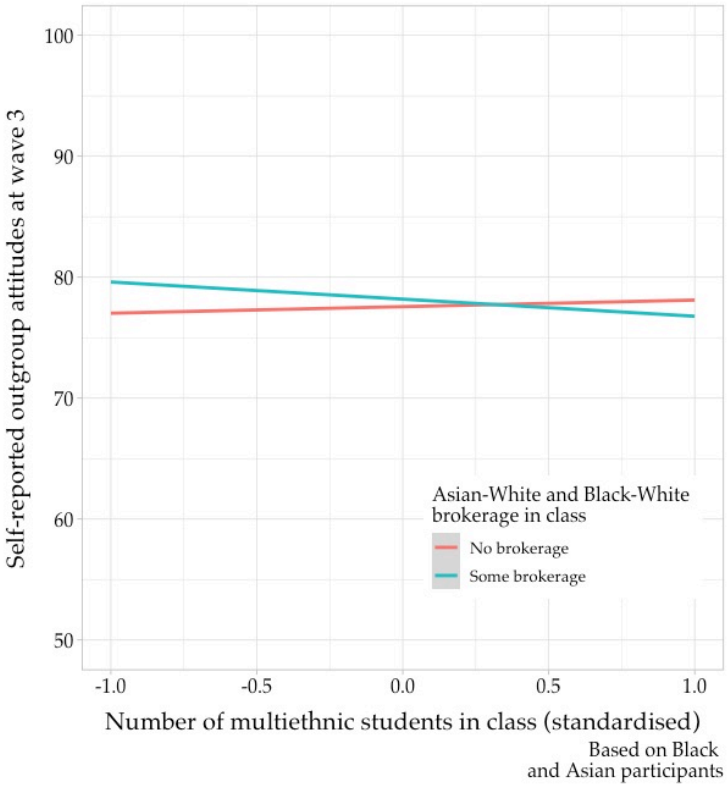

Figure 3.8. Association between the number of multiethnic students in class at wave 1 and minority participants' outgroup attitudes at wave 3 as moderated by the presence vs. absence of multiethnic brokers in class.

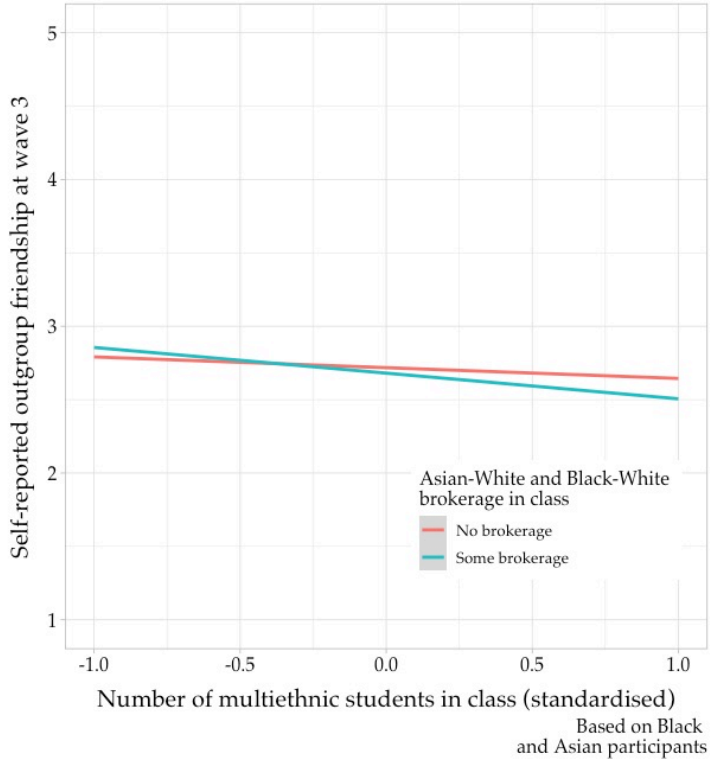

Figure 3.9. Association between the number of multiethnic students in class at wave 1 and minority participants' outgroup friendship at wave 3 as moderated by the presence vs. absence of multiethnic brokers in class.

Table 3.8
Wave 1 Outgroup Attitudes and Outgroup Friendship Among Monoethnic Majority and Minority Participants

	Majority participants						Minority participants					
	Wave 1 Attitudes towards Minority			Wave 1 Friendship with Minority			Wave 1 Attitudes towards Whites			Wave 1 Friendship with Whites		
	b	*p*	*SE*	*b*	*p*	*SE*	*b*	*p*	*SE*	*b*	*p*	*SE*
Level 1: Participants												
Age	0.42	.633	0.88	0.11	.112	0.07	0.19	.890	1.34	-0.12	.078	0.07
Gender	2.95	.021	1.27	-0.04	.699	0.09	0.32	.807	1.30	-0.03	.686	0.06
SES	4.55	.002	1.44	-0.06	.385	0.07	1.43	.357	1.55	0.15	.033	0.07
Multiethnic friends	-0.20	.895	1.48	0.03	.260	0.08	1.06	.327	1.08	0.02	.821	0.07
Level 2: Classrooms												
Multiethnic students	-0.62	.674	1.45	0.09	.449	0.11	1.83	.176	1.33	-0.06	.460	0.07
Multiethnic brokerage	-0.73	.825	3.28	-0.01	.977	0.26	2.23	.549	3.70	-0.04	.800	0.16
Multiethnic students x Multiethnic brokerage	4.10	.139	2.72	0.04	.840	0.17	-0.59	.262	0.52	0.00	.946	0.05
Target outgroup students	1.08	.428	1.35	0.29	.026	0.12	5.85	.005	1.99	0.55	<.001	0.10
Network boundary	-0.14	.915	1.33	0.04	.726	0.12	-0.56	.695	1.43	0.06	.511	0.09
L1 Variance σ^2 (*SE*)	617.65 (42.11)			2.32 (0.16)			609.41 (50.73)			1.04 (0.09)		
L2 Variance τ (*SE*)	11.86 (14.44)			0.25 (1.11)			0.69 (16.70)			0.04 (0.04)		
Deviance (*df*)	4313.67 (12)			1702.20 (12)			2986.36 (12)			935.83 (12)		

Note. Majority participants, Attitudes: n = 465 students, n = 50 classrooms. Majority participants, Friendship: n = 455 students, n = 51 classrooms. Minority participants, Attitudes: n = 323 students, n = 54 classrooms. Minority participants, Friendship: n = 322 students, n = 54 classrooms Multiethnic brokerage was entered as a binary predictor (0 = no brokerage; 1 = some brokerage). All other variables were z-standardised. SES = socioeconomic status, L1 = level 1, L2 = level 2.

Table 3.9
Wave 3 Outgroup Attitudes and Outgroup Friendship Among Monoethnic Majority and Minority Participants

	Majority participants						Minority participants					
	Wave 3 Attitudes towards minority			Wave 3 Friendship with minority			Wave 3 Attitudes towards Whites			Wave 3 Friendship with Whites		
	b	*p*	*SE*	*b*	*p*	*SE*	*b*	*p*	*SE*	*b*	*p*	*SE*
Level 1: Participants												
Age	0.63	.640	1.35	0.03	.651	0.06	-0.61	.652	1.35	-0.11	.114	0.06
Gender	1.36	.237	1.15	0.05	.489	0.06	2.05	.148	1.41	-0.09	.245	0.08
SES	1.57	.253	1.37	-0.14	.012	0.06	-0.36	.778	1.28	0.11	.063	0.06
Multiethnic friends	0.40	.729	1.15	0.03	.599	0.06	-0.05	.967	1.19	-0.05	.473	0.07
Wave 1 target outgroup attitudes	5.26	<.001	1.51				3.94	.039	1.90			
Wave 1 target outgroup friends				0.41	<.001	0.06				0.32	<.001	0.07
Level 2: Classrooms												
Multiethnic students	-0.98	.512	1.47	0.06	.454	0.08	0.54	.619	1.08	-0.07	.204	0.06
Multiethnic brokerage	-8.62	.021	3.58	-0.10	.603	0.19	0.62	.840	3.06	-0.04	.800	0.15
Multiethnic students x Multiethnic brokerage	5.01	.250	4.30	0.29	.419	0.35	-1.96	.007	.69	-0.10	.068	0.05
Target outgroup students	-0.31	.798	1.21	0.19	.211	0.15	1.13	.626	2.30	0.38	.002	0.12
Network boundary	1.19	.167	.84	0.00	.988	0.08	-1.56	.300	1.49	0.12	.190	0.09
L1 Variance σ^2 (*SE*)	365.60 (30.51)			1.20 (.10)			321.02 (34.05)			0.97 (0.10)		
L2 Variance τ (*SE*)	0.84 (9.55)			0.07 (0.05)			0.27 (13.04)			0.00 (0.04)		
Deviance (*df*)	2769.25 (13)			988.97 (13)			1790.90 (13)			652.70 (13)		

Note. Majority participants, Attitudes: n = 317 students, n = 48 classrooms. Majority participants, Friendship: n = 323 students, n = 49 classrooms. Minority participants, Attitudes: n = 208 students, n = 50 classrooms. Minority participants, Friendship: n = 233 students, n = 51 classrooms. Multiethnic brokerage was entered as a binary predictor (0 = no brokerage; 1 = some brokerage). All other variables were z-standardised. SES = socioeconomic status, L1 = level 1, L2 = level 2.

Study 3.3

Aims and Hypotheses

In Study 3.3, I report further analyses from the online experiment introduced in Study 2.2, which investigates perceptions of social environments displayed in the form of social network diagrams. The primary aim of Study 3.3 was to test the hypothesis that social networks in which multiethnics occupy broker positions are more positively connoted than social networks in which multiethnics do not occupy broker positions (H1). The use of participants as external observers of social networks was intended to ensure that the presence of multiethnic network members was salient regardless of their location. Study 3.3 therefore allowed me to test whether information specifically on the network location of multiethnic people contributes to network evaluation, and specifically to investigate how participants rated the attractiveness of each network diagram and their perception of the likely intergroup climate within each depicted network. Furthermore, unlike both Studies 3.1 and 3.2, which were field studies, this study's design provides insight into the significance of multiethnics' network location while other potentially confounding factors are kept constant (e.g., the size of the multiethnic population, the number of direct friendship ties between monoethnic majority and minority group members, and tie density).

A second aim of Study 3.3 was to further investigate the significant interaction between Social Dominance Orientation (SDO; Sidanius & Pratto, 1999) and Experimental Condition reported in Study 2.2. For the reasons outlined in Study 2.2, I proposed no directed hypotheses on the role of SDO in this particular study. Instead, I tested the hypothesis that individuals with high levels of SDO, who are known to have a strong preference for clear group hierarchies (see Kauff et al., 2016), are particularly sensitive to the location of multiethnic network members (H2). In so far as multiethnic brokers are seen as blurring established intergroup boundaries, individuals with high SDO might be less attracted to, and perceive the social climate to be more negative in, networks with multiethnic brokers than networks where multiethnics do not occupy broker positions. Alternatively, multiethnics in broker positions might be seen to accentuate the distance between monoethnic majority and minority groups and be perceived as barriers rather than bridges. In this case, individuals

with high SDO might be especially attracted to networks where multiethnics occupy broker positions. With these distinct interpretations of brokerage in mind, Study 3.3 also aimed to establish whether monoethnic participants would characterise brokers as bridges or barriers.

Method and Analysis Strategy

The repeated-measures design of this online study, conducted among White US American participants, included a three-level experimental manipulation: Networks included either nodes representing Black and White individuals but no nodes representing biracial Black-White individuals, who were absent from this condition (BA condition); nodes representing Black, White, and biracial individuals where biracials occupied broker positions (BBr condition); or nodes representing Black, White, and biracial individuals, where biracials occupied no broker positions but were instead embedded within homogeneous clusters of Black or White individuals (BNBr condition).

In Study 3.3, I firstly assess whether participants saw biracial nodes in broker positions as 'bridges' or 'barriers' between the monoracial groups. I then expand on findings reported in Study 2.2. Study 2.2 highlighted that the experimental manipulation had a significant main effect on perceived intergroup climate and network attractiveness and, when I contrasted conditions with vs. without biracial nodes, I found evidence for a positive mere presence effect. In Study 3.3, I focus on the importance of where in their networks biracial individuals are located and thus compare perceptions of networks where biracial nodes were in broker positions (BBr condition) and networks where they were embedded within homogeneous monoracial clusters (BNBr condition). Finally, in Study 2.2 a significant SDO x Experimental Condition interaction on network evaluation indicated a more pronounced mere presence effect among participants with lower levels of SDO. Ingroup identification, on the other hand, did not significantly moderate the effect of the experimental condition. In Study 3.3, I investigate further the direction of the significant SDO moderation regarding reactions to the location of biracials.

Results and Discussion

Characterisation of biracial brokers. When asked to indicate whether biracials in the BBr condition were bridges or barriers, 98.3% of participants described them as bridges and only 1.7% of participants (n = 3) described them as barriers between the two monoracial groups included in the networks.

Main effects. Following on from the significant multivariate main effect of experimental condition, significant post-hoc ANCOVAs, and planned contrasts reported in Study 2.2, I also conducted planned contrasts to compare networks with biracial brokers and biracial non-brokers. Results suggested that both attractiveness ratings and perceived intergroup climate differed significantly between networks where biracials occupied broker positions and networks where they were present but not in broker positions (attractiveness: $F(1,168) = 15.86$, $p < .001$, $\eta^2 = .09$; climate: $F(1,168) = 10.37$, $p = .002$, $\eta^2 = .06$).

Inspection of estimated marginal means (see Figure 3.10) suggested that networks including biracials in broker positions were rated as significantly more attractive (M = 3.43, SE = 0.08, 95% CI 3.29, 3.58) than networks where biracials did not occupy broker positions (M = 2.75, SE = 0.07, 95% CI 2.61, 2.89). Similarly, intergroup climate was deemed more positive in networks including biracial brokers (M = 3.56, SE = 0.16, 95% CI 3.25, 3.87) than networks where biracials did not occupy broker positions (M = 2.46, SE = 0.12, 95% CI 2.23, 2.68); see Figure 3.11.

Overall, the results of Study 3.3 suggest that biracials in broker positions are positively connoted when they are unambiguously presented (and presumably clear to the participant)[8] in a network diagram in which participants themselves do not feature. Not only do participants describe biracials as bridges between monoracial groups, but they also prefer networks that include biracial brokers over networks where biracials are embedded

[8] Manipulation checks reported in Study 2.2 confirmed that 100% of participants correctly identified the colour of biracial nodes in the networks, and that the location of biracials was correctly identified in 89-93% of networks in the BNBr and BBr conditions.

within monoracial clusters. The positive mere presence effect reported in Study 2.2 therefore seems to be enhanced when biracials are portrayed as occupying broker positions.

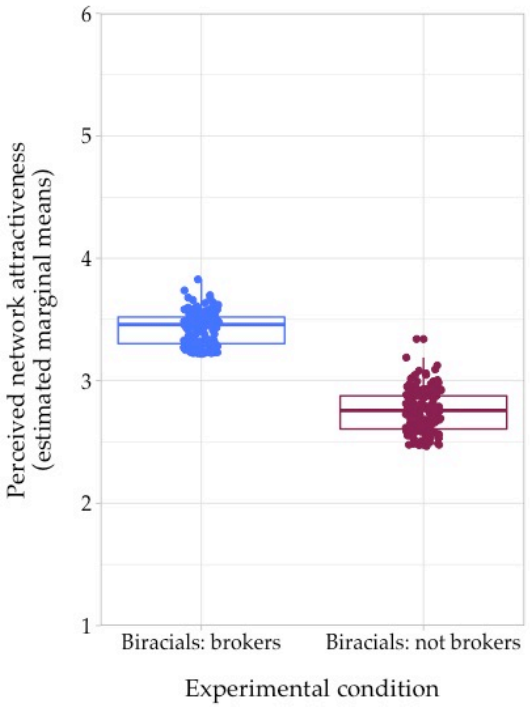

Figure 2.10. Estimated marginal means of network attractiveness ratings when biracials were in broker positions or not in broker positions.

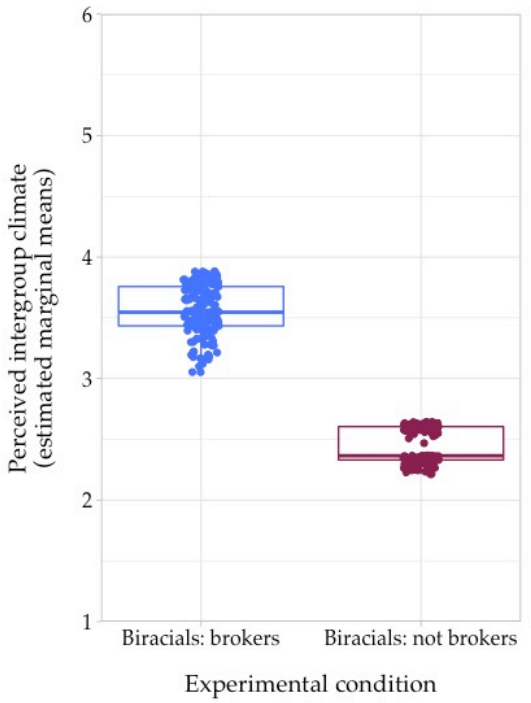

Figure 2.11. Estimated marginal means of intergroup climate ratings when biracials were in broker positions or not in broker positions.

Interaction effects. As reported in Study 2.2, ingroup identification did not significantly moderate the mere presence effect. However, SDO did significantly moderate the effect of the presence vs. absence of biracials on perceived network attractiveness. While I contrasted networks with and without biracial nodes in Study 2.2, in Study 3.3 I further investigated the significant SDO x Experimental Condition interaction by comparing networks with biracials in broker positions (BBr condition) or not in broker positions (BNBr condition). I again used the MEMORE macro in SPSS (Montoya, 2019) to test moderations in repeated-measures designs where the moderator is a between-participant variable (Montoya, 2018; see also Judd et al., 1996, 2001). The difference between evaluations of networks in the BBr condition and networks in the BNBr conditions was treated as the dependent variable, and SDO was entered into the model as a mean-centered moderator.

SDO significantly moderated the difference in perceived intergroup climate between the BBr condition and the BNBr condition (b = -0.35, SE = 0.17, 95% CI -0.69, -0.01), $t(172) = 2.04$, $p = .043$. Inspection of the difference score at the 25th, 50th and 75th percentile of SDO showed that the difference in perceived network climate was smaller at higher levels of SDO (see Table 3.10).

Table 3.10
Effect of the Location of Biracial Nodes in Broker Positions vs. Not in Broker Positions on Perceived Social Climate at Different Levels of SDO

	SDO	Main effect	*SE*	*t*	*p*	95% CI
25th percentile	-0.77	1.37	0.19	7.05	<.001	0.99, 1.75
50th percentile	-0.27	1.19	0.15	7.99	<.001	0.90, 1.49
75th percentile	0.48	0.93	0.16	5.68	<.001	0.61, 1.25

Note. SDO = Social dominance orientation, *SE* = standard error, CI = Confidence interval. Confidence intervals were calculated as percentile bootstrap CIs with 5000 bootstrap iterations.

SDO also significantly moderated the difference in perceived network attractiveness between the BBr condition and the BNBr condition (b = -0.27, SE = 0.08, 95% CI -0.43, -0.11), $t(172) = 3.28$, $p = .001$. Inspection of the difference scores at the 25th, 50th and 75th percentile of SDO (Table 3.11) again showed that higher levels of SDO were associated with smaller differences in network attractiveness.

Table 3.11
Effect of the Location of Biracial Nodes in Broker Positions vs. Not in Broker Positions on Network Attractiveness at Different Levels of SDO

	SDO	Main effect	*SE*	*t*	*p*	95% CI
25th percentile	-0.77	0.89	0.09	9.60	<.001	0.70, 1.07
50th percentile	-0.27	0.75	0.07	10.59	<.001	0.61, 0.89
75th percentile	0.48	0.55	0.08	7.07	<.001	0.40, 0.71

Note. SDO = Social dominance orientation, *SE* = standard error, CI = Confidence interval. Confidence intervals were calculated as percentile bootstrap CIs with 5000 bootstrap iterations.

The overall direction of the effects that the location of biracial nodes in the network had on network attractiveness and the perceived intergroup climate in networks – namely that networks with biracial brokers were evaluated more positively than networks where biracial nodes were not situated in broker positions – was consistent across SDO levels. These findings extend the moderation effect reported in Study 2.2. They do not suggest that individuals with high SDO are particularly attracted to or repelled from environments with biracial brokers. Rather, the moderating effect of SDO might reflect *less* sensitivity to

information on mixed individuals' network location among individuals with high levels of SDO. Alternatively, the interaction effects could result from an attempt by high-SDO participants to appear less prejudiced when evaluating networks where biracials did not occupy broker positions.

Study 3.4

Study 3.4 includes data collected in South Africa, an intergroup context that, despite its racially, ethnically, religiously, and linguistically highly diverse population and recent history of violent intergroup conflict, has received less attention in social psychological research than US American and UK contexts (but see Lolliot, 2013; Pettigrew, 2010; Swart, 2007), especially where multiethnic populations are concerned. An in-depth overview of race relations in South Africa lies beyond the scope of Study 3.4. Nevertheless, I provide below an introduction to the recent history of intergroup conflict in the country and especially the role of the multiethnic population of Coloured South Africans before turning to the research I conducted in South Africa.[9]

The South African Context

Marked by over three hundred years of racialised oppression and bearing the scars of 40 years of state legislated segregation during Apartheid (1948-1990), South Africa today continues to be a country of vast intergroup disparities. The transition from Apartheid to a new democratic South Africa is framed, in the popular narrative, as an exercise in the development of a non-racist shared national identity and, in the spirit of *rainbow nationalism*, the recognition and celebration of South Africa's multicultural population (Adhikari, 2005; Thompson & Berat, 2014). Nevertheless, a 2017 representative survey conducted as part of the South African Reconciliation Barometer, indicated that today as many as one in three South Africans still consider interethnic divisions to constitute the biggest faultline in South Africa. Furthermore, ethnic identities continue to be one of the most, if not the most, strongly held social identities among a considerable share of the population – ahead of a common national identity (Potgieter, 2017).

[9] The group labels used in Study 3.4 reflect the terminology used widely in South Africa today, including in the Census and also in quotidian life, to classify its different population groups.

As a society in transition from recent violent and state-legislated interethnic conflict to reconciliation and peaceful co-existence, the South African context is particularly relevant for researchers studying the social psychology of intergroup relations (e.g., Lolliot, 2013; Swart, 2007). South Africa is an especially interesting context for scholars on multiethnic identities because it includes what is sometimes referred to as one of the largest multiethnic populations in the world (Mann, 1958; see also Swart, 2007): Coloured South Africans constitute 8.6% of the South African population, the second largest group after the Black African population (80.7%) and ahead of the White population (8.1%) (Statistics South Africa, 2016). Unlike multiethnic populations in England or the US, Coloureds today are a visible and well-established group,[10] if a phenotypically heterogeneous one of diverse social and geographical origin that includes, but is not limited to, indigenous Khoisan populations, Cape slaves populations with Malay or Indian ancestry, European settlers, and other people of African and Asian origin (Adhikari, 2005). This group is therefore interesting for a researcher investigating the contribution of multiethnic people to intergroup processes in real-life contexts where, in European and US American settings, multiethnic identities would otherwise go unnoticed.

Nevertheless, Coloureds should not be considered the South African equivalent of multiethnic populations in the UK or the US. Although they descend partly from Europeans who settled the Cape region in the 16th century and from their slaves (Adhikari, 2004, 2005; Swart, 2007), such historical miscegenation no longer features strongly in many Coloureds' contemporary consciousness (Ruiters, 2009). Mixed marriages and sexual relationships were illegal during Apartheid, and marriage across the so-called colour bar continues to be rare (Amoateng & Heaton, 2017). Unlike multiethnic people in the UK and the US, Coloureds do not usually grow up in ethnically heterogeneous households, nor can they be described as individuals of dual heritage that overlaps in part with monoethnic identities of the other prominent groups in society – Black and White South Africans[11]. Rather, Coloured South

[10] The predominance of Afrikaans among the Coloured population contributes to this visibility. Afrikaans is the first language of 75.8% of Coloured South Africans, compared to 60.8% of White and 1.5% of Black South Africans (Statistics South Africa, 2012).

[11] Black and White South African populations are themselves internally heterogeneous. The Black South African population, in particular, includes members of distinct groups (e.g., Xhosa, Zulu) with their own languages and a long history of complex and often fraught intergroup relations (see Thompson & Berat, 2014).

Africans are widely considered a population of multiethnic origin with a unique (albeit hazily defined) social identity (Adhikari, 2005; Ruiters, 2009).

Despite such differences, Coloured South Africans, like the other multiethnic populations discussed in this thesis, occupy an intermediate status in society that makes them likely interethnic brokers (Swart, 2007). Under Apartheid, the Coloured identity was loosely defined by the state as "neither white nor black" (Ruiters, 2009, p. 109), as an identity "which does not fit a classificatory scheme" (Erasmus, 2001, p. 17). The socioeconomic conditions of Coloured South Africans under Apartheid's strict intergroup hierarchy – conditions that continue to affect the status of Coloureds to this day – also reflected their intermediate status. Under White minority rule, the development of Black communities was designed to be separate from that of Whites, whereas the development of the Coloured community was vaguely envisaged as parallel to but below that of the White community (Adhikari, 2004; Morse & Peele, 1975). This hierarchy was borne out in all aspects of life, including health, education, and political participation, and in this hierarchy, Coloureds consistently fared worse than Whites yet better than Blacks (Thompson & Berat, 2014; see also Foster & Finchilescu, 1986; Mandela, 1994). Many Coloureds considered their interstitial space, which included better pay than Blacks for the same work, the second-best choice and exhibited both "strong affinities to whiteness and a defensive racism toward Africans" (Adhikari, 2004, p. 170). Under Apartheid, then, Colouredness was imbued with ambivalence and marginalisation between Blacks as the disadvantaged majority and Whites as the oppressor minority.

The end of Apartheid brought about not only the dismantlement of old group hierarchies but also the construction of new ones. The reversal of the political power structure from minority to majority rule, especially affirmative action policies which explicitly favour Blacks (Swart, 2007), and the continued socioeconomic hierarchy that sees Whites in the most privileged positions (Thompson & Berat, 2014), have alienated many Coloureds from the nation building process of a new South Africa. Farred, a South African cultural studies scholar, argued that "[w]hereas 'full blackness' or Africanness has translated into full citizenship of and belonging to the post-apartheid state, colouredness has retained its

historic ambivalence" (as cited in Ruiters, 2009, p. 108). This experience finds expression in the popular lament "first we were not white enough and now we are not black enough" (Adhikari, 2004, p. 168), and in the dismissal of rainbow nationalism with the protestation that "brown does not appear in the rainbow" (Ruiters, 2009, p. 106).

Contemporary Coloured identity ought to be viewed both in this historical context and in light of the experiences of Coloureds in today's democratic South Africa. The end of Apartheid saw a resurgence of Coloured identity, partly because it served to mobilise sections of society around shared economic and political interests. Yet even 25 years hence, the Coloured identity, when compared to groups in other contexts, remains a particularly complex and vaguely defined one, even among Coloureds themselves. Coloureds continue to occupy a space between Whiteness and Black Africanness, but one that can now also accommodate individuals who identify with their slave origins, or people who find their roots within the indigenous Khoisan community (Ruiters, 2009). Ruiters' description of Coloured identities as "multiple, fluid and hybrid" (Ruiters, 2009, p. 112) is reminiscent of descriptions of multiethnic identities in the UK and US (e.g., Kang & Bodenhausen, 2015). But despite this overlap with other discourses on multiethnic identities, the highly politicised disputes about the meaning of Colouredness in South Africa remain strongly influenced by the reading of South Africa's unique and complex history of race relations.

Be it the long-standing association of Coloured identities with an intermediate social status, an awareness of Coloureds' multiethnic origins, or the heterogeneity of the Coloured population at large, several studies indicate that Coloureds are particularly likely to be interethnic brokers. For example, Coloureds appear most open to the idea of interethnic marriage (Amoateng, 2006; Hofmeyr, 2006) and indicate the greatest levels of outgroup trust (Potgieter, 2017). Furthermore, both Black and White South Africans are least likely to mention Coloureds as the ethnic outgroup that they find most difficult to associate with (Potgieter, 2017), and White South Africans have been found to have more positive attitudes towards Coloureds than towards Blacks (Lolliot, 2013). Moreover, the intermediate status of Coloureds has been put forward as a factor that, among Black and White South Africans,

facilitates the transfer of positive attitudes towards Coloureds to more socially distant outgroups (Lolliot, 2013; Swart, 2007).

Study 4 was conducted within the ethnically relatively diverse context of higher education, a context which, for many young South Africans who grow up in a society that even now is highly segregated, offers their first opportunities for meaningful intergroup experiences. In Study 3.4, I combine social network and survey data to assess both the contextual and the evaluative intermediacy of Coloured South Africans. In Study 4.3 in Chapter 4, I return to their potential to affect intergroup relations between Black and White South Africans through intergroup contact.

Aims and Hypotheses

The aim of Study 3.4 was to test the replicability of findings reported in Study 3.1 in a different intergroup context, among university students in South Africa. Specifically, I tested whether Coloured South Africans, who are often described as being of mixed ethnic background and of occupying a socioeconomically and politically intermediate status between Black and White South Africans, are also situated in intermediate network positions and evaluated by Blacks and Whites with intermediate levels of favourability.

The hypotheses tested in Study 3.4 were a variation on H2 and H3 reported in Study 3.1. Due to incomplete network data, network centrality could not be evaluated in this sample, and neither could the difference between observed and expected brokerage. To address Coloureds' contextual intermediacy, I first tested the hypothesis that Coloured individuals are more often brokers in triads including Blacks, Whites, and Coloureds, than are Black or White individuals (H1). I then addressed evaluative intermediacy and tested the hypothesis that Black and White South Africans relate more positively to Coloureds than they relate to Whites and Blacks respectively, but that they relate less positively to Coloureds than they relate to ingroup members (H2).

Method

Dataset and sample. The data presented here was collected as part of a new multi-wave study on the influence of social networks on academic performance, health, and intergroup relations among students at Stellenbosch University (SU) in South Africa.[12] This ongoing research project is being conducted in collaboration with Dr Hermann Swart and Dr Debra Shepherd at SU. Participants are first year students studying at the Economic and Management Sciences Faculty at SU.

Wave 1 data, which we collected in April 2018, included both survey measures of participants' self-reported social and cultural experiences and attitudes, and social network data on their friendship relations with same-year students (henceforth, 'co-years') within SU's *Economics 144* course. Over the course of a week, Hermann Swart, Debra Shepherd, and I introduced the study to the attendees of the seven lecture groups that comprised the target population. All students who were signed up to the *Economics 114* course (N = 1792) were then prompted by email to complete the study online. Given the overall length of the online questionnaire, it was presented to participants in three parts, each taking about 10 minutes to complete. A unique link to each subsequent questionnaire was sent to participants who had completed the preceding questionnaire. At the beginning of the study, participants generated a unique participant ID which was then used to match responses across the questionnaires. Participants who completed all three parts of the study were eligible to enter a cash prize draw.

Questionnaire 1 included the friendship nomination procedure used to generate social network data. Participants were presented a searchable list of the names of all their co-years who were signed up to the *Economics 114* course. We were interested in friendship ties within each of the seven lecture groups. However, because students often do not attend the specific weekly lecture group to which they were assigned at the beginning of the academic year, but instead are regular attendees of another lecture group of the same course, we decided not to limit participants' friendship choices to the co-years who were formally

[12] This research was funded by South Africa's National Research Foundation and a University of Oxford Oppenheimer Grant awarded to Professor Miles Hewstone.

assigned to the same lecture group as the participant. Instead, participants were instructed to select up to ten friends from the complete list of co-years with whom they attend their regular *Economics 114* lectures.

The overall sample size at each part of the study is reported in Table 3.12. With the exception of one item on intergroup contact experiences in the home community, all measures reported here, including on demographic information, were included within the first part of the study. My analyses focus on a subset of the overall sample, namely, members of South Africa's three largest ethnic groups: White (n = 411), Black (African) (n = 62), and Coloured South Africans (n = 79). Participants who identified as Indian (n = 22), Asian (n = 5), Foreign (n = 58), or Other (n = 11) were not included in the analyses. A summary of participants' self-reported demographics is included in Table 3.13.

Table 3.12
Target Population and Sample Sizes Available for Different Sections of the Study

	Target population	(Partially) completed Q1	(Partially) completed Q2	(Partially) completed Q3	Completed Q3
Sample size	1792	648	478	446	444

Note. Q1 = Questionnaire 1, Q2 = Questionnaire 2, Q3 = Questionnaire 3. These counts include not only Black, White, and Coloured participants but also members of other ethnic groups who are not included in the analyses presented in Study 4.

Table 3.13
Demographic Attributes of Black, White, and Coloured Participants

	Black	White	Coloured
M age in years (*SD*)	19.00 (1.59)	18.53 (.76)	18.39 (.87)
% female	59.7%	59.6%	54.4%
M SES (*SD*)	2.85 (1.11)	3.98 (.87)	2.92 (.84)

Note. *M* = mean; *SD* = standard deviation; SES = socioeconomic status.[13]

Measures

Liaison brokerage. As in Study 3.1, liaison brokerage scores were derived from social network data, and the inter- or intra-group nature of friendship ties was determined based

[13] Participants self-reported on their SES using a six-point scale from 1 = *Lower class* to 6 = *Elite*.

on the ethnic self-categorisation of each individual within a given dyad. Where participants nominated someone who did not participate in the study, the ethnic identity of the friend was based on SU records of previous ethnic self-categorisation (e.g., during university admission).

For the reasons outlined above, participants could populate their friendship network with co-years across the entire year group, regardless of what lecture group they had been assigned to. Inspection of friendship nominations across the entire sample indicated that only 55% of all nominated friends were assigned to the same lecture group as the participant. For each participant, I therefore computed two separate brokerage scores: a conservative score that considered only friendship ties between individuals assigned to the same lecture group; and a more liberal score that considered all friendship ties. The formal approach to liaison brokerage was identical to the measure described in Study 3.1. In the present study I focus on triads including Black, White, and Coloured individuals.

Intergroup similarity. On six-point scales, participants rated how different or similar, "generally speaking", they thought members of the following groups were: Black (African) and White South Africans; Black (African) and Coloured South Africans; White and Coloured South Africans (1 = *Very different*; 6 = *Very similar*).

