Guilt and Relationship Repair

Luka Katic

Keble College



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For my Princess Warrior Queen Mihaela

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ABSTRACT

This research reported in this thesis investigates the relationship repair function of the emotion of guilt. Chapter 2 presents Studies 1 – 3 which assessed the effects of delivering an apology on experienced guilt. Study 1 aimed to extend previous findings that practical repair of material damage reduced guilt independently of whether it is carried out by the transgressor or someone else by introducing an additional manipulation of apology (relationship repair). However, participants reported having delivered an apology even when the instructions did not mention apologising. Study 2 improved the apology manipulation and showed that it reduced guilt as predicted. Study 3 used a directly involving laboratory task to induce guilt and confirmed that apology had an independent effect on guilt. The separate effect of practical repair on guilt shown in previous research was replicated across all 3 of these studies. Chapter 3 focused on investigating the effect of self-punishment on guilt reduction in a laboratory experiment (Study 4). Findings indicated that guilt was alleviated more when the victim was present when shock levels were set than when they were absent. Further, guilt was alleviated more when the transgressor, rather than the experimenter, set the intensity of the shocks. Chapter 4 reports on Studies 5 and 6 which examined the interaction between different means of guilt communication. These studies assessed both the extent to which guilt elicited the means of guilt communication, and in turn, the extent to which these means of guilt communication affected guilt. Study 5 was a laboratory experiment and it included an apology manipulation similar to that used in Study 3, in addition to the self-punishment manipulation used in Study 4. One of the aims of this study was to see whether the modified self-punishment measurement would give clearer results on the effect of victim's presence on intensity of electric shocks. The other aim was to examine if the effects of apology and communicated self-punishment on guilt would interact. Findings reported no effects of the manipulated factors on guilt. However, apology reduced the intensity of intended self-punishment as expected. In Study 6, participants had to imagine that they were participating in an adapted version of study 5. In addition to manipulations of apology and intended self-punishment, a manipulation of practical repair similar to the one used in Study 3 was added. This study investigated if the expected guilt-alleviating effects of apology and self-punishment were independent of practical repair. Findings indicated that participants increased the intensity of shocks when they knew that the shock level would be communicated to the victim. Moreover, results showed that when participants communicated their intention to punish themselves, guilt reduced if they apologised or if the victim's material damage got repaired. Overall, this thesis took steps towards extending the body of knowledge on interaction of inter- and intra-personal effects on guilt by testing new hypotheses and building on previous research.

DETAILED ABSTRACT

The research in this thesis aimed to investigate the interpersonal and intrapersonal processes associated with guilt. Chapter 1 introduces the emotion of guilt and reviews the previous literature on intrapersonal and interpersonal effects and alleviators of guilt. It also provides an overview of the present conceptual framework and methodological approach. Furthermore, Chapter 1 gives an overview of relevant theories and recent perspectives on guilt, including the social function of guilt which highlights the role guilt may play in promoting cooperative behaviour. The chapter argues that the main role of guilt is to restore the interpersonal relationship with the victim. Finally, Chapter 1 outlines the research aims and summarises the six studies reported in this thesis.

Chapter 2 investigates the interaction between interpersonal and intrapersonal repair on guilt, and presents findings from my first three empirical studies (Studies 1 to 3). This chapter first outlines the differences between apology (interpersonal) and practical repair (intrapersonal) based on the previous empirical findings and theories, and presents reasons behind the motivation to apologise. Recent findings showing that alleviation of guilt is not subject to the transgressor's involvement in repair of the material damage potentially undermine interpersonal approaches to the emotion. By taking a more realistic approach to the situations in which guilt is elicited (i.e. by adding a manipulation of apology), I aimed to investigate this further and revive the social aspect of guilt. In Study 1, participants read a scenario about borrowing a bicycle from a friend, which was later stolen due to their own negligence. Participants were then assigned to experimental conditions based on whether the apology was given or not and

whether the bicycle was found by themselves, someone else, or remained stolen. Findings showed that when someone else brought the bicycle back, the participants who apologised felt more self-blame (core-relational theme for guilt) than those who did not apologise. However, the results also indicated that participants who read no information on offering an apology (no-apology condition), nevertheless imagined that they had apologised. Study 2 was a follow-up study which addressed methodological problems that arose in Study 1. Instead of not reading anything about apology in the no-apology condition, the participants read about being prevented from apologising to their friend despite having the intention to do so. Findings confirmed my hypothesis by reporting that participants who imagined apologising, according to the scenario, had their guilt alleviated more than those who imagined not apologising. To substantiate these findings, Study 3 used an experimental manipulation to examine the effect of apology and practical repair on guilt in a directly involving laboratory experiment. Participants completed a computer-based task with the aim of winning a chocolate bar for the other participant they had met beforehand. However, the task was deceptive since there was no interaction between the two participants and all the results were pre-programmed. Namely, all the participants received feedback that they failed to win the chocolate for the other person due to their poor performance, but that the other participant won a chocolate for them. The results confirmed the findings from Study 2: participants who apologised had their guilt alleviated. In all three studies, the effect of practical repair on guilt was replicated. These findings highlight the fact that interpersonal factors play a role in guilt over and above the effects of practical concerns relating to damage reduction.

Chapter 3 presents one experimental study examining the guilt-alleviating effects of self-punishment in different social contexts. Using the same guilt-eliciting task from the previous studies, the aim of this study was to investigate how the presence of the victim affects the extent of the transgressor's self-punishment and the extent of their guilt alleviation. After guilt was elicited, the intensity of the electric shocks the transgressor was to receive in round 2 was set by either the transgressor themselves or by the experimenter (self-selected/yoked condition). In both conditions, the victim (confederate) was either present or absent from the room during this procedure. The findings showed that guilt was reduced only in the social condition, (i.e. when the victim was present). Moreover, participants who set shocks themselves had their guilt reduced more than participants who had the level of shocks imposed by the experimenter. This highlights the social role of self-punishment as a communication of one's guilt rather than the intention to suffer in the absence of punishment.

Chapter 4 examined the interaction between means of interpersonal and intrapersonal repair and their effects on guilt. Study 5 used the same guilt-eliciting task from the previous studies. In a laboratory setting, I manipulated apology and a modified version of intention to self-punish. Findings confirmed one of my hypotheses, that apology reduced the intensity of shocks set by the participants when they knew that this would be communicated to the victim. However, the other hypothesis was rejected since guilt remained unaffected by any of the manipulated factors or their interactions, when I expected it to reduce the most when apology and intention to self-punish were communicated to the victim. Study 6 was conducted as an online vignette experiment. The aim was to replicate the shock intensity reducing effect of apology and to investigate whether apology in interaction with communicated intention to self-punish

would have the strongest guilt-alleviating effect. Participants saw a short video on the guilt-eliciting task and expected to imagine completing the experiment while being guided through the experiment by a written narrative. Findings did not replicate the effect of apology on communicated intention to self-punish, but participants set a higher intensity of electric shocks when they knew that this would be communicated to the victim. Guilt was reduced under specific interactions of all three effects of guilt but not in the expected conditions. More specifically, guilt was alleviated when the communicated intention to self-punish was supported by either the repair of the material damage or by the apology. These findings indicate that in order to alleviate guilt, in addition to communication of intention to self-punish, the transgressors are required to include a more transparent and expected type of guilt repair such as apology or practical repair.

The final chapter (Chapter 5) summarises the main findings of all six studies with reference to the overarching research aims. Chapter 5 concludes with a description of this thesis' contribution to the existing literature on guilt, highlights the limitations of current research, and makes suggestions for future investigations.

CHAPTER 1: GENERAL INTRODUCTION

In this chapter I provide an overview of previous literature relating to the research reported in this thesis. I first introduce the concept of guilt with its most common elicitors and consequences. I then review theories of emotions which closely relate to guilt, and outline the difference between guilt and similar emotions. I continue with summarizing apology and self-punishment as interpersonal expressions of guilt. In the concluding section I outline the research aims and the structure of this thesis as well as summarise the six studies reported in subsequent chapters.

Introduction

Before guilt was considered an emotion, ‘being guilty’ was observed as a technical definition with its roots in Old English *gieldan*, meaning "to pay for” or “debt." It was based on a notion of violating legislated rules, which implies that people may be guilty without any feeling (Lewis, 1971; Ortony, 1987). As such, guilt still has two meanings, a socio-legal one and an emotional one (Ortony, 1987), and this thesis focuses on the emotional concept of guilt.

Freud (1930/1961, 1933/1964) treated guilt as a product of intrapsychic conflicts derived from the "fear of the super-ego" (1930/1961, p. 74). According to his views, guilt feelings resulted from a conflict between the superego and the id, where guilt was the weapon used by the superego to influence the ego's decisions (1933/1964, p. 76). Other theorists have explicitly and consistently rejected an interpersonal aspect of guilt. For instance, Piers and Singer (1953/1971) claimed that guilt emerged from castration anxiety and treated it as a response to id impulses; Gilligan (1976) asserted that guilt

arises in response to aggressive drives connected with the early stages in the Freudian scheme, while considering the wish for punishment an important aspect of guilt. From a different perspective, Buss (1980) linked guilt to private self-consciousness, not involving other people or their perspectives. Furthermore, by supporting the view of guilt as an intrapersonal emotion, the body of knowledge on guilt was mainly based on pathological investigations of mental disorders, such as masochism and obsessional neuroses (Freud, 1917/1957, 1923/1961). Helen Block Lewis (1971) asserted that interpersonal factors and processes were irrelevant to guilt: "Guilt is evoked only from within the self" (p. 85). She further stated that people who experience guilt report negative evaluations of a specific behaviour inconsistent with internal standards. In other words, they focus on the negative aspects of their behaviour/failure— “I did a bad thing” (Lewis, 1971). Thus, her analysis explicitly denied any significant role of interpersonal processes. Overall, in early research (beginning of the twentieth century), psychologists identified the emotion of guilt as a negative emotion resulting from intrapersonal (intrapsychic), moral conflicts.

Despite the prevalent intrapersonal view of guilt, some authors deemed that the social dimension exists in the "traditional view" of guilt (Jones, Kugler, & Adams, 1995; Vangelisti, Daly, & Rudnick, 1991), however, their claim was not brought to light early enough. For instance, looking back to Freud's understanding of guilt as resulting from a conflict between the superego and the id, one can infer some emerging, albeit implicit, interpersonal elements. Since the superego is conceptualized as a representation of internalized standards of proper behaviour in interactions with other people (Freud, 1930/1961; Mosher, 1965), guilt could be interpreted as resulting from conflicts which arise when dealing with other people. This definition assigns a role to

interpersonal factors based on the possibility that "internalized standards" can be learned from others (De Hooge, Nelissen, Breugelmans & Zeelenberg, 2011). Some psychoanalysts implicitly acknowledged guilt's links to interpersonal elements through anxiety over breaking an interpersonal relationship (Rank, 1929) or through a basic fear of other people's disapproval (Horney, 1937). More recently, psychological research has begun to focus on the interpersonal perspective of guilt. Initially, a collection of reported autobiographical events showed that guilt related to concerns regarding interpersonal relationships. People reported that even when feeling guilty alone, the incident about which they felt guilty for tended to be interpersonal (Tangney, 1992). Similarly, studies found that experiencing the emotion of guilt makes people imagine being accused by real or imagined characters (Brooke, 1985; Millar & Tesser, 1988), and that they have no difficulty recalling incidents in which they felt guilty for transgressing towards another person (Leith & Baumeister, 1998; Vangelisti et al., 1991). Finally, Parkinson and Illingworth (2009) reported that in situations when people did not commit a transgression, people felt guiltier when they were blamed it compared to when they were not blamed.. This shows that guilt can be elicited solely as a result of an interpersonal interaction.