Intergroup attitudes. I included the commonly used feeling thermometer to measure intergroup attitudes. On 11-point scales (0-100), participants indicated how warm or cold they felt towards Black, White, and Coloured South Africans, respectively. Lower scores were described as indicating cold/less favourable feelings and higher scores as indicating warm/more favourable feelings.

Analysis Strategy

The first part of this study concerns Coloured participants' location within their friendship networks and specifically asks whether Coloured individuals tend to broker relations between Black and White South Africans. First adopting a conservative approach to the data, I assess the distribution of brokerage scores when only friendship connections among

individuals from the same classroom are considered. Then adopting a more liberal approach, I also report on brokerage when ties across the whole year group are included. The second part of Study 3.1 asks whether Black and White South Africans display evaluative intermediacy towards Coloured South Africans. Separately for Black and White participants, I conducted paired-samples t-tests to compare perceived similarity between Coloureds and the ingroup and between Coloureds and the outgroup. I then conducted one-way repeated measures ANOVAs on attitudes towards Coloureds with target ethnicity (White, Black, Coloured) as the three-level within-subjects factor. This approach allowed me to assess Black and White participants' attitudes towards Coloureds in direct relation to their attitudes towards their ingroup and their other outgroup.

Results and Discussion

Are Coloured South Africans Located in Intermediary Positions in their Networks?

Data cleaning. Although participants were instructed to nominate up to 10 friends, a programming error meant that more than 10 names could be selected from the list of co-years. The average outdegree was 6.10 (*SD* = 6.27). Seven participants' friendship outdegrees were 3 *SD* or more above the mean (outdegree > 24). Considering also that 99% of the sample nominated 24 friends or fewer, I curtailed participants' friendship lists to the first maximum 24 friendship nominations and thus only considered outdegrees that fell within the first three *SD*s above the M outdegree.

Subsequently, I identified 117 instances where participants nominated themselves and excluded these nominations from these participants' friendship lists. The online data collection tool did not allow duplicate nominations, and a test for duplicates confirmed that no friendship list included a given name more than once. To test whether participants meaningfully used the alphabetical list of names from which they could select friends, I inspected indegrees, i.e., the number of nominations received by each network member. The individual at the top of the alphabetical list of potential friends received 109 friendship nominations (median indegree = 2), and in each instance their name was the first on participants' list of friends. This raised the possibility that participants selected this top-of-the-list individual in order to test the friendship selection tool and/or to progress more

quickly through the survey, rather than to express actual friendship ties to this individual. I therefore took the precaution of excluding nominations to this top-of-the-list individual from participants' friendship lists. To account for the common occurrence of nominations across lecture groups, I first consider brokerage within lecture groups and then brokerage within the year group network. Mean brokerage score within lecture groups and across the year group are displayed in Table 3.14.

Table 3.14
Mean Brokerage Scores Across Ethnic Groups Based on Lecture Group and Year Group Data

	White	Coloured	Black
Lecture Group Data	0.02 (0.23)	0.66 (2.30)	0.78 (2.53)
Year Group Data	0.07 (0.38)	1.36 (2.80)	3.05 (10.43)

Note. Standard deviations are included in parentheses

Lecture group data. I considered only data from lecture groups that included Black, White, and Coloured students and where brokerage was therefore theoretically possible ($n_{\text{lecture group}} = 6$). Inspection of the distribution of residuals following a one-way ANOVA, with participant ethnicity as the independent and brokerage as the dependent variable, suggested that the data violated the assumption of normality. Additionally, the standardised brokerage scores of all participants who occupied one or more brokerage positions marked these cases as extreme univariate outliers. Square root transformations of brokerage scores did not resolve this issue.

Therefore, to compare the occurrence of brokerage across participant groups, I followed the analytic procedure outlined in Study 3.1 and dichotomised brokerage scores, distinguishing only between individuals in no or some broker positions. Per lecture group, I then calculated the proportion of White, Black, and Coloured students respectively, who occupied one or more broker positions. Repeated-measures t-tests indicated that, within a given lecture group, the proportion of Coloured participants who occupied one or more broker positions ($M = .09$, $SD = .06$) was significantly higher than the proportion of White students in broker positions ($M = .00$, $SD = .01$, $t(5) = 3.90$, $p = .011$, Cohen's $d = 2.25$), but not significantly different from the proportion of Black students in broker positions ($M =$

.08, SD = .06, $t(5)$ = .99, p = .366, Cohen's d = .27).[14] Low participation rates mean that these proportions likely under-represent the true occurrence of brokers within the networks, but the overall pattern of results nevertheless suggests that Coloured South Africans are as likely as Black South Africans to be brokers.

Year group data. The data based on year group-wide friendship networks resembled the data based on lecture group networks. Inspections of the proportion of Black, White, and Coloured students who occupied one or more broker positions indicated again that White students were least likely to be brokers (1%), followed by Black (9%) and Coloured (12%) students. As a statistical comparison of brokerage, I also computed a Kruskal-Wallis test to compare mean rank brokerage scores across Black, White, and Coloured participants. A significant Kruskal-Wallis test suggested that brokerage scores varied with participant ethnicity, $\chi^2(2) = 69.80$, $p < .001$. Post-hoc pairwise comparisons of mean rank scores with Bonferroni correction replicated findings based on classroom data: Coloured participants had a significantly higher mean rank score than White participants (Average rank $_{\text{Coloured}}$ = 330.28, Average rank $_{\text{White}}$ = 254.32), $p < .001$. However, even though Coloured participants tended to have a higher rank score than Black participants (Average rank $_{\text{Black}}$ = 307.64) this difference was not statistically significant; p = .316. This pattern of results replicates the pattern of brokerage within lecture groups, although estimates of brokerage and the number of brokers likely underrepresent the true occurrence of contextual intermediacy given the incompleteness of the social network data. Overall, analyses of Coloured individuals' social network location do not provide unequivocal support for the hypothesis (H1) that Coloured South Africans are uniquely placed to build relational bridges.

[14] I also computed a Kruskal-Wallis test comparing brokerage scores across Black, White, and Coloured participants. Because the distribution pattern of scores appeared consistent across participant groups, I compared median brokerage scores. The Kruskal-Wallis test indicated that brokerage scores differed significantly between participant groups, $\chi^2(2) = 56.96$, $p < .001$. In line with the findings reported above, post-hoc pairwise comparisons of mean brokerage rank scores with Bonferroni correction suggested that Coloured participants occupied significantly more brokerage positions than White participants (Average rank $_{\text{Coloured}}$ = 240.14, Average rank $_{\text{White}}$ = 197.39), $p < .001$. However, Coloured participants did not occupy more brokerage positions than Black participants (Average rank $_{\text{Black}}$ = 236.51), p = 1.00.

Are Coloured South Africans Seen as 'Intermediate'?

Descriptives and inter-item correlations are summarised in Table A3.15. Firstly, I report paired-samples t-tests comparing participants' perceived similarity between the ingroup and Coloureds with their perceived similarity between the ingroup and the monoethnic outgroup. For White participants, this allowed me to test whether Coloureds or Blacks were deemed more similar to Whites. Conversely, for Black participants I tested whether Coloureds or Whites were deemed more similar to Blacks. I then report on one-way repeated-measures ANOVAs comparing attitudes across different target groups. Where Mauchley's test of a given ANOVA was significant and sphericity of the outcome variable could not be assumed, I report within-subjects effects and planned contrasts with Greenhouse-Geisser correction.

White participants. A paired-samples t-test to compare White participants' perceived similarity between White and Black South Africans and their perceived similarity between White and Coloured South Africans was significant, $t(408) = 8.95$, $p < .001$, 95% CI -0.61, -0.39, Cohen's $d = .39$. Inspection of mean perceived similarity scores suggested that Whites and Coloureds were seen as being more similar ($M = 3.25$, $SD = 1.24$) than Whites and Blacks ($M = 2.75$, $SD = 1.30$).

A one-way repeated measures ANOVA with target ethnicity (White, Black, Coloured) as the three-level within-subjects factor and attitudes as the dependent variable, indicated that White participants' attitudes varied across target groups (Mauchley's W = .92, $\chi^2(2) = 35.41$, $p < .001$), $F(1.85, 757.20) = 213.13$, $p < .001$. Within-subjects contrasts indicated that White participants had more positive attitudes towards White than Coloured South Africans ($M_{White} = 80.94$, $SD = 13.71$; $M_{Coloured} = 67.68$, $SD = 18.39$), $F(1, 410) = 248.97$, $p < .001$, $\eta^2 = .38$. However, they had more positive attitudes towards Coloured than Black South Africans ($M_{Black} = 62.55$, $SD = 21.91$), $F(1, 61) = 35.44$, $p < .001$, $\eta^2 = .08$.

Black participants. I compared perceived similarity between Black and White South Africans to perceived similarity between Black and Coloured South Africans. The paired-samples t-test was significant, and inspection of mean perceived similarity scores indicated

that Blacks and Coloureds were seen as more similar (M = 3.89, SD = 1.36) than Blacks and Whites (M = 2.50, SD = 1.42), $t(61) = 8.26$, p <.001, 95% CI -1.72, -1.05, Cohen's d = 1.00.

A one-way repeated measures ANOVA comparing attitudes across target groups revealed a significant within-subjects effect of target ethnicity (Mauchley's W = .69, $\chi^2(2) = 22.58$, p < .001), $F(1.52, 92.87) = 34.73$, $p < .001$, $\eta^2 = .36$. Within-subjects contrasts showed that Black participants had more positive attitudes towards Black than Coloured South Africans (M_{Black} = 83.85, SD = 17.95; $M_{Coloured}$ = 65.19, SD = 20.74), $F(1, 61) = 35.98$, $p < .001$, $\eta^2 = .36$. However, they had more positive attitudes towards Coloureds than towards Whites (M_{White} = 59.76, SD = 23.56), $F(1, 61) = 6.54$, $p = .013$, $\eta^2 = .10$.

In support of H2, these findings suggest that Black and White South Africans relate to Coloured South Africans as an intermediate group. Black and White participants thought of Coloureds as being more similar to their ingroup than members of the White or Black outgroup, and they evaluated Coloureds more favourably than their respective White or Black outgroup.

General Discussion

Where multiethnic individuals are hailed as facilitators of greater intergroup harmony, this tends to be closely linked to the assumption that they occupy an intermediate position in the intergroup context. Throughout the research presented in this chapter, I considered intermediacy from two angles, regarding both multiethnic individuals' location in relationship networks (contextual intermediacy) and how they are evaluated by others (evaluative intermediacy). In the following sections, I begin by discussing the findings on multiethnics' contextual intermediacy, specifically their social network location and how the presence of multiethnic people affects intergroup relations when multiethnics occupy broker positions. I then turn to the findings on evaluative intermediacy, specifically on how monoethnic minority and majority group members relate to and perceive multiethnic people.

Contextual Intermediacy

Despite the abundance of spatial metaphors (e.g., "gateways", Levy et al., 2017, p. 260; "the perfect cultural bridge", Padilla, 2006, p. 491) in discussions on the potential of people of mixed background to positively affect intergroup relations and multiethnic individuals' own accounts of their intergroup experiences (e.g., "being pendulous", Danquah, 1998, p. 107; "between the cracks", O'Hearn, 1998, p. xiv), few studies have examined whether multiethnic individuals realise this bridge building potential in their social networks (Jugert et al., 2018; Muttarak, 2014). Furthermore, as far as I am aware, no published quantitative research to date has examined the consequences of mixed individuals' network location for wider intergroup relations. In this chapter, I addressed this lacuna in four separate studies that brought together social network (Studies 3.1, 3.2, 3.4), survey (Study 3.2), and experimental (Study 3.3) data collected across three intergroup contexts: England (Studies 3.1 & 3.2), the US (Study 3.3), and South Africa (Study 3.4).

Multiethnics' network location. Contrary to the long-held belief that multiethnic individuals are universally rejected 'marginal men'[15] at the peripheries of their communities (Park, 1928; Stonequist, 1935), my analyses of friendship networks at English schools indicated that multiethnic Black-White and Asian-White individuals are as well integrated into their year group (Study 3.1) or classroom (Study 3.2) networks as monoethnic individuals. However, this does not mean that they are well placed to facilitate positive relations between members of different monoethnic groups. My analyses of the propensity of multiethnic individuals to occupy liaison broker positions, and thus to link members of the monoethnic groups combined in their multiethnic background, provided early and partial support to the argument that multiethnics build bridges across ethnic divides. Across two independent English samples, I found that multiethnic adolescents were brokers more often than their monoethnic peers, both in their classrooms (Study 3.2) and in the larger year group network (Study 3.1). However, the number of broker positions they occupied did not exceed the brokerage levels that would be expected under a chance model in which

[15] The term was first coined by Park (1928) and defined as "living and sharing intimately in the cultural life and traditions of two distinct peoples, never quite willing to break, even if he were permitted to do so, with his past and his traditions, and not quite accepted, because of racial prejudice, in the new society in which he now seeks to find a place." (p. 892)

network ties would be distributed randomly across a network including similarly sized ethnic groups and similar tie density.

Such social network-based evidence for contextual intermediacy among multiethnic individuals in England accords with recent studies which suggested that the contents of multiethnics' ego networks reflect their multiethnic background (e.g., Muttarak, 2014). However, the research presented here goes beyond the existing literature by considering not only multiethnic individuals' ego networks (i.e., their friendship nominations) but also the network data of other individuals within the wider network, including their self-reported friendship ties to multiethnic people. It adds quantitative evidence to anecdotal accounts such as Erica Koji Stowe's description, cited at the beginning of this chapter, of being a bridge between her different monoethnic friendship groups, or O'Hearn's report that "biracials blended in both directions, moving between the groups, though always somewhat outside of each" (O'Hearn, 1998, p. xi). Nevertheless, my analyses on brokerage among multiethnics do not suggest that multiethnic individuals deliberately seek out broker positions or are pushed into intermediary locations by monoethnic majority or minority group members. Instead, multiethnic brokerage may reflect the small size of the multiethnic population in England and thus an opportunity structure within their social environments that makes multiethnic brokerage particularly likely. Indeed, especially in Study 3.1 which included larger year group networks, multiethnic participants would in some instances have had to occupy more than 56 broker positions in order to exceed brokerage levels expected by chance; a level that is theoretically possible but, because participants could only nominate up to ten friends, predicates considerable popularity (i.e., a high indegree) and appears unlikely.

My analyses of data collected in South Africa (Study 3.4) support the argument that multiethnics' contextual intermediacy reflects the opportunity structure of their social networks. In this study, where the multiethnic Coloured sample and the monoethnic minority sample of Black South Africans were very similar in size, Coloureds were brokers as commonly as Blacks. Nevertheless, the South African and English intergroup contexts also differ along several additional dimensions that make a direct comparison of the findings

problematic. Importantly, unlike the Asian-White and Black-White populations in England, South Africa's multiethnic (Coloured) population is not directly related to South Africa's monoethnic majority and minority groups – Black and White South Africans (e.g., Adhikari, 2013). Colouredness has historically been imbued with porous category boundaries and a degree of fluidity, and it has been described as an "interstitial" identity (Adhikari, 2004, p. 168) characterised by "racial hybridity" (Adhikari, 2005, p. 6). However, the Coloured South African population today is seen as separate from both Black and White groups and, although racial miscegenation has at least historically been central to the Coloured identity, Colouredness has never been construed in terms of a combination of Black (African) and White backgrounds. The composition of an individual's social network might reflect their social identity (see Leszczensky et al., 2019); but for Coloured South Africans, in spite of their intermediate status in South African society, this might not translate into brokerage between Blacks and Whites.

Implications of brokerage. The research presented in Chapter 2 and previous lab-based studies suggested that for exposure to multiethnic individuals to affect intergroup relations, multiethnic identities likely need to be salient (e.g., Gaither et al., 2018; Halberstadt & Winkielman, 2014). In the complex real-life environments wherein intergroup relations develop, multiethnic identities often remain invisible (Kang & Bodenhausen, 2015). However, because the structure and content of an individuals' friendship network reflect and may even accentuate their social identity (Leszczensky et al., 2019), multiethnic identities may be especially salient when multiethnics occupy broker positions. Studies 3.2 and 3.3 tested whether multiethnics in broker positions influence how majority and minority group members react to the presence of multiethnics.

Building on results reported in Study 2.1, in Study 3.2 I addressed both context-level indicators of intergroup relations and, in hierarchical linear models that reflected the nested and longitudinal structure of the data, individual-level indicators of intergroup relations. The location of multiethnic individuals in their networks was mostly not significantly associated with context-level indicators of intergroup relations. However, intergroup relations tended to be more positive when multiethnics occupied broker positions (albeit

non-significantly), and at wave 2, homophily (i.e., the proportion of intra-group ties) was significantly lower in classrooms where multiethnics occupied broker positions. These findings suggest that intergroup relations across the classroom could benefit from multiethnics in broker positions. The cross-sectional nature of these analyses cannot establish any causal relationship between brokerage and context-level intergroup relations, but these finding are nevertheless in line with previous research on positive mere presence effects (e.g., Levy et al., 2017; Young et al., 2013).

Such evidence for positive implications of multiethnic brokers could not be replicated on the individual level. While I found that majority group members were unaffected by the presence of multiethnic brokers in class, minority group members reacted negatively to the presence of multiethnic brokers. Contrary to the argument that multiethnics can positively affect wider intergroup relations (e.g., Alibhai-Brown, 1999; Levy et al., 2019; Parker & Song, 2001b), I found that the presence of multiethnic classmates was associated with fewer outgroup friendships over time only if at least some of these multiethnics occupied broker positions. A similar negative longitudinal trend emerged regarding minority participants' attitudes towards Whites, which were more negative in classrooms where multiethnic students occupied broker positions. Although both effects were small, they raise the possibility that, among monoethnic minority group members, multiethnic brokers could hamper intergroup relations.

To my knowledge, Study 3.2 is the first to incorporate liaison brokerage into research on intergroup relations, and it did not afford further analyses of the variables that could account for minority participants' negative reaction to multiethnic brokers. However, several hypotheses are plausible and should be tested in future research. For example, rather than increase the salience of multiethnic identities, multiethnics in broker positions could increase ethnic ambiguity through associating simultaneously with both of the monoethnic groups that converge in their mixed background. As I discussed in Chapter 1, such heightened category ambiguity is likely to enhance intergroup discrimination (e.g., Gaither et al., 2018; Halberstadt & Winkielman, 2014; Young et al., 2013). The online experiment presented in Study 3.3 allowed me to assess reactions to multiethnic brokers when both the

multiethnic identity of certain network members and their broker positions were objectively clear. Under such low levels of ambiguity, multiethnic brokerage was positively connoted, and networks that included multiethnic individuals in broker positions were associated with more positive intergroup relations and deemed more attractive than networks where multiethnics did not occupy broker positions. However, Study 3.3 included only majority monoethnic participants and therefore cannot help explain the negative individual-level effects observed among minority group members in Study 3.2. Future iterations of the paradigm presented in Study 2.2 should include a minority sample to test whether the positive connotations of brokerage are limited to majority perceivers, or whether minority group members also react positively to brokers under conditions of low ambiguity.

Another potential reason for the backlash observed in Study 3.2 is that multiethnic brokers might, through their location quite literally at the border between ingroup and outgroup, blur intergroup boundaries and thus threaten intergroup distinctiveness (Schmid et al., 2009). Heightened group-based threat perceptions have generally been associated with more negative intergroup relations (Riek, Mania, & Gaertner, 2006; Stephan & Stephan, 2001). In particular, increased intergroup similarity and threatened distinctiveness can lead to discriminatory behaviour towards the outgroup in an attempt to re-establish intergroup differentiation. Such backlash effects are usually limited to individuals who identify strongly with their ingroup (Jetten et al., 2004; Jetten et al., 2001; Schmid et al., 2009). Considering that minority group members have previously been found to identify more strongly with their ingroup than majority group members do (Saguy, Dovidio, & Pratto, 2008, Study 2; Simon & Brown, 1987), this might help explain why in Study 3.2 they were only observed among minority participants. However, contrary to such reasoning, in Study 3.2 ingroup identification did not moderate participants' reactions to the location of multiethnics within their social networks. Moreover, individuals with high SDO, who are particularly invested in clear group hierarchies (Kauff et al., 2016; Sidanius & Pratto, 1999), were even found to be less sensitive to the network location of multiethnics than individuals with low SDO. Future research could consider in detail whether multiethnic brokers induce distinctiveness threat – especially among minority group members for whom well-defined group boundaries and ingroup norms facilitate effective collective action and majority influence (see Warner,

Hornsey, & Jetten, 2007) – and whether this accounts for negative reactions to multiethnic brokers.

Finally, multiethnics in broker positions might also be the *product*, rather than *precursor,* of more negative intergroup relations. The positive interpretation of multiethnic brokers as "bridges" in Study 3.3 and the finding that multiethnics do not occupy more broker positions than expected under a chance model (Studies 3.1 and 3.2), suggest that multiethnics are not pushed into intermediary locations by monoethnic groups in conflict. However, future studies on multiethnic brokerage could include longitudinal network data and test both predictors of brokerage and provide more reliable insights into the likely direction of any negative association between the number of multiethnic brokers and intergroup relations.

Evaluative Intermediacy

As I outlined in Chapter 1, how multiethnic people are perceived by monoethnic majority and minority group members has important implications for whether and how multiethnic individuals could affect intergroup relations. Research on intergroup contact in particular, which will be the focus of Chapter 4, has placed a strong emphasis on the role of social categorisation and social category salience during contact experiences (e.g., Brown & Hewstone, 2005; van Oudenhoven et al., 1996; see also Love & Hewstone, *in press*). By assessing whether monoethnic people extend ingroup favouritism to multiethnic people, treat them with an intermediate level of favourability, or fail to distinguish between monoethnic outgroup members and multiethnics, we can gain indirect insight into the social categorisation of multiply categorisable individuals. So far, most research on social categorisation of multiethnic targets has been conducted in the US and among majority group members (see Kang & Bodenhausen, 2015; Pauker, Meyers, et al., 2018). This chapter has considered previously under-researched intergroup contexts by including monoethnic majority and minority samples from England (Study 3.1) and South Africa (Study 3.4). I tested the assumption that people of multiethnic background attract what I term 'evaluative intermediacy': that they are evaluated less positively than ingroup members but more positively than monoethnic outgroup members.

In both Study 3.1 and Study 3.4, I found that majority and minority monoethnic participants consistently evaluated their ethnic ingroup more favourably than they evaluated multiethnics. Contrary to recent evidence suggesting that minority group members often include multiethnic people in the ingroup (Gaither et al. 2016; Ho et al., 2017), these findings suggest that multiethnics are either perceived as a separate multiethnic outgroup or included within a monoethnic outgroup. They do not, however, support the claim that minority group members apply rules of hypodescent when categorising multiethnic people, in which case they would consistently associate multiethnics with a monoethnic minority.

Furthermore, both Study 3.1 and 3.4 included evidence to suggest that members of the multiethnic target group are evaluated with intermediate levels of favorability. In the South African context (Study 3.4), where Coloured South Africans constitute a visible and well-established multiethnic group, White and Black South Africans explicitly rated their ingroup as more similar to Coloureds than to the White or Black outgroup, respectively. They also reported intermediate attitudes towards Coloureds, a finding that replicates Lolliot (2013) and extends his findings from White to Black perceivers. Similarly, in Study 3.1 Asian and White participants reported less intergroup anxiety towards multiethnics than towards majority or minority monoethnic outgroup members, respectively. Remarkably, given the small size of the multiethnic population relative to other monoethnic groups in England, and thus limited opportunities for contact, members of all monoethnic groups in Study 3.1 also reported having more positive contact with Mixed British people than with monoethnic outgroup members. Overall, these findings replicate recent research suggesting that multiethnic targets are judged more favourably than monoethnic outgroup targets when their ethnicity is made explicit (Halberstadt & Winkielman, 2014), and that interactions with clearly biracial individuals are more positive than interactions with monoethnic outgroup members (Gaither et al., 2018). They also accord with research on social categorisation of multiethnic social stimuli, which suggests that even though monoethnic categories are more accessible, perceivers are able to assign multiethnic targets to multiethnic categories (Chen & Hamilton, 2012, Experiment 5; Peery & Bodenhausen, 2008, Experiment 2; Willadsen-Jensen & Ito, 2006).

However, Study 3.1 also included several instances where evaluations of multiethnics matched evaluations of monoethnic outgroup members, including in terms of trust (among all monoethnic participants), attitudes (among Asian and White participants), and intergroup anxiety (among Black participants). These findings suggest that although monoethnic majority and minority group members can relate to multiethnics as a target group that is distinct from a monoethnic outgroup, this does not always manifest across all indices of intergroup relations nor for all participant groups.

These findings contribute insights into the evaluation of multiply categorisable individuals, a group that has thus far mostly been excluded from social psychological research on intergroup relations or been subsumed under a monoethnic minority group label (Gaither, 2015). Nevertheless, research on intergroup evaluations can provide only indirect insights into how monoethnic individuals categorise multiethnic others in real-life contexts. My research showed that participants were able to self-report a distinct set of evaluations for multiethnic and monoethnic outgroup targets when explicitly asked to do so in a survey. However, monoethnic categories continue to be considerably more prevalent and tend to be more accessible than multiethnic categorisations (Kang & Bodenhausen, 2015). It is therefore far from certain that monoethnic individuals would engage spontaneously with multiethnics as members of an intermediate group that is more similar to their ingroup, less anxiety inducing, and generally more positively connoted, than a monoethnic outgroup. Furthermore, different categorisation tendencies could conceivably produce similar patterns of evaluation. For example, equivalent evaluations of multiethnic and monoethnic outgroups could reflect the categorisation of multiethnic people as members of a monoethnic outgroup, or their categorisation as members of a separate (multiethnic) outgroup. Similarly, the evidence for evaluative intermediacy reported in Chapter 3 cannot disambiguate whether multiethnics are categorised as members of a group that overlaps in part with the ingroup and in part with the monoethnic outgroup, or whether they are categorised as members of a distinct multiethnic category.

Future research on the perception of multiethnic targets would benefit from more fine-grained analyses of how perceivers from specific monoethnic groups relate to members of

specific multiethnic backgrounds. The survey included in Study 3.1 did not afford such analyses because it included items referring to a broad category of Mixed British people instead of separate items for Asian-White and Black-White targets. More nuanced measures would allow researchers to assess whether evaluative intermediacy is extended to members of non-overlapping multiethnic categories (e.g., Asians' evaluations of Black-Whites), or whether intermediate evaluations are reserved for multiethnic targets who share part of their ethnic background with the monoethnic perceiver (e.g., Asians' evaluations of Asian-Whites); a finding that would suggest that multiethnics are categorised as partial ingroup members (Crisp & Hewstone, 2007; Love & Levy, 2019). Relatedly, and where sample size allows, future research might also consider whether members of different subgroups subsumed under the same broad ethnic category (e.g., Bangladeshis and Indians subsumed under the label 'Asian British') express equal levels of ingroup bias when evaluating their broadly defined ingroup (e.g., Asian British people), or whether some subgroups are more likely than others to treat their nominal ingroup as they treat other outgroups. Such a lack of ingroup preference among some participants could, for example, account for moderate to occasionally high correlations between ingroup and outgroup evaluations in Study 3.1 (see Tables A3.9-3.11).

Overall, the evidence for evaluative intermediacy accrued across two very different intergroup contexts suggests that multiethnics are seen as distinct from the ingroup but may in part be associated with the monoethnic outgroup. More direct evidence for how multiethnic people are categorised spontaneously and in real-life social contexts is still required. However, evaluative intermediacy suggests that the relatively positive evaluations of multiethnics could generalise to more positive evaluations of the monoethnic outgroup – for example, through secondary transfer processes (Lolliot et al., 2013; Swart, 2007; Tausch et al., 2010), which I will address in Chapter 4. Evidence for evaluative intermediacy also highlighted that engaging with multiethnics may be easier (e.g., less fraught with anxiety) than engaging with monoethnic outgroup members. Indeed, monoethnic majority and minority group members reported having more multiethnic friends than monoethnic outgroup friends. Such positive contact experiences and their direct and indirect effects on intergroup relations more widely are the focus of Chapter 4.

Conclusion

Much of the optimism surrounding the growth of multiethnic populations seems to be founded in the belief that individuals of multiple ethnic backgrounds are situated at the threshold between the ingroup and a more distant monoethnic outgroup, and thus well-placed to broker positive intergroup relations (see Love & Levy, 2019). In this chapter, I considered intermediacy both in socio-structural terms (regarding multiethnic individuals' social network locations) and in evaluative terms (regarding how multiethnic individuals are seen by monoethnic majority and minority group members). Evidence collected across three very different intergroup contexts and based on social network, survey, and experimental data, suggested that multiethnic individuals can indeed be described as both contextually and evaluatively intermediate. However, the research presented in this chapter also indicated that it is unlikely that multiethnic individuals improve intergroup relations passively – through their presence within a real-life social context – even when they occupy bridge-building positions within their networks. The present chapter therefore extends the conclusion reached in Chapter 2; that in complex real-life environments the potential of multiethnic people to affect intergroup relations is unlikely to be realised through passive context-level exposure.

Nevertheless, the research presented in this chapter suggests that multiethnic individuals may be well-placed to positively influence intergroup relations in more intimate interactions with monoethnic others. For example, by occupying broker positions and attracting lower levels of intergroup anxiety, multiethnic people may facilitate both indirect and direct contact between members of different monoethnic groups. Furthermore, their partial association with monoethnic outgroups could facilitate the transfer of monoethnic individuals' moderately positive attitudes towards multiethnics to more distant and less approachable monoethnic outgroups. While the research presented thus far focused on mere presence effects independently of individual-level contact experiences, Chapter 4 considers whether it is instead through intergroup contact experiences that the potential of multiethnic people to positively affect intergroup relations can be realised most effectively.

Appendix Chapter 3

Table A3.1
Study 3.1: Factor Loadings for Attitudes Towards Minority Among White Participants

#	Item	Factor
1	Attitudes towards Asian or Asian British people	.94
2	Attitudes towards Black or Black British people	.94

Note. Participants were asked: "Please rate how you feel about people from the following groups on a scale that runs from 0 (cold, indicating negative feelings) to 100 (warm, indicating positive feelings)."

Table A3.2
Study 3.1: Factor Loadings for Trust Towards Minority Among White Participants

#	Item	Factor
1	How many of them do you think can be trusted: Asian or Asian British	.96
2	How many of them do you think can be trusted: Asian or Asian British	.96

Note. Participants were asked: "Thinking about the following groups, how many of them do you think can be trusted?"

Table A3.3
Study 3.1: Factor Loadings for Anxiety Towards Whites

#	Item	Factor
1	Interacting with Whites: Anxious	.75
2	Interacting with Whites: Confident *	.79
3	Interacting with Whites: Relaxed *	.80
4	Interacting with Whites: Self-conscious	.61

Note. Asterisks (*) mark reverse coded items. Participants were asked: "If you were interacting for the first time with a White or White British person, how would you expect to feel?"

Table A3.4
Study 3.1: Factor Loadings for Anxiety Towards Multiethnics

#	Item	Factor
1	Interacting with Multiethnics: Anxious	.73
2	Interacting with Multiethnics: Confident *	.80
3	Interacting with Multiethnics: Relaxed *	.82
4	Interacting with Multiethnics: Self-conscious	.58

Note. Asterisks (*) mark reverse coded items. Participants were asked: "If you were interacting for the first time with a Mixed or Mixed British person, how would you expect to feel?"

Table A3.5
Study 3.1: Factor Loadings for Anxiety Towards Minority Among White Participants

#	Item	Factor 1	Factor 2
1	Interacting with Asians: Anxious	.47	.66
2	Interacting with Asians: Confident *	.86	
3	Interacting with Asians: Relaxed *	.84	
4	Interacting with Asians: Self-conscious		.92
5	Interacting with Blacks: Anxious	.49	.64
6	Interacting with Blacks: Confident *	.86	
7	Interacting with Blacks: Relaxed *	.85	
8	Interacting with Blacks: Self-conscious		.92

Note. Asterisks (*) mark reverse coded items. Participants were asked: "If you were interacting for the first time with a [Asian or Asian British/Black or Black British] person, how would you expect to feel?"

Table A3.6
Study 3.1: Factor Loadings for Anxiety Towards Asians

#	Item	Factor
1	Interacting with Asians: Anxious	.76
2	Interacting with Asians: Confident *	.79
3	Interacting with Asians: Relaxed *	.82
4	Interacting with Asians: Self-conscious	.58

Note. Asterisks (*) mark reverse coded items. Participants were asked: "If you were interacting for the first time with an Asian or Asian British person, how would you expect to feel?"

Table A3.7
Study 3.1: Factor Loadings for Anxiety Towards Blacks

#	Item	Factor
1	Interacting with Blacks: Anxious	.77
2	Interacting with Blacks: Confident *	.80
3	Interacting with Blacks: Relaxed *	.82
4	Interacting with Blacks: Self-conscious	.61

Note. Asterisks (*) mark reverse coded items. Participants were asked: "If you were interacting for the first time with a Black or Black British person, how would you expect to feel?"

Table A3.8
Study 3.1: Lowest and Highest Brokerage Scores Expected Under a Chance Model Across Ethnic Groups

	White	Asian-White	Asian	Black	Black-White
Asian-White Brokerage	0.14, 6.77	3.99, 55.95	0.12, 32.50		
Black-White Brokerage	0.11, 16.14			0.34, 28.60	1.99, 47.45

Table A3.12
Study 3.2: Lowest and Highest Brokerage Scores Expected Under a Chance Model Across Ethnic Groups

	White	Asian-White	Asian	Black	Black-White
Asian-White Brokerage	0.24, 5.23	1.93, 12.34	0.51, 8.21		
Black-White Brokerage	0.23, 8.05			0.68, 11.29	1.36, 11.29

Table A3.9
Study 3.1: Means, Standard Deviations and Inter-Item Correlations of Key Variables for Evaluative Intermediacy Analyses Among White Participants

	Variable	Mean (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12
1	Attitudes towards Whites	80.66 (19.29)	-	.35**	-.39**	.27**	.61**	.17**	-.33**	.05	.59**	.20**	-.34**	.07
2	Trust towards Whites	3.67 (0.88)		-	-.24**	.19**	.28**	.77**	-.23**	-.02	.25**	.78**	-.24**	.02
3	Anxiety towards Whites	2.26 (0.88)			-	-.16**	-.25**	-.15**	.88**	-.09*	-.23**	-.16**	.90**	-.08*
4	Self-reported friendship contact with Whites	4.83 (0.44)				-	.11**	.08*	-.14**	.12**	.13**	.10*	-.14**	.19**
5	Attitudes towards minority	72.95 (20.62)					-	.43**	-.39**	.20**	.83**	.38**	-.35**	.21**
6	Trust towards minority	3.55 (0.88)						-	-.28**	.12**	.34**	.89**	-.25**	.14**
7	Anxiety towards minority	2.40 (0.85)							-	-.16**	-.33**	-.25**	.96**	-.13**
8	Self-reported friendship contact with minority	3.86 (1.07)								-	.14**	.11**	.13**	.66**
9	Attitudes towards multiethnics	73.63 (21.87)									-	.26**	-.34**	.24**
10	Trust towards multiethnics	3.56 (0.93)										-	-.26**	.17**
11	Anxiety towards multiethnics	2.36 (0.86)											-	-.14*
12	Self-reported friendship contact with multiethnics	3.93 (1.22)												-

Note. *SD* = Standard deviation, $p < .05$ *, $p < .001$ **.