In the next sections I outline how guilt is defined from the perspective of moral, social, self-conscious, appraisal, attribution and goal systems theories. Furthermore, I review the existing literature on practical repair, apology and self-punishment. This is followed by a description of the six studies that I carried out. At the end, I discuss the findings supporting the case for guilt being primarily a social emotion (Baumeister, Stillwell & Heatherton, 1994).

Moral Emotion Theory

Guilt, shame, disgust and schadenfreude are considered moral emotions (Haidt, 2003; Harris, 2003; Tangney & Dearing, 2002). Most authors agree that moral emotions have the function of facilitating integration of individuals into the community, motivating them to adhere to social norms and thus avoid social rejection (Keltner & Buswell, 1997; Kroll & Egan, 2004; Sedikides & Skowronski 2000). Haidt (2003) defined them as being "linked to the interests or welfare either of society as a whole or at least of persons other than the judge or agent" (p. 276).

Frank (1988) suggests that guilt may motivate cooperative behaviour, and Haidt (2003) proposes that emotions like guilt may evoke prosocial action tendencies. In recent reports, the behaviour following guilt was mostly interpreted as moral behaviour, or behaviour motivated out of concern for another person (Haidt, 2003; Kilpatrick, Emmons, & Larson, 2001; Sheikh & Janoff-Bulman, 2010; Smith, 1759). Additionally, guilt is considered a moral emotion because of its preventive function- namely, the anticipated punishment prevents people from making unethical decisions (Tangney et al., 2007). In a different way, guilt is considered a moral emotion for being linked to the prevention of negative actions (Ferguson, Stegge, & Damhuis, 1991; Sabini & Silver 1997; Smith, Webster, Parrott, & Eyre, 2002) and to the development of moral faculties (Eisenberg, 2000; Hoffman, 2000; Tangney & Dearing, 2002). This is confirmed by empirical findings showing that feelings of guilt are elicited by failing to live up to one's morals standards (Zeelenberg & Breugelmans, 2008). Guilt is also considered a supporting pillar of the society since it has been found to increase a sense of personal responsibility (Freedman, et al., 1967; Haidt, 2003; Izard, 1977; McCullough, Worthington, & Rachal, 1997; Smith, 1759; Strelan, 2007) and compliance (Carlsmith

& Gross, 1969; Cunningham, Steinberg, & Grev, 1980; Freedman et al., 1967; Konecni, 1972). Recent findings seem to diminish the moral aspect of guilt. In a series of experiments, De Hooge and colleagues (2011) showed that guilt motivates transgressors to act prosocially toward the victim at the expense of others. When given a chance to redistribute their limited assets, participants repeatedly chose to give more to the victim than to others. This might be indicating that when feeling guilty, people are more focused on the victim of their transgression and restoring their welfare.

Social Emotion Theory

According to Baumeister (1994) guilt serves three broad functions for relationships. Here, I expand his description of social functions of guilt by adding more recent empirical findings. First, guilt motivates relationship-enhancing patterns of behaviour that prescribe mutual concern, respect, and positive treatment in the absence of self-interested return (Derber, 1979; Fiore & Swensen, 1977; Leith & Baumeister, 1998; Rusbult, Johnson, & Morrow, 1986; Tangney et al., 2007). Second, guilt may operate as an interpersonal influence technique empowering the weak, making powerful individuals feel guilty and thus less likely to take advantage of weaker individuals. It is worth mentioning however, that this characteristic can also be abused by intentionally eliciting guilt in others (Baumeister et al., 1994). The final function of guilt is to redistribute emotional distress within the dyad. After a transgression, the victim is presumably suffering while the transgressor has benefited. If the transgressor feels guilty however, his or her enjoyment is diminished, and by this rebalancing of scales of sorts, their guilt might make the victim feel better. In this way, emotional equity is restored because negative feelings are effectively restored to the person who caused them. This categorization of guilt is broadly supported by findings in studies reporting

that guilt primarily serves an interpersonal or intergroup function by preventing negative and promoting positive actions towards others (Barrett & Nelson-Goens, 1997; Leary, 2000; Hareli & Parkinson, 2008; Parkinson, Fischer, & Manstead, 2005).

It is important to specify that guilt is not restricted to previously established relationships where a received benefit does not create a specific debt (communal relationships – typical for family members) but it also expands to newly formed relationships. For instance, people tend to feel survivor's guilt when witnessing a recently acquainted person suffering from a traumatic experience (Niederland, 1961) or being put in a comparably worse situation (Baumeister et al., 1994). Similarly, in laboratory experiments of this thesis (Studies 3-5) participants met for the first time during the experiment. Consequently, relationship between participants are expected to be less of a communal nature but to rely on receiving benefit in return (exchange relationship).

Self-Conscious Emotion Theory

Compared to basic emotions which emerge within the first 9 months of life (Campos, Barrett, Lamb, Goldsmith, & Stenberg, 1983), self-conscious emotions emerge toward the end of the child's third year (Abe & Izard, 1999; Lagattuta & Thompson, 2004; Lewis, Alessandri, & Sullivan, 1992), which was confirmed for the emotion of guilt as well (Luby et al., 2009). It is worth noting that this is around the same time when one obtains theory of mind (ToM). i.e. when one clearly distinguishes the self as different from others, and starts using developed standards for evaluating own behaviour. Below I will outline the salient characteristics of self-conscious emotions:

According to the theory of self-conscious emotions (Tracy & Robins, 2004), guilt, shame, embarrassment and pride are evoked by explicit (consciously aware) or

implicit (consciously unaware) *self-evaluations*. When the self reflects upon oneself and one's own specific behavior, self-conscious emotions arise as a product of discrepancy between the two (Tracy, Robins, & Tangney, 2007). Self-conscious emotions reflect not only on the personal self, but also relational, social, and collective self-representations (Buss, 2001; Tangney & Dearing, 2002). Therefore, these emotions 'feed' an immediate evaluation of our social and moral acceptability. Self-conscious emotions facilitate the attainment of complex social goals, such as maintenance or enhancement of status and prevention of group rejection (Keltner & Buswell, 1997; Tracy & Robins, 2004; Tracy & Robins, 2007), which then facilitate survival and reproductive goals. Hence, it comes as no surprise that self-conscious emotions seem to be present only in species with highly complex and frequently changing social hierarchies (e.g., humans and great apes; de Waal, 1989; Keltner & Buswell, 1997; Leary, 2004). Unlike basic emotions, some self-conscious emotions are not distinguishable by universally recognized facial expressions (Tracy & Robins, 2004). For instance, to date research has not identified such expressions for the emotion of guilt (Izard, 1971; Keltner, 1995). Self-conscious emotions are more cognitively complex than basic emotions (Abe & Izard, 1999; M. Lewis, 2000) as they require the capacity to form stable self-representations as well as to consciously self-reflect.

According to the features outlined above, guilt is considered a self-conscious emotion (Tangney et al., 2007). When feeling guilty, transgressors are aware of the self being responsible for a transgression and of the effect this had on another person. Guilt supports social goals by promoting apology and confession after the transgression (Keltner & Buswell, 1997; Noftle & Robins, 2006; Tangney & Dearing, 2002). Guilt does not elicit any recognizable nonverbal expression (Haidt & Keltner, 1999), and it

requires cognitive complexity to create a mental representation of another person and to make causal attributions. Although the theory of self-conscious emotions defines guilt as an emotion “encouraging communal relationships” (Tracy & Robins, 2004, p.5), it does not specify how guilt does this: whether it elicits compliance with ethical principles, insists on compensation for the material damage, or attempts to repair the interpersonal relationship with the victim.

Appraisal Theory

Appraisal theory is the most applied systematic attempt to understand the sources and mechanism of emotions. According to one of the versions of this theory (Smith & Lazarus, 1991), different emotions depend on people categorizing the circumstances corresponding to benefit or harm into appraisals (evaluations). For instance, categorising to what extent is the event relevant to them or how responsible they feel for it. A key proposition of this cognitive-relational theory of emotions is that, through the symbiotic interaction of particular harms and benefits, appraisals identify a "core relational theme" which results in a distinct emotion (Lazarus & Smith, 1988). For instance, an ambiguous danger/threat (core relational theme) produces anxiety (Abramson, Seligman, & Teasdale, 1978; Plutchik, 1980). Each appraisal component addresses one of the two global appraisals relevant to well-being (Lazarus, 1966; Lazarus, 1970). "Primary appraisal" - consisting of two components, is concerned with how and whether the event is relevant to the person's well-being, and "secondary appraisal" – consisting of four components, is concerned with the person's resources and options for coping with the event. The two components of primary appraisal are *motivational relevance* and *motivational congruence (incongruence)* understood as a part of the personality. "Motivational relevance" is an evaluation of the extent to which

the experience relates to one's goals and concerns, i.e. the extent to which there are issues the person cares about (Frijda, 1986; Scherer, 1984; Smith & Ellsworth, 1987), and it is a requirement for any emotion to be elicited (Smith & Lazarus, 1991). "Motivational congruence or incongruence" refers to the extent to which the experience is consistent (or inconsistent) with what one wants, i.e. if it forestalls or facilitates personal goals (Roseman, 1984; Scherer, 1984). "Motivational incongruence" is a necessary appraisal component for negative emotions to be elicited (Smith & Lazarus, 1991). The four components of secondary appraisal are accountability, problem-focused coping potential, emotion-focused coping potential, and future expectancy. Accountability provides direction and focus to the emotional response and the coping efforts motivated by it. It determines who is to receive the credit or the blame for the harm or benefit. It is also closely related to the locus of causality (Ellsworth & Smith, 1988; Weiner, Graham, & Chandler, 1982), which is an attributional or knowledge factor (discussed below) but differs from it in ways which highlight the earlier stated difference between knowledge and appraisal.

The core relational theme producing guilt is "self-blame," which means holding oneself *accountable* for a motivationally *relevant* and motivationally *incongruent* event (Smith & Lazarus, 1991). The remaining three components of secondary appraisal all have to do with evaluation of the potential for improving an undesirable situation or maintaining a desirable one (Lazarus & Folkman, 1984) and they will not be further analysed in this thesis since they are not specifically relevant to the emotion of guilt.

Attribution Theory

While appraisals are concerned with evaluating the significance of what has happened, attributions relate to individuals' attempts to explain the occurrence of events

(Anderson, Krull, & Weiner, 1996). For instance, if two football players underperform in the semi-final of the World Cup, they might appraise the loss quite differently (e.g., "I've done really well to get the team this far" or "I've really let my teammates down"). However, they might attribute their loss in a similar way – by attributing their failure to the lack of ability to perform better (e.g., "I gave my best! There was nothing more I could have done."). First introduced by Fritz Heider (1958), attribution theory of motivation and emotion (Weiner, 1985) is considered as an adaptation of the appraisal theory of emotion (Hareli, 2014; Weiner, 2014). According to the attributional theory of emotions (Weiner, 1985; 2014) there are three basic dimensions (properties) which determine the emotion that will be experienced. First, causal locus - defines whether the cause is perceived as residing within (internal) or outside of the person (external). Second, causal stability - defines whether the causes will remain in place (stable) or it is perceived to be amendable (unstable). Finally, causal control - defines whether the cause is subject to volitional alteration (effort) or not (aptitude).