Table A3.10
Study 3.1: Means, Standard Deviations and Inter-Item Correlations of Key Variables for Evaluative Intermediacy Analyses Among Asian Participants

	Variable	Mean (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12
1	Attitudes towards Asians	81.49 (19.50)	-	.32**	-.39**	.32**	.33**	.11*	-.18**	.16**	.41**	.16**	-.25**	.12*
2	Trust towards Asians	3.61 (0.93)		-	-.28**	.17**	.11**	.52**	-.18**	.10**	.20**	.62**	-.22**	.14**
3	Anxiety towards Asians	2.07 (0.79)			-	-.19**	-.14**	-.11*	.64**	-.07	-.19**	-.17**	.72**	-.06
4	Self-reported friendship contact with Asians	4.74 (0.68)				-	.09*	.13**	-.12*	.26**	.09*	.12**	-.10*	.25**
5	Attitudes towards Whites	66.62 (21.92)					-	.40**	-.38**	.46**	.65**	.22**	-.29**	.26**
6	Trust towards Whites	3.24 (1.01)						-	-.33**	.31**	.31**	.74**	-.21**	.20**
7	Anxiety towards Whites	2.39 (0.76)							-	-.23**	-.28**	-.25**	.81**	-.20**
8	Self-reported friendship contact with Whites	4.19 (0.97)								-	.30**	.19**	-.19**	.50**
9	Attitudes towards multiethnics	67.87 (22.05)									-	.25**	-.37**	.33**
10	Trust towards multiethnics	3.29 (1.04)										-	-.27**	.21**
11	Anxiety towards multiethnics	2.32 (0.75)											-	-.26**
12	Self-reported friendship contact with multiethnics	3.82 (1.18)												-

Note. *SD* = Standard deviation, $p < .05$ *, $p < .001$ **.

Table A3.11
Study 3.1: Means, Standard Deviations and Inter-Item Correlations of Key Variables for Evaluative Intermediacy Analyses Among Black Participants

	Variable	Mean (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12
1	Attitudes towards Blacks	81.48 (20.72)	-	.24**	-.33**	.18*	.41**	.20*	-.21**	.13	.63**	.24**	-.28**	.22**
2	Trust towards Blacks	3.23 (1.11)		-	-.30**	.06	.21**	.43**	-.11	.17*	.30**	.71**	-.29**	.16
3	Anxiety towards Blacks	2.05 (0.81)			-	-.16*	-.23**	-.12	.55**	-.18*	-.36**	-.32**	.79**	-.22**
4	Self-reported friendship contact with Blacks	4.79 (0.63)				-	.08	.10	-.16*	.17*	.18*	.09	-.17*	.38**
5	Attitudes towards Whites	61.60 (25.40)					-	.42**	-.38**	.40**	.61**	.30**	-.32**	.33**
6	Trust towards Whites	2.89 (1.12)						-	-.16*	.41**	.27**	.63**	-.18*	.17*
7	Anxiety towards Whites	2.27 (0.81)							-	-.14	-.27**	-.18*	.67**	-.27**
8	Self-reported friendship contact with Whites	4.05 (1.16)								-	.30**	.33**	-.20*	.42**
9	Attitudes towards multiethnics	69.27 (24.44)									-	.40**	-.47**	.40**
10	Trust towards multiethnics	2.94 (1.13)										-	-.35**	.25**
11	Anxiety towards multiethnics	2.20 (0.77)											-	-.36**
12	Self-reported friendship contact with multiethnics	4.20 (1.08)												-

Note. *SD* = Standard deviation, $p < .05$ *, $p < .001$ **.

Table A3.13
Study 3.2: Means, Standard Deviations and Inter-Item Correlations of Key Variables Among Majority Participants

	Variable	Mean (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12
1	Age	181.14 (4.52)	-	-.11**	-.04	-.03	.02	.02	.04	.04	-.15**	.03	.16**	.14**
2	Gender	1.44 (0.50)		-	.06	.07	.12**	.07	.00	.05	.07	.21**	.13**	.16**
3	Socioeconomic status	90.93 (39.91)			-	.17**	.18**	.11	-.09*	-.09	.09*	.21**	-.08	.01
4	Multiethnic friendship ties	0.21 (0.45)				-	.03	-.02	.05	.07	.34**	.24**	.04	.22**
5	Attitudes towards minority (W1)	71.58 (25.83)					-	.25**	.03	.15**	.00	.06	.03	.01
6	Attitudes towards minority (W3)	76.30 (20.71)						-	-.02	.14**	-.08	-.08	-.03	.00
7	Friendship ties to minority (W1)	0.38 (0.72)							-	.22**	.06	.14**	.31**	.10*
8	Self-reported friendship contact with minority (W3)	3.79 (1.27)								-	.11*	.07	.19**	-.01
9	Number of multiethnic students in class	1.99 (0.94)									-	.41**	.21**	.17**
10	Number of multiethnic brokers in class	0.37 (0.48)										-	.03	.36**
11	Number of minority students in class	5.34 (4.49)											-	-.17**
12	Network boundary	0.66 (0.47)												-

Note. Age was measured in months. *SD* = standard deviation, W1 = wave 1, W3 = wave 3, $p < .05$ *, $p < .001$ **.

Table A3.14
Study 3.2: Means, Standard Deviations and Inter-Item Correlations of Key Variables Among Minority Participants

	Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11	12
1	Age	181.43 (4.69)	-	-.13**	.07	-.02	-.03	-.05	-.01	-.08	-.12*	-.05	-.15**	.23**
2	Gender	1.52 (0.50)		-	.20**	.01	.02	.03	-.10*	-.12*	.09	.08	-.009	-.04
3	Socioeconomic status	70.75 (38.13)			-	.11*	.08	.00	.14**	.12	.09	.21**	.11*	.00
4	Multiethnic friendship ties	0.22 (0.46)				-	.06	-.02	.04	.02	.10*	.19**	-.01	.17**
5	Attitudes towards Whites (W1)	68.90 (26.03)					-	.21**	.19**	.20**	.03	.04	.17**	-.09
6	Attitudes towards Whites (W3)	77.39 (19.16)						-	.10	.18**	-.03	-.06	.02	-.08
7	Friendship ties to Whites (W1)	0.51 (0.89)							-	.36**	-.05	.11*	.48**	-.08
8	Self-reported friendship contact with Whites (W3)	2.53 (1.15)								-	-.04	.02	.36**	-.07
9	Number of multiethnic students in class	2.13 (0.96)									-	.41**	.01	.03
10	Number of multiethnic brokers in class	0.38 (0.49)										-	.02	.30**
11	Number of minority students in class	6.96 (7.94)											-	-.56**
12	Network boundary	0.83 (0.38)												-

Note. Age was measured in months. SD = standard deviation, W1 = wave 1, W3 = wave 3, $p < .05$ *, $p < .001$ **.

Table A3.15
Study 3.4: Means, Standard Deviations, and Inter-Item Correlations of Key Variables Among Black and White South African Participants

			White South Africans					Black South Africans				
	Variable	Mean (*SD*)	1	2	3	4	5	A	B	C	D	E
1	Black-White similarity	2.75 (1.30)	-	.60**	.45**	.11*	.28**					
2	White-Coloured similarity	3.25 (1.24)		-	.17**	.05	.32**					
3	Attitudes towards Blacks	62.55 (21.91)			-	.37**	.64**					
4	Attitudes towards Whites	80.94 (13.71)				-	.47**					
5	Attitudes towards Coloureds	67.68 (18.39)					-					
A	Black-Coloured similarity	3.89 (1.36)						-	.55**	.30*	.12	.25
B	Black-White similarity	2.50 (1.42)							-	.01	.25**	.21
C	Attitudes towards Blacks	83.85 (17.95)								-	.06	.21
D	Attitudes towards Whites	59.76 (23.56)									-	.72**
E	Attitudes towards Coloureds	65.19 (20.74)										-

Note. *SD* = standard deviation, $p < .05$ *, $p < .001$ **.

Chapter 4: Intergroup Contact

In Chapters 2 and 3, I considered the implications that exposure to multiethnic individuals would have for intergroup relations. In order to test the argument that the growth of the multiethnic population alone – and thus the increased presence of individuals of multiple ethnic backgrounds within social contexts – would help increase intergroup harmony, I considered contextual- and individual-level variables simultaneously, thus distinguishing the attributes of a social environment from individuals' intergroup contact experiences within that environment. Although I argue that this can approximate the field research presented in Chapters 2 and 3 to the more common experimental designs in the research literature on multiethnic identities (e.g., Levy et al., 2017; Young et al., 2013), it may be precisely in those more personal individual-level encounters where the potential of multiethnics to affect wider intergroup relations really lies.

In this chapter, I present three studies that address those intimate encounters between monoethnic and multiethnic individuals. Studying the effects of positive intergroup contact experiences, my aim is to contribute the first steps towards including the study of multiethnic individuals into the intergroup contact literature; a literature which thus far has focused mostly on individuals that fall on either side of a clearly defined intergroup divide, but which can nevertheless accommodate experiences with individuals whose social identities blur established intergroup boundaries.

Intergroup Contact Effects

As I have outlined in Chapter 1, research on positive interactions across group divides has shown that such contact experiences help to reduce prejudice, improve intergroup attitudes, and can even initiate a virtuous circle of intergroup behaviour where positive contact begets an increased willingness to engage in more cross-group interactions in the future (Davies, Tropp, Aron, Pettigrew, & Wright, 2011; Dovidio et al., 2017; Pettigrew & Tropp, 2006; Wölfer & Hewstone, 2018). The biggest promise of positive intergroup contact experiences lies in the

finding that the effects of such experiences can transcend the individuals engaged in the encounter.

A substantial body of research conducted across ethnic, religious, cultural, political, and many other social faultlines now shows that intergroup contact experiences affect not only cognition, emotion, and behaviour directed towards the contact partner, but towards entire *groups* and their members (see review by Brown & Hewstone, 2005). However, recent research has highlighted further principles of such contact generalisation that reach beyond individual-to-group patterns. These include extended contact effects, whereby contact experiences affect uninvolved individuals who benefit from ingroup members' outgroup contact (Wright et al., 1997), and secondary transfer effects, whereby contact with members of one, 'primary' outgroup also affects relations with other uninvolved 'secondary' outgroups (Pettigrew, 2009). Taken together, research testifying to these additional effects of contact highlights that intergroup contact "exerts influence at a higher level of abstraction than the interaction between individual representatives of those groups would initially seem to suggest" (Love & Hewstone, *in press*, p. 1), making it a now well-established tool for the reduction of intergroup conflict.

So far, intergroup contact research has mostly focused on interactions between individuals on either side of a well-established group divide. However, recent research on exposure to, and interactions with, individuals of mixed background suggests that such contact could also help to improve relations between simple-identity (e.g., monoethnic) groups. For example, Sanchez et al. (2015, Study 2) studied monoracial participants' essentialist conception of racial categories before and after 10-minute long interactions with confederates in the laboratory. They found participants' racial essentialism to be reduced immediately after the interaction and again two weeks later, but only if they perceived their interaction partner to be racially ambiguous (vs. unambiguously monoracial). Furthermore, Gaither et al. (2018) found interactions between unambiguously biracial confederates and White participants to be more effective at reducing participants' racial essentialism than interactions with confederates whose racial category membership was either ambiguous or unambiguously Black. These findings suggest that interactions with individuals who defy common category boundaries can reduce

racially essentialist thinking. However, because a reduction in essentialist thinking is not consistently or necessarily directly associated with a reduction in prejudice (Haslam et al., 2002; Rangel & Keller, 2011), such research does not address directly the question of whether contact with multiethnic individuals can improve intergroup relations between members of different monoethnic groups.

So far, research on interactions that involve individuals whose identities straddle conventional social divisions, who are multiply identified (e.g., individuals with dual or multicultural/-ethnic background) and may be perceived as such by their contact partners, does not address how such encounters affect intergroup relations. In three studies on real-life contact and intergroup relations that combine social network and survey data, the research presented here begins to address this gap in the literature. Specifically, I ask whether monoethnic individuals' friendships with multiethnic individuals affect their relations with monoethnic outgroup members; that is, whether monoethnic majority and minority individuals' positive direct and extended contact with multiethnic others is associated with more positive direct contact with, and more positive attitudes and trust, and less anxiety towards monoethnic outgroup members.

Processes Via Which Contact Effects Occur

As I have outlined in Chapter 1 and discussed elsewhere (Love & Levy, 2019), various well-established processes through which intergroup contact affects intergroup relations can accommodate contact experiences with individuals of multiethnic background. Over the past 65 years, theory and research on intergroup contact has closely linked contact effects to social categorisation and social identity-related processes (Allport 1954; Brown & Hewstone, 2005; Hewstone & Swart, 2011); for example, by showing that a contact partner's group membership needs to be salient during the interaction if contact is to affect outgroup attitudes (e.g., van Oudenhoven et al., 1996). Therefore, any hypotheses regarding the efficacy of contact with multiethnic individuals and the cognitive and affective processes underpinning contact effects, need to take account of how monoethnic perceivers categorise their multiethnic contact partners. Below, I outline two social categorisation outcomes that could facilitate positive

effects of contact with multiethnics: categorisation as members of a separate multiethnic category and categorisation as monoethnic outgroup members.

Categorisation as a separate outgroup: Secondary transfer effects. Previous experimental research has shown that multiethnic categorisation is possible, even though monoethnic category labels are more accessible to monoethnic perceivers (Chen & Hamilton, 2012; Freeman et al., 2010). In line with this argument, in Chapter 3 I also showed that monoethnic individuals are able to relate differently to monoethnic and multiethnic outgroups. If multiethnic contact partners are categorised as members of a distinct multiethnic outgroup, the effect of contact with multiethnics on intergroup relations with monoethnic outgroup members can best be understood in terms of secondary transfer (Pettigrew, 2009).

Secondary transfer describes a process whereby contact experiences with one outgroup (the primary outgroup) affect evaluations of a second uninvolved outgroup (the secondary outgroup). Secondary transfer effects (STEs) are well-documented across various contexts and in correlational (Schmid, Hewstone, & Al Ramiah, 2013; Schmid, Hewstone, Küpper, Zick, & Wagner, 2012; Tausch et al., 2010; Pettigrew, 2009), longitudinal (Eller & Abrams, 2004; Lolliot, 2013; van Laar, Levin, Sinclair, & Sidanius, 2005), and experimental (Al Ramiah, 2009; Shook, Hopkins, & Koech, 2016) studies. The most robust studies found STEs to persist after controlling for secondary outgroup contact (e.g., Lolliot, 2013; Tausch et al., 2010). Furthermore, a handful of studies have also ruled out potentially confounding effects of shared method variance (e.g., Lolliot, 2013, Study 5; Pettigrew, 2009; Schmid et al., 2012, Study 2) and demand characteristics (Tausch et al., 2010, Study 3), thus strengthening the argument that positive contact with one outgroup can improve intergroup relations more widely.

Research on the mechanism of secondary transfer attributes STEs primarily to affect generalisation, whereby the affective value of the primary outgroup generalises to the secondary outgroup (Pettigrew, 2009; see also Shook, Fazio, & Eiser, 2007; Walther, 2002). STEs have mostly been linked to the generalisation of attitudes (e.g., Lolliot, 2013, Tausch et al., 2010), but more recent research has also highlighted the generalisation of empathy and intergroup anxiety (Vezzali & Giovannini, 2012). This chapter includes one of the first studies

to investigate the secondary transfer of both direct and extended contact effects.[1] Furthermore, it goes beyond established affective mediators of secondary transfer and, in addition to attitudes, tests the contribution of trust and anxiety as mediators of STEs of contact with multiethnics.

While STEs have been found in contexts that involve a diverse range of groups, the transfer of contact effects from one outgroup to another is by no means guaranteed (e.g., van Laar et al., 2005; Shook et al., 2016). A key moderating factor seems to be the similarity between primary and secondary outgroup (Lolliot, 2013; Pettigrew, 2009), although how exactly similarity should be defined and operationalised remains unclear. So far, most studies do not test similarity perceptions directly among participants but rely on independently collected ratings (Asbrock et al., 2017; Harwood et al., 2011). However, in line with the similarity hypothesis, the first study to assess directly the moderating effect of participants' perceived primary and secondary outgroup similarity suggested that STEs of direct contact are stronger when primary and secondary outgroups are deemed more similar (Lolliot, 2013, Study 4).

Because similarity between primary and secondary outgroup enhances transfer efficacy, secondary transfer is a process likely to underpin any effect of contact with multiethnics on relations with members of monoethnic outgroups. In general, secondary transfer from one ethnic or racial outgroup to another could be considered "minimal extensions" (Pettigrew, 2009, p. 56) and has been demonstrated repeatedly (e.g., Al Ramiah, 2009; Clément, Gardner, & Smythe, 1977; Eller & Abrams, 2004; Shook et al., 2016). Although research on STEs has not yet explicitly considered contact with a primary outgroup whose social identity overlaps partially with the secondary outgroup, I would expect contact with multiethnic individuals to generalise most strongly when the multiethnic contact partner shares part of their background with a monoethnic secondary outgroup. After all, monoethnic perceivers find it easy to associate multiethnic people with monoethnic category labels (Pauker, Meyers, et al., 2018; Kang & Bodenhausen, 2015) and, as I have shown in Chapter 3, often evaluate multiethnic and monoethnic outgroup members in similar ways.

[1] An unpublished study by Asbrock, Christ, Hewstone, Pettigrew, and Wagner (2017) also investigates STEs of both direct and extended contact.

In Study 4.1, I consider both whether contact with multiethnic friends, as measured through SNA, is associated with how monoethnic individuals relate to members of a related monoethnic outgroup (e.g., effect of Whites' contact with Asian-Whites on attitudes toward Asians), and to members of unrelated monoethnic outgroups (e.g., effect of contact with Asian-Whites on attitudes towards Blacks). Study 4.2 builds on this research but includes measures of self-reported and extended contact with multiethnic friends. It thus focuses on experiences that monoethnic participants perceived to involve people of mixed ethnic background. Study 4.2 also investigates the contribution of affect generalisation to the STEs of direct and extended contact with multiethnics. Study 4.3 sought to replicate findings of Study 4.2 and additionally, as one of the first studies to measure directly participants' ratings of perceived similarity between outgroups, also included primary and secondary outgroup similarity as a moderator of any positive effect of contact with multiethnics on relations with monoethnic outgroup members.

Categorisation as monoethnic outgroup: Standard contact effects. Although secondary transfer offers a parsimonious account of how contact with multiethnic people could affect intergroup relations between members of different monoethnic groups, other processes that do not rely on the categorisation of multiethnics as members of a distinct mixed-race category could produce similar outcomes. The categorisation of mixed individuals as monoethnic is common in societies like the UK or US, where monoethnic categories remain the norm (see Kang & Bodenhausen, 2015; Pauker, Meyers, et al., 2018). Research on intergroup contact has shown that contact improves outgroup attitudes and behaviours most effectively when contact partners are categorised as outgroup members (e.g., Brown & Hewstone, 2005; McIntyre et al., 2016; van Oudenhoven et al., 1996). Therefore, where multiethnic individuals are categorised as monoethnic outgroup members, such interactions ought to affect attitudes and behaviours, including contact initiation (Wölfer & Hewstone, 2018), towards this monoethnic outgroup in a way that is analogous to contact between members of different monoethnic groups.

Research on extended contact effects has shown that contact with ingroup members who themselves have outgroup contact can also improve intergroup relations (Wright et al., 1997; see Vezzali et al., 2014). Such extended contact effects have been attributed, for example, to

more positive perceptions of outgroup-directed ingroup norms, reduced intergroup anxiety, and heightened group membership salience (e.g., de Tezanos-Pinto et al., 2010; Turner et al., 2008). Given the small size of the multiethnic population in many intergroup settings and thus limited opportunities for direct contact with people of multiethnic background, evidence for extended contact effects would add significantly to the potential of multiethnic individuals to affect intergroup relations. In this chapter, I consider not only direct (Studies 4.1, 4.2, and 4.3) but also extended positive contact with multiethnic individuals (Studies 4.2 and 4.3).

The Present Research

In this chapter, I present research on positive contact with multiethnic individuals and how such social experiences affect how members of different monoethnic groups relate to one another. The three studies presented here include social network and survey data collected from minority and majority monoethnic students at English secondary schools (Studies 4.1 and 4.2) and a South African university (Study 4.3). In Study 4.1, I tested the longitudinal association of direct friendship ties to multiethnic classmates and attitudes towards and friendship contact with related and unrelated monoethnic outgroups. In Study 4.2, I then assessed how not only direct but also extended positive contact with multiethnic individuals relates to various measures of intergroup relations (e.g., anxiety, trust, attitudes). Study 4.2 includes analyses of both direct and extended contact and, as one of the first studies to address STEs of extended contact, also tests the contribution of affect generalisation processes to such contact effects. Study 4.3 includes analyses of the effects of direct and extended contact with a distinct and visible multiethnic group: Coloured South Africans. It also includes analyses of affect generalisation and the moderating role of perceived similarity between the primary and secondary outgroups. Together, these studies provide insight into individual-level experiences that go beyond the passive exposure to multiethnic individuals explored in Chapters 2 and 3. Instead, they focus on positive contact experiences that are likely to make ethnic identities salient and therefore have the potential to affect intergroup relations not only between monoethnic and multiethnic individuals, but also more generally between members of different monoethnic groups.

The contribution of social network data. One of the hallmarks of the research presented in this chapter is the combination of social network and survey data to quantify contact experiences. Social network analysis (SNA) is a relatively novel tool in social psychology in general, and intergroup contact research specifically, and one that complements self-report measures in several notable ways (Lesczcensky et al., 2019; Munniksma, Stark, Verkuyten, Flache, & Veenstra, 2013; Wölfer & Hewstone, 2017; Wölfer et al., 2017).

SNA provides a particularly pertinent measure of friendship contact because it combines information from both members in a friendship dyad on the nature of that relationship (Wölfer & Hewstone, 2017). It therefore allows me not only to identify whether an individual describes someone as a friend, but also whether this nominated friend reciprocates this friendship nomination ('reciprocal ties', see Figure 4.1); although when data are incomplete, one can still conduct analysis on outgoing ties only (e.g., whom a person connects with; see Study 4.3).

Crucially for research on the role of mixed individuals in intergroup processes, SNA also provides an innovative approach to quantifying intergroup contact with people who are less readily categorised and whose category memberships often remain invisible. This is possible because demographic information, including on ethnic identification, is collected directly from each member in a network of relationships. This process allows me to account for contact with all (self-described) multiethnic individuals in a specific social context, even if they are perceived as monoethnic. In Study 4.1, I base my measure of contact with multiethnic individuals on monoethnic participants' social networks.

Because contact effects depend on how the perceiver categorises their interaction partner rather than that interaction partner's self-categorisation, in Studies 4.2 and 4.3 I added new data including self-reported contact with multiethnic individuals. This allowed me to test direct and extended effects of contact with individuals who are perceived as mixed. Finally, the availability of social network and self-report data in Studies 4.2 and 4.3 also allowed me, for the first time, to explore the likely prevalence of mis-categorisation or under-reporting of contact with

multiethnics. I did this by assessing the correlation of social network and self-report-based measures of friendship contact.

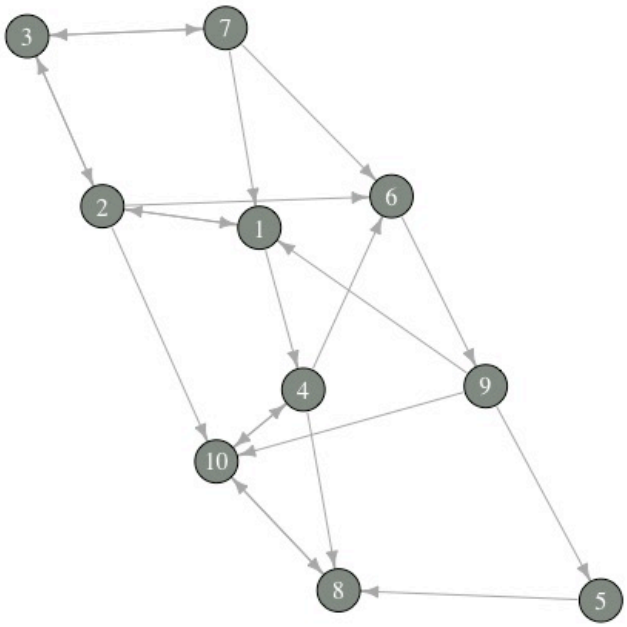

Figure 4.1. Diagram showing nodes that represent separate individuals and their unidirectional and reciprocal friendship relations. Double-headed arrows indicate that both individuals nominated each other as friends ('reciprocal ties', e.g., nodes 4 and 10). Single-headed arrows denote unidirectional relations where only one individual nominated the other as a friend (e.g., node 9 nominating node 10). SNA affords both the study of an individual's sum of outgoing ties regardless of reciprocity, and separate analysis of reciprocal connections.

Study 4.1

Aim and Hypotheses

Study 4.1 was conducted in England and considered relations between majority White British and minority Black British and Asian British group members as a function of friendship contact with mixed Black-White and Asian-White individuals. In a longitudinal design and combining social network and survey data, I tested the following associations of contact with multiethnic friends and relations with monoethnic outgroup members:

H1. Among majority monoethnic participants (Whites), friendship contact with 'outgroup-White' (i.e., Asian-White or Black-White) multiethnic individuals is associated with improved attitudes towards and more friendship contact with the specific monoethnic outgroup that also converges in the multiethnic friend's identity.

H2. Among majority monoethnic participants (Whites), friendship contact with outgroup-White multiethnic individuals is associated with improved attitudes towards and more friendship contact with monoethnic outgroups that are unrelated to the multiethnic friend's background.

H3. Among minority monoethnic participants (Asians and Blacks), friendship contact with 'ingroup-White' (i.e., Asian-White or Black-White) multiethnic individuals is associated with improved attitudes towards and more friendship contact with the monoethnic majority outgroup, Whites.

H4. Among minority monoethnic participants (Asians and Blacks), friendship contact with ingroup-White multiethnic individuals is associated with improved attitudes towards and more friendship contact with monoethnic outgroups that are unrelated to the mixed friend's background.

Method and Measures

Study 4.1 is based on the English subsample from the multilevel CILS4EU dataset (Kalter et al., 2016a, 2016b, 2016c) described in detail in Study 2.1 in Chapter 2 and also included in Study 3.2. As in Study 2.1, I used survey data from waves 1 and 3, and social network data from wave 1 and considered only participants who self-identified as a monoethnic majority group member, White British (n = 1689), or as a member of one of the two broadly defined monoethnic minority groups, Asian British (n = 617) and Black British (n = 252). These participant groups were included because their identity mapped onto the wording of the available survey items on intergroup contact and attitudes described below. Two mixed populations, mixed Asian-White (n = 41) and mixed Black-White (n = 98) individuals, were also included in the data as members of the classroom networks.

Contact with multiethnic classmates. The predictor variable in my analyses was the number of friendship ties a monoethnic participant had with multiethnic minority-White classmates at wave 1. This measure was taken from the friendship nomination procedure (described earlier) where participants were asked to nominate up to five best friends within their classroom. Contact with specific ethnic groups was quantified based on the self-reported ethnic identity of each nominated network member and the participant. For these analyses, I considered both participants' complete set of outgoing ties (both unidirectional and reciprocated) and, separately, their reciprocal ties.

Further variables included in the analyses and described in Studies 2.1 and 3.2 *were outgroup attitudes* (measured at waves 1 and 3) *and self-reported outgroup friendship contact* (measured at wave 3) as dependent variables, and *age*, *gender*, and *parental socioeconomic status* as individual-level covariates. Furthermore, to rule out effects of direct contact with monoethnic outgroup members, I controlled for the *number of friendship ties to the target outgroup* at wave 1, measured through the friendship nomination procedure described above. In the analyses on the effect of wave 1 contact with multiethnic classmates on wave 3 outgroup attitudes, I also controlled for wave 1 outgroup attitudes.

At the classroom-level, I controlled for *classroom size* and for the *number of target outgroup classmates* and the *number of target multiethnic classmates*. These were indicators of the opportunity for the relevant intergroup contact experiences. To account for erroneously set network boundaries across a small number of classrooms during data collection, I again also controlled for *network boundary*.[2]

Analysis Strategy

To reflect the nested structure of the data (individuals within classrooms), I used multilevel modelling (Raudenbrush & Bryk, 2002) with full information maximum likelihood estimation (Collins et al. 2001). I calculated random-intercept models with participants at Level 1 and

[2] During data collection, social network boundaries were erroneously set at the year group-, instead of the classroom-, level at a small number of schools ($N_{schools}$= 10, $N_{classrooms}$ = 20, $N_{participants}$ = 332). Because I was able to identify the relevant networks, I included this variation as a covariate.

classrooms at Level 2 and analysed the effect of contact with multiethnic classmates separately for majority (White) and minority (Asian and Black) participants.

To assess the role of similarity between primary and secondary outgroups, I tested the effects of contact with multiethnics on relations with two different kinds of monoethnic outgroups: (1) I related contact with multiethnic classmates whose mixed background included the participant's ingroup combined with a monoethnic outgroup, to participants' contact with and attitudes towards that monoethnic outgroup (e.g., Black participants' contact with Black-White individuals as a predictor of their relations with Whites). (2) I related contact with the same multiethnic classmates to contact with and attitudes towards members of an unrelated monoethnic outgroup (e.g., Black participants' contact with Black-White individuals as a predictor of their relations with Asians). While (1) tests concern a minimal extension of contact effects to a very similar secondary outgroup, (2) tests concern transfer to a somewhat less similar secondary outgroup. Throughout analyses, all predictor and control variables were z-standardised, and dependent variables are reported as unstandardised scores to aid interpretation.

Results and Discussion

Majority Participants

Attitudes towards minority at wave 3. Descriptive statistics and inter-item correlations are summarised in Tables A4.1 and A4.2. Among White participants, friendship ties to mixed Asian-White classmates at wave 1 did not predict attitudes towards monoethnic Asians at wave 3. Similarly, friendship ties to mixed Black-White classmates at wave 1 did not predict attitudes towards monoethnic Blacks at wave 3. Details of these analyses are summarised in Table 4.1.

To assess whether contact with multiethnic friends generalised to more positive attitudes towards unrelated monoethnic outgroups, I also studied the association between friendship ties to mixed Black-White individuals at wave 1 and attitudes towards Asians at wave 3 (see Table A4.3), and between friendship ties to mixed Asian-White individuals at wave 1 and attitudes towards Blacks at wave 3 (see Table 4.2). Neither of these associations were significant.

Table 4.1
Study 4.1: Effect of Ties to Mixed Outgroup-White Classmates on White Participants' Outgroup Relations to Asians and Blacks

	Monoethnic outgroup: Asians								Monoethnic outgroup: Blacks							
	W3 Attitudes towards Asians				W3 Self-reported Asian friends				W3 Attitudes towards Blacks				W3 Self-reported Black friends			
	All ties		Reciprocal ties		All ties		Reciprocal ties		All ties		Reciprocal ties		All ties		Reciprocal ties	
	b (SE)	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*
Level 1: *Student*																
W1 Ties to mixed outgroup-White	-0.16 (0.93)	.863	-0.15 (0.85)	.858	0.03 (.02)	.117	0.03 (0.02)	.053	0.71 (0.59)	.230	0.82 (0.58)	.161	0.05 (0.02)	.020	0.03 (0.03)	.302
W1 Outgroup ties	1.36 (0.68)	.047	1.35 (0.68)	.047	0.10 (0.03)	<.001	0.10 (0.03)	<.001	-1.24 (0.68)	.068	-1.28 (0.68)	.059	0.03 (0.03)	.393	0.03 (0.03)	.401
Age	-0.11 (0.79)	.886	-0.12 (0.79)	.884	-0.01 (0.02)	.810	-0.01 (0.02)	.829	-0.38 (0.56)	.501	-0.38 (0.56)	.496	0.03 (0.02)	.142	0.03 (0.02)	.145
Gender	0.55 (0.76)	.469	0.55 (0.75)	.469	0.00 (0.02)	.983	0.00 (0.02)	.984	1.17 (0.51)	.023	1.12 (0.51)	.030	-0.04 (0.02)	.043	-0.05 (0.02)	.030
Socioeconomic status	1.35 (0.69)	.052	1.35 (0.69)	.051	-0.01 (0.02)	.691	-0.01 (0.024)	.657	-0.08 (0.58)	.896	-0.06 (0.58)	.914	-0.04 (0.02)	.054	-0.04 (0.02)	.054
W1 Outgroup attitudes	7.59 (0.90)	<.001	7.59 (0.90)	<.001					5.33 (0.76)	<.001	5.35 (0.76)	<.001				
Level 2: *Classrooms*																
Class size	-1.18 (1.28)	.360	-1.18 (1.28)	.359	-0.02 (0.06)	.796	-0.01 (0.06)	.810	-1.41 (0.81)	.087	-1.42 (0.81)	.084	-0.06 (0.06)	.359	-0.06 (0.06)	.355
Outgroup-White classmates	-0.38 (0.77)	.621	-0.40 (0.74)	.591	0.08 (0.03)	.017	0.08 (0.03)	.014	-1.54 (0.94)	.104	-1.50 (0.89)	.097	0.07 (0.03)	.022	0.08 (0.03)	.007
Outgroup classmates	-4.43 (1.61)	.007	-4.43 (1.62)	.007	0.22 (0.05)	<.001	0.22 (0.05)	<.001	-0.97 (0.98)	.323	-0.95 (0.98)	.332	0.19 (0.05)	<.001	0.19 (0.05)	<.001
Network boundary	-0.73 (1.22)	.553	-0.73 (1.22)	.553	-0.03 (0.06)	.647	-0.03 (0.06)	.651	-1.11 (0.98)	.256	-1.10 (0.98)	.263	-0.06 (0.07)	.393	-0.05 (0.07)	.432
Level 1 Variance σ^2 (*SE*)	448.53 (21.84)		448.54 (21.84)		0.49 (0.02)		0.39 (0.02)		325.48 (15.60)		325.61 (15.60)		0.44 (0.02)		0.44 (0.02)	
Level 2 Variance τ (*SE*)	11.75 (8.81)		11.74 (8.81)		0.08 (0.02)		0.08 (0.02)		1.31 (5.09)		1.09 (5.05)		0.03 (0.01)		0.03 (0.01)	
Deviance (*df*)	8472.12 (13)		8472.12 (13)		2022.38 (12)		2021.95 (12)		8333.78 (13)		8333.54 (13)		2060.34 (12)		2064.15 (12)	

Note. W1 = wave 1, W3 = wave 3, *SE* = Standard error, *df* = degrees of freedom. Predictor variables were standardised for within-model comparison of effect size, while outcome variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. For analyses on monoethnic Asian outgroup: $n_{students}$ = 945, $n_{classrooms}$ = 135 (analyses on attitudes towards Asians); $n_{students}$ = 1002, $n_{classrooms}$ = 136 (analyses on self-reported Asian friends). For analyses on monoethnic Black outgroup: $n_{students}$ = 966, $n_{classrooms}$ = 136 (analyses on attitudes towards Blacks); $n_{students}$ = 999, $n_{classrooms}$ = 136 (analyses on self-reported Black friends).

Friendship with minority at wave 3. Among White participants, the number of all friendship ties to mixed Asian-White classmates at wave 1 was not significantly related to self-reported friendship quantity with monoethnic Asians at wave 3. However, the number of specifically reciprocal friendship ties to mixed Asian-White classmates was a positive predictor approaching significance ($b = 0.03$, $p = .053$) of self-reported friendship quantity with monoethnic Asians at wave 3. Notably, this effect emerged after controlling for friendship ties to Asians and the opportunity for contact with Asian-Whites at wave 1.

Furthermore, the number of all friendship ties to mixed Black-White classmates at wave 1 was a significant positive predictor of self-reported friendship quantity with monoethnic Blacks at wave 3 ($b = 0.05$, $p = .020$). This effect emerged after controlling for the number of friendship ties to Black classmates and the opportunity for contact with Black-White classmates at wave 1. The number of strictly reciprocal ties to mixed Black-White classmates at wave 1 was unrelated to friendship contact with monoethnic Blacks at wave 3. Details of these analyses are summarised in Table 4.1.

To test for the generalisation of contact effects to unrelated monoethnic outgroups, I again assessed the association between friendship ties to Black-White individuals at wave 1 and self-reported friendship with Asians at wave 3 (see Table A4.3). I also assessed the association between friendship ties to Asian-White individuals at wave 1 and self-reported friendship with Blacks at wave 3 (see Table A4.4). None of these associations were significant.

Minority Participants

Attitudes towards majority at wave 3. Descriptives and inter-item correlations are summarised in Table A4.5. Among Asian and Black participants, I found that friendship ties to multiethnic ingroup-White classmates at wave 1, including strictly reciprocal ties, did not predict attitudes towards monoethnic Whites at wave 3. These results are summarised in Table 4.2. I also tested whether friendship ties to mixed ingroup-White classmates at wave 1 predicted wave 3 attitudes towards members of the unrelated monoethnic minority outgroup (Blacks for Asian participants, Asians for Black participants). As summarised in Table A4.6, none of the associations were significant.

Table 4.2
Study 4.1: Effect of Ties to Mixed Ingroup-White Classmates on Monoethnic Minority Participants' Relations to Whites

	W3 Attitudes towards Whites				W3 Self-reported White friends			
	All ties		Reciprocal		All ties		Reciprocal	
	b (*SE*)	*p*	*b* (*SE*)	*p*	*b* (*SE*)	*p*	*b* (*SE*)	*p*
Level 1: Student								
W1 Ties to mixed ingroup-White	-0.26 (0.87)	.768	0.34 (0.67)	.617	-0.05 (0.06)	.340	-0.09 (0.05)	.065
W1 ties to Whites	0.96 (0.93)	.301	0.91 (0.93)	.324	0.31 (0.05)	<.001	0.32 (0.05)	<.001
Age	-0.97 (0.87)	.265	-0.96 (0.88)	.274	-0.10 (0.04)	.011	-0.10 (0.04)	.016
Gender	1.15 (1.05)	.272	1.15 (1.04)	.271	0.01 (0.05)	.817	0.01 (0.05)	.806
Socioeconomic status	0.39 (0.77)	.607	0.37 (0.77)	.627	0.10 (0.04)	.009	0.11 (0.04)	.006
W1 attitudes towards Whites	4.34 (1.09)	<.001	4.36 (1.08)	<.001				
Level 2: Classrooms								
Class size	-1.12 (1.22)	.362	-1.07 (1.21)	.379	-0.21 (0.09)	.022	-0.21 (0.09)	.021
Mixed classmates	-0.10 (0.67)	.879	-0.24 (0.66)	.716	0-.03 (0.04)	.443	-0.03 (0.04)	.525
White classmates	0.87 (1.17)	.460	0.93 (1.18)	.435	0.40 (0.07)	<.001	0.40 (0.07)	<.001
Network boundary	-1.93 (1.04)	.068	-1.91 (1.04)	.068	-0.07 (0.08)	.364	-0.08 (0.08)	.348
Level 1 Variance σ^2 (*SE*)	327.91 (23.49)		327.87 (23.48)		0.89 (.06)		0.89 (.06)	
Level 2 Variance τ (*SE*)	0.26 (8.51)		0.26 (8.50)		0.05 (.03)		0.05 (.03)	
Deviance (*df*)	3866.80 (13)		3866.75 (13)		1370.50 (12)		1368.31 (12)	

Note. W1 = wave 1, W3 = wave 3, SE = Standard error, *df* = degrees of freedom. Predictor variables were standardised for within-model comparison of effect size, while outcome variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. Analyses on attitudes towards Whites: $n_{\text{students}} = 448$, $n_{\text{classrooms}} = 105$; Analyses on self-reported White friends $n_{\text{students}} = 494$, $n_{\text{classrooms}} = 107$.

Friendship with majority at wave 3. Among Asian and Black participants, the number of friendship ties to multiethnic ingroup-White classmates did not predict self-reported friendship quantity with monoethnic Whites at wave 3. However, specifically reciprocal friendship ties to ingroup-White classmates at wave 1 negatively predicted self-reported friendship quantity with Whites at wave 3. Nevertheless, this effect did not reach conventional levels of statistical significance (b = -0.09, p = .065). Details of these analyses are summarised in Table 4.2.

I again also tested whether friendship ties to mixed ingroup-White classmates at wave 1 predicted wave 3 self-reported friendship contact with members of the unrelated monoethnic minority outgroup (Blacks for Asian participants, Asians for Black participants). As summarised in Table A4.6, none of the associations were significant.

To summarise, Study 4.1 provided at best mixed support for the hypothesis that friendship contact with multiethnic partial ingroup members facilitates better relations between monoethnic groups. Among majority participants, having more mixed Asian-White (Black-White) friends at wave 1 predicted having more monoethnic Asian (Black) friends two years later. In line with my predictions, these findings suggest that positive contact with multiethnic individuals could facilitate more contact experiences with monoethnic outgroup members. However, positive contact with multiethnic classmates did not affect attitudes towards monoethnic outgroups. Therefore, my findings lend only weak support to H1.

Contrastingly, my analyses of minority participants' friendship ties to multiethnic classmates suggest that such friendship does not affect, and may even preclude, intergroup harmony. Among minority participants, I found no evidence for longitudinal effects of friendship with mixed ingroup-Whites on attitudes towards monoethnic Whites. Furthermore, I found tentative evidence suggesting that having more mixed ingroup-White friends at wave 1 could lead to lower levels of friendship contact with Whites. H3 was therefore not supported by my findings.

Across all analyses, any contact effects were limited to the most minimal generalisation, from contact with minority-White multiethnics to relations to the specific monoethnic groups converging in the multiethnic friend's background. I found no evidence for a more general effect of contact with multiethnic people on relations to unrelated monoethnic outgroups, which leads me to reject H2 and H4.

Despite the contribution of SNA to contact research, it does not reveal how multiethnic individuals are perceived by their monoethnic classmates. Therefore, Study 4.1 cannot elucidate how positive contact effects come about for majority participants, or what precludes positive effects for minority participants. Small effect sizes could, for example, highlight that multiethnic contact partners, if categorised as monoethnic, are likely seen as atypical representatives of these monoethnic groups (Pauker et al., 2009; Sanchez et al., 2011), which limits the effectiveness of such contact (Brown & Hewstone, 2005). Finally, basing contact measures on social network data and ethnic self-categorisation raises the possibility that individuals who might have a multiethnic background and could be perceived as mixed by their friends, do not appear as multiethnic within the network because they choose not to identify as mixed at the time of data collection (see Khanna, 2010; Pew Research Center, 2015; Rockquemore & Brunsma, 2002). My data might therefore underestimate how often monoethnic individuals experience having contact with multiethnic individuals.

Studies 4.2 and 4.3 address this core limitation of Study 4.1 by focusing on contact experiences that participants perceive as involving multiethnic individuals. Furthermore, I begin to address possible processes whereby such contact experiences could affect intergroup relations and also test whether discrepant findings for majority and minority participants can be replicated. Finally, Study 4.2 also uses a combination of social network and survey data to investigate the propensity of monoethnic individuals to under-report contact with multiethnics.

Study 4.2

A key limitation of Study 4.1 was that I relied on *internal* criteria of group membership (i.e., self-categorisation; Tajfel, 1982) as the basis of my network-based intergroup contact measures. Given how strongly the effects of contact experiences with multiethnic individuals should depend on the perceived social category membership of a contact partner (i.e., *external* criteria of group membership; Tajfel, 1982), and considering the prevalence of multiple identity blindness (Kang & Bodenhausen, 2015), Study 4.2 focused on the effects of positive contact with what monoethnic participants perceive to be multiethnic friends.

I will also explore the correlation between survey-based contact measures that refer directly to a friend's ethnic identity (e.g., number of self-reported outgroup friends) and social network-based contact measures which derive the intergroup nature of a friendship from each friend's self-reported ethnic identity (e.g., number of friendship ties to outgroup members). To my knowledge, the only other study which assessed correlations between self-report and SNA-based contact measures (Wölfer et al., 2017) considered contact with monoethnic outgroup members and found both types of measures to be moderately correlated. Study 4.2 builds on this research by considering not only contact with monoethnic but also with multiethnic others. Multiethnic individuals frequently experience mis-categorisation (Cheryan & Monin, 2005; Halberstadt, Sherman, & Sherman, 2011), and this may have contributed to the findings reported in Study 4.1. By combining survey and social network data, and by comparing the correlations of different contact measures across monoethnic and multiethnic target groups, I can begin to explore the extent to which contact with multiethnic individuals in particular is likely to be underreported.

Aims and Hypotheses

In Study 4.2, I firstly addressed the association of direct contact with friends perceived to be multiethnic, and evaluations (attitudes, trust, anxiety) of monoethnic outgroups. Considering the small size of the multiethnic population in the UK and thus limited opportunities for contact with multiethnic individuals, I also studied the link between extended contact with

multiethnic people via ingroup members and monoethnic outgroup evaluations. I then considered one of the key hypothesised processes, affect generalisation, that could underpin any effect of direct and extended contact with distinctly multiethnic friends on relations with secondary monoethnic outgroups. Finally, I addressed a limitation of Study 4.1 and combined social network and self-report measures to assess how well self-reported and network-based contact measures align. This allowed me to test the assertion that mis-categorisation likely contributed to the results of Study 4.1. In summary, I tested the following hypotheses, where 'improved evaluations' refer to improved attitudes and trust, and reduced intergroup anxiety:

H1. Direct friendship contact with multiethnic individuals will be associated with improved evaluations of the monoethnic outgroup.
  H1.2 Direct friendship contact with multiethnic individuals will be indirectly associated with improved monoethnic outgroup evaluations via evaluations of multiethnics ('affect generalisation').

H2. Extended friendship contact with multiethnic individuals will be associated with improved evaluations of the monoethnic outgroup.
  H2.1 Extended friendship contact with multiethnic individuals will be indirectly associated with improved monoethnic outgroup evaluations via evaluations of multiethnics ('affect generalisation').

H3. Self-reported and network-based contact with multiethnic individuals will be positively but weakly correlated, and this correlation will be smaller than the correlation of self-reported and network-based contact with monoethnic outgroups.

Method and Measures

The sample included in Study 4.2, which was part of the Social Integration in Diverse Societies project conducted by Ralf Wölfer and Miles Hewstone, was described in detail in Study 3.1, and I refer the reader to Chapter 3 (pp. 81) for details on both method and sample.

The dependent variables used in this study were self-reported *outgroup attitudes*, *trust,* and *anxiety*. Among White majority participants, measures referring separately to Asian and Black

outgroups were combined into self-reports on monoethnic minority group members (e.g., attitudes towards monoethnic minority). I chose this approach because the key predictor variable for my analyses, self-reported friendship contact with multiethnic people, did not distinguish between different multiethnic groups but rather referred to 'Mixed British' people in general. I could therefore not relate Whites' contact with Asian-White (Black-White) individuals to their evaluations of Asians (Blacks). Among White participants, I therefore assessed the association between contact with multiethnic individuals and evaluations averaged across Asian and Black target outgroups, i.e., evaluations of monoethnic minority outgroup members.

Network-based direct contact. The network-based contact measure was similar to the measure used in Study 4.1. In Study 4.2, however, network data was collected across the entire year group and not limited to classrooms, and participants could nominate up to ten friends.

Extended contact with multiethnic people. Extended contact was calculated using a combination of self-report and network contact measures described above and following the two-step procedure outlined by Wölfer et al. (2016). Firstly, the friendship nomination procedure allowed me to determine participants' number of direct ingroup friends. Secondly, I calculated the sum of these ingroup friends' self-reports of friendship contact with multiethnic people.[3] This therefore allowed me to translate the two-step concept of extended contact (ingroup friends' outgroup friends) into two separate analytical procedures. The total self-reported contact score of participants' network-based ingroup friends reflects each participant's level of extended contact.

Self-reported intergroup contact at school. To test the association between the network-based contact measure, which explicitly referred to friendship contact at school, and self-reported contact, I also included a measure of participants' self-reported contact at school ("How often

[3] At this second stage I deviate slightly from past studies that have used this two-step process (e.g., Wölfer et al., 2019) because I calculate the sum, rather than the mean, of ingroup friends' outgroup contact. I did this to allow for participants with more ingroup friends to also, potentially, have more extended contact – a perspective on extended contact quantity that is lost when the mean of ingroup friends' self-reported outgroup contact is considered. Following my procedure, participants with many ingroup friends who have many outgroup friends have more extended outgroup contact than participants with one ingroup friend who has many outgroup friends.

do you spend time during breaks at school with students from a [White/Black/Asian/Mixed] background?"). Answers were collected on five-point scales (1 = *Never*, 5 = *Every day*).

Analyses further included the measure of *self-reported friendship contact.* As individual-level covariates, I included *age* and *gender*, and *socioeconomic status*. Analyses of extended contact effects further included the *number of ingroup students in the year group* as a group-level covariate. Details on these measures are provided in Study 3.1.

Analysis Strategy

Reflecting the nested structure of the data (individuals within schools), I used multilevel modelling (Raudenbrush & Bryk, 2002) with full information maximum likelihood estimation (Collins et al. 2001) to test the association between, first, direct, and then extended friendship contact with multiethnic people at wave 1, and relations (attitudes, trust, anxiety) with the monoethnic outgroup at wave 3. In several random-intercept models, I analysed these contact effects separately for majority (White) and minority (Asian and Black) monoethnic participants. Across analyses, I controlled not only for age, gender, and socioeconomic status, but also for self-reported contact with the target monoethnic outgroup. The analyses of extended contact with multiethnic people via ingroup members also included opportunity for contact with ingroup members in the year group as a group-level covariate.

I then tested affect generalisation as one of the potential processes to underpin any effect of contact with multiethnic people on wider intergroup relations. Affect generalisation occurs when evaluations of multiethnic people mediate the association between contact with multiethnics and evaluations of monoethnic outgroup members. I tested for this mediation pattern separately for wave 1 attitudes, trust, and intergroup anxiety towards multiethnic people as the mediators (see Figure 4.2). To do so, I computed multilevel within-group mediation models using the indirect.mlm function (Page-Gould & Sharples, 2016) within the R package boot (Canty & Ripley, 2017; Davison & Hinkley, 1997), thus taking the nested structure of the data into account and using bootstrapping re-sampling (1000 resamples) to calculate accurate indirect effects. All variables of interested were situated at Level 1, the

participant level; my mediation models can thus be described as 1-1-1 models (see Zhang, Zyphur, & Preacher, 2009).

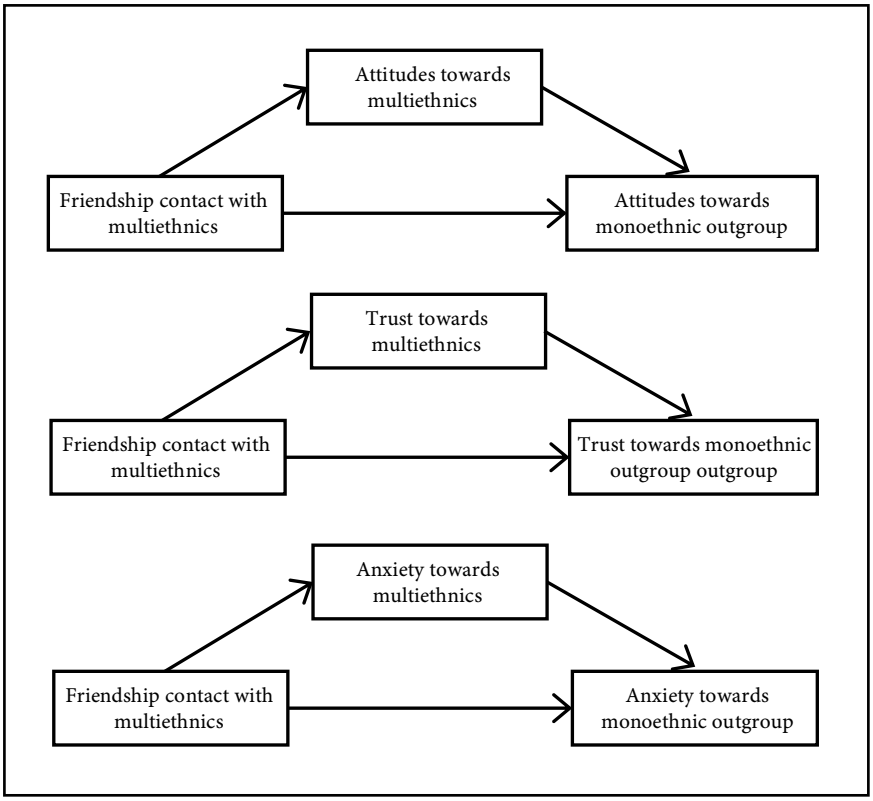

Figure 4.2. Level 1 of three direct contact secondary transfer models

I calculated random-intercept mediation models separately for majority and minority monoethnic participants and tested the indirect effects of wave 1 direct and extended contact separately. Covariates included in all mediation models were socioeconomic status, gender, age, and self-reported friendship contact with the target monoethnic outgroup. For the extended contact analyses, direct friendship contact with multiethnic people was entered as an additional covariate. Across all analyses, all predictor and control variables were z-standardised, while dependent variables are reported as unstandardised scores to aid interpretation.

Finally, I calculated Pearson correlation coefficients between the social network-based measure of intergroup contact (friendship ties) and two self-report measures of intergroup contact: intergroup contact at school, which matched the social network measure in the context of contact; and friendship contact more generally, which matched the social network measure in

the quality of contact. Whilst the network-based measure is derived from how each network member self-categorises, self-report measures reflect participants' perceptions of their contact partners' group membership. Correlating both types of contact measures therefore allowed me to gain indirect insights into the correspondence between internal criteria of group membership (Tajfel, 1982) and the external perception thereof. In order to assess whether any mismatch between both types of measures was more pronounced when contact with multiethnics rather than monoethnic outgroup members was concerned, I conducted these analyses both for majority and minority participants' relations with multiethnics, majority participants' relations with Asian and Black outgroup members, and minority participants' relations with Whites. I then used asymptotic *z* tests to compare statistically the strength of inter-item correlations when contact measures referred to multiethnics to the strength of inter-item correlations when they referred to monoethnic outgroup members.

Any mismatch between survey- and network-based contact measures of course confounds the effect of perspective on category membership (internal vs. perceived) with the effect of the method employed to measure contact (deduced from SNA vs. based on self-report). However, because I expect the effect of method to be independent of which group a measure refers to (multiethnics vs. monoethnics), comparing correlation strengths across target groups allowed me to assess whether additional factors, such as the perspective on category membership inherent in a contact measure (i.e., whether it is based on self-categorisation or on how a participant categorises their contact partner), affected measures of contact with multiethnics in particular.

Results and Discussion

Direct Contact Effects

Descriptives and inter-item correlations are summarised in Table A4.7 and A4.8. Details on all analyses of direct contact effects are provided in Table 4.3. Furthermore, direct associations of all predictor, mediator, and dependent variables of the multilevel mediation models are summarised in the Appendix in Tables A4.9 and A4.10.

Table 4.3
Study 4.2: Association of Self-Reported Contact with Multiethnic Friends and Participants' Evaluations of the Monoethnic Outgroup

	White Majority Participants: Relations with Monoethnic Minority						Black & Asian Minority Participants: Relations with Monoethnic Majority					
	Attitudes		Trust		Anxiety		Attitudes		Trust		Anxiety	
	b (SE)	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*
Level 1: *Student*												
Direct friendship contact with multiethnic people	2.28 (1.29)	.077	0.10 (0.03)	<.001	-0.07 (0.02)	.001	0.39 (0.60)	.513	-0.05 (0.04)	.204	-0.03 (0.02)	.223
Direct friendship contact with monoethnic target outgroup	2.40 (1.11)	.030	0.02 (0.05)	.677	-0.05 (0.03)	.091	6.15 (0.68)	<.001	0.19 (0.02)	<.001	-0.04 (0.03)	.204
Age	-0.04 (0.96)	.970	-0.01 (0.03)	.737	0.00 (0.01)	.960	0.50 (0.66)	.445	-0.05 (0.04)	.218	-0.01 (0.03)	.671
Gender	0.78 (0.79)	.324	-0.03 (0.03)	.142	0.13 (0.03)	<.001	-0.42 (1.18)	.719	-0.19 (0.05)	<.001	0.11 (0.03)	<.001
Socioeconomic status	0.36 (0.79)	.649	0.06 (0.01)	<.001	0.05 (0.04)	.249	1.83 (0.84)	.030	0.03 (0.09)	.778	0.17 (0.06)	.002
Level 2: *Classrooms*												
Level 1 Variance σ^2 (*SE*)	400.62 (25.87)		0.71 (.05)		0.64 (0.04)		465.88 (30.92)		1.01 (0.07)		0.57 (0.04)	
Level 2 Variance τ (SE)	12.08 (9.59)		0.04 (.03)		0.02 (0.02)		5.86 (7.14)		0.00 (0.01)		0.00 (0.00)	
Deviance (*df*)	4324.90 (9)		1233.65 (8)		1179.28 (8)		4142.87 (8)		1298.71 (8)		1047.23 (8)	

Note. *SE* = Standard error, *df* = degrees of freedom. Predictor variables were standardised for within-model comparison of effect size, while outcome variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. For White majority participants: Attitudes: $n_{\text{students}} = 489$, $n_{\text{schools}} = 10$; Trust: $n_{\text{students}} = 490$, $n_{\text{schools}} = 10$; Anxiety: $n_{\text{students}} = 489$, $n_{\text{schools}} = 10$. For Black & Asian minority participants: Attitudes: $n_{\text{students}} = 461$, $n_{\text{schools}} = 9$; Trust: $n_{\text{students}} = 457$, $n_{\text{schools}} = 9$; Anxiety: $n_{\text{students}} = 460$, $n_{\text{schools}} = 9$.

Majority participants. Among majority participants, self-reported direct friendship contact with multiethnic people was a positive predictor of attitudes towards the monoethnic minority that approached significance (b = 2.28, p = .077), a significant positive predictor of trust towards the monoethnic minority (b = 0.10, p < .001), and a significant negative predictor of anxiety towards the minority (b = -0.07, p = .001). These effects, which emerged after controlling for participants' direct friendship contact with monoethnic minority group members, support H1.

Affect generalisation. Among monoethnic majority participants, I found a significant indirect and positive association of self-reported direct friendship contact with multiethnic people and attitudes towards monoethnic minorities, mediated by attitudes towards multiethnic people, *Indirect effect* = 3.98, 95% CI = 2.19, 5.67, and a significant positive total effect, *Total effect* = 2.38, 95% CI = 0.23, 4.41. Similarly, I found a significant positive indirect association of direct contact with multiethnic people and trust towards monoethnic minorities, mediated by trust towards multiethnic people, *Indirect effect* = 0.12, 95% CI = 0.05, 0.20, and a significant positive total effect, *Total effect* = 0.10, 95% CI = 0.00, 0.18. Finally, the indirect association of direct contact with multiethnic people and anxiety towards monoethnic minorities, mediated by anxiety towards multiethnic people, was also significant and negative, *Indirect effect* = -0.12, 95% CI = -0.20, -0.04, although the total effect was not significant, *Total effect* = -0.08, 95% CI -0.16, 0.01. These analyses thus support H1.2.

Minority participants. I found no evidence for a direct association between self-reported friendship contact with multiethnic individuals and attitudes, trust, or anxiety towards the majority. My analyses of minority group members' direct contact with multiethnic individuals therefore do not support H1.

Affect generalisation. Among monoethnic minority participants, I found a significant positive indirect association of direct contact with multiethnic people and attitudes towards the monoethnic majority, mediated by attitudes towards multiethnic people, *Indirect effect* = 2.14, 95% CI = 0.86, 3.55. However, the total effect was not statistically significant, *Total effect* = 0.34, 95% CI -1.61, 2.51. Similarly, I obtained a significant negative indirect association of direct

contact with multiethnic people and anxiety towards the monoethnic majority, mediated by anxiety towards multiethnic people, *Indirect effect* = -0.06, 95% CI = -0.12, -0.01. Again, the total effect was not statistically significant, *Total effect* = -0.03, 95% CI -0.09, 0.03. Furthermore, the indirect association of contact with multiethnic people and trust towards the monoethnic majority, mediated by trust towards multiethnic people, was not statistically significant, nor was the total effect of the mediation model, *Indirect effect* = 0.06, 95% CI -0.01, 0.14, *Total effect* = -0.04, 95% CI -0.12, 0.06. These findings thus lend further partial support to H1.2.

Overall, my analyses of self-reported direct contact replicated some of the discrepancies found in Study 4.1 between members of the monoethnic minority and the monoethnic majority. I found that direct contact with multiethnic friends is associated with more positive outgroup evaluations among majority but not minority monoethnic individuals. However, analyses of the contribution of affect generalisation to contact effects provided further insights into the contribution of multiethnic contact experiences to wider intergroup relations. Among majority group members, affect generalisation contributed partially to the association of direct contact with multiethnic friends and more positive monoethnic outgroup evaluations. Among minority group members, affect generalisation also contributed to a strictly indirect and positive association of direct contact with multiethnic friends and evaluations of the monoethnic majority. Therefore, while it may not affect directly how minority group members relate to the monoethnic majority, contact with multiethnic friends may nevertheless indirectly improve both majority and minority group members' relations with monoethnic outgroups.

Extended Contact Effects

Detailed results of all random intercept hierarchical linear models to test extended contact effects are displayed in Table 4.4. Furthermore, detailed results of the direct associations between predictor, mediator, and dependent variables found in multilevel mediation models of affect generalisation are displayed in the Appendix in Tables A4.11 and A4.12

Table 4.4
Study 4.2: Association of Extended Contact with Multiethnic People and Participants' Evaluations of the Monoethnic Outgroup

	White Majority Participants: Relations with Monoethnic Minority						Black & Asian Minority Participants: Relations with Monoethnic Majority					
	Attitudes		Trust		Anxiety		Attitudes		Trust		Anxiety	
	b (SE)	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*
Level 1: *Student*												
Extended contact with multiethnic people	3.44 (1.29)	.008	0.06 (0.04)	.089	-0.09 (0.06)	.151	0.93 (1.48)	.530	0.06 (0.03)	.034	-0.02 (0.03)	.553
Direct friendship contact with multiethnic people	1.99 (1.36)	.142	0.09 (0.02)	<.001	-0.07 (0.03)	.008	0.30 (0.59)	.610	-0.06 (0.04)	.118	-0.03 (0.02)	.258
Direct friendship contact with monoethnic target outgroup	2.86 (1.10)	.010	0.03 (0.04)	.504	-0.07 (0.04)	.089	6.36 (0.57)	<.001	0.19 (0.03)	<.001	-0.04 (0.03)	.136
Age	-0.03 (1.00)	.979	-0.01 (0.04)	.753	0.00 (0.02)	.943	0.49 (0.61)	.425	-0.05 (0.04)	.200	-0.01 (0.03)	.667
Gender	0.45 (0.60)	.452	-0.04 (0.03)	.280	0.14 (0.03)	<.001	-0.48 (1.23)	.695	-0.20 (0.05)	<.001	0.11 (0.04)	.001
Socioeconomic status	0.11 (0.80)	.893	0.05 (0.01)	<.001	0.05 (0.04)	.188	1.93 (0.92)	.037	0.03 (0.09)	.718	0.17 (0.06)	.003
Level 2: *Classrooms*												
Number of ingroup peers	-0.24 (1.49)	.877	0.08 (.07)	.309	0.01 (0.06)	.934	-0.11 (1.26)	.930	-0.04 (0.03)	.227	0.01 (0.04)	.873
Level 1 Variance σ^2 (*SE*)	391.33 (25.27)		0.71 (.05)		0.64 (.04)		465.84 (30.91)		1.00 (0.07)		0.57 (.04)	
Level 2 Variance τ (*SE*)	12.52 (9.72)		0.02 (0.02)		0.03 (.02)		4.46 (6.30)		0.00 (0.01)		0.00 (.00)	
Deviance (*df*)	4313.74 (10)		1229.98 (10)		1174.68 (10)		4142.06 (10)		1296.71 (10)		1046.92 (10)	

Note. SE = Standard error, df = degrees of freedom. Predictor variables were standardised for within-model comparison of effect size, while outcome variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. For White majority participants: Attitudes: $n_{students}$ = 489, $n_{schools}$ = 10; Trust: $n_{students}$ = 490, $n_{schools}$ = 10; Anxiety: $n_{students}$ = 489, $n_{schools}$ = 10. For Black & Asian minority participants: Attitudes: $n_{students}$ = 461, $n_{schools}$ = 9; Trust: $n_{students}$ = 457, $n_{schools}$ = 9; Anxiety: $n_{students}$ = 460, $n_{schools}$ = 9.

Majority participants. Among monoethnic majority participants, extended contact with multiethnic people via ingroup friends was a significant positive predictor of attitudes towards the monoethnic outgroup (b = 3.44, p = .008). Notably, this association emerged after controlling for effects of direct contact with multiethnic individuals. Extended contact was not significantly associated with trust or anxiety towards the monoethnic minority. These findings therefore lend partial support to H2.

Affect generalisation. Among monoethnic majority participants, extended contact with multiethnic people had a significant positive indirect association with attitudes towards the monoethnic minority, mediated by attitudes towards multiethnic people, *Indirect effect* = 0.38, 95% CI = 0.09, 0.70. The total effect was also positive and significant, *Total effect* = 0.59, 95% CI = 0.25, 0.98. However, I did not find evidence for indirect effects of extended contact on either trust or anxiety towards the monoethnic minority, mediated by trust or anxiety towards multiethnic people respectively, Trust: *Indirect effect* = 0.01, 95% CI -0.01, 0.02, *Total effect* = 0.01, 95% CI -0.00, 0.03; Anxiety: *Indirect effect* = -0.01, 95% CI -0.03, 0.00, *Total effect* = -0.01, 95% CI -0.03, 0.00. Therefore, when considering the contribution of affect generalisation to the effect of extended contact with multiethnic individuals, H2.1 was partially supported.

Minority participants. Among monoethnic minority participants, extended contact with multiethnic people via ingroup friends was a significant positive predictor of trust towards the monoethnic majority (b = 0.06, p = .034), a finding that emerged after controlling for effects of direct contact with multiethnic individuals. Extended contact with multiethnic people was unrelated to attitudes or anxiety towards the monoethnic majority. Among minority participants, H2 was therefore also partially supported.

Affect generalisation. Among monoethnic minority participants, extended contact with multiethnic people via ingroup friends was not significantly indirectly associated with attitudes, trust, or anxiety towards the monoethnic minority, via attitudes, trust, or anxiety towards multiethnic people respectively, Attitudes: *Indirect effect* = 0.16, 95% CI -0.08, 0.41, *Total effect* = 0.17, 95% CI -0.23, 0.53; Trust: *Indirect effect* = 0.00, 95% CI -0.01, 0.02,

Total effect = 0.01, 95% CI -0.01, 0.03; Anxiety: *Indirect effect* = -0.01, 95% CI -0.02, 0.01, *Total effect* = -0.01, 95% CI -0.02, 0.01. Considering the contribution of affect generalisation to extended contact effects among minority monoethnic participants in particular, H2.1 was therefore not supported.

Evidence for some effect of extended contact with multiethnic people via ingroup members, both among majority and minority members, further strengthens the claim that friendship contact with multiethnic individuals may contribute positively and indirectly to intergroup relations between monoethnic groups. Among majority participants, I found some evidence for the contribution of affect generalisation to such extended indirect effects, but no evidence for affect generalisation was obtained among minority participants. Although extended contact effects were obtained less reliably than direct contact effects, they may be particularly relevant given the small size of the multiethnic population in England and thus very limited opportunities for direct contact experiences.

Self-Report and Network-Based Contact Measures

To gain insights into the prevalence of mis-categorisation, a mismatch between a contact partner's self-categorisation and how they are perceived, I calculated Pearson correlation coefficients between self-report and network-based contact measures. I then compared statistically those correlations referring to contact with multiethnics with equivalent correlations referring to contact with the monoethnic outgroup. To this end, I used Lee and Preacher's (2013) interactive calculator for the test of the difference between two dependent correlations that have no variable in common. This calculator transforms correlation coefficients into z-scores using Fisher's *r*-to-*z* transformation, computes asymptotic covariance of the estimates, and then uses them in an asymptotic *z*-test (see Steiger, 1980).