Guilt is associated with *controllable, internal* and *unstable* causes (Weiner et al., 1982), which was confirmed in studies testing controllability-guilt associations (Brown & Weiner, 1984; Covington & Omelich, 1984; Jagacinski & Nicholls, 1984) and again by findings showing that guilt was associated with failure due to lack of effort (Tangney et al., 2007; Tracy & Robins, 2006). For these reasons, the studies I report in this thesis were designed to make participants believe they were accountable for the transgression (internal causal locus), that the situation was amendable (causal stability), and that it was caused by their lack of effort rather than their lack of ability (causal control).

Goal Systems Theory

People in most situations consider multiple possible ways of achieving a given goal. Equifinality depicts a situation wherein each of a different means leads to a single goal; consequently, these equifinal means should be substitutable, meaning that if one fails, it could be substituted by another means whilst keeping the attainment of the main goal (Heider, 1958). The number of available means attached to a given goal may vary and they create an architectural like configuration of goals and means. However, in some situations, the means may need to attain a subordinate (prerequisite) goal before it achieves the main goal (Förster, Liberman & Friedman, 2007; Kruglanski, Pierro & Sheveland, 2011; Kruglanski, et al., 2002). For instance, if an individual has a goal to improve their financial situation, they might try achieving a more specific – subordinate goal such as to save money or to get promoted. Means of achieving these subordinate goals will be respectively to stop spending money or to start working more diligently at the current job position. However, these two means will not be equifinal since they are not interchangeably substitutable. Precisely, in case of failure of the first chosen means (stop spending money), the second means (working harder) will not be able to take over the process leading towards the first subordinate goal (saving money) which will lead to failure of reaching the main goal (better financial situation).

Similarly, there are multiple means of reaching emotion alleviation. If the first chosen means is prevented, and the second chosen means alleviates the emotion, the means are substitutable, and hence, equifinal. However, if the second means does not alleviate the emotion, means are not equifinal, but they stand as individual means that can attain the main goal only after reaching a more specific, subordinate goal.

In terms of my thesis, my aim is to examine whether different means pertaining to guilt alleviation are equifinal or not. Precisely, if means of achieving guilt alleviation (apology; practical repair; self-punishment) interact, this will indicate that they are substitutive and equifinal in their intention to achieve the main goal. If means alleviate guilt separately and do not interact as substitute in absence of other means, this will reveal separate underlying subordinate goals ascribed to each separate means.

Guilt and Other Emotions

Negative emotions signal the need for something in the current situation to change in order to align with one's goals (Frijda, 1986; Zeelenberg & Pieters, 2004). Guilt and shame, as two negative emotions, are often used interchangeably since they are elicited in remarkably similar situations (Tangney & Dearing, 2002; Tangney, Miller, Flicker & Barlow, 1996) and are both classified as self-conscious emotions. Nevertheless, guilt and shame refer to distinct experiences (Ferguson, Stegge, & Damhuis, 1991; Lewis, 1971; Tangney, 1990, 1991; Tangney & Dearing, 2003; Wicker, Payne, & Morgan, 1983). Guilt concerns a particular action, whereas shame pertains to the entire self (Lewis, 1971; Tangney, 1990, 1991). This differential emphasis on *behaviour* ("I *did* a horrible thing") vs. the *self* ("*I* did a horrible thing") further causes shame to be experienced as a more disruptive emotion, often leading to social withdrawal. When feeling shame, the transgressor feels "small" and worthless, and wants to "remove themselves from the scene" (Olthof, Ferguson, Bloemers, & Deij, 2004; Rothschild, Landau, Sullivan, & Keefer, 2012; Stets & Carter, 2012; Tangney, 1991). Conversely, feeling guilty drives the transgressor to make amends and motivates prosocial behaviour (De Hooge et al., 2007; Ellsworth & Smith, 1988; Izard, 1977; Smith, 1882; Tangney & Dearing, 2002).

Effects of Guilt

Guilt has been reported as an unpleasant feeling with accompanying beliefs that one should have thought, felt, or acted differently (Kubany & Watson, 2003). Therefore, the desire to avoid actions which anticipate guilty feelings seems justifiable (Birkimer, Johnston, & Berry, 1993; O'Keefe, 2002) since anticipation of guilt can prevent people from making unethical decisions and transgressive behaviours (Tangney, Stuewig & Mashek, 2007). For instance, people were found to engage in certain behaviours just to avoid inaction which they anticipated would have led to guilt (Lindsey, 2005). For individuals with an extensive ability to anticipate guilt, the mental representation of guilt as something to fear and avoid potentially leads to disorders focused on behaviours intended to avoid guilt inducing situations, such as obsessive–compulsive disorder (McGraw, 1987; Miceli, 1992; Rachman, 1993), and eating disorders (Dunn & Ondercin, 1981; Fairburn & Cooper, 1984). Nevertheless, after the transgression is committed, guilt strongly relates to reparative intentions (Caprara, Barbaranelli, Pastorelli, Cermak, & Rosza, 2001; Roseman, Wiest, & Swartz, 1994; Schmader & Lickel, 2006; Tangney, 1993; Tangney, Miller, Flicker, & Barlow, 1996; Zeelenberg & Breugelmans, 2008). For instance, people who recalled situations when they experienced guilt or made unfair offers, acted more prosocially in subsequent situations (Ketelaar & Au, 2003; Nelissen, Dijker, & De Vries, 2007). Below I will outline the effects of guilt by classifying them according to the objective of their repair: intrapersonal outcomes – with objective to restore victim's material position but not necessarily to restore the interpersonal relationship (practical repair), and interpersonal outcomes – with objective to restore the interpersonal relationship with the victim (apology and self-punishment).