Majority participants. The full set of correlations between self-reported and network-based measures of contact between White and multiethnic people are summarised in Table 4.5. Notably, I found correlations between these different approaches to measuring contact with people of mixed background to be small (range: $r = .05$ to $r = .12$) and occasionally non-significant. The only significant correlations emerged when self-reported contact referred

explicitly to contact at school, even though this measure made no reference to the quality of this contact.

Table 4.5
Correlations Between Self-Report and Network-Based Measures for Majority Participants' Contact with Multiethnic People

	Undirected friendship ties to multiethnic individuals	Reciprocal friendship ties to multiethnic individuals
Self-reported multiethnic friends	$r = .07$, $p = .060$	$r = .05$, $p = .170$
Self-reported contact with multiethnic people at school	$r = .12$, $p = .002$	$r = .08$, $p = .049$

Contrastingly, correlations between self-report and network-based measures of contact with Black and Asian individuals were consistently statistically significant and of medium size (see Table 4.6), a finding that replicates Wölfer et al.'s (2017) analysis of correlations between contact measures derived from self-report and SNA measures. Correlations ranged from $r = .32$ to $r = .46$ for measures referring to contact with Black individuals, and from $r = .31$ to $r = .42$ for measures referring to contact with Asian individuals.

Table 4.6
Correlations Between Self-Report and Network-Based Measures for Majority Participants' Contact with Asian and Black People

	Undirected friendship ties to Blacks	Reciprocal friendship ties to Blacks	Undirected friendship ties to Asians	Reciprocal friendship ties to Asians
Self-reported Black/Asian friends	$r = .46$, $p < .001$	$r = .36$, $p < .001$	$r = .42$, $p < .001$	$r = .31$, $p < .001$
Self-reported contact with Blacks/Asians at school	$r = .40$, $p < .001$	$r = .32$, $p < .001$	$r = .42$, $p < .001$	$r = .34$, $p < .001$

Comparisons between correlations referring to multiethnics and correlations of equivalent measures referring to Asian and Black outgroup members consistently indicated that items referring to multiethnics were significantly more weakly correlated than items referring to monoethnic outgroups (see Table 4.7).

Table 4.7

Comparisons of Correlations Between Self-Report and Social Network Measures among Majority Participants

Correlation 1 ($r_{1,2}$)	Correlation 2 ($r_{3,4}$)	*n*	*z*	*p*
Self-reported multiethnic friends, Undirected friendship ties to multiethnics	Self-reported Asian friends, Undirected friendship ties to Asians	662	-6.95	<.001
	Self-reported Black friends, Undirected friendship ties to Blacks	669	-8.07	<.001
Self-reported multiethnic friends, Reciprocal friendship ties to multiethnics	Self-reported Asian friends, Reciprocal friendship ties to Asians	671	-5.03	<.001
	Self-reported Black friends, Reciprocal friendship ties to Blacks	669	-6.28	<.001
Self-reported school contact with multiethnic, Undirected friendship ties to multiethnics	Self-reported school contact with Asians, Undirected friendship ties to Asians	662	-6.02	<.001
	Self-reported school contact with Blacks, Undirected friendship ties to Blacks	662	-5.68	<.001
Self-reported school contact with multiethnic, Reciprocal friendship ties to multiethnics	Self-reported school contact with Asians, Reciprocal friendship ties to Asians	662	-5.07	<.001
	Self-reported school contact with Blacks, Reciprocal friendship ties to Blacks	662	-4.79	<.001

Minority participants. All correlations between monoethnic minority participants' self-reported and network-based contact measures with multiethnic people are displayed in Table 4.8. As for majority participants, correlations were small, although statistically significant throughout, and ranged from $r = .08$ to $r = .21$. Again, correlations between friendship ties and self-reported contact were somewhat stronger when the self-report item referred explicitly to contact at school.

Table 4.8

Minority Participants' Correlations Between Self-Report and Network-Based Measures of Contact with Multiethnic People

	Undirected friendship ties to multiethnic individuals	Reciprocal friendship ties to multiethnic individuals
Self-reported multiethnic friends	$r = .11$, $p = .007$	$r = .08$, $p = .042$

Self-reported contact with multiethnic people at school	$r = .21$, $p < .001$	$r = .15$, $p < .001$

As for majority participants, and again replicating Wölfer et al., (2017), among minority participants the correlations between self-reported and network contact with a monoethnic outgroup, here Whites, were of medium size and significant throughout (Table 4.9). They ranged from $r = .31$ to $r = .45$ and were again strongest when self-report items referred explicitly to contact at school.

Table 4.9.

Majority Participants' Correlations Between Self-Report and Network-Based Measures of Contact with White People

	Undirected friendship ties to White individuals	Reciprocal friendship ties to White individuals
Self-reported White friends	$r = .41$, $p < .001$	$r = .31$, $p < .001$
Self-reported contact with White people at school	$r = .45$, $p < .001$	$r = .35$, $p < .001$

Comparisons between correlations referring to multiethnics and correlations of equivalent measures referring to White outgroup members again indicated that items referring to multiethnics were significantly more weakly correlated than items referring to the monoethnic majority outgroup (see Table 4.10). Therefore, across majority and minority participants, H3 was supported.

Table 4.10

Comparisons of Correlations Between Self-Report and Social Network Measures among Minority Participants

Correlation 1 ($r_{1,2}$)	Correlation 2 ($r_{3,4}$)	*n*	*z*	*p*
Self-reported multiethnic friends, Undirected friendship ties to multiethnics	Self-reported White friends, Undirected friendship ties to Whites	636	-5.87	<.001
Self-reported multiethnic friends, Reciprocal friendship ties to multiethnics	Self-reported White friends, Reciprocal friendship ties to Whites	636	-4.38	<.001
Self-reported school contact with multiethnic, Undirected friendship ties to multiethnics	Self-reported school contact with Whites, Undirected friendship ties to Whites	633	-4.88	<.001
Self-reported school contact with multiethnic, Reciprocal friendship ties to multiethnics	Self-reported school contact with Whites, Reciprocal friendship ties to Whites	633	-3.92	<.001

Together, these findings support the argument that mis-categorisation likely contributes to the effect of contact with multiethnic individuals on intergroup relations between monoethnic groups, both among members of monoethnic majority and minority groups. In Study 4.3, I consider the effect of direct and extended contact with members of a highly visible and culturally well-established multiethnic group, Coloured South Africans.

Study 4.3

Aims and Hypotheses

The aim of Study 4.3, a cross-sectional study, was to test whether evidence for direct and extended contact effects reported in Study 4.2 could be replicated in a context where the multiethnic population is much larger and historically well-established; post-Apartheid South Africa. A context scarred by recent violent intergroup conflict, South African society is still marked by high levels of ethnic segregation and thus few opportunities for meaningful interethnic contact (see Study 3.4 for an overview over the South African context). Nevertheless, the only studies thus far which, to my knowledge, have addressed the involvement of multiethnic individuals in secondary transfer processes (Lolliot, 2013; Swart, 2007) were conducted in South Africa and suggested that direct positive contact with Coloured South Africans could improve White South Africans' attitudes towards Black South Africans. These previous findings highlight the potential of contact with individuals of mixed ethnic or racial background to bridge stark rifts in society, and in Study 4.3 I expand on this research in several significant ways.

Firstly, this study includes not only White but also Black South Africans' contact with Coloured South Africans. Considering that Black South Africans constitute the largest ethnic group in South Africa, this adds important insights into the overall potential of people of mixed background to affect intergroup processes. Secondly, I go beyond previously studied direct contact effects in this context and combine social network and survey data to also study extended contact with Coloureds. In light of high levels of segregation in South Africa today, evidence for such indirect contact effects would further strengthen the argument that multiethnic individuals can significantly influence intergroup relations. Thirdly, I not only consider the contribution of attitude generalisation (see Lolliot, 2013) but also assess the role of trust towards Coloureds as a mediator of the transfer of direct and extended contact. Finally, to my knowledge this is only the second study to address the moderating effect of participants' perceived similarity of primary and secondary outgroups on STEs (Lolliot, 2013, Study 4). Specifically, in the first study to consider the role of similarity in contact with multiethnics, I sought to replicate Lolliot's (2013, Study 4) findings that affect generalisation effects were

stronger among individuals who perceived primary and secondary outgroups to be more similar. Study 4.3 therefore addressed the following hypotheses:

H1. Among White and Black South Africans, direct positive contact with Coloured South Africans will be associated with more positive attitudes and trust towards Black and White South Africans, respectively.

H1.1. Direct positive contact with Coloureds will be indirectly associated with attitudes and trust towards the target outgroup via attitudes and trust towards Coloureds (affect generalisation).

H2. Perceived similarity between Coloureds and the target outgroup will moderate the association of direct contact with Coloureds and relations with the target outgroup, such that direct contact has a more positive effect on secondary outgroup evaluations at higher levels of primary and secondary outgroup similarity.

H3. Among White and Black South Africans, extended positive contact with Coloured South Africans will be associated with more positive attitudes and trust towards Black and White South Africans, respectively.

H3.1. Extended positive contact with Coloureds will be indirectly associated with attitudes and trust towards the target outgroup via attitudes and trust towards Coloureds (affect generalisation).

H4. Perceived similarity between Coloureds and the target outgroup will moderate the association of extended contact with Coloureds and relations with the target outgroup, such that extended contact has a more positive effect on secondary outgroup evaluations at higher levels of primary and secondary outgroup similarity.

Method and Measures

Study 4.3 relied on the same cross-sectional South African sample described in Study 3.4, and I refer the reader to Chapter 3 for details on method and sample.

Self-reported direct positive contact. Positive contact with Black, White, and Coloured South Africans was measured across three items per target group. On five-point scales, participants

rated the frequency of their positive experiences with a given group at university, outside of university, and within the home community (1 = *Never;* 5 = *Very often*). Separate exploratory principal components factor analyses for contact with Black, White, and Coloured South Africans, respectively, indicated that the three contact items consistently loaded onto a single factor. I thus created average scores for contact with each target group (contact with Whites: $\alpha = .69$; contact with Blacks: $\alpha = .68$; contact with Coloureds: $\alpha = .66$).

Extended positive contact with Coloured South Africans. Participants' extended contact with Coloured South Africans via their ingroup friends was calculated following the same two-step approach adopted in Study 4.2. Thus, I used social network data to quantify direct contact with ingroup members, and these ingroup contacts' self-reported contact with Coloureds to calculate participants' extended contact with Coloureds. To quantify ingroup contact, I relied on the friendship nomination procedure whereby participants select their friends from a list of names of students in their *Economics 104* course (further details in Study 3.4, pp. 118). Due to incomplete social network data, I only considered outgoing ties (i.e., participants' own nominations) and could not analyse reciprocal friendship ties. As in Study 3.4, I again considered two measure of contact: both a conservative measure of network-based contact (friendship ties to peers assigned to the same lecture group), and a more liberal measure (friendship ties to peers from the same year group). Further details on the two-step analytical approach to extended contact can be found in Wölfer et al. (2016).

Intergroup trust. One five-point item was used to measure trust towards members of different ethnic groups, one of the key dependent variables; "Thinking about [White/Black/Coloured] South Africans, how many of them do you think can be trusted?" (1 = *None;* 5 = *All*).

The analyses presented here further included measures described in detail in Study 3.4, including a measure of *intergroup attitudes* wherein participants indicated how warm or cold they felt towards a given group as a dependent variable, and ratings of participants' *perceived intergroup* similarity (White vs. Coloured, Black vs. Coloured) as a moderator variable. Covariates at the participant level included in all analyses were *age, gender*, and *socioeconomic*

status. Analyses of extended contact effects further included *the number of ingroup peers* as a context-level covariate.

Analysis Strategy

Following the strategy outlined in Study 4.2, I used multilevel modelling (Raudenbush & Bryk, 2002) with full information maximum likelihood estimation (Collins et al., 2001) to test the association between first self-reported direct, and then extended, contact with Coloured South Africans and relations (attitudes, trust) with the monoethnic outgroup. Furthermore, I tested the moderating effect of perceived similarity between the target outgroup and Coloured South Africans on both direct and extended contact effects. In several random-intercept models, I assessed contact effects separately for White and Black participants regarding their relations with Black and White South Africans, respectively.

I also tested for affect generalisation processes using multilevel within-group mediation models following the approach detailed in Study 4.2. Separately for White and Black participants, these STE analyses tested the association of direct and extended contact with target outgroup evaluations (attitudes, trust) via evaluations of Coloured South Africans. I also tested for moderated mediation effects by assessing whether the perceived similarity between Coloured South Africans and the target outgroup affected the association between evaluations of Coloured South Africans and evaluations of the target outgroup as had previously been shown.

Across analyses, I again controlled not only for age, gender, and socioeconomic status but also direct contact with the target outgroup. The extended contact analyses further included direct contact with Coloured South Africans and the number of ingroup members within the social network as covariates.

Results and Discussion

Direct Contact Effects

White participants. Descriptives and inter-item correlations are summarised in Table A4.13. Among White South African participants, self-reported direct contact with Coloured South

Africans was not significantly associated with attitudes towards Black South Africans. However, it unexpectedly emerged as a negative predictor of trust towards Black South Africans that approached statistical significance (b = -0.08, p = .086). Furthermore, when the interaction between contact with Coloureds and the perceived similarity between Black and Coloured South Africans was included in the model, the negative main effect of contact on trust became significant (b = -0.21, p = .014) and the interaction effect approached significance (b = 0.32, p = .061). These effects are summarised in Table 4.11.

I used Preacher, Curran, and Bauer's (2006) online calculator of interaction effects in multilevel models to determine simple slopes at different values of the moderator. Further inspection of the main effect of contact at low (-1SD = 1.90), medium (M = 3.19) and high (+1SD = 4.48) levels of Black-Coloured similarity, suggested that the association of contact with Coloured South Africans and trust towards Black South Africans was significant and negative at low and medium levels of perceived Black-Coloured similarity (low: simple slope = -0.53, t = 2.14, p = .033; medium: simple slope = -0.21, t = 2.48, p = .014). Conversely, the association tended to be positive when Black and Coloured South Africans were perceived to be very similar, although this relationship was not statistically significant (simple slope = 0.10, t = 1.03, p = .304). The moderating effect of perceived similarity is displayed in Figure 4.3.

Therefore, while analyses of the main effect of direct contact with Coloured South Africans suggest that H1 should be rejected, the overall direction of the moderation of perceived intergroup similarity broadly accords with H2. It suggests that the unexpectedly negative effect of contact with Coloured South Africans on trust towards Black South Africans was ameliorated and tended to be reversed (although not significantly) at higher levels of perceived similarity between Coloured and Black South Africans. I investigate the role of primary and secondary outgroup similarity further in my analyses of affect generalisation.

Table 4.11
White Participants' Association of Direct Positive Contact with Coloureds South Africans and Evaluations of Black South Africans

	White Participants: Relations with Blacks							
	Attitudes				Trust			
	b (SE)	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*
Level 1: *Student*								
DC with Coloured South Africans	-1.27 (1.21)	.296	-3.71 (2.20)	.092	-0.08 (0.05)	.086	-0.21 (0.09)	.014
DC with Black South Africans	14.78 (1.11)	<.001	14.40 (1.04)	<.001	0.48 (0.04)	<.001	0.45 (0.04)	<.001
Age	-0.32 (1.38)	.815	-0.12 (0.84)	.885	0.00 (0.04)	.947	0.01 (0.03)	.709
Gender	0.40 (0.73)	.579	0.46 (0.84)	.580	-0.01 (0.03)	.743	-0.01 (0.03)	.806
Socioeconomic status	0.06 (1.01)	.954	-0.12 (0.85)	.888	-0.05 (0.02)	.010	-0.06 (0.03)	.055
Black-Coloured similarity			-3.04 (3.75)	.418			-0.17 (0.15)	.247
DC with Coloureds X Black-Coloured similarity			5.76 (4.31)	.182			0.32 (0.17)	.061
Level 2: *Classrooms*								
Level 1 Variance σ^2 (*SE*)	279.23 (19.79)		274.76 (19.47)		0.43 (0.03)		0.41 (0.029)	
Level 2 Variance τ (*SE*)	0.18 (2.66)		0.18 (2.62)		0.00 (0.00)		0.00 (0.05)	
Deviance (*df*)	3428.70 (8)		3422.19 (10)		804.92 (8)		702.68 (10)	

Note. SE = Standard error, *df* = degrees of freedom, DC = Direct contact. Predictor variables were standardised for within-model comparison of effect size, while outcome variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. $n_{students} = 405$, $n_{lecture\ groups} = 7$.

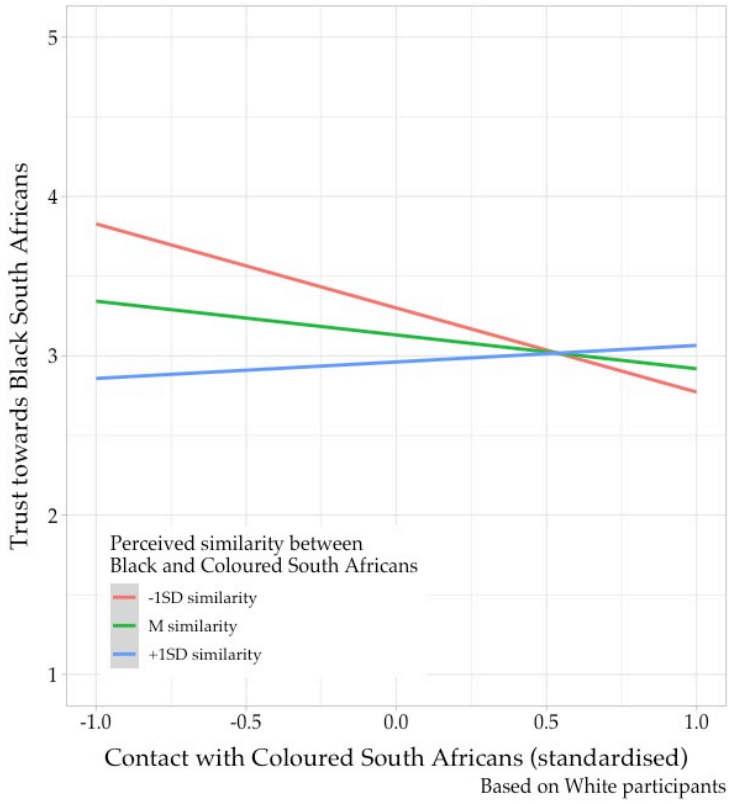

Figure 4.3. Association of contact with Coloured South Africans and trust towards Black South Africans at White participants' different levels of perceived Black-Coloured similarity

Affect generalisation. Although the direct effect on attitudes towards Black South Africans was not significant, contact with Coloured South Africans had a significant positive indirect effect on attitudes towards Black South Africans via its association with attitudes towards Coloureds, *Indirect effect* = 8.06, 95% CI = 6.22, 10.13. The total effect was not statistically significant, *Total effect* = -1.65, 95% CI = -4.61, 1.35.

To test the moderating role of perceived similarity between Coloured and Black South Africans on this mediation, I regressed attitudes towards Black South Africans on attitudes towards Coloured South Africans. Controlling also for contact with Coloured and Black South Africans, demographic variables, and the main effect of perceived similarity, the Attitudes x Similarity interaction effect was significant (b = 6.11, p = .049). Inspection of simple slopes suggested that attitudes towards Coloureds generalised to attitudes towards Blacks at medium (M) and high (+1SD) levels of similarity between Coloured and Black South Africans (medium: simple slope

= 9.39, $p < .001$; high: simple slope = 15.50, $p < .001$), but not at low (-1*SD*) levels of similarity (simple slope = 3.28, $p = .493$).

Contact with Coloured South Africans also had a significant positive indirect effect on trust towards Black South African via its association with trust towards Coloureds, *Indirect effect* = 0.18, 95% CI = 0.10, 0.25. However, the total effect of the mediation was again not statistically significant, *Total effect* = -0.11, 95% CI = -0.22, 0.00. Perceived similarity between Coloured and Black South Africans did not moderate the association between trust towards Coloureds and trust towards Blacks ($b = 0.10$, $p = .415$).

The direct associations between all predictor, mediator, and dependent variables are summarised in the Appendix in Table A4.14. In line with H1.1, these findings suggest that direct contact with Coloureds can indirectly have a positive effect on evaluations of Blacks through a process of affect generalisation. They also lend partial support to H2 and highlight that where intergroup similarity moderates contact effects, evaluations of the primary outgroup generalise to evaluations of the secondary outgroup at medium and high levels of similarity.

Black participants. Descriptives and inter-item correlations are summarised in Table A4.15. Among Black participants, I again found no significant direct association between direct contact with Coloured South Africans and attitudes towards White South Africans. However, similarly to findings among White participants, the association between direct contact with Coloureds and trust towards Whites was significant and negative ($b = -0.33$, $p = .006$). Perceived White-Coloured similarity did not moderate this main effect on trust (see Table 4.12). Therefore, these findings lead me to reject H1 among Black participants as well.

Affect generalisation. Although contact with Coloured South Africans did not directly affect Black participants' attitudes towards Whites, it had a significant positive indirect effect on attitudes towards Whites, mediated by attitudes towards Coloureds, *Indirect effect* = 7.72, 95% CI = 2.63, 13.48. The total effect of this multilevel mediation was not statistically significant, *Total effect* = 0.56, 95% CI -9.31, 9.71.

Table 4.12

Black Participants' Association of Direct Positive Contact with Coloured South Africans and Evaluations of White South Africans

	Black Participants: Relations with Whites							
	Attitudes				Trust			
	b (SE)	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*
Level 1: *Student*								
DC with Coloured South Africans	0.48 (3.21)	.881	-2.00 (6.17)	.747	-0.33 (0.12)	.006	-0.53 (0.22)	.022
DC with White South Africans	12.85 (3.27)	<.001	12.48 (3.24)	<.001	0.35 (0.12)	.005	0.33 (0.12)	.008
Age	-0.82 (3.19)	.798	-1.11 (3.18)	.730	-0.17 (0.12)	.142	-0.17 (0.12)	.145
Gender	1.88 (3.25)	.565	2.89 (3.29)	.384	-0.20 (0.12)	.096	-0.16 (0.12)	.180
Socioeconomic status	-0.46 (2.78)	.870	-0.33 (2.75)	.906	-0.06 (0.10)	.572	-0.06 (0.10)	.546
White-Coloured similarity			-1.29 (11.11)	.908			-0.31 (0.40)	.451
DC with Coloureds X White-Coloured similarity			5.71 (12.73)	.656			0.47 (0.46)	.313
Level 2: *Classrooms*								
Level 1 Variance σ^2 (*SE*)	394.48 (75.80)		382.03 (73.41)		0.52 (0.10)		0.50 (0.10)	
Level 2 Variance τ (*SE*)	0.16 (21.78)		0.19 (21.12)		0.00 (0.03)		0.00 (0.03)	
Deviance (*df*)	518.29 (8)		516.41 (10)		126.84 (8)		124.95 (10)	

Note. SE = Standard error, *df* = degrees of freedom, DC = Direct contact. Predictor variables were standardised for within-model comparison of effect size, while outcome variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. $n_{students} = 59$, $n_{lecture\ groups} = 5$.

To test the moderating effect of perceived similarity between Coloured and White South Africans on this mediation, I regressed attitudes towards Whites on attitudes towards Coloureds and included Coloured-White similarity as a moderator. Controlling for positive contact with Whites and Coloureds, demographics, and the main effect of perceived similarity, the association of attitudes towards Coloureds and attitudes towards Whites was not significantly moderated by perceived primary and secondary outgroup similarity (b = 10.47, p = .215).

The indirect effect of contact with Coloureds on trust towards Whites mediated by trust towards Coloureds was significant and positive, *Indirect effect* = 0.20, 95% CI = 0.06, 0.35, although the total effect was significant and negative, *Total effect* = -0.42, 95% CI = -0.74, -0.14. Following the same analytic strategy as for my analyses of attitude generalisation, I again found no moderating effect of perceived similarity on the association between trust towards Coloureds and trust towards Whites (b = -0.56, p = .169).

Together, these analyses among Black participants accord with H1.1 in suggesting that direct contact with Coloured South Africans is indirectly and positively associated with evaluations of White South Africans through a process of affect generalisation. However, there was no evidence that perceived intergroup similarity moderated direct contact effects, and H2 was therefore not supported for Black participants. Furthermore, I again found some unexpected evidence for a negative association between contact with Coloureds and evaluations of the secondary outgroup, Whites.

Extended Contact Effects

White participants. Among White participants, extended contact with Coloured South Africans via White ingroup friends was not directly related to either attitudes or trust towards Black South Africans. This was the case both when the extended contact measure included ingroup ties across the entire year group and when only ingroup ties within the same lecture group were included. Details on these analyses are provided in Table 4.13.

Table 4.13

White Participants' Association of Extended Contact with Coloured South Africans and Evaluations of Black South Africans

	Attitudes				Trust			
	Lecture Group Based		Year Group Based		Lecture Group Based		Year Group Based	
	b (SE), p	*b (SE), p*	*b (SE), p*	*b (SE), p*	*b (SE), p*	*b (SE), p*	*b (SE), p*	*b (SE), p*
Level 1: *Student*								
EC with Coloured South Africans	-0.49 (0.89), .583	-1.06 (2.31), .647	0.11 (0.85), .895	0.39 (2.21), .859	0.02 (0.04), .591	-0.01 (0.09), .895	-0.01 (0.03), .857	-0.08 (0.09), .356
DC with Black South Africans	14.75 (1.04), <.001	14.36 (1.06), <.001	14.79 (1.04), <.001	14.44 (1.04), <.001	0.47 (0.04), <.001	0.45 (0.04), <.001	0.48 (0.04), <.001	0.46 (0.04), <.001
DC with Coloured South Africans	-1.24 (1.03), .230	-1.07 (1.03), .300	-1.28 (1.03), .217	-1.12 (1.03), .278	-0.08 (0.04), .054	-0.07 (0.04), .087	-0.08 (0.04), .053	-0.07 (0.04), .078
Age	-0.39 (0.86), .649	-0.23 (0.86), .790	-0.30 (0.85), .723	-0.11 (0.86), .901	0.00 (0.03), .998	0.01 (0.03), .792	0.00 (0.03), .962	0.01 (0.03), .798
Gender	0.39 (0.84), .643	0.40 (0.84), .632	0.40 (0.83), .635	0.42 (0.84), .616	-0.01 (0.03), .781	-0.01 (0.03), .791	-0.01 (0.03), 762	-0.01 (0.03), .729
Socioeconomic status	0.01 (0.86), .993	-0.07 (0.86), .933	0.06 (0.85), .943	-0.04 (0.85), .967	-0.05 (0.03), .142	-0.05 (0.03), .107	-0.06 (0.03), .104	-0.06 (0.03), .092
Black-Coloured similarity		1.67 (1.09), .128		1.99 (1.25), .113		0.09 (0.04), .034		0.07 (0.05), .179
EC with Blacks X Black-Coloured similarity		0.63 (2.39), .793		-0.38 (2.40), .876		0.03 (0.09), .717		0.09 (0.09), .365
Level 2: *Classrooms*								
Number of ingroup peers	0.23 (0.86), .799	0.17 (0.86), .86			-0.05 (0.03), .169	-0.06 (0.03), .144		
Level 1 Variance σ^2 (*SE*)	279.07 (19.78)	275.78 (19.54)	279.20 (19.79)	275.95 (19.56)	0.43 (0.03)	0.42 (0.03)	0.43 (0.03)	0.42 (0.03)
Level 2 Variance τ (*SE*)	0.11 (2.62)	0.11 (2.59)	0.19 (2.66)	0.19 (2.63)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.04)
Deviance (*df*)	3428.38 (10)	3423.58	3428.69 (9)	3423.94 (11)	802.37 (10)	793.14 (12)	804.88 (9)	795.30 (11)

Note. SE = Standard error, *df* = degrees of freedom, DC = Direct contact, EC = Extended contact. Predictor variables were standardised for within-model comparison of effect size, while dependent variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. $n_{students} = 405$, $n_{lecture\ groups} = 7$.

Affect generalisation. The indirect effect of lecture group-based extended contact with Coloured South Africans on attitudes towards Black South Africans, mediated by attitudes towards Coloured South Africans, was not significant, *Indirect effect* = 0.06, 95% CI = -0.18, 0.30, and neither was the total effect, *Total effect* = -0.12, 95% CI = -0.48, 0.30. A similar finding emerged when the extended contact measure included ingroup ties across the entire year group, *Indirect effect* = 0.08, 95% CI = -0.07, 0.22; *Total effect* = 0.01, 95% CI = -0.24, 0.27.

Furthermore, the indirect effect of lecture group-based extended contact with Coloured South Africans on trust towards Black South Africans, mediated by trust towards Coloureds, was not significant, *Indirect effect* = 0.010, 95% CI = 0.00, 0.02, and neither was the total effect, *Total effect* = 0.00, 95% CI = -0.02, 0.02. Similar findings emerged for the year group-based extended contact measure, *Indirect effect* = 0.00, 95% CI = -0.01, 0.01; *Total effect* = -0.00, 95% CI = -0.01, 0.01.

All direct associations between predictor, mediator, and dependent variables are summarised in Table A4.16. Together, these findings do not suggest that extended contact with Coloured South Africans has any direct or indirect effect on White participants' evaluations of Black South Africans. They therefore lead me to reject H3, H3.1., and, for a lack of contact effects to be moderated, H4.

Black participants. Among Black participants, extended contact with Coloured South Africans via Black ingroup friends was also not directly related to attitudes towards Whites, both when the extended contact measure included ingroup ties across the entire year group and when it was restricted to ingroup ties within the lecture group.

Similarly, no extended contact effect was found on trust when extended contact was measured within the lecture group. However, extended contact across the year group was a positive predictor of trust towards Whites that approached statistical significance ($b = 0.17$, $p = .080$). Furthermore, this extended contact effect was moderated by perceived similarity between White and Coloured South Africans ($b = 0.71$, $p = .031$). All analyses of extended contact effects among Black participants are summarised in Table 4.14.

Table 4.14

Black Participants' Association of Extended Contact with Coloured South Africans and Evaluations of White South Africans

	Attitudes				Trust			
	Lecture Group Based		Year Group Based		Lecture Group Based		Year Group Based	
	b (SE), p	*b (SE), p*	*b (SE), p*	*b (SE), p*	*b (SE), p*	*b (SE), p*	*b (SE), p*	*b (SE), p*
Level 1: *Student*								
EC with Coloured South Africans	-2.26 (2.64), .396	-2.26 (6.53), .731	-4.54 (2.67), .096	-1.28 (8.93), .887	-0.02 (0.10), .807	-0.11 (0.24), .638	0.17 (0.10), .080	-0.51 (0.31), .111
DC with White South Africans	12.82 (3.25), <.001	12.59 (3.22), <.001	12.81 (3.19), <.001	13.00 (3.29), <.001	0.35 (0.12), .004	0.34 (0.12), .005	0.36 (0.11), .003	0.27 (0.12), .027
DC with Coloured South Africans	0.48 (3.20), .881	0.38 (3.17), .904	1.29 (3.17), .686	0.99 (3.16), .755	-0.34 (0.12), .005	-0.34 (0.11), .004	-0.38 (0.12), .002	-0.32 (0.11), .006
Age	-1.32 (3.25), .664	-1.83 (3.22), .572	-0.94 (3.12), .764	-1.13 (3.17), .724	-0.18 (0.12), .127	-0.19 (0.12), .112	-0.17 (0.11), .132	-0.24 (0.11), .038
Gender	1.90 (3.29), .568	2.77 (3.31), .408	2.39 (3.18), .456	3.16 (3.20), .328	-0.22 (0.12), .064	-0.20 (0.12), .096	-0.22 (0.11), .065	-0.17 (0.11), .133
Socioeconomic status	-0.46 (2.76), .869	-0.19 (2.75), .944	-0.30 (2.71), .914	-0.14 (2.69), .960	-0.06 (0.10), .532	-0.05 (0.10), .604	-0.08 (0.10), .411	-0.04 (0.10), .681
White-Coloured similarity		3.50 (2.81), .219		3.29 (2.86), .141		0.07 (0.10), .501		0.00 (0.10), .962
EC with whites X White-Coloured similarity		0.07 (6.50), .991		-3.71 (9.05), .684		0.10 (0.24), .680		0.71 (0.32), .031
Level 2: *Classrooms*								
Number of ingroup peers	-0.16 (3.07), .962	0.25 (3.04), .94			-0.13 (0.11), .334	-0.12 (0.11), .370		
Level 1 Variance σ^2 (*SE*)	389.60 (74.86)	378.82 (72.79)	376.12 (72.27)	362.10 (69.57)	0.51 (0.10)	0.50 (0.10)	0.48 (0.09)	0.45 (0.09)
Level 2 Variance τ (*SE*)	0.09 (21.47)	0.10 (20.88)	0.08 (20.72)	0.08 (19.96)	0.00 (0.08)	0.00 (0.03)	0.02 (0.04)	0.04 (0.03)
Deviance (*df*)	517.55 (10)	515.89 (12)	515.47 (9)	513.23 (11)	125.43 (10)	124.59 (12)	124.08 (9)	118.73 (11)

Note. SE = Standard error, *df* = degrees of freedom, DC = Direct contact, EC = Extended contact. Predictor variables were standardised for within-model comparison of effect size, while dependent variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. $n_{students} = 59$, $n_{lecture\ groups} = 5$.

Inspection of the association between extended contact with Coloureds and trust towards Whites at low (-1*SD* = 1.88), medium (*M* = 3.37) and high (+1*SD* = 4.86) levels of White-Coloured similarity indicated that the association of extended contact with Coloureds and trust towards Whites was negative and approaching significance at low levels of White-Coloured similarity (simple slope = -1.22, $t = 1.95$, $p = .058$), negative yet not significant at medium levels of similarity (simple slope = -0.51, $t = 1.63$, $p = .111$), but positive and significant at high levels of White-Coloured similarity (simple slope = 0.20, $t = 2.09$, $p = .043$). The moderating effect of perceived similarity on the association between extended contact with Coloureds and trust towards Whites is displayed in Figure 4.4.

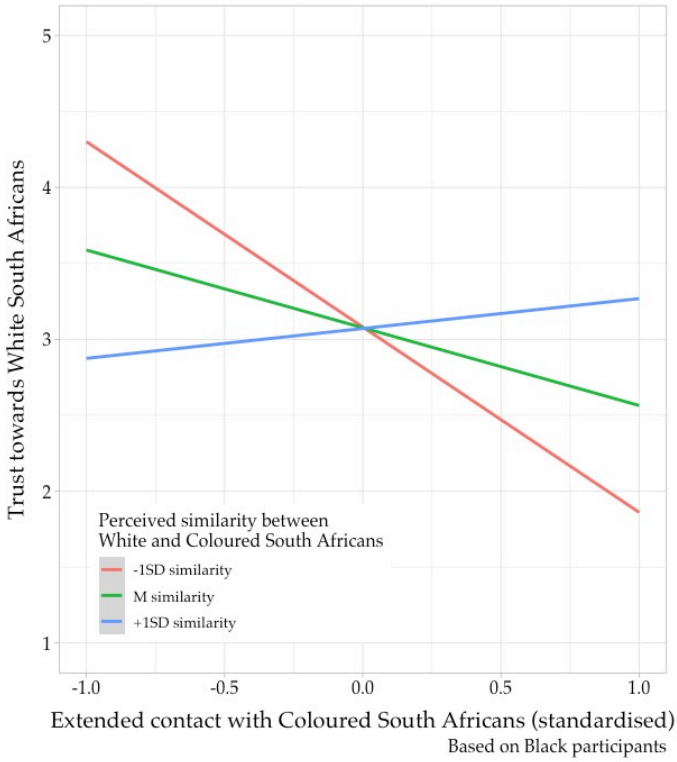

Figure 4.4. Association of extended contact with Coloured South Africans and trust towards White South Africans at Black participants' different levels of perceived White-Coloured similarity

At face value, these findings do not support H3. However, when the role of perceived intergroup similarity was taken into account, a significant positive extended contact effect on outgroup trust emerged at high levels of primary and secondary outgroup similarity, and this finding supports H4.

Affect generalisation. The indirect effect of lecture group-based extended contact with Coloured South Africans on attitudes towards Whites, mediated by attitudes towards Coloureds, was not significant, *Indirect effect* = -1.95, 95% CI = -5.35, 1.15, and neither was the total effect, *Total effect* = -2.03, 95% CI = -5.20, 2.18. Lecture group-based extended contact with Coloured South Africans did also not indirectly relate to trust towards Whites, mediated by trust towards Coloureds, *Indirect effect* = 0.00, 95% CI = -0.07, 0.08; *Total effect* = -0.02, 95% CI = -0.20, 0.23. Similarly, I found no significant indirect effect of year group-based extended contact with Coloured South Africans on attitudes towards Whites, mediated by attitudes towards Coloured South Africans, *Indirect effect* = -0.46, 95% CI = -1.72, .88, *Total effect* = -1.25, 95% CI = -3.25, 0.68, or on trust towards Whites, mediated by trust towards Coloured South Africans, *Indirect effect* = 0.01, 95% CI = -0.01, 0.05, *Total effect* = -0.03, 95% CI = -0.04, 0.10. All direct associations between predictor, mediator, and dependent variables are summarised in Tables A4.17. These findings thus do not suggest that extended contact with Coloureds indirectly affects Black participants' relations with Whites through affect generalisation. They therefore lead me to reject H3.1.

Overall, the results of Study 4.3 suggest that direct and, potentially at high levels of primary and secondary outgroup similarity, extended positive contact experiences with Coloured South Africans are positively associated with intergroup relations between monoethnic groups. Direct contact effects in particular came about through the indirect processes of affect generalisation, a finding that accords with previous research on secondary transfer (e.g., Tausch et al., 2010; Vezzali & Giovannini, 2012). However, affect generalisation was not found to contribute to extended contact effects. Furthermore, evidence for positive contact effects, both direct (among majority participants, albeit non-significantly) and extended (among minority participants), tended to be stronger among participants who perceived primary and secondary outgroup to be more similar. Evidence for the moderating effect of intergroup similarity on extended contact effects in particular, contributes to the literature on of STEs which so far has only addressed the role of perceived similarity in direct contact processes.

Unexpectedly, Study 4.3 also suggested that contact with a primary outgroup can be *negatively* associated with secondary outgroup evaluations. Negative STEs have received very little research attention thus far, but Spiegler, Zingora, Christ, Stolle, and Hewstone (2020) recently

suggested that negative STEs could emerge when individuals perceive the primary and secondary outgroups to be in conflict. They argued that cognitive consistency motives (e.g., Heider, 1958) could translate into a worsening of secondary outgroup evaluations if the primary outgroup, and thus the positive contact partner, is seen to have an antagonistic relationship with the secondary outgroup (consistent with the sayings, "your friend is my friend" and "your enemy is my enemy"). In the post-Apartheid South African context, which is characterised by relatively recent violent interethnic conflict and stark ethnic inequalities, it seems plausible that participants perceived some conflict between Coloureds, the primary outgroup, and the Black or White secondary outgroup. The finding that negative effects emerged in particular when the primary and secondary outgroup were perceived to be strongly dissimilar, further supports this post-hoc explanation. However, how negative direct STEs can be reconciled with positive indirect effects through affect generalisation remains unclear. Future research ought to test the replicability of these findings in a longitudinal design and to include more direct measures of perceived intergroup conflict.

General Discussion

Because multiethnic individuals are often subsumed under monoethnic category labels unless an explicitly multiethnic category is salient (Gaither, 2015; Kang & Bodenhausen, 2015), previous survey-based studies on intergroup contact have likely glossed over any unique contribution of multiracial or -ethnic individuals to intergroup processes. In this chapter, I presented one longitudinal (Study 4.1) and two cross-sectional studies (Studies 4.2 and 4.3) that, through a combination of social network and survey data, provided some of the first evidence for positive effects of real-life direct and extended contact with multiethnic individuals on relations between monoethnic groups. The following discussion integrates these findings with the research literatures on, first, direct, and then extended intergroup contact. I also consider how the social categorisation of multiethnic people might, from the point of view of monoethnic individuals, limit the effectiveness of positive contact with them.

Direct Contact Effects

Study 4.1 suggested that White participants' friendship with minority-White (e.g., Asian-White) multiethnic people can facilitate more positive contact between White participants and

members of the specific minority outgroup (e.g., Asians) that also contributes to their friend's multiethnic background. Although it did not affect outgroup evaluations directly, Study 4.1 thus provided first evidence to suggest that contact with multiethnic friends has the potential to catalyse more positive intergroup relations between members of majority and minority monoethnic groups.

Studies 4.2 and 4.3 provided further evidence for indirect effects of positive contact with multiethnic individuals. In Study 4.2, direct positive contact was indirectly associated, through a process of affect generalisation, with more positive attitudes and trust, and less anxiety towards monoethnic outgroup members. These effects emerged independently of direct contact with members of the target outgroup. Furthermore, they could be partially replicated in Study 4.3 which, unlike Studies 4.1 and 4.2, was conducted in South Africa, a context where the group of Coloured South Africans constitutes a much larger multiethnic minority than is the case for multiethnic people in the UK, and a group that is treated as separate from the Black and White South African communities. Here, direct contact had a positive effect on monoethnic outgroup evaluations that was strictly indirect and again mediated by affect generalisation processes. At the same time, Study 4.3 also revealed some unexpected evidence for negative direct STEs, a pattern of STEs that has received little research attention thus far but may emerge when individuals perceive the primary and secondary outgroups to be in conflict (Spiegler et al., 2020). However, this unexpected pattern of results warrants replication and awaits further investigation in studies that include direct measures of perceived primary and secondary outgroup conflict.

Evidence for an association of direct contact with multiethnic people and more positive relations with monoethnic outgroups is consistent with lab-based research that linked such contact to lower levels of racial essentialism (Gaither et al., 2018; Sanchez et al., 2015) and therefore, by extension, to a reduction of outgroup stereotyping and contact avoidance (e.g., Bastian & Haslam, 2006; Williams & Eberhardt, 2008). It also accords with research suggesting that the presence of mixed Black-White individuals in an intergroup context can reduce intergroup threat and prejudice towards Black outgroup members among White participants (Levy et al., 2019). Building on these findings, the research presented in this chapter was

conducted in real-life rather than artificial laboratory contexts, one of which, South Africa, is characterised by high levels of segregation and recent interethnic conflict. Furthermore, it included different contact measures and multiple indicators of intergroup relations (trust, anxiety, attitudes). The research presented in this chapter therefore provides evidence of high ecological validity for the potential of direct positive contact with multiethnic individuals to improve wider intergroup relations; this is the case, even when it occurs in complex real-life environments where opportunities for contact with multiethnic people are rare and many individuals who self-categorise as multiethnic may not be perceived as such.

Extended Contact Effects

In Studies 4.2 and 4.3, I went beyond direct contact experiences and combined network-based measures of ingroup contact and self-reported contact with multiethnic people (Coloureds in South Africa), to study extended contact effects (Wölfer et al., 2016; Wright et al., 1997). Extended contact research had not yet addressed the possibility that, like direct contact, it could also affect relations with uninvolved secondary outgroups, although Lolliot (2013) raised this as a possibility. Study 4.2 and, to a more limited extent, Study 4.3 provided some initial evidence for positive effects of extended contact with multiethnic people on monoethnic outgroup attitudes and trust.

Due to the small size of multiethnic populations or, especially in the South African context, high levels of segregation, opportunities for contact with people of multiethnic background are often rare. In these environments, evidence for the generalisation of extended contact effects to uninvolved monoethnic outgroups is particularly promising. Furthermore, it expands our understanding of indirect contact effects in suggesting that two indirect contact effects which thus far have been studied separately – secondary transfer and extended contact – may in fact conjointly influence intergroup relations.

Even though the studies presented in in this chapter suggest that direct and extended contact with multiethnic individuals can contribute positively to monoethnic individuals' intergroup relations, many contact effects studied in this chapter were not statistically significant or very small. In some instances, this may reflect small sample sizes (especially where minority sub-

samples were concerned) or very limited opportunities for contact with multiethnic people (especially in Study 4.1, where network ties were used to quantify contact). However, my research also affords further insights into cognitive processes that may limit the effect of contact with multiethnic individuals, most notably how they are categorised by monoethnic majority and minority group members.

Multiethnic Categorisation

The studies included in this chapter provide at best indirect insights into what ethnic categories are salient during monoethnic individuals' contact with multiethnic friends, a factor that determines the cognitive and affective processes underpinning any contact effects. In Study 4.1, I used social network data and multiethnic individuals' self-categorisation to quantify contact with multiethnic people. This approach allowed me to circumvent individuals' limited ability to give self-reports of their experiences with members of less visible social groups. However, it did not allow me to discern how monoethnic participants categorised their multiethnic friends. Friendship as a particularly intimate form of contact likely reveals the mixed friend's multiethnic background, yet multiethnic individuals can emphasise different parts of their social identity selectively (Hong, Benet-Martinez, Chiu, & Morris, 2003; Hong et al., 2000; Verkuyten & Pouliasi, 2006). How they are categorised by their contact partners is therefore likely to vary – both within monoethnic perceivers across situations, and across monoethnic perceivers.

In Study 4.1, monoethnic participants might have perceived their multiethnic friends as belonging simultaneously to the monoethnic ingroup and a monoethnic outgroup, and some researchers have operationalised 'mixed-race' as the combination of two monoethnic groups (Peery & Bodenhausen, 2008). However, it is unclear whether perceivers spontaneously assign a contact partner two category memberships from the same categorical space (e.g., two ethnic categories), or whether one category will instead dominate perception (Freeman et al., 2010; 2016), and how perceivers relate their own monoethnic background to this combined identity.

Monoethnic participants in Study 4.1 might also have categorised their multiethnic friends as members of a distinct mixed category. Study 4.2, in which I asked participants to self-report on

their positive contact with 'Mixed or Mixed British' individuals, may inadvertently have addressed the outcomes of this specific form of categorisation. In this study, the positive effects of contact with people who participants clearly identified as multiethnic on monoethnic outgroup evaluations suggests that the implications of contact with multiethnics can be described in terms of secondary transfer (Pettigrew, 2009). This argument was strengthened further by evidence for the contribution of affect generalisation to the indirect effect of contact with multiethnic friends, a process that has been shown repeatedly to underpin STEs (e.g., Lolliot, 2013; Tausch et al., 2010).

Nevertheless, a focus on unambiguously multiethnic contact partners necessarily excludes participants' interactions with individuals of mixed background whom they do not categorise as mixed. Conceivably, during some of the contact experiences reported retrospectively as contact with multiethnic individuals, participants may have categorised their contact partners as ethnically ambiguous, an atypical outgroup member, or otherwise. Relatedly, if some contact with multiply categorisable multiethnic individuals has been experienced in terms of these alternative social category memberships, monoethnic participants may have omitted such contact from their self-report.

Study 4.2 showed that the self-reported quantity of contact with multiethnic individuals is at best only weakly correlated with a social network approach to measuring intergroup contact. Conversely, correlations between network and self-report measures of contact with monoethnic outgroup members were more robust, a finding that replicates Wölfer et al.'s (2017) analysis of the correspondence between self-report and SNA-based measures of contact with monoethnic outgroups (Studies 2 and 3). Furthermore, statistical comparisons of correlations across target groups (monoethnic vs. multiethnic) consistently indicated that the mismatch between the two approaches to measuring contact was stronger when contact with multiethnics was concerned. In line with previous research on the frequent experience of mis-categorisation among people of multiethnic background (Alibhai-Brown, 2001; Cheryan & Monin, 2005; Halberstadt et al. 2011), these findings suggests that monoethnic participants in Studies 4.1 and 4.2 may not have experienced, or may not encode or possibly retrieve, much of their contact with multiethnic people as contact with people of multiethnic background.

In the South African context, in which Study 4.3 was conducted, the multiethnic group, Coloured South Africans, has long been treated as distinct from Black and White South Africans – culturally, politically, and socioeconomically (Adhikari, 2009). Unlike in Studies 4.1 and 4.2 where participants could have categorised their multiethnic friends as (partial) ingroup or outgroup members, participants in Study 4.3 might therefore have categorised their Coloured friends as members of a distinct ethnic outgroup, even though Coloured South Africans constitute an internally diverse population. In line with such reasoning and consistent with previous research on secondary transfer in the South African intergroup context (Lolliot, 2013; Swart, 2007), I again found evidence for STEs, including affect generalisation.

The role of similarity perceptions. Research on contact generalisation has highlighted that similarity perceptions moderate generalisation processes. In the case of individual-to-group generalisation, contact can fail to affect outgroup evaluations if the contact partner is not sufficiently associated with a mental representation of the outgroup prototype and discounted as an exceptional outgroup member (Brown & Hewstone, 2005; Rothbart, 1996; Rothbart & Lewis, 1988). As I discussed in Chapter 1, several studies now point to a weak association of multiethnic individuals with a monoethnic prototype (Blascovich et al., 1997; Knowles & Peng, 2005; Sanchez et al., 2011), and this raises doubts about the efficacy of contact with multiethnic individuals who are categorised as monoethnic outgroup members.

Relatedly, research on STEs has shown that contact with a primary outgroup is most likely to affect relations with an uninvolved secondary outgroup if both outgroups are deemed similar (Lolliot, 2013; Harwood et al., 2011, albeit for imagined contact). I provided initial indirect evidence for the significance of intergroup similarity in Study 4.1, where friendship ties to multiethnics only affected relations with members of a related monoethnic outgroup (i.e., the monoethnic outgroup, e.g., Asian, was contained in the multiethnic contact partner's self-categorisation, e.g. White-Asian), not members of a monoethnic outgroup that was unrelated to the multiethnic friend's background (e.g., Black). Study 4.3 included more direct evidence for the moderating effect of primary and secondary outgroup similarity on both direct and extended contact effects. This finding not only replicates the only other study thus far which measured similarity perceptions directly among participants (Lolliot, 2013, Study 4), but it also

raises the possibility that similarity perceptions moderate the transfer of both direct and extended contact effects. [4]

The role of group status. Although my research suggests that contact with multiethnic people has the potential to facilitate improved relations between monoethnic groups, I found more consistent evidence for positive contact effects among majority than among minority participants.[5] In Study 4.1, unlike among majority participants, minority monoethnic participants' contact experiences were unrelated to friendship with Whites. In Study 4.2, minority participants' direct contact with multiethnic friends was also unrelated to anxiety, trust, and attitudes towards Whites. Although I found some evidence for (small) positive extended contact effects and indirect effects of direct contact through affect generalisation among minority participants, my findings largely suggest that positive contact with multiethnic people has more potential to improve how majority group members relate to the minority than vice versa.

Both the social categorisation and intergroup contact literatures can inform our understanding of this discrepancy. The findings reported in Studies 4.1 and 4.2 might reflect the more general tendency for intergroup contact to be less efficacious among minority than majority group members (Pettigrew & Tropp, 2006; see also Dovidio et al., 2017), although this trend is not universal and remains a subject of debate (e.g., Wölfer et al., 2016, Study 1).

Differences between majority and minority participants could also reflect differences in how they categorise multiethnic people. Recent experimental research suggested that ethnic minority group members tend to categorise ambiguous targets as ingroup members, whereas ethnic majority group members tend to categorise them as outgroup members (Gaither et al.,

[4] Unpublished research by Asbrock and colleagues did not find that primary and secondary outgroup similarity moderated the transfer of extended contact effects. However, unlike Study 4.3, Asbrock et al. derived similarity ratings from an independent sample and also did not control for contact with the secondary outgroup.

[5] The South African context of Study 4.3 defies the common distinction between majority and minority groups (see Swart, 2007). While Black South Africans constitute a large ethnic majority in South Africa, White South Africans still wield greater economic power. In the context of higher education, numerical power relations are reversed with a significantly larger number of White than Black South Africans attending university (Berat, 2010). In light of such ambiguous power relations, I focus my discussion on the English context of Studies 4.1 and 4.2, where majority and minority groups are more clearly defined.

2016; Ho et al., 2017). In light of these findings, minority group members might experience contact with multiethnic friends as ingroup contact, a form of contact which has previously been associated with lower levels of outgroup friendship and, albeit less reliably, more negative outgroup attitudes (Levin et al., 2003; see also Dovidio et al., 2017), and could thus explain negative findings among minority participants. To test whether these categorisation processes contribute to the observed effects, future research could test the moderating role of variables that are known to affect how exclusively individuals define their ingroup, including the experience of discrimination and social exclusion (Gaither et al., 2016; Ho et al., 2017).

This discussion of my findings highlights that, in order to understand not only whether but also how contact with multiethnic individuals can affect intergroup relations, it is paramount to understand the social categorisation processes that govern such interactions (Nicolas et al., 2017). When it comes to studying contact with multiply-categorisable individuals, the well-established survey and more novel social network measures of contact employed in the research presented here reach their limits. Alternative methods, including lab-based interactions with confederates, diary studies that track how individuals experience specific interactions, and social network research where participants report how they categorise each of their friends, could be explored as complementary approaches to contact research that includes multiethnic populations.

Limitations

At this early stage of research on contact with multiethnic people, many unanswered questions and caveats remain that limit the interpretation of my results. I have already outlined limitations of survey and social network measures of contact with multiply-categorisable individuals. More generally, while I have shown how social network data can enrich the study of contact, it is collected within a necessarily circumscribed social milieu (e.g., a classroom at school) and therefore provides only a conservative estimate of participants' intergroup contact experiences. This is especially problematic when the group of potential contact partners of interest is small, as is the case for the multiethnic population in the UK, and I expect contact experiences to be rare.

As an additional limitation, I acknowledge that none of the studies presented here provides evidence of any causal effects of contact with multiethnic individuals. Although Study 4.1 had a longitudinal element, thereby increasing confidence in the direction of causality, a lack of wave 3 network data meant I could not test the competing hypothesis that outgroup relations might predict friendship ties to multiethnic people. The cross-sectional design of Studies 4.2 and 4.3 also did not allow me to draw conclusions about the direction of any relationship between having multiethnic friends and evaluations of a monoethnic outgroup. Nevertheless, previous longitudinal (e.g., Binder et al., 2009; Swart et al., 2011) and experimental (Page-Gould et al., 2008; Wright et al., 1997) research on intergroup contact does provide some confidence in a causal effect of intergroup contact and intergroup relations.

In Studies 4.2 and 4.3, a further methodological limitation was the use of identical measures to study attitudes, trust, and anxiety towards the monoethnic outgroup and multiethnic people. This raises the possibility that evidence for affect generalisation partly reflects shared method variance (Tausch et al., 2010). The reliability of findings reported in Study 4.3 was also limited, due to survey length constraints, by the reliance on single-item measures. Nevertheless, previous research that included multiple different attitude and prejudice scales also found affect generalisation to contribute to STEs (Lolliot, 2013, Study 5; Pettigrew, 2009; Schmid et al., 2012, Study 2), and this should strengthen our confidence in the findings presented here. Further research on the contribution of contact with multiethnic individuals to intergroup relation between monoethnic groups will benefit from adopting both a longitudinal perspective and from varying the scales used to measure primary and secondary outgroup evaluations.

Conclusion

Multiethnic populations are growing rapidly not only in the US (Pew Research Center, 2015), where most research on mixed-race has thus far been conducted, but also in the UK (Jivraj, 2012). In other contexts, including South Africa, multiethnic people are already a well-established group. While this demographic development blurs the boundaries between salient social categories, it also means contact with multiethnic individuals will become increasingly common. Research on intergroup relations is now beginning to incorporate populations with

complex social identities that challenge traditional ingroup-outgroup divides (Love & Levy, 2019). Conceivably, this includes not only people of multiethnic background, but also bicultural individuals, individuals with non-binary gender identities, and individuals who identify with multiple groups within other categorical spaces (e.g., two religions).

Previous research on the contribution of multiethnic individuals to wider intergroup processes suggested that "social contexts that encourage and promote biracial labels" hold the greatest promise for improved intergroup relations (Wilton et al., 2014, p. 131). In this chapter, I shifted my attention from mere exposure to multiethnic individuals at the context-level, which was the focus of Chapters 2 and 3, to individual-level contact experiences that involve high amounts of disclosure and repeated interactions and are thus especially likely to draw attention to multiethnic identities. My findings suggest that, although effects may be small, positive contact with multiethnic people can indeed help build intergroup bridges. More generally the research presented in this chapter can, I believe, contribute both theoretically and empirically to our understanding of how one of the most influential social psychological theories, intergroup contact theory (Allport, 1954; Hewstone & Swart, 2011), could and should expand to accommodate the increasingly complex landscape of social identities.

Appendix Chapter 4

Table A4.1.
Study 4.1: Means, Standard Deviations and Inter-Item Correlations of Key Variables Among White Participants Regarding Asian Contact Partners

	Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Undir. friendship ties to Asian-Whites	0.04 (0.21)	-	.83**	.00	.09**	.03	.00	-.01	.06*	.13**	.06*	.40**	.00	-.02
2	Recip. friendship ties to Asian-Whites	0.03 (0.17)		-	.003	.09**	.02	.00	-.03	.04	.14**	.02	.32**	.00	.01
3	Friendship ties to Asians (W1)	0.19 (0.52)			-	.25**	.05*	.01	.05	-.04	-.01	.00	-.02	.39**	.02
4	Self-reported Asian friends (W3)	1.72 (0.73)				-	.11**	.11**	.00	.01	.07*	.10**	.09**	.27**	-.08**
5	Attitudes towards Asians (W1)	69.71 (28.33)					-	.33**	-.03	.16**	.14**	-.02	.03	-.04	.02
6	Attitudes towards Asians (W3)	77.69 (23.00)						-	.01	.06	.10**	-.08**	-.02	-.14**	.06
7	Age	180.86 (4.41)							-	-.08**	-.04	-.08**	.03	-.06*	.05
8	Gender	1.46 (0.50)								-	.03	-.11**	-.04	.01	.10**
9	Socioeconomic status	87.98 (38.95)									-	.07**	.18**	.01	-.02
10	Network size	25.37 (9.27)										-	.30**	.26**	-.87**
11	Number of Asian-White students	0.31 (0.59)											-	.05	-.20**
12	Number of Asian students	2.35 (3.41)												-	-.19**
13	Network boundary	0.88 (0.32)													-

Note. Age was measured in months. *SD* = standard deviation, undir. = undirected, recip. = reciprocal, W1 = wave 1, W3 = wave 3, $p < .05$ *, $p < .001$ **.

Table A4.2.
Study 4.1: Means, Standard Deviations and Inter-Item Correlations of Key Variables Among White Participants Regarding Black Contact Partners

	Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Undir. friendship ties to Black-Whites	0.06 (0.27)	-	.76**	.02	.11**	.00	-.02	-.02	-.02	-.01	-.04	.25**	.05*	.06*
2	Recip. friendship ties to Black-Whites	0.03 (0.19)		-	.03	.08**	.01	-.01	-.02	.02	-.01	-.04	.28**	.05*	.06*
3	Friendship ties to Blacks (W1)	0.10 (0.36)			-	.13**	.04	-.06	.01	-.07**	.00	.04	.02	.45**	-.03
4	Self-reported Black friends (W3)	1.74 (0.72)				-	.01	.08*	.07*	-.05	-.07*	.07*	.18**	.23**	-.09**
5	Attitudes towards Blacks (W1)	76.83 (24.65)					-	.29**	.01	.12**	.13**	-.01	-.04	-.01	.02
6	Attitudes towards Blacks (W3)	81.40 (19.25)						-	.00	.09**	.04	-.07*	-.08**	-.08**	.05
7	Age	180.86 (4.41)							-	-.08**	-.04	-.08**	-.06**	-.01	.05*
8	Gender	1.46 (0.50)								-	.03	-.11**	.05	-.01	.10**
9	Socioeconomic status	87.98 (38.95)									-	.07**	-.06*	.01	-.02
10	Network size	25.37 (9.27)										-	.21**	.26**	-.87**
11	Number of Black-White students	0.64 (0.92)											-	.23**	-.20**
12	Number of Black students	1.01 (1.87)												-	-.29**
13	Network boundary	0.88 (0.32)													-

Note. Age was measured in months. *SD* = standard deviation, undir. = undirected, recip. = reciprocal, W1 = wave 1, W3 = wave 3, $p < .05$ *, $p < .001$ **.

Table A4.3
Study 4.1: Effect of Ties to Multiethnic Black-White Classmates on White Participants' Relations to Asians

	W3 Attitudes towards Asians				W3 Self-reported Asian friends			
	All ties		Reciprocal ties		All ties		Reciprocal ties	
	b (SE)	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*
Level 1: *Student*								
W1 Ties to Black-White friends	1.16 (0.97)	.234	1.12 (0.91)	.217	0.02 (0.03)	.485	0.01 (0.04)	.824
W1 Ties to Asian friends	1.41 (0.70)	.043	1.41 (0.71)	.046	0.10 (0.03)	<.001	0.10 (0.03)	<.001
Age	-0.19 (0.80)	.810	-0.19 (0.80)	.808	0.00 (0.02)	.898	0.00 (0.02)	.886
Gender	0.66 (0.72)	.353	0.59 (0.72)	.409	0.00 (.02)	.890	0.00 (0.02)	.947
Socioeconomic status	1.18 (0.67)	.079	1.21 (0.67)	.073	0.00(.02)	.994	0.00 (0.02)	1.00
W1 Attitudes towards Asians	7.62 (0.90)	<.001	7.58 (0.89)	<.001				
Level 2: *Classrooms*								
Class size	-1.17 (1.11)	.294	-1.20 (1.12)	.285	-0.01 (0.05)	.871	0.01 (0.05)	.879
Black-White classmates	-1.80 (1.00)	.074	-1.64 (0.98)	.094	0.05 (0.05)	.284	0.06 (0.05)	.210
Asian classmates	-4.25 (1.66)	.011	-4.20 (1.65)	.012	0.20 (0.06)	<.001	0.20 (0.06)	<.001
Network boundary	-0.96 (1.11)	.389	-0.92 (1.11)	.407	-0.01 (0.06)	.826	-0.01 (0.06)	.860
Level 1 Variance σ^2 (*SE*)	449.44 (21.86)		449.58 (21.87)		0.40 (0.02)		0.40 (0.02)	
Level 2 Variance τ (*SE*)	8.31 (8.26)		8.37 (8.27)		0.08 (0.02)		0.08 (0.02)	
Deviance (*df*)	8468.04 (13)		8468.44 (13)		2027.93 (12)		2028.74 (12)	

Note. W1 = wave 1, W3 = wave 3, *SE* = Standard error, *df* = degrees of freedom. Predictor variables were standardized for within-model comparison of effect size, while outcome variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. For analyses on monoethnic Asian outgroup: $n_{students} = 945$, $n_{classrooms} = 135$ (analyses on attitudes towards Asians); $n_{students} = 1002$, $n_{classrooms} = 136$ (analyses on self-reported Asian friends).

Table A4.4
Study 4.1: Effect of Ties to Multiethnic Asian-White Classmates on White Participants' Relations to Blacks

	W3 Attitudes towards Blacks				W3 Self-reported Black friends			
	All ties		Reciprocal ties		All ties		Reciprocal ties	
	b (SE)	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*
Level 1: *Student*								
W1 Ties to Asian-White friends	0.06 (0.72)	.928	-0.02 (0.78)	.977	-0.03 (0.02)	.111	-0.01 (0.01)	.448
W1 Ties to Black friends	-1.18 (0.67)	.080	-1.18 (0.67)	.079	0.02 (0.03)	.440	0.02 (0.03)	.437
Age	-0.29 (0.56)	.605	-0.29 (0.56)	.602	0.03 (0.02)	.220	0.03 (0.02)	.219
Gender	1.06 (0.52)	.040	1.07 (0.52)	.040	-0.04 (0.02)	.049	-0.04 (0.02)	.043
Socioeconomic status	0.10 (0.60)	.867	0.11 (0.60)	.861	-0.05 (0.02)	.026	-0.05 (0.02)	.026
W1 Attitudes towards Blacks	5.33 (0.77)	<.001	5.33 (0.77)	<.001				
Level 2: *Classrooms*								
Class size	-1.50 (0.82)	.070	-1.50 (0.82)	.070	-0.05 (0.06)	.396	-0.05 (0.06)	.384
Asian-White classmates	-0.50 (0.58)	.398	-0.46 (0.58)	.432	0.06 (0.03)	.074	0.05 (0.03)	.119
Black classmates	-1.33 (0.91)	.150	-1.31 (0.91)	.152	0.21 (0.05)	<.001	0.21 (0.05)	<.001
Network boundary	-1.11 (1.02)	.277	-1.11 (1.02)	.278	-0.05 (0.07)	.485	-0.05 (0.07)	.468
Level 1 Variance σ^2 (*SE*)	324.62 (15.58)		324.61 (15.58)		0.44 (0.02)		0.44 (0.02)	
Level 2 Variance τ (*SE*)	3.49 (5.47)		3.60 (5.47)		0.03 (0.01)		0.04 (0.01)	
Deviance (*df*)	83337.54 (13)		8337.56 (13)		2070.85 (12)		2072.17 (12)	

Note. W1 = wave 1, W3 = wave 3, *SE* = Standard error, *df* = degrees of freedom. Predictor variables were standardized for within-model comparison of effect size, while outcome variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. For analyses on monoethnic Black outgroup: $n_{students} = 96$, $n_{classrooms} = 136$ (analyses on attitudes towards Blacks); $n_{students} = 999$, $n_{classrooms} = 136$ (analyses on self-reported Black friends).

Table A4.5.
Study 4.1: Means, Standard Deviations and Inter-Item Correlations of Key Variables Among Minority Monoethnic Participants

	Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Undir. friendship ties to Ingroup-Whites	0.07 (0.27)	-	.84**	-.02	-.03	.00	-.02	.01	.05	.01	-.09**	.22**	.00	.09**
2	Recip. friendship ties to Ingroup-Whites	0.05 (0.23)		-	-.01	-.07	.01	.03	.02	.04	.02	-.07*	.18**	.00	.07*
3	Friendship ties to Whites (W1)	0.60 (1.00)			-	.43**	.25**	.10*	.00	-.13**	.22**	-.09**	-.07*	.52**	.06
4	Self-reported White friends (W3)	2.59 (1.15)				-	.22**	.22**	-.05	-.07	.19**	-.08	-.04	.41**	.05
5	Attitudes towards Whites (W1)	67.68 (25.71)					-	.25**	-.01	.08*	.10**	.03	.07*	.19**	-.05
6	Attitudes towards Whites (W3)	77.41 (19.12)						-	-.07	.01	.05	.03	.01	.07	-.04
7	Age	181.14 (4.72)							-	-.05	.00	-.24**	-.01	-.09**	.15**
8	Gender	1.47 (0.50)								-	.08*	.03	.13**	-.09**	-.07
9	Socioeconomic status	75.87 (40.66)									-	-.09*	-.07	.15**	.08*
10	Network size	26.51 (8.40)										-	.09*	.18**	-.84**
11	Number of multiethnic students	1.14 (1;25)											-	.10**	-.07*
12	Number of White students	6.47 (7.15)												-	-.26**
13	Network boundary	0.87 (0.34)													-

Note. Age was measured in months. *SD* = standard deviation, undir. = undirected, recip. = reciprocal, W1 = wave 1, W3 = wave 3, $p < .05$ *, $p < .001$ **.

Table A4.6
Study 4.1: Effect of Ties to Mixed Ingroup-White Classmates on Monoethnic Minority Participants' Relations to Monoethnic Minority Outgroup

	W3 Attitudes towards monoethnic minority outgroup				W3 Self-reported monoethnic minority outgroup friends			
	All ties		Reciprocal		All ties		Reciprocal	
	b (SE)	*p*	*b (SE)*	*p*	*b (SE)*	*p*	*b (SE)*	*p*
Level 1: *Student*								
W1 Ties to mixed ingroup-White	-0.90 (1.05)	.389	-1.13 (1.12)	.311	0.02 (0.05)	.629	-0.01 (0.05)	.820
W1 ties to monoethnic minority outgroup	-1.02 (1.14)	.369	-1.05 (1.15)	.360	0.20 (0.05)	<.001	0.20 (0.05)	<.001
Age	-1.35 (0.93)	.150	-1.31 (0.94)	.165	0.08 (0.03)	.802	0.01 (0.03)	.810
Gender	1.43 (1.52)	.215	1.45 (1.16)	.205	0.01 (0.05)	.835	0.01 (0.05)	.842
Socioeconomic status	-0.19 (0.86)	.830	-0.16 (0.86)	.855	-0.05 (0.04)	.219	-0.04 (0.04)	.237
W1 attitudes towards monoethnic minority outgroup	5.81 (1.21)	<.001	5.83 (1.22)	<.001				
Level 2: *Classrooms*								
Class size	-1.01 (1.62)	.535	-1.03 (1.63)	.529	0.05 (0.09)	.575	0.05 (0.09)	.609
Mixed classmates	-0.37 (0.81)	.647	-0.36 (0.80)	.657	0.01 (0.05)	.875	0.02 (0.05)	.755
Monoethnic minority classmates	-1.00 (0.63)	.114	-0.99 (0.63)	.120	0.01 (0.04)	.794	0.01 (0.04)	.783
Network boundary	-2.44 (1.26)	.055	-2.47 (1.27)	.054	0.04 (0.08)	.608	0.04 (0.08)	.618
Level 1 Variance σ^2 (*SE*)	419.69 (30.44)		419.31 (30.42)		0.65 (0.05)		0.65 (0.05)	
Level 2 Variance τ (*SE*)	0.25 (11.20)		0.26 (11.19)		0.09 (0.03)		0.09 (0.03)	
Deviance (*df*)	3895.54 (13)		3895.14 (13)		1237.54 (12)		1237.74 (12)	

Note. W1 = wave 1, W3 = wave 3, *SE* = Standard error, *df* = degrees of freedom. Predictor variables were standardized for within-model comparison of effect size, while outcome variables were not to aid interpretation. All predictors were entered as uncentered variables in HLM. Analyses on attitudes towards monoethnic minority outgroup: $n_{students}$ = 439, $n_{classrooms}$ = 105; analyses on self-reported monoethnic minority outgroup friends $n_{students}$ = 494, $n_{classrooms}$ = 106.