Intrapersonal

Practical repair. According to Equity theory (Walster, Berscheid, & Walster, 1976) people support fairness and results that are proportionate to their invested effort. The most widely accepted guideline for restoring justice in these situations is the equity principle (Austin, Walster, & Utne, 1976; Brickman, 1977). Guilt is elicited by diverging from the equity principle, for instance by being rewarded more than others (Baumeister et al., 1994; Hassebrauck, 1986). This leads individuals to attempt to compensate at the expense of personal outcome (Penner, Dovidio, Piliavin, & Schroeder, 2005) for the reward the other person should have received. Research shows that people increase their effort on a subsequent performance in order to make up for the difference between their and the other person's reward (Wertheim & Schwartz, 1983). Findings indicate that in order to reach equity, transgressors who experience guilt are ready to allocate more resources to those whom they have wronged (Cryder, Springer, & Morewedge, 2012), and are more inclined to cooperate in repeated social bargaining games (Ketelaar & Au, 2003). For instance, after they were led to believe that they have transgressed by breaking an expensive object, participants were more inclined to compensate for the damage or to ask the experimenter or a third person for their assistance (Konecni, 1972; Regan, Williams, & Sparling, 1972; Regan, 1971). Transgressors were also found to be motivated to make amends by doing something for the victim by merely recalling guilt charged experiences (Carlsmith & Gross, 1969; Freedman, Wallington, & Bless, 1967; Regan, 1971; Wallace & Sadalla, 1966). Having these findings in mind, some authors came to believe that compensation alone might be an adequate response to unintentional harm (Darley & Pittman, 2003).

Interpersonal

Apology. The positive effects of apology have been well documented in psychology (Darby & Schlenker, 1982; Eaton, Struthers & Santeli, 2006; Exline & Baumeister, 2000), and sociology (Goffman, 1971; Tavuchis, 1991). Empirical findings show that recalling guilt charged experiences, made people more likely to apologise (Roseman, Wiest, & Swartz, 1994). Although the likelihood of transgressor proffering apology is subject to various cultural elements, relationship between guilt and apology is nonetheless commonly observed across cultures (Breugelmans & Poortinga, 2006; Fontaine et al., 2006). The understanding that the central role of apology is to express guilt is widely accepted and observed in the transgressor's tendency to apologise when feeling guilty (Friedman, 1985; Hoffman, 1982; Lewis, 1971; Zahn-Waxler & Kochanska, 1990). For instance, participants who imagined offending a partner used concessionary strategies, such as explicit acknowledgment of responsibility and guilt, rather than excuses, justifications, or denial strategies (Gonzales, Manning, & Haugen, 1992). Beyond the field of psychological research, apology has been reported as the most common outcome of judicial mediation between the victim and the offender, (Bolitho, 2012; Bonta, Wallace-Capretta, & Rooney, 1998; Maxwell & Morris, 1993; Miers, Maguire, & Goldie, 2001; Umbreit, 1995; Umbreit & Coates, 1992).

I think it is important to note that apology comes at a price for the transgressor; a price which might at times discourage the transgressors from apologising. Firstly, despite being the most satisfying resolution for the victims, apology is perceived as the most difficult and threatening action for the transgressors (Brown & Levinson, 1987; Holtgraves, 1989; McLaughlin, Cody, & O'Hair, 1983). Since apologising is considered a threat to self-consistency and public-image (Eaton & Theuer, 2009), people sometimes

decide to deny their mistakes and thus refrain from apologising (Exline & Baumeister, 2000). Secondly, apologising can also be perceived as a form of self-punishment, as it entails a painful process of retelling, reliving, and seeking forgiveness (Tavuchis, 1991). For this reason, transgressors might deny their involvement, make excuses, justify their actions, or claim to be the true victim rather than apologise (Felson & Ribner, 1981; Pontari, Schlenker, & Christopher, 2002; Presser, 2003; Snyder & Higgins, 1988). These findings emphasize that offering an apology is a common expression of guilt which nevertheless comes with certain risks and can be experienced as a painful process. More discussion on similarities and differences between apology and self-punishment will follow in Chapter 4.

Self-punishment. Initially reported as a possible action tendency of guilt (Roseman, Wiest, & Swartz, 1994), self-punishment was found to be elicited by guilt, a process the authors dubbed the Dobby effect (Nelissen & Zeelenberg, 2009). The Dobby effect was later replicated in follow-up studies, e.g. showing that after committing a transgression, the wrongdoers punished themselves by reducing their economic gain (Tanaka, Yagi, Komiya, Mifune, & Ohtsubo, 2015; Watanabe & Ohtsubo, 2012). In one of the studies focused on the relationship between physical pain and guilt, Bastian and colleagues (2011), found that people who wrote about a situation in which they wronged someone, held their hand in cold water longer than those who wrote about a casual everyday interaction. These findings were replicated by Inbar and colleagues (2013) showing that people self-induced electric shocks of higher intensity after writing about a situation when they felt guilty, compared to people who wrote about an affectively neutral situation. The general conclusion from these findings was that people punished themselves in order to self-inflict the deserved punishment.

However, Wicker and colleagues (1983) found that guilt feelings are associated with the *expectation* of punishment but not necessarily with the *desire* for punishment. The expectation to be punished comes as no surprise given that causing others damage usually entails some form of punishment. Moreover, self-punishment as a response to feeling guilty was well documented in religious and social practices (Leff, 1999; Wallington, 1973). Still, the reasons that motivate transgressors to punish themselves were unclear, especially considering that guilt already creates a negative experience one wants to avoid. The need for empirical evidence on a transgressors' wish for punishment was also noted by other authors (Walster, Berscheid, & Walster, 1976). One of the possible reasons for self-punishment is the social context. Namely, the above discussed studies did not report controlling for the presence of other people during the experiment (Nelissen & Zeelenberg, 2009; Inbar, Pizarro, Gilovich, & Ariely, 2013), making it unclear as to whether the wish to self-punish could have been an attempt to convey one's guilt to the victim, to the experimenter or to a third person (neutral audience). More recently, Nelissen (2012) focused on testing the effects of social context of self-punishment by manipulating the victim's presence during self-punishment. Findings from this study reported that people were ready to punish themselves more when they knew that the victim was present. This opened a new direction in research questioning whether guilt induced self-punishment is in fact guilt signalling. Study 4 in Chapter 3 pertains to answer this question and question on whether guilt is alleviated as an effect of its signalling to the victim through intention to self-punish.