Table A4.7
Study 4.2: Means, Standard Deviations and Inter-Item Correlations of Key Variables Among White Participants

	Variable	Mean (*SD*)	1	2	3	4	5	6	7	8	9	10
1	Age	14.51 (0.51)	-	-.05	.04	-.02	-.07	-.03	.02	.07	-.03	-.02
2	Gender	1.50 (0.50)		-	.05	.10*	-.03	.10**	.08*	.06	.12**	.03
3	Socioeconomic status	12.26 (33.06)			-	.01	.07	.05	.00	.01	.09*	.08
4	Attitudes towards minority	72.95 (20.62)				-	.43**	-.39**	.17**	.13**	.14**	.05
5	Trust towards minority	3.55 (0.88)					-	-.28**	.06	.01	.07	.11**
6	Anxiety towards minority	2.40 (0.85)						-	-.11**	-.13**	-.08*	-.03
7	Friendship contact with multiethnics	2.08 (1.03)							-	.55**	.00	-.08*
8	Friendship contact with minority	1.91 (0.83)								-	-.17**	-.29**
9	Extended contact with multiethnics	9.12 (5.72)									-	.36**
10	Number of White students in year group	94.93 (48.41)										-

Note. *SD* = standard deviation, $p < .05$ *, $p < .001$ **.

Table A4.8
Study 4.2: Means, Standard Deviations and Inter-Item Correlations of Key Variables Among Monoethnic Minority Participants

	Variable	Mean (SD)	1	2	3	4	5	6	7	8	9	10
1	Age	14.54 (0.54)	-	-.02	.07	-.01	-.06	.01	.05	-.04	.02	.08
2	Gender	1.55 (0.50)		-	-.06	-.02	-.17**	.14**	-.06	-.12**	.08	-.06
3	Socioeconomic status	13.95 (26.23)			-	.09*	-.02	.02	-.14**	-.05	.03	-.05
4	Attitudes towards Whites	65.36 (22.92)				-	.42**	-.37**	.02	.25**	.04	-.11**
5	Trust towards Whites	3.16 (1.05)					-	-.27**	-.02	.21**	.00	-.11**
6	Anxiety towards Whites	2.36 (0.77)						-	-.10*	-.11**	-.03	.04
7	Friendship contact with multiethnics	2.15 (1.15)							-	.23**	-.01	-.01
8	Friendship contact with Whites	2.34 (1.11)								-	-.18**	-.28**
9	Extended contact with multiethnics	7.40 (5.45)									-	-.07
10	Number of minority students in year group	115.62 (46.52)										-

Note. *SD* = standard deviation, $p < .05$ *, $p < .001$ **.

Table A4.9
Study 4.2: STEs of Direct Contact – Direct Associations Between Independent, Mediator, and Dependent Variables Among Majority Participants

	Dependent Variables					
	Attitudes towards multiethnics *b* (95% CI)	Trust towards multiethnics *b* (95% CI)	Anxiety towards multiethnics *b* (95% CI)	Attitudes towards Minority *b* (95% CI)	Trust towards Minority *b* (95% CI)	Anxiety towards Minority *b* (95% CI)
Direct contact with multiethnics	4.96 (2.72, 7.06)	0.14 (0.05, 0.24)	-0.13 (-0.21, -0.05)	-1.57 (-2.70, -0.41)	-0.03 (-0.08, 0.02)	0.05 (0.02, 0.08)
Attitudes towards multiethnics				0.80 (0.72, 0.88)		
Trust towards multiethnics					0.86 (0.81, 0.90)	
Anxiety towards multiethnics						0.95 (0.92, 0.97)

Note. CI = confidence interval. All predictor variables were group-mean centered. Adjusted confidence intervals, 1000 bootstrap iterations. Covariates: age, gender, socioeconomic status, contact with monoethnic outgroup.

Table A4.10
Study 4.2: STEs of Direct Contact – Direct Associations Between Independent, Mediator, and Dependent Variables Among Minority Participants

	Dependent Variables					
	Attitudes towards multiethnics *b* (95% CI)	Trust towards multiethnics *b* (95% CI)	Anxiety towards multiethnics *b* (95% CI)	Attitudes towards Majority *b* (95% CI)	Trust towards Majority *b* (95% CI)	Anxiety towards Majority *b* (95% CI)
Direct contact with multiethnics	3.41 (1.41, 5.47)	0.08 (-0.02, 0.18)	-0.07 (-0.14, -0.02)	-1.81 (-3.55, -0.03)	-0.10 (-0.17, -0.02)	0.03 (-0.01, 0.08)
Attitudes towards multiethnics				0.63 (0.54, 0.71)		
Trust towards multiethnics					0.74 (0.67, 0.81)	
Anxiety towards multiethnics						0.80 (0.73, 0.87)

Note. CI = confidence interval. All predictor variables were group-mean centered. Adjusted confidence intervals, 1000 bootstrap iterations. Covariates: age, gender, socioeconomic status, contact with monoethnic outgroup.

Table A4.11
Study 4.2: STEs of Extended Contact – Direct Associations Between Independent, Mediator, and Dependent Variables Among Majority Participants

	Dependent Variables					
	Attitudes towards multiethnics *b* (95% CI)	Trust towards multiethnics *b* (95% CI)	Anxiety towards multiethnics *b* (95% CI)	Attitudes towards Minority *b* (95% CI)	Trust towards Minority *b* (95% CI)	Anxiety towards Minority *b* (95% CI)
Extended contact with multiethnics	0.47 (0.11, 0.86)	0.00 (-0.00, 0.02)	-0.02 (-0.03, 0.00)	0.22 (0.03, 0.42)	0.00 (-0.00, 0.01)	-0.00 (0.00, 0.00)
Attitudes towards multiethnics				0.80 (0.72, 0.88)		
Trust towards multiethnics					0.85 (0.80, 0.90)	
Anxiety towards multiethnics						0.95 (0.92, 0.97)

Note. All predictor variables were group-mean centered. Adjusted confidence intervals, 1000 bootstrap iterations. Covariates: age, gender, socioeconomic status, contact with monoethnic outgroup

Table A4.12
Study 4.2: STEs of Extended Contact – Direct Associations Between Predictor, Mediator, and Dependent Variables Among Minority Participants

	Dependent Variables					
	Attitudes towards multiethnics *b* (95% CI)	Trust towards multiethnics *b* (95% CI)	Anxiety towards multiethnics *b* (95% CI)	Attitudes towards Majority *b* (95% CI)	Trust towards Majority *b* (95% CI)	Anxiety towards Majority *b* (95% CI)
Extended contact with multiethnics	0.25 (-0.24, 0.66)	0.00 (-0.02, 0.02)	0.00 (-0.02, 0.00)	-0.05 (-0.36, 0.24)	0.00 (0.00, 0.02)	0.00 (0.00, 0.00)
Attitudes towards multiethnics				0.63 (0.55, 0.71)		
Trust towards multiethnics					0.74 (0.67, 0.81)	
Anxiety towards multiethnics						0.80 (0.73, 0.86)

Note. All predictor variables were group-mean centered. Adjusted confidence intervals, 1000 bootstrap iterations. Covariates: age, gender, socioeconomic status, contact with monoethnic outgroup

Table A4.13
Study 4.3: Means, Standard Deviations, and Inter-Item Correlations of Key Variables Among White Participants

	Variable	*M* (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Age	18.52 (0.76)	-	-.02	-.15**	-.09	-.01	-.01	-.20**	-.18**	-.02	-.13**	-.09	-.01	-.13**	.01	-.11*	-.14**
2	Gender	1.50 (0.49)		-	-.08	.07	.12*	.03	-.03	.03	.10*	.05	.02	.07	.03	.04	.02	-.02
3	SES	3.98 (0.87)			-	.04	.06	-.08	-.05	-.02	.04	-.02	-.01	-.03	-.03	-.07	.07	.07
4	DC Whites	4.10 (0.46)				-	.26**	.30**	.03	.13*	.15*	.36**	.24**	.05	.24**	.12*	.16**	.02
5	DC Blacks	3.25 (0.74)					-	.58**	-.09	-.07	.64**	.12*	.40*	.55**	.08	.41**	.14**	-.13**
6	DC Coloureds	3.33 (0.73)						-	.01	.02	.33**	.13**	.53**	.26**	.10	.42**	.02	-.06
7	EC Coloureds (lecture group)	3.41 (4.17)							-	.63**	-.08	-.02	-.01	-.05	.04	.01	.03	.31**
8	EC Coloureds (year group)	7.02 (6.45)								-	-.04	.07	.04	-.05	.10*	-.03	.01	.13**
9	Attitudes towards Blacks	62.55 (21.91)									-	.37**	.64**	.60**	.12*	.41**	.18**	-.08
10	Attitudes towards Whites	80.94 (13.71)										-	.47**	.12*	.27**	.17**	.12*	.04
11	Attitudes towards Coloureds	67.68 (18.34)											-	.41**	.25**	.55**	.07	-.06
12	Trust towards Blacks	3.12 (0.79)												-	.25**	.71**	.20**	-.15**
13	Trust towards Whites	3.65 (0.60)													-	.51**	.15**	-.03
14	Trust towards Coloureds	3.21 (0.74)														-	.14**	-.14**
15	Black-Coloured similarity	3.19 (1.29)															-	.03
16	Number of White students	180.81 (77.36)																-

Note. *M* = mean, *SD* = standard deviation, SES = socioeconomic status, DC = direct contact, EC = extended contact, $p < .05$ *, $p < .001$ **.

Table A4.14
Study 4.3: STEs of Direct Contact with Coloured South Africans– Direct Associations Between Predictor, Mediator, and Dependent Variables

	White Participants: Dependent Variables				Black Participants: Dependent Variables			
	Attitudes towards Coloureds *b* (95% CI)	Trust towards Coloureds *b* (95% CI)	Attitudes towards Blacks *b* (95% CI)	Trust towards Blacks *b* (95% CI)	Attitudes towards Coloureds *b* (95% CI)	Trust towards Coloureds *b* (95% CI)	Attitudes towards Whites *b* (95% CI)	Trust towards Whites *b* (95% CI)
Direct contact with Coloureds	11.65 (9.06, 14.08)	0.26 (0.15, 0.37)	-9.64 (-12.60, -6.81)	-0.28 (-0.38, -0.19)	9.81 (3.63, 16.56)	0.38 (0.14, 0.58)	-7.31 (-15.13, 1.11)	-0.64 (-0.90, -0.34)
Attitudes towards Coloured			0.69 (0.62, 0.77)				0.79 (0.57, 0.98)	
Trust towards Coloureds				0.68 (0.59, 0.75)				0.52 (0.25, 0.79)

Note. CI = confidence interval. All predictor variables were group-mean centered. Adjusted confidence intervals, 1000 bootstrap iterations. Covariates: age, gender, socioeconomic status, contact with monoracial outgroup.

Table A4.15
Study 4.3: Means, Standard Deviations, and Inter-Item Correlations of Key Variables Among Black Participants

	Var.	*M* (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Age	19.00 (1.58)	-	-.55**	-.93*	-.16	-.14	-.04	-.09	-.26*	-.16	-.17	-.17	-.07	-.15	-.05	.24	.10
2	Gender	1.62 (0.49)		-	.24	-.01	.08	-.20	.13	.16	.07	.09	-.07	-.17	-.08	-.22	-.31*	-.20
3	SES	2.85 (1.11)			-	.22	-.16	.12	-.09	-.08	-.26*	.13	-.03	.11	.00	.25	-.15	-.13
4	DC Whites	3.11 (0.90)				-	.27*	.58**	.09	.05	.11	.54**	.50*	.07	.18	.35**	-.01	-.02
5	DC Blacks	4.17 (0.81)					-	.29*	.20	.31*	.73**	.01	.17	.39**	.10	.03	.06	.16
6	DC Coloureds	3.20 (0.79)						-	.14	.01	.01	.30*	.55**	.17	-.13	.46**	.07	.01
7	EC Coloureds (lecture group)	1.78 (2.98)							-	.45**	.16	-.10	-.07	.07	.06	.09	.02	.02
8	EC Coloureds (year group)	0.41 (1.16)								-	.21	-.05	-.12	.09	-.02	.00	-.11	.03
9	Attitudes towards Blacks	83.85 (17.95)									-	.06	.21	.41**	.23	.01	-.04	.09
10	Attitudes towards Whites	59.76 (23.56)										-	.72**	.03	.40**	.39**	.12	-.03
11	Attitudes towards Coloureds	65.19 (20.74)											-	.16	.11	.47**	.14	.11
12	Trust towards Blacks	3.37 (0.77)												-	.32*	.54**	-.05	-.03
13	Trust towards Whites	3.10 (0.84)													-	.38**	.13	-.15
14	Trust towards Coloureds	2.89 (0.85)														-	.11	-.07
15	White-Coloured similarity	3.37 (1.49)															-	.00
16	Number of Black students	12.87 (2.42)																-

Note. *M* = mean, *SD* = standard deviation, SES = socioeconomic status, DC = direct contact, EC = extended contact, $p < .05$ *, $p < .001$ **.

Table A4.16
Study 4.3: STEs of Extended Contact with Coloured South Africans– Direct Associations Between Predictor, Mediator, and Dependent Variables among White participants

	Lecture Group-Based Extended Contact				Year Group-Based Extended Contact			
	Attitudes towards Coloureds *b* (95% CI)	Trust towards Coloureds *b* (95% CI)	Attitudes towards Blacks *b* (95% CI)	Trust towards Blacks *b* (95% CI)	Attitudes towards Coloureds *b* (95% CI)	Trust towards Coloureds *b* (95% CI)	Attitudes towards Blacks *b* (95% CI)	Trust towards Blacks *b* (95% CI)
Extended contact with Coloureds	0.10 (-0.32, 0.54)	0.01 (-0.00, 0.03)	-0.19 (-0.53, 0.19)	-0.01 (-0.02, 0.01)	0.14 (-0.12, 0.39)	0.00 (-0.01, 0.01)	-0.07 (-0.28, 0.14)	0.00 (0.01, 0.01)
Attitudes towards Coloured			0.55 (0.46, 0.65)				0.55 (0.46, 0.65)	
Trust towards Coloureds				0.62 (0.53, 0.70)				0.62 (0.53, 0.71)

Note. CI = confidence interval. All predictor variables were group-mean centered. Adjusted confidence intervals, 1000 bootstrap iterations. Covariates: age, gender, socioeconomic status, contact with Blacks.

Table A4.17
Study 4.3: STEs of Extended Contact with Coloured South Africans – Direct Associations Between Predictor, Mediator, and Dependent Variables Among Black Participants

	Lecture Group-Based Extended Contact				Year Group-Based Extended Contact			
	Attitudes towards Coloureds *b* (95% CI)	Trust towards Coloureds *b* (95% CI)	Attitudes towards Whites *b* (95% CI)	Trust towards Whites *b* (95% CI)	Attitudes towards Coloureds *b* (95% CI)	Trust towards Coloureds *b* (95% CI)	Attitudes towards Whites *b* (95% CI)	Trust towards Whites *b* (95% CI)
Extended contact with Coloureds	-2.80 (-7.40, 1.43)	0.01 (-0.17, 0.18)	-0.54 (-3.27, 3.60)	-0.03 (-0.20, 0.23)	-0.66 (-2.40, 1.40)	0.02 (-0.04, 0.09)	-0.92 (-2.16, 0.43)	0.02 (-0.05, 0.10)
Attitudes towards Coloured			0.70 (0.43, 0.94)				0.69 (0.45, 0.91)	
Trust towards Coloureds				0.32 (-0.05, 0.66)				0.30 (-0.03, 0.65)

Note. CI = confidence interval. All predictor variables were group-mean centered. Adjusted confidence intervals, 1000 bootstrap iterations. Covariates: age, gender, socioeconomic status, contact with Whites.

Chapter 5: Discussion and Conclusion

"(…) Thus from a Mixture of all Kinds began,
That Het'rogeneous Thing, An Englishman: (…)
For Englishmen to boast of Generation,
Cancels their Knowledge, and Lampoons the Nation.
A True-Born Englishman's a Contradiction,
In Speech an Irony, in Fact a Fiction. (…)"
– (Defoe, *The True Born Englishman,* 1703)

British society has come a long way since the Conservative parliamentary candidate James Wentworth Day went on national television in 1958 to proclaim: "No first-class nation can afford to produce a race of mongrels, and that is what we are doing. (…) I should strongly advise [my daughter] against [marriage to a Black man] (…) I should ask her whether she wanted to wake up in the morning and see a coffee-coloured imp on the pillow beside her, calling her 'mummy'" (Gamble, 1958). Public acceptance of interethnic marriages in the UK has risen continuously over the past decades, and with this shift has come a change in how multiethnic individuals are seen. While in 1983 between 50% and 60% of White British respondents to a representative NatCen survey said they would personally mind if a close relative were to marry someone of Black or Asian origin, in 2013 this number had declined to around 20% (Kelley, Khan, & Sharrock, 2017). Today, multiethnic individuals are no longer considered to be at the margins but rather at the seams of society. They are frequently portrayed as agents of a "basically harmonious society" (Richards, 1994, p. 83) with "the potential to undermine various forms of racism" (Lal, 2001, p. 168; see Gilbert, 2005). In this doctoral thesis, I put to the test the claim that multiethnic individuals help build bridges between monoethnic groups and that their quickly growing presence has positive implications for wider intergroup relations.

Research Background and Limitations of Previous Research

The research presented in this thesis critiques and builds on a growing research base which, conducted almost exclusively in the US, suggests that exposure to multiethnic individuals will benefit intergroup relations. For example, Levy et al. (2017) conducted experimental research centred on the minimal group paradigm which suggested that the presence of a passive and dually identified group in an otherwise two-group context positively affected participants' treatment of the outgroup. These positive mere presence effects were enhanced when the salience of the passive group's dual identity was increased further. Similarly, Gaither et al. (2018) found that monoracial participants' interactions with a multiracial confederate led to a reduction in racial essentialism, albeit only if the confederate's race was declared and thus unambiguous. Experiences with multiply identified individuals – whether through passive exposure (e.g., Levy et al., 2017) or active engagement (e.g., Gaither et al., 2018) – thus promise to affect cognitive, behavioural, and affective processes associated with increased intergroup harmony.

What holds less promise for intergroup relations, however, is ambiguous group membership and difficulties in social categorisation. This was evidenced by research employing the face categorisation task, which found that ethnically ambiguous face stimuli tend to be processed more disfluently than ethnically unambiguous face stimuli, as indicated by slower categorisation rates (Halberstadt & Winkielman, 2014, Study 3) and more frequent category shifts as perceivers arrive at a categorisation outcome (Freeman et al., 2016). Such disfluency, in turn, predicts more negative affect (Halberstadt & Winkielman, 2014, Studies 3-4) and less trust towards multiethnic targets (Freeman et al., 2016, Study 2). However, when multiethnic targets are processed fluently, they tend to be judged more favourably than monoethnic outgroup targets (Halbestadt & Winkielman, 2014). Positive effects of the presence of multiethnic individuals might thus be conditional on familiarity with multiethnic individuals, which is likely to be facilitated by the recent growth of multiethnic populations in the US (Pew Research Centre, 2015), the UK (Jivraj, 2012), and elsewhere.

In spite of this optimistic view on multiethnic populations, I have argued throughout this thesis that the portrayal of multiethnic people as both hallmarks of a less divided society and

harbingers of ever greater intergroup harmony is founded on a relatively weak evidence base. In the research presented here, which adopts a multi-method approach and considers the bridge-building potential of multiethnic individuals both from a socio-structural and a social psychological point of view, I have begun to address four core limitations of the literature on mixed-race. Before discussing my findings and conclusions, I begin by outlining the shortcomings of the available literature – low ecological validity; a lack of direct measures of intergroup relations; the focus on a narrow participant population; and, insufficient distinction between context- and individual-level processes – and highlight how my research begins to redress them.

Ecological Validity

Firstly, most evidence for the positive contribution of multiethnic people to intergroup relations has been obtained in artificial laboratory environments where multiethnic identities were made unambiguous and salient. This is unlikely to provide ecologically valid insights into the bridge-building potential of multiethnic people in real-life settings, which are characterised by multiple identity blindness (Kang & Bodenhausen, 2015) and the frequent mis-categorisation of multiethnics (Ho et al., 2011; Ho et al., 2017; Peery & Bodenhausen, 2008; Sanchez et al., 2011; see also Hirsch, 2018). In cultural contexts where monoethnic or monoracial categories continue to be the norm, it comes as no surprise that multiethnic social identities are less accessible than monoethnic identities (Freeman et al., 2016; Halberstadt & Winkielman, 2014). This challenge of the categorisation of multiethnic individuals is further exacerbated by the intra-individual variability of multiethnic identities, which can change over the course of a lifetime (Pew Research Centre, 2015) and across contexts depending on the audience and desires to assimilate (Hong et al., 2000; Ng et al., 2010). Disfluent and effortful processing of social categories might in turn hamper individuals' ability to down-regulate prejudice (Lick & Johnson, 2015). To date, the available research on mixed-race does not address the possibility that, in real-life contexts, experiences with hard-to-categorise multiethnic individuals could have a negative rather than positive effect on intergroup relations.

With the aim of providing ecologically valid insights into intergroup relations and the contribution of multiethnic individuals, most of the data presented in this thesis was collected in complex real-life settings: 136 high school classrooms (Studies 2.1, 3.2, and 4.1) and ten high school year groups in England (Studies 3.1 and 4.2), and six university lecture groups in South Africa (Studies 3.4 and 4.3). I used both social network and survey data to assess multiethnic individuals' position as bridges between monoethnic groups, both in socio-structural terms (regarding their network location) and in terms of their effect on self-reported and network-based indices of intergroup relations. In order to integrate my findings with the available literature, I also included data from a new experimental paradigm, conducted online among a heterogeneous Anglo-American convenience sample, that resembled the largely experiment-driven research backdrop to this thesis (Studies 2.2 and 3.3).

Measures of Intergroup Relations

The second limitation of the available research addressed throughout this thesis is that claims on the bridge-building potential of multiethnic individuals are largely based on studies which do not include measures of intergroup relations. For example, several studies have found exposure to multiracial face stimuli and contact with multiracial individuals to be associated with reduced racial essentialism (Gaither et al., 2018; Young et al., 2013). While essentialism has been associated with stereotype endorsement (Bastian & Haslam, 2006), avoidance of intergroup contact (Verkuyten, 2003; Williams & Eberhardt, 2008), less outgroup trust, and diminished cooperation (Kung et al., 2018), very few of the studies on mixed-race included measures of such downstream consequences of racial essentialism (but see Levy et al., 2017, 2019). Relatedly, exposure to multiethnic targets has also been associated with greater perceived similarity between the monoethnic groups that converge in a given multiethnic identity (Wilton et al., 2014). However, changes in essentialism or similarity do not always translate into improved intergroup relations (see Haslam et al., 2000), especially among those who identify strongly with their ingroup (Jetten et al., 2004), are invested in stark group hierarchies (see Kauff et al., 2016; Pratto et al., 1994), and whose sense of group distinctiveness is threatened by blurred intergroup divides (e.g., Jetten et al., 1996; Roccas & Schwartz, 1993). It is therefore insufficient to base the argument that

multiethnic individuals can facilitate improved intergroup relations and build bridges in society on such data.

To address this limitation, I have included a range of social network and well-validated survey-based measures of intergroup relations in this thesis. Social network analysis, in particular, provided close-to-behavioural indices of intergroup relations. Specifically, the friendship nomination procedure – which makes no direct reference to the ethnicity of friends and can combine information from multiple sources on the existence of a friendship tie – provided a particularly unobtrusive approach to quantifying interethnic relations (see Wölfer & Hewstone, 2017). For example, it allowed me to assess what proportion of existing friendships in a given environment involve individuals from the same ethnic background, and thus provided insights into homophily (see McPherson et al., 2001). Where possible, I also included self-report measures of outgroup attitudes, trust, and intergroup anxiety as indicators of intergroup relations. These measures are well-established in the social psychological literature of prejudice reduction and intergroup conflict and have been validated across a diversity of intergroup contexts and populations (see Lolliot et al., 2015).

Participant Populations

To address a third limitation, this thesis also went beyond the existing research literature by including a wide range of participant populations. Most research on mixed-race populations has been conducted in the US (for reviews, see Gaither, 2015; Kang & Bodenhausen, 2015; Pauker, Meyers, et al., 2018), a national context where interracial marriage continued to be illegal in some states until as recently as 1967, and a context that has been shaped uniquely by the slave trade, Jim Crow laws, and the Civil Rights Movement. The research presented in this thesis was conducted among English high school students (Studies 2.1, 3.1, 3.2, 4.1, and 4.2), South African university students (Studies 3.4, and 4.3), and a US American convenience sample (Studies 2.2, and 3.3). Thus, I sought to integrate findings across multiple age groups and both national and intergroup contexts. The South African context in particular offered insights into intergroup relations in a context scarred by decades of intergroup conflict during Apartheid and still marked today by high levels of segregation. The English context, on the other hand, could be considered a particularly diverse and

ethnically complex, a fact that is owed to Britain's complex history of empire and multiple waves of migration (see Alibhai-Brown, 2001; Samanani, 2018). By necessity, social psychological research on intergroup relations in this multicultural context often subsumes members of distinct sub-groups (e.g., Indians and Bangladeshis) under the same broader category label (e.g., Asian British) even though, in their everyday lives, members of these different subgroups might not spontaneously categorise each other as ingroup members. Here, while my research can reveal robust trends, it necessarily obscures some of the complexities of intergroup dynamics in real-life contexts.

This thesis also began to redress the disproportionate focus of the available research on the perspective of monoethnic or monoracial majority perceivers (see Pauker, Meyers, et al., 2018). This criticism can also be applied to intergroup contact research more widely, which awaits a comprehensive meta-analysis on the effectiveness of contact experiences on minority group members in particular (see Tropp & Pettigrew, 2005a, for a meta-analysis considering research up to the year 2000, which found significantly stronger contact-prejudice associations among majority than minority group members). Unlike most research thus far on mixed-race, I included analyses of both majority and minority monoethnic individuals' experiences with multiethnic others. I also included research from a context, South Africa, where, unlike in the UK and the US, the numerically largest group (Black South Africans) is not also the socioeconomically most advantaged group, and where a relatively small part of the population (White South Africans) still is disproportionately powerful, especially in socioeconomic terms.

Context and Contact Effects

A fourth limitation of the available research, addressed throughout this thesis, is the frequent lack of any distinction between context- and individual-level processes when researchers analyse and discuss their findings. It is clearly problematic to argue, based on a paradigm that includes direct contact between monoethnic and multiethnic individuals, that the growth of multiethnic populations – a change in context attributes that does not necessarily translate into more intergroup contact experiences – will itself positively affect wider intergroup relations (Gaither et al., 2018; Sanchez et al., 2015, Study 1); or to argue

that the passive presence of multiethnic individuals could improve intergroup relations when a precondition of positive effects, the disambiguation of an ambiguous category memberships, may in real-life contexts warrant actual individual-level contact with multiethnics (e.g., Levy et al., 2017). This is illustrated most clearly by Sanchez et al. (2015), who studied what they termed 'ambiguity exposure' by asking how many of their participants' acquaintances, including friends, close friends, and fellow students, appeared racially ambiguous. Clearly, this measure cannot distinguish between the makeup of participants' social environments and the amount of individual-level contact experiences they have with racially ambiguous individuals.

Conceivably, both an individual's context and their contact experiences within those contexts could affect intergroup relations (see Christ et al., 2014), and this thesis addressed both possibilities. However, in order to argue convincingly that the mere presence of multiethnic individuals will facilitate greater intergroup harmony, researchers need to account separately for context and contact effects. In social psychology, this methodological point was made explicit in the debate on the effect of neighbourhood diversity on intergroup relations (e.g., Schmid & Hewstone, 2010). Specifically, research which considered not only context-level diversity but also the individual-level experiences that result from neighbourhood diversification, most notably greater intergroup contact, suggested that studies focusing on attributes of the context alone (e.g., Putnam, 2007) likely overstate negative effects of increased diversity on intergroup relations (see Schmid et al., 2008). The same applies to research on the effects that the mere presence of multiethnic individuals has on intergroup relations.

The only study thus far which simultaneously considered both the presence of multiethnic individuals within an environment and intergroup contact experiences showed that any context effects on the perception of multiethnic individuals disappeared when intergroup contact was included in the analyses (Pauker, Carpinella et al., 2018). The research presented in this thesis built on these insights and thus addressed one of the core limitations of the available research on how multiethnic populations affect intergroup relations. I presented several multilevel analyses that reflected the nested structure of the data and

accounted for both attributes of the social environment, including the presence vs. absence of multiethnics, and participants' own contact experiences within a given social environment (Studies 2.1, 3.2, 4.1, 4.2, and 4.3). Statistically, these analyses provided an appropriate test of the argument that the presence of multiethnic individuals in an environment has positive implications for intergroup relations between monoethnic groups, regardless of monoethnic individuals' own contact with multiethnics. They also allowed me to test the unique contribution of intergroup contact experiences with multiethnic individuals to wider intergroup relations. In the following section, I outline my main findings on the bridge-building potential of multiethnic individuals in a manner reflecting the distinction between context- and individual-level processes.

Key Findings

Throughout this thesis, I firstly considered whether the mere presence of multiethnic individuals in a social environment can improve intergroup relations (Chapter 2), then addressed the contextual and evaluative intermediacy of multiethnics (Chapter 3), and finally assessed whether multiethnic individuals realise their bridge-building potential in direct and extended contact experiences with monoethnics (Chapter 4). I now discuss each aspect in turn.

Bridge Building Through Mere Presence

I began my research by attempting to replicate the positive mere presence effect of multiethnic individuals found in recent laboratory-based research (e.g., Levy et al., 2017). To test the claim that the presence of multiethnics within a given environment helps improve intergroup relations, I separated this context-level variable from the more direct intergroup contact experiences that monoethnic individuals have with multiethnic others. Study 2.1, which was based on social network and survey data collected across English high school classrooms, suggested that in this real-life context the positive mere presence effect could only be replicated very partially.

My analyses of social network-based indicators of intergroup relations revealed that the only trend to emerge, both cross-sectionally at two waves and longitudinally across a small subsample of classrooms sampled at both waves 1 and 2, was for homophily to be lower in classrooms with than without multiethnic students. Conversely, positive and negative tie density and classroom-level outgroup attitudes were unrelated to the presence or absence of multiethnics. The mere presence effect on homophily was marginally significant at wave 1 and significant but very small at wave 2 (wave 1: $p = .071$, $\eta^2 = .02$; wave 2: $p = .001$, $\eta^2 = .10$), but it emerged after I had accounted, among other variables, for ethnic diversity at the school level. This finding can therefore not be attributed solely to greater opportunity for interethnic ties in classrooms that included multiethnic students. Rather, it suggests that the presence of multiethnic individuals can itself catalyse more positive relations across ethnic divides.

My analyses of participants' self-reported intergroup relations in classrooms with vs. without multiethnic students further supported this conclusion. Individual-level outgroup attitudes were unaffected by the presence of multiethnic students. However, in line with evidence for a homophily-lowering effect of multiethnic presence, majority participants in classrooms where multiethnic students were present at wave 1 reported having more outgroup friends two years later. Importantly, this effect emerged independently of participants' contact with multiethnic individuals and after I accounted for the opportunity for contact with monoethnic outgroup members at wave 1. Among majority group members only, these findings thus reflect a small but significant mere presence effect unconfounded by contact experiences.

Friendship contact with monoethnic outgroup members is a well-established means of improving intergroup relations (see Love & Hewstone, *in press*; Pettigrew & Tropp, 2006). Therefore, even though I found no direct evidence for mere presence effects on outgroup attitudes in Study 2.1, my findings suggest that the presence of multiethnic individuals in a social environment such as the classroom could have positive downstream consequences for wider intergroup relations. A similar argument for the significance of experiences that facilitate intergroup contact has been made by researchers studying extended contact, the

experience of knowing about ingroup members' outgroup contact (Wright et al., 1997). Such indirect contact experiences are effective at improving intergroup relations because, among other processes, they promote direct contact experiences (Wölfer et al., 2019).

Future research will need to address the psychological processes that account for the contact-promoting effect of environments which include multiethnic individuals. Previous research on exposure to multiethnic or multiracial stimuli raised lower levels of racial essentialism and greater perceived intergroup similarity as possible contributing factors (Pauker, Meyers, et al., 2018; Wilton et al., 2014), but by virtue of their simultaneous association with different monoethnic groups, the presence of multiethnic individuals might also signal more positive intergroup norms within a social environment such as the classroom.

A further avenue for future research would be to test whether the very limited mere presence effects obtained in Study 2.1 – limited especially when compared to previous experimental research – reflect insufficient levels of multiethnic identity salience in real-life contexts such as classrooms in England. Although my research cannot directly test this possibility, the argument was supported by previous research which manipulated the salience of dual identification (Levy et al., 2017, Study 4), and research which suggested that the positive effects of exposure to multiracial stimuli might be limited to experiences that disambiguate ambiguous category membership (Gaither et al., 2018; Young et al., 2013). It also accords with the finding that, in Study 2.1, the number of multiethnic classmates at wave 1 (rather than the presence vs. absence of multiethnics) positively predicted outgroup friendship at wave 3, and hence that the context-level mere presence effect was stronger in classrooms that included more multiethnic students. The multiethnic population is still small in the UK but growing at greater rates than other ethnic groups (Coleman, 2010). If future studies sample environments where disproportionately high numbers of multiethnic individuals are present, they might reveal stronger effects across a wider range of indices of intergroup relations.