Effects on Guilt

Practical repair, apology and self-punishment produce a guilt alleviating effect in specific conditions. One of the objectives of this thesis is to investigate how these outcomes interact in their alleviating effect on guilt. Below I outline theoretical and empirical findings for apology, practical repair and self-punishment categorised as intra- or interpersonal alleviators of guilt based on their aim towards restoration of the relationship with the victim or restoration of victim's material position.

Intrapersonal

Practical repair. When guilt feelings arise after a transgression involving material damage, the most commonly chosen response is restoration of equity with the victim by repairing the damage (Caplovitz Barrett, 1995; Lindsay- Hartz, 1984). However, Walster, Berscheid, and Walster (1970) observed that the transgressor's motivation, besides restoring equity, is also for the process to happen in a most satisfactory way possible. For instance, a transgressor might prefer an affluent third person to repair the material damage instead of themselves (Freedman, 1970). Furthermore, a recent study (De Hooge, 2012) reports that for transgressors' involvement in repairing the material damage is not required for the guilt to be alleviated. The results demonstrated that transgressors felt less guilty not only when they repaired the material damage, but also when someone else did it instead of them. This shows that in order to get rid of the discomforting experience of guilt, people are more concerned about victim's reparation than being involved in the process themselves. Chapters 2 and 4 further explore the effects of practical repair on guilt.

Interpersonal

Apology. To my current knowledge, there no studies were conducted on the effects of apology on guilt without the additional manipulation of forgiveness. The only study that closely relates to this topic was a vignette experiment in which participants had to imagine a hypothetical situation. Results reported that transgressors who imagined seeking forgiveness (apologising) reported alleviated guilt compared to those who have not imagined apologising (Witviet, Ludwig & Bauer, 2002). One of the objectives of this thesis is to investigate the effects of apology on guilt. Therefore, by manipulating the apology factor after eliciting guilt, Studies 1-3 in the next chapter directly contribute to existing literature on the effects of apology on guilt.

Self-punishment. A recent, albeit arguably ancient, explanation of the motivation for self-punishment when feeling guilty is that pain purifies (Glucklich, 2003). In line with this position, empirical research has shown that transgressors effectively alleviate guilt by holding their hands in cold water for longer, i.e. by punishing themselves (Bastian, Jetten, & Fasoli, 2011). Similarly, participants who wrote about a guilt-inducing event, self-administered more intense electric shocks compared to those who wrote about events that made them feel sad (Inbar et al., 2013). However, expanding on Nelissen's (2012) findings that people self-punish more in presence of the victim, this thesis investigates whether the previously reported guilt alleviating factor of self-punishment is caused by an uncontrolled social context, and/or whether it alleviates guilt further. Study 4 (Chapter 3) directly examines this question.

Research Aims and Summary of Chapters

The overarching goal of the research reported in this thesis is to highlight the importance of the interpersonal elements of guilt and to investigate their potential

interaction with intrapersonal elements. Hence, the studies in this thesis manipulate and measure the efficiency of guilt outcomes directed at repairing both intrapersonal and interpersonal damage: Practical Repair (Studies 1-3, 6); Apology (Studies 1-3, 5-6) and Self-Punishment (Studies 4-6).

Above I have outlined the most relevant aspects and theories of guilt. Guilt as a self-conscious emotion (Tangney & Dearing, 2003; Tracy & Robins, 2004), is elicited out of the transgression towards another person and motivates the transgressor to repair the resulting damage (Tracy & Robins, 2007). As a moral emotion, guilt prompts the transgressor to attempt to improve the victim's situation by compensating for the material damage while adhering to the fairness principle (Haidt, 2003). Most importantly, guilt as a social emotion motivates the transgressor to repair the interpersonal relationship with the victim (Baumeister et al., 1994). Guided by the interpersonal approach to guilt, the primary objectives are: first, to investigate whether the interpersonal effects on guilt are independent of intrapersonal effects; second, to establish whether the motivation to self-punish during guilt has an interpersonal basis; and third, to examine whether apology and self-punishment together reduce guilt more than when they are carried out individually. With these goals in mind, this thesis reports six studies, three vignettes (Studies, 1, 2 and 6), and three laboratory-based experiments (Studies 3, 4 and 5) using both student and non-student samples. Details of each of these studies are summarised below, with reference to my research aims.

CHAPTER 2: APOLOGY AND PRACTICAL REPAIR

ABSTRACT

This chapter presents three studies investigating the effect apology has on guilt reduction. Study 1 used a vignette method to extend and clarify De Hooge's (2012) finding that practical repair of material damage reduced guilt, by assessing potential independent effects of apology. Study 2 improved Study 1's issues with an apology manipulation. Study 3 used a similar design to try to replicate Study 2's findings in a laboratory setting. In Study 1, practical repair alleviated guilt when material damage was repaired, either by the transgressor or someone else. Apology did not have any effect on guilt in Study 1, but the modified apology manipulation used in Study 2 resulted in lower guilt as intended. Study 3 confirmed these findings by showing that participants whose apology was passed to the victim, had their guilt alleviated. Further, the effect of practical repair on guilt observed in De Hooge's (2012) study was replicated in all three studies reported here (with corresponding effects on guilt-related action tendencies in Studies 2 & 3). However, self-blame (core relational theme of guilt) was not affected by the manipulations in either Study 2 or 3, and the effect on this dependent variable in Study 1 was probably due to participants' misunderstanding of the apology manipulation. Taken together, these findings provide novel evidence for the effect apology has on guilt independently of practical repair.