Similarly to previous experimental research, Study 2.2, which was conducted as a pilot for a new online experiment, provided a more optimistic outlook on the effect of the mere presence of multiethnic individuals on intergroup relations. It suggested that majority group members rated social contexts more positively when these contexts included not only ingroup and monoethnic outgroup members but also clearly labelled multiethnic individuals. The artificial nature of the experiment – participants were shown different network diagrams in a repeated-measures design – makes it problematic to infer that positive evaluations of environments which include multiethnic individuals would predict more positive intergroup relations among those who populate those environments, rather than just observe them. However, previous research on intergroup relations found that individuals' intergroup relations are affected by perceived attributes of social environments. Perceived intergroup norms, for example, have been found to be associated with outgroup attitudes (e.g., Christ et al., 2014; De Tezanos-Pinto et al., 2010), as has the perceived size of an outgroup (Semyonov et al., 2004). It is therefore conceivable that positive connotations of the presence of a multiethnic group within an intergroup context could translate into positive intergroup experiences within such a context. In order to integrate the experiment more effectively with the literature on intergroup relations, future iterations of Study 2.2 could adapt its design to include intergroup behaviour (e.g., the allocation of limited resources to ingroup and outgroup members) as a dependent variable (see also e.g., Levy et al., 2017).

Overall, my initial analyses of mere presence effects highlighted that, in real-life environments like the classroom, the presence of multiethnic individuals is in and of itself unlikely to significantly affect intergroup relations, especially among minority group members but also only to a limited extend among majority group members. Further analyses presented in Chapter 3, which I will discuss next, provided additional evidence against the simple argument that exposure to multiethnic individuals will translate into greater intergroup harmony. At the same time, I also found evidence suggesting that multiethnic individuals occupy 'intermediate' positions – both socio-structurally within their social networks and in terms of how they are perceived by monoethnic majority and minority individuals.

Socio-Structural Bridges

In Chapter 2, I considered whether multiethnic individuals can, metaphorically speaking, build bridges between members of different monoethnic groups merely by being present within circumscribed social environments. In Chapter 3, I tested the hypothesis that the bridge-building potential of multiethnic individuals is also reflected in the position they occupy within friendship networks. Specifically, I studied their propensity to occupy liaison broker positions which connect members of the monoethnic groups that converge in their multiethnic identity (e.g., an Asian-White individual connecting an Asian and a White individual; Gould & Fernandez, 1989). Building on the argument developed in Chapter 2, I also provided the first empirical test of the implications that multiethnic individuals' network location might have for wider intergroup relations.

Anecdotal accounts of multiethnic and multiracial experiences (see Gaskins, 1999), and research on cultural frame switching (Gaither et al., 2013; Verkuyten & Pouliasi, 2006) suggested that many multiethnic individuals are able to relate to different monoethnic groups as ingroups, and that they often experience occupying a liminal space between groups. Across friendship networks in English high school classrooms and year groups (Studies 3.1 and 3.2), I found that multiethnic individuals were located as centrally within their networks as monoethnic individuals, but that they were brokers more often than monoethnic majority and minority group members. These findings lend empirical support to the suggestion that multiethnic individuals can no longer be described as marginal (e.g., Shih & Sanchez, 2005), at least in this context, and support the claim that they are in fact occupying bridge-building positions within their networks. The findings also accord with previous research which suggested that the relationship networks of multiply identified individuals, including those of multicultural and multiethnic people, reflect their dual heritage (e.g., Jugert et al., 2018; Muttarak, 2014; Repke & Benet-Martinez, 2017). However, my research also went beyond such previous research by analysing socio-centric, not ego-centric, network data. I was therefore able to draw on rich datasets on the relations of all individuals within a circumscribed environment (e.g., a classroom) which elucidated the wider network structure within that environment.

While my analyses suggest that multiethnic individuals are often situated in bridge-building positions within their networks, I also found that the number of liaison broker positions occupied by a given multiethnic individual never exceeded the number of broker positions expected given the demographic composition of their specific social context (e.g., the classroom). These findings suggest that the higher number of broker positions occupied by multiethnics could reflect the opportunity structure within their social environment and not necessarily, or exclusively, a deliberate effort by multiethnics to structure their social environment.[1]

This argument was also supported by my research on intergroup relations in a different intergroup context where the proportional multiethnic population is considerably larger than in the UK and therefore less prone to occupying broker positions by chance: South Africa (Study 3.4). In the intergroup environment of lecture groups at a South African university, Coloured South Africans were brokers as often as Black South Africans. However, incomplete social network data in Study 3.4 may have produced a conservative count of the true number of broker positions occupied by Black, White, and Coloured South Africans. This finding therefore remains to be replicated in future research on South African social networks which meets the challenging requirement of near-complete network datasets for comprehensive analyses of socio-centric networks.

Implications of multiethnic brokers. Building on the argument and analyses around mere presence effects developed in Chapter 2, Study 3.2 also included some of the very first analyses to link sociological measures of a social network attribute (here the number of multiethnic individuals in broker positions) with social psychological measures of intergroup relations (outgroup attitudes, self-reported outgroup contact). Conceivably, multiethnic individuals who actively and visibly blur intergroup divides by occupying bridge-building positions within their friendship networks could challenge the usefulness of these divides and thus de-essentialise ethnic categories – an argument that echoes lab-based research on exposure to multiracial social stimuli (see Pauker, Meyers, et al., 2018).

[1] However, it should be noted that the level of brokerage expected under a chance model for multiethnics could be as high as 56 (see Study 3.1). Thus, in certain contexts, this appeared especially difficult to surpass given that participants could only nominate up to 10 friends.

Multiethnic individuals in broker positions might also model positive intergroup norms by integrating members of different ethnic groups into their immediate friendship group; norms derived from attributes of a social context have in turn been previously associated with intergroup relations independently of individual-level contact experiences (Christ et al., 2014). Study 3.2 tested the hypothesis that intergroup relations would specifically benefit from the presence of multiethnic individuals in liaison broker positions.

In line with the argument that the presence of multiethnics in bridge-building positions would benefit relations between monoethnic groups, Study 3.2 provided first evidence for positive implications of multiethnic brokers. However, these positive effects were again limited and emerged only for context-level indices of intergroup relations: Homophily was significantly lower in classrooms where multiethnics occupied broker positions compared to classrooms that included multiethnic individuals who did not occupy broker positions.

Conversely, my analyses of the association between the mere presence of multiethnic brokers and individual-level measures of intergroup relations challenged the conclusion that multiethnic brokers necessarily improve intergroup relations. Among majority group members, the network location of multiethnic individuals did not affect self-reported outgroup attitudes or friendship contact. However, among monoethnic minority participants, I found that having more multiethnic classmates at wave 1 predicted having *fewer* monoethnic outgroup friends two years later when these multiethnic classmates occupied broker positions. Conversely, the number of multiethnic classmates was unrelated to minority participants' friendship(s) with majority group members when these multiethnic classmates occupied no broker positions. As with other mere presence effects reported in this thesis, this finding was small and remains to be replicated in other intergroup contexts. However, it emerged longitudinally and after accounting for minority participants' contact with multiethnic classmates, as well as the opportunity for contact with majority group members at wave 1. The research presented in Study 3.2 thus suggested that multiethnic individuals in bridge building positions may hamper intergroup relations.

While the available data provided no insight into the psychological process underpinning this negative mere presence effect, future research on the implications of multiethnic individuals' location within their relationship network for intergroup relations could explore several possible explanations. For example, multiethnic brokers could threaten intergroup distinctiveness which, especially among strongly identified individuals, has been associated with more negative intergroup relations (Jetten et al., 2001, 2004; Schmid et al., 2009). Minority group members, who have been found to tend to categorise multiethnic individuals as minority ingroup members (Gaither et al., 2016), might also perceive multiethnic brokers as traitors who, by affiliating with monoethnic outgroup members, diminish ingroup size and distinctiveness and thus further increase perceived intergroup threat and, by association, intergroup conflict (see Love & Levy, 2019). Where multiethnic individuals occupy broker positions, this could also, from the point of view of monoethnic perceivers, increase the ambiguity of multiethnic individuals' ethnic category membership. Considering that category ambiguity has been associated with enhanced rather than reduced intergroup discrimination (Gaither et al., 2018; Halberstadt & Winkielman, 2014; Young et al., 2013), this could further account for a negative mere presence effect when multiethnic individuals occupy liaison broker positions.

As in Chapter 2, the findings from the online experiment reported first in Study 2.2 and then expanded on in Study 3.3, stand in clear contrast to the field research reported in Study 3.2. Unlike in large parts of Study 3.2, Study 3.3 suggested that networks where multiethnic nodes were situated in broker positions were perceived more positively than networks that included multiethnic nodes but not in broker positions. Similar discrepancies between research conducted in the field and research conducted in more artificial laboratory settings have been observed elsewhere in social psychological research – a phenomenon that has been attributed to higher levels of ingroup identification in real as opposed to artificial environments (Jetten & Spears, 2003). However, because the online experiment (Study 3.3) deviates clearly from my field research (Study 3.2) along several significant lines (e.g., participant population, dependent variables, likely salience of multiethnic identities), it is not yet possible to locate the origin(s) of this discrepancy. In future iterations of the online experiment, adaptations to its design could test several variables that may moderate what

effect the presence of multiethnic brokers has on (perceived) intergroup relations. For example, follow-up studies could include minority participants as well as measures and/or manipulations of optimal distinctiveness threat and vary the salience of multiethnic identities within the network. The latter could be achieved, for example, through selective labelling of network nodes. Together, such variations of the pilot experiment promise to provide further insights into the mediators and moderators of positive and negative mere presence effects.

Evaluative Intermediacy

As my discussion of mere presence effects and the implications of multiethnic individuals' socio-structural intermediacy highlights, the research presented throughout this thesis could provide only very limited insight into the perception and specifically the categorisation of multiethnic individuals. It is not clear, for example, whether their multiethnic identities are salient and spontaneously accessible when monoethnic majority and minority group members observe their presence and location within social environments. As I will elaborate when turning to the effects of contact with multiethnic individuals, this is a core limitation of my research. In Chapter 3, I began to provide first indirect evidence on the categorisation of multiethnic individuals by assessing whether monoethnic people extend ingroup favouritism to multiethnics, treat them with an intermediate level of favourability, or fail to distinguish between them and monoethnic outgroup members.

Across three studies conducted in England (Studies 3.1 and 3.2) and South Africa (Study 3.4), I found that majority and minority group members did not extend ingroup favouritism to multiethnic target groups. This finding suggests that monoethnic individuals relate to multiethnics either as members of a monoethnic outgroup or as members of a distinct multiethnic group. It therefore deviates from recent research conducted in the US which suggested that minority group members tend to include multiethnic individuals in their ingroup (Gaither et al., 2016; Ho et al., 2017). To my knowledge, the research presented in Studies 3.1 and 3.2 constituted the first evidence for how monoethnic minority group members evaluate multiethnic individuals within an English context, rather than in the more commonly studied US American context. Although evidence for how minority group

members relate to multiracial individuals in the US is still scarce, the difference between my findings and recent experimental research on the categorisation of multiracial targets raises doubts about the generalisability of US-based research on intergroup relations to a European intergroup context, especially where it concerns the role of multiethnic individuals.

In other instances, however, my findings replicated experimental research conducted in the US. Evidence for evaluative intermediacy in particular aligned with recent research which suggested that multiethnic targets are judged more favourably than monoethnic outgroup targets (Gaither et al., 2018; Halberstadt & Winkielman, 2014). In these experimental studies, the preference for multiethnic over monoethnic outgroup targets was conditional upon unambiguous category membership of multiethnic targets. My research on evaluative intermediacy is likely to have met this condition because participants were explicitly asked to evaluate multiethnic people. In other cases, I found that evaluations of multiethnic targets matched evaluations of monoethnic outgroup targets, a finding that could reflect either the categorisation of multiethnics as monoethnic outgroup members or equal evaluations of two separate outgroups: a monoethnic and a distinct multiethnic one. The conclusions to be drawn from evidence for evaluative intermediacy on the categorisation of multiethnic individuals are clearly limited by the fact that different social categorisation outcomes could produce similar patterns of evaluations. As the following discussion on the potential of multiethnic individuals to affect intergroup relations through intergroup contact will highlight, our understanding of the contribution of multiethnics to intergroup processes will be greatly enhanced by more explicit measures of the social categorisation of multiethnic people in complex and often ambiguity-laden real-life contexts.

Bridge Building Through Friendship Contact

In chapters 2 and 3, in order to approximate my research to the bulk of available research on the passive exposure to multiethnic stimuli, I distinguished contextual from contact effects. However, it may be in more personal interactions, like intergroup contact experiences, where the bridge building potential of multiethnic populations truly lies. In Chapter 4, I therefore focused on positive intergroup contact, mostly intergroup friendship, and its effect

on how monoethnic majority and minority group members relate to monoethnic outgroups. I considered both direct and extended contact experiences and also began to investigate affect generalisation as a process that may underpin any contact effect. Notably, Chapter 4 not only provided further insights into of the role of multiethnic individuals in intergroup processes, it also expanded our understanding of intergroup contact effects more generally by providing evidence for the contribution of secondary transfer processes to both direct and extended contact effects. Research presented in Chapter 4 again included both English and South African populations and combined social network and survey data in hierarchical linear models.

Previous research on multiple social identities. Most empirical research on intergroup contact continues to focus on binary divides where individuals in contact are either ingroup or outgroup members. Nevertheless, theoretical social psychological approaches to intergroup relations are increasingly cognisant of individuals' multiple simultaneously held social identities. Maalouf famously stated that "every individual, without exception, possesses a composite identity" (Malouf, 2000, p. 17) and Deaux and Burke (2010) went as far as suggesting that "virtually all contemporary identity theories include an assumption of multiplicity, noting both the seeming inevitability of multiplicity in the postmodern world (…) and the possible psychological benefits of multiplicity for the individual" (p. 318). This development is beginning to affect how intergroup contact is studied.

For example, research on how individuals make sense of their own multiple social identities – specifically the extent to which different social groups are subjectively represented as distinct entities with a specific membership collective, and distinct entities associated with specific meaning – has been associated with intergroup contact and intergroup relations. Individual differences in such so-called social identity complexity (SIC; Roccas & Brewer, 2002) have been shown to affect how multiply identified individuals relate to others (Brewer & Pierce, 2005; Schmid et al., 2009; Schmid et al., 2013). Where SIC is high, the individual recognises that people may be ingroup members in some social categories and outgroup members in others. They are therefore more likely to extend ingroup favouritism to partial ingroup members. At low SIC, however, the ingroup tends to be a compound category and

only those who share the same combination of social identities will be considered ingroup members (Brewer, 2010). Increases in SIC, for example through positive intergroup contact, can improve intergroup relations (Schmid et al., 2009). Awareness of not only one's own but also a contact partner's multiple social identities affects intergroup relations, too. Research on crossed categorisation has shown that individuals relate most positively to others who share membership in all their multiple social identities (e.g., same gender, ethnicity, and religion) than to individuals who share membership in some but not all social identities (e.g., same gender and ethnicity, different religion), and better to such partial ingroup members than to individuals who share membership in none of their multiple social identities (for an overview, see Crisp & Hewstone, 2007).

While these developments of research and theory on intergroup relations and intergroup contact are welcome, they cannot, in their current form, inform our understanding of when and how contact with multiethnic individuals affects how members of different monoethnic groups relate to one another. Research on both crossed categorisation and SIC has focused on multiple group memberships in different identity domains (e.g., one ethnic and one gender identity) rather than in identical identity domains (e.g., two ethnicities, or two gender identities) (see also Nicolas et al., 2017). Furthermore, where identity multiplicity has been related to intergroup contact, the focus lay on individuals' cognitive representations of their own multiple group memberships (i.e., SIC) rather than their perception of their contact partner's multiple group memberships (Schmid et al., 2009). Research on crossed categorisation in particular has yet to be integrated with the intergroup contact literature.

Demographers are forecasting that populations which are simultaneously associated with multiple social categories from the same identity domain will grow rapidly over the coming decades (e.g., Coleman, 2010). Research on multiethnic individuals may provide some insights into how intergroup contact research could evolve to take account of these binary-defying groups. However, previous studies on intergroup contact have likely glossed over any unique contribution of multiethnic individuals because they offered no opportunity for participants to self-categorise as multiethnic nor did they include items that referred

explicitly to contact with or evaluations of multiethnic people. In Chapter 4, I began to address this gap in the literature.

Direct contact effects. Independently of monoethnic participants' direct contact with monoethnic outgroup members, I found that contact with multiethnic friends could facilitate more monoethnic outgroup contact over time, albeit only among majority group members (Study 4.1). Furthermore, although positive contact with monoethnic individuals did not translate directly into more positive outgroup evaluations, I found that it was indirectly associated with better intergroup relations through affect generalisation (Studies 4.2 and 4.3), which previous research showed partially underpins STEs (e.g., Lolliot, 2013; Tausch et al., 2010). Affect generalisation describes the process whereby contact with one outgroup (here multiethnics) improves evaluations of this outgroup, which then facilitates more positive evaluations of an uninvolved secondary outgroup (here monoethnic outgroup). In Chapter 4, I provided cross-sectional evidence in support of the argument that direct contact with multiethnics could have a significant indirect effect on intergroup relations through affect generalisation. This positive indirect association emerged among both ethnic majority and minority group members in England (Study 4.2) and Black and White South Africans (Study 4.3). The cross-sectional nature of these analyses, however, cannot provide conclusive evidence for the processes underpinning any effect of contact with multiethnic individuals. Nevertheless, my findings across multiple different intergroup contexts and participant populations suggest that secondary transfer might contribute to the effects of contact with this growing demographic.

Study 4.3, which was conducted in South Africa, also provided first evidence for the moderation of direct contact effects by the perceived similarity between multiethnic and target monoethnic outgroup members. Unlike most research on the moderating effect of primary and secondary outgroup similarity on STEs, this study included similarity ratings obtained directly from participants rather than collected independently (see Lolliot, 2013, Study 4, for a notable exception). In line with theory and research on the effect of outgroup similarity on STEs (see Lolliot, 2013), I found that White South Africans' direct contact with Coloured South Africans only tended to be positively associated with their trust towards

Black South Africans when participants thought Coloured and Black South Africans to be very similar. Unexpectedly, however, this association was negative when participants perceived Coloured and Black South Africans to be strongly or even moderately dissimilar. Among White participants, perceived Coloured-Black similarity also moderated affect generalisation. Specifically, White South Africans' attitudes towards Coloured South Africans were more strongly associated with attitudes towards Black South Africans when they thought both groups were moderately or highly similar.

Studies 4.2 and 4.3 began to integrate multiethnic populations into established theory and research on intergroup contact. However, the research on direct contact reported in Chapter 4 also raises questions about whether evidence for STEs reflects actual contact processes or whether it is, rather, an unintended by-product of the research design. Study 4.2, which included data from English high school students, constitutes the first study on STEs in an intergroup context where the (multiethnic) primary and (monoethnic) secondary outgroup might be thought of as partially overlapping. However, the items included in Study 4.2 referred not to specific multiethnic groups (e.g., Asian-Whites) but more generally to 'Mixed British' people. This approach may have obscured any potential overlap between ingroup and multiethnics or between the monoethnic outgroup and multiethnics. At the same time, it may have unduly increased the likelihood that participants thought of multiethnic people as members of a distinct outgroup when, in real-life interactions, they might instead spontaneously categorise their multiethnic contact partners differently.

The South African research presented in Study 4.3 might also, due to its unique context, be of limited validity for our general understanding of the involvement of multiethnics in intergroup processes. Unlike in the UK or the US, where multiethnic populations are often considered an amalgam of distinct monoethnic groups in society, South Africa's multiethnic population (Coloured South Africans) is not usually considered a group that shares parts of their background with the Black and White South African populations. Rather, it is considered a distinct group of multiethnic origin (Adhikari, 2009). Study 4.3 therefore could not provide any conclusive insight into whether STEs and the moderating effect of perceived

primary and secondary outgroup similarity observed in the South African context would also emerge in the UK context of partially overlapping multiethnic and monoethnic groups.

Extended contact effects. The small size of multiethnic populations and, especially in the South African context, high levels of segregation, mean that opportunities for direct contact with people of mixed background are often rare. Chapter 4 provided some initial evidence for a positive effect of extended contact with multiethnics on intergroup relations between members of different monoethnic groups. The implication of these findings is that even though direct contact with multiethnic individuals is rare, it may indirectly affect uninvolved ingroup members and thus have a wider ripple effect.

Combining social network and survey data to quantify extended contact, in Study 4.2 I found that extended contact with multiethnic individuals was associated with more positive outgroup attitudes among majority group members and more outgroup trust among minority group members. These effects emerged over and above direct contact with target outgroup members and multiethnic individuals. Furthermore, among majority participants, affect generalisation contributed to the effect of extended contact. Study 4.2 therefore not only suggested that extended contact with multiethnic individuals is associated with more positive relations between monoethnic groups, but it also provided first evidence for the conjoint effect of two indirect processes – STE and extended contact – which have thus far been studied in isolation.

Evidence for extended contact effects was weaker in the South African sample (Study 4.3). Here, extended contact was neither directly nor indirectly associated with White participants' relations with Black South Africans. However, among Black participants, extended contact was directly associated with more trust towards Whites, especially when Coloureds and Whites were deemed very similar. Overall, the evidence presented in Chapter 4 on extended contact effects was weaker than evidence for direct contact effects. Nevertheless, my findings suggest that contact experiences with multiethnic individuals, even though they may be rare, might have an effect that goes beyond the individuals involved in the interaction. In order to increase our confidence in any causal effect of

extended contact with multiethnics, future research will have to replicate these findings longitudinally and, even better, try to develop experimental paradigms in which to study the purported processes. Furthermore, follow-up research could consider additional indirect processes through which extended contact might affect intergroup relations. These include, for example, deprovincialisation processes, that is, a reappraisal of the ingroup as a consequence of contact experiences (Kauff et al., 2016; Pettigrew, 1998). Extended contact in particular, which has been associated with changes in perceived ingroup norms (de Tezanos-Pinto et al., 2010; Turner et al., 2008), might engage not only affective processes as suggested in Study 4.2, but also facilitate better intergroup relations through deprovincialisation (see also Asbrock et al., 2017)

As this discussion highlights, my research on the effects of direct and extended contact with multiethnic individuals on relations between monoethnic groups is only beginning to integrate multiethnic populations into existing intergroup contact theory. Many small or non-significant effects, especially among minority participants, raise doubts about the potential of multiethnic individuals to build bridges between monoethnic groups through intergroup contact. However, at this early stage of research on contact between monoethnic and multiethnic individuals, we cannot rule out the possibility that inconsistent and small effects reflect not the ineffectiveness of contact with multiethnics per se, but the co-occurrence of several contradictory contact effects within a participant group. Different and possibly opposed effects of contact with multiethnic individuals are likely to come about through differences in how monoethnic individuals categorise their multiethnic contact partners.

Secondary transfer, the focus of Studies 4.2 and 4.3, offers a parsimonious account of how contact with multiethnic individuals could affect monoethnic individuals' relations with monoethnic outgroups. However, other processes that do not presume the categorisation of multiethnic individuals as members of a distinct 'mixed' outgroup are possible. While evidence presented in Chapter 3 suggests that multiethnics are not necessarily subsumed within the monoethnic minority category but associated with a distinct set of evaluations, other research has suggested that multiethnic individuals tend to be categorised as minority

group members (e.g., Ho et al., 2011; Peery & Bodenhausen, 2008). From the point of view of monoethnic minority group members, multiethnic individuals might thus often be considered ingroup members. The association of ingroup contact with intergroup relations remains under-researched, although there is some evidence to suggest that ingroup contact may increase intergroup discrimination (Levin et al., 2003), possibly because it diminishes the capacity for outgroup contact (Pfister et al., 2019). Others, majority group members in particular, might instead categorise multiethnics as monoethnic outgroup members. In this case, contact with them ought to affect outgroup evaluations in a way that is analogous to contact with monoethnic outgroup members, provided multiethnic contact partners are considered sufficiently typical of the outgroup (e.g., Brown & Hewstone, 2005; Rothbart, 1996). How monoethnic individuals categorise their multiethnic contact partners is likely to vary greatly, both inter- and intra-individually and across contexts and contact partners. Future research on the effects of contact between monoethnic and multiethnic individuals will have to account for different social categorisations of multiethnic contact partners in order to determine when contact with multiethnics facilitates greater intergroup harmony – and when it does not.

Wider Implications

My findings suggest that the effect of multiethnic individuals in intergroup relations tend to be small and should not be overstated. Nevertheless, they also indicate that multiethnic individuals at least have the potential to facilitate more positive relations between members of different monoethnic groups: by catalysing, through their presence within an environment, more intergroup contact between monoethnic groups and, often indirectly, through direct and extended contact with monoethnic individuals. Although the multiethnic population in the UK is small, it doubled in size between 2001 and 2011 (Jivraj, 2012) and is set to grow at a faster rate than that of most other ethnic groups (Coleman, 2010). Therefore, even though any effects of multiethnic individuals on intergroup relations appear small, the experiences that can bring about such effects are bound to become more common. I will now outline briefly the implications of my findings for social psychological theory and research methodology, and for broader societal questions.

Theoretical and Methodological Implications

Social psychological research on intergroup relations is becoming increasingly cognisant of the effect of an individual's social environment on their intergroup cognition, affect, and behaviour (e.g., Christ et al., 2014). The research presented in Chapters 2 and 3 adds to the small but growing body of social psychological research that distinguishes clearly, both theoretically and statistically, between the effects of contextual variables and individual-level experiences. In particular, my research on mere presence effects and multiethnic brokers highlighted that sociological measures of social network content and structure can, in combination with survey-based measures of intergroup relations, enhance our understanding of the contextual factors that contribute to intergroup relations. As demonstrated in Chapters 2 and 3, social network data not only helps to predict self-reported intergroup relations, but it can also provide socio-structural indicators thereof. These include, for example, estimates of homophily and the density of positive and negative ties (see also Hewstone & Wölfer, 2017; Wölfer et al., 2015). The integration of social network research with more established social psychological research methodologies promises to add to our understanding of how intergroup relations are shaped not only by our own intergroup experiences, but also by our wider social environment.

A further implication of my research and the questions it raises is that established theories on intergroup contact and intergroup relations need to be expanded and integrated more fully in order to account for the contribution that people of mixed or multiple backgrounds make to intergroup relations. My discussion of research on contact between monoethnic and multiethnic individuals has highlighted several means of integrating multiethnic populations into existing intergroup contact research. However, within the existing theoretical framework, any integration of multiethnic populations relies on the assumption that monoethnic individuals perceive multiethnic contact partners either as ingroup or outgroup members. Intergroup contact theory thus far does not account for contact experiences with individuals (e.g., Asian-Whites) who may be perceived as *partially* related to the ingroup (e.g., Whites) and, possibly at the same time, as sharing part of their background with an outgroup (e.g., Asians). As I discussed earlier, research on crossed categorisation has provided some insights into the evaluation of individuals who share all,

some, or none of a perceiver's multiple social category memberships. However, this research is yet to consider instances where individuals identify with multiple groups within the same identity domain (e.g., multiple ethnicities). Significantly, intergroup contact researchers are also yet to address the effects of contact with partial ingroup members (e.g., with Asian-Whites) on relations with associated full outgroup members (e.g., with Asians). I now turn my attention to the implications that including mixed populations into intergroup contact research will likely have for how we quantify real-life contact experiences.

Measuring contact. While contact with individuals whose social category membership (e.g., ethnicity) is unambiguous and salient can be measured reliably by asking participants to self-report on such contact experiences (see Hewstone, Judd, & Sharp, 2011), conventional survey measures are bound to reach their limit when they concern contact partners who could be categorised in multiple ways. Previous research on the mis-categorisation of multiethnic stimuli suggests that monoethnic majority and minority group members frequently interact with, or are exposed to, multiethnic individuals whom they categorise as monoethnic (see Kang & Bodenhausen, 2015). Basing estimates of the contribution of multiethnic individuals to intergroup relations entirely on experiences where monoethnic participants are aware of a contact partner's multiethnic background is likely to underestimate the impact of this growing population on intergroup relations. Therefore, a methodological implication of the many inconclusive findings throughout this thesis is that research on intergroup contact which involves multiply categorisable individuals needs to adjust how contact experiences are quantified. This concerns not only contact with multiethnic individuals, but also with people who present as gender fluid (see Reimer, 2018) or who challenge other established category boundaries.

As I have shown throughout this thesis, SNA can help researchers quantify the presence of and contact with individuals who self-categorise as multiethnic without relying on monoethnic participants' awareness of multiethnic identities. However, intergroup contact experiences in particular are known to depend on how we categorise our contact partners, rather than the contact partner's privately held social identity (Brown & Hewstone, 2005). Future research on the effect of contact with multiply categorisable individuals could seek to

combine social network and self-report measures in order to quantify the contribution of multiethnic individuals to intergroup processes more reliably. For example, research participants who complete the friendship nomination procedure in the course of network data collection could be asked to indicate the category membership (e.g., ethnicity) of each of their connections. This would clearly negate one of benefits of SNA- over survey-based contact measures, namely that SNA can help quantify contact without referring explicitly to the category membership of a participant's contact partners, which might bias their self-report. However, the proposed approach would allow researchers to differentiate between contact with individuals who identify as multiethnic but are categorised differently, contact with individuals whose multiethnic identity is perceived correctly, and contact with individuals who might not self-identify as multiethnic but are categorised as such by their monoethnic contact partners. This approach could also identify instances where individuals find it particularly difficult to categorise a contact partner, an experience that experimental research suggests has detrimental consequences for intergroup relations (e.g., Gaither et al., 2018) but which has yet to be studied in real-life settings.

Societal Implications

Research on intergroup relations is increasingly concerned with the potential of people who can associate, and be associated, with different and sometimes conflicting groups to broker more positive intergroup relations (see Love & Levy, 2019). While the research presented in this thesis concerned relatively benign intergroup relations in relatively cooperative settings (the classroom, a university lecture group), the potential of people of mixed or multiple backgrounds to affect intergroup relations has also been raised in research on post-conflict reconciliation. For example, Harth and Shnabel (2015) recently found that members of groups that are partially affiliated with a conflict party are more effective at facilitating reconciliation between conflicting groups than members of neutral third groups. In the context of the Israel-Palestine conflict, they found that messages from the Jordanian ambassador to Israel (a third party that was partially affiliated with one of the conflicting groups) increased the willingness of Israeli Jews for reconciliation with Palestinians, while messages from the UN envoy to the Middle East (a neutral third party) did not. This study's social context differed significantly from the landscape of interethnic relations in the US or

UK, and the social identity of the potential mediator, because it spanned different identity domains, was unlike that of multiethnic individuals. Harth and Shnabel's finding nevertheless highlights that our understanding of intergroup conflict and conflict resolution can be enhanced if we consider not only individuals on either side of a social divide, but also multiply identified individuals who blur such clear ingroup-outgroup boundaries.

My research can add to our understanding of intergroup processes that involve more than two groups, on either side of an interethnic divide. However, my findings also caution against an overly optimistic outlook on the potential of multiethnic individuals to facilitate greater intergroup harmony. My research on mere presence effects suggests that the growth of multiethnic populations is unlikely to translate directly into more positive relations between monoethnic groups. Indeed, the presence of multiethnic individuals might even, at least among minority group members, hamper intergroup harmony when multiethnics are situated in broker positions within their relationship networks – although this effect remains to be replicated longitudinally. The growth of multiethnic populations is also going to make contact between monoethnic and multiethnic individuals increasingly likely. And while, as the research presented in Chapter 4 suggests, this might facilitate more positive intergroup relations, most effects obtained throughout my research were indirect, small, and again more common among majority than minority group members. Hirsch is therefore right when she responds to the suggestion that "a new mixed-race generation (…) represents the ability to transcend prejudice" with the argument that "you cannot just paint everyone in the families of the future a pleasant shade of light brown, and expect questions of identity, racial difference and histories of oppression to disappear." (Hirsch, 2018, p. 156).

Conclusion

The research presented throughout this thesis represents a first foray into the implications of a demographic shift – the rapid growth of multiethnic populations – that is likely to affect how we think about the dynamics of intergroup relations in the future. Even though identity multiplicity and the wellbeing and social networks of multicultural and multiethnic individuals have already attracted some research attention (e.g., Nguyen & Benet-Martinez, 2013; Repke & Benet-Martinez, 2017; Verkuyten, Wiley, Deaux, & Fleischmann, 2019), the

contribution of multiethnic individuals to intergroup relations continues to be discussed mostly anecdotally or with reference to findings from abstract laboratory-based research conducted in the US. My research set out to test empirically and through a combination of analytical approaches (survey, social network analysis, experiment) the oft-repeated suggestions that multiethnic individuals are well-placed to build bridges across ethnic divides.

This final chapter of my thesis has highlighted that, while I found some empirical support for the potential of multiethnic individuals to facilitate more positive intergroup relations, too many questions remain to state conclusively that multiethnic people do indeed bridge intergroup divides. The role of multiethnic individuals in intergroup processes, and more generally the contribution of individuals who blur common category boundaries, clearly remains a rich area for future research. One of the challenges that such future research will need to address is the complexity of real-life intergroup contexts, especially where individuals can be categorised in multiple ways. The well-established social psychological approach to studying intergroup experiences on the basis of self-reports or in experimental settings reaches its limits when intergroup contexts are also shaped by individuals whose group membership is often invisible or ambiguous, whose social identity varies across contexts, and who might still shape intergroup relations through their mere presence regardless of how they are categorised by others.

Multiethnic populations are set to grow faster than most other ethnic groups in the UK (Coleman, 2010). With this demographic change in mind, our understanding of intergroup relations in social environments where familiar intergroup boundaries are becoming increasingly blurred will be enhanced if we begin to design surveys, social network studies, and experiments with multiethnic populations in mind. For example, as intergroup contact researchers we should consider it standard practice to offer participants the opportunity to identify as multiethnic, an approach that would help avoid the absorption of multiethnic populations under larger monoethnic category labels, and to ask specifically about participants' interactions with and evaluations of multiethnic people. This will make future research in this area more challenging. Nevertheless, by doing so, research on the

contextual- and individual-level factors that shape intergroup relations will also become better-placed to take existing theories and paradigms, literally, beyond black-and-white thinking, and to reflect more accurately the growing complexity of intergroup relations in the increasingly heterogeneous societies of the 21st century.

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