Introduction

For a long time in psychological research, guilt was characterized as a negative emotion, associated with an unpleasant mental state that individuals are naturally motivated to remove (Cialdini, Darby, & Vincent, 1973; Isen, Horn, & Rosenhan, 1973;

Regan, Williams, & Sparling, 1972). Nevertheless, this uncomfortable feeling seems to benefit both the victim and the transgressor (Estrada-Hollenbeck & Heatherton, 1998) by motivating the transgressor to undertake reparations, resolve the guilt-evoking situation and hence restore their interpersonal relationship with the victim (Tangney and Dearing, 2002).

Apology

In his book *On Apology*, psychiatrist Aaron Lazare refers to apology as ‘‘One of the most profound human interactions” (Lazare, 2004, p. 1). He asserts that the real power of apology lies in its ability to heal humiliation and remove the desire for vengeance by eliciting forgiveness, which further leads to restoration of broken relationships as well as guilt alleviation. Studies have confirmed that apology has a positive effect on children’s attitudes toward transgressors (Darby & Schlenker, 1982; Ohbuchi & Sato, 1994). When they apologised, transgressors were perceived as less intentional and less morally negative, and more remorseful and forgivable instead. From an early age, children in most cultures are taught to apologise for causing harm, and to accept apologies from others (Kochanska, Casey, & Fukumoto, 1995). Moreover, apology is the most common learned response to guilt (Goffman, 1971; Schlenker, 1980) and the most effective response to transgressions (Darby & Schlenker, 1982; Tavuchis, 1991; Van Dijke & De Cremer, 2011).

To the best of my knowledge, no study has been conducted on the effects of apology on guilt, let alone of apology in conjunction with practical repair. Since the objective of this chapter is to investigate whether the alleviating effect of apology is independent of practical repair, in the introductory section of this chapter I will deliver the rationale for the expectation of such effect.

Reasons to Apologise. Reparative actions such as confessions and apologies are aimed at restoring the relationship between the transgressor and the victim (Caplovitz Barrett, 1995; Lewis, 1971, 1987; Lindsay-Hartz, 1984). Moreover, apology was found to be effective in promoting trust between victims and transgressors (Bottom, Gibson, Daniels, & Murnighan, 2002; De Cremer & Schouten, 2008; Exline, et al., 2007; Ohbuchi, Kameda, & Agarie, 1989; Van Dijke & De Cremer, 2011). It also conveys that transgressors understand the consequence of their actions, and that they suffer by feeling guilty, which can be interpreted as "serving" a part of the sentence (Ohbuchi, et al., 1989). By apologising, transgressor pledges not to repeat the offense (Gold & Weiner, 2000; Kim, Dirks, & Cooper, 2009; Schwartz, Kane, Joseph, & Tedeschi, 1978; Weiner, 1995) which leads to reaffirmation of the legitimacy of social rules (Darby & Schlenker, 1982) and re-positioning of the involved parties back to the initial roles in their relationship (McCullough et al., 1997; Rusbult, Verette, Whitney, Slovik, & Lipkus, 1991).

Importantly, apologies restore the dignity of the victim as a part of the reconciliation process (Kim, Dirks, Cooper, & Ferrin, 2006; Kim, Ferrin, Cooper, & Dirks, 2004), which further re-establishes normal social interaction and restores social order (Bennett & Dewberry, 1994; Goffman, 1955). By apologising, transgressors are making an effort to balance out the damage and to reaffirm the victim's social position (Exline et al., 2007; Reb, Goldman, Kray, & Cropanzano, 2006). Apology is not only effective in resolving interpersonal conflict and restoring damaged relationships (Exline & Baumeister, 2000; McCullough, et al., 1997), but was shown to be successful in alleviating the suffering of the victim (Baumeister, et al., 1994; Exline & Baumeister, 2000; Tangney et al., 2007; Tangney et al., 1992). It has also been linked with better

physical (Berry & Worthington, 2001; Witvliet, Ludwig, & Vander Laan, 2001) and psychological health of the victim (Blecher, 2011; Karremans, Van Lange, Ouwerkerk, & Kluwer, 2003; Maltby, Day, & Barber, 2005; Ohbuchi et al., 1989). However, the benefits of an offered apology are not restricted to the victim. Crime case studies demonstrate that apologies benefit the victims' families as well. For instance, a father whose son was a victim of a homicide reported his desire to receive an apology from the murderer rather than to have them executed (Prejean, 1994, p. 244). The positive effects of apology are supported by criminal justice reports and empirical findings. For instance, victims described desiring to receive an apology from the offender and benefits after receiving it (Strang, 2002). The results of the longest running mediation scheme in the United Kingdom (59 mediation agreements) show that 30 of these agreements contained an apology offer by the transgressor (Dhami, 2016). In cases when the offenders did not apologise during a restorative justice meeting, victims reported feeling worse (Morris & Maxwell, 1997; Umbreit, 1994).

One of the most frequently mentioned explanations as to why an apology benefits the transgressor is the alteration in the perception of the transgressor's character and the characteristics of the offence (Bobocel & Zdaniuk, 2005; Gold & Weiner, 2000; Hodgkins & Liebeskind, 2003; Ohbuchi, et al., 1989; Robbennolt, 2003; Scher & Darley, 1997). A more positive mental image of the offender helps victims to become more empathetic towards them (Darby & Schlenker, 1982; Weiner, et al., 1991). In addition to image restoration in the victim's eyes, apology also reduces the blameworthiness in the eyes of others, (Gonzales, Haugen, & Manning, 1994; Tedeschi & Reiss, 1981). A study where victims refrained from severe aggression against the transgressors who apologised, the improvement of the transgressors' impression

mediated the aggression-inhibitory effects of the apology (Ohbuchi et al., 1989). By apologising, the transgressor expects to communicate their intention of reparation to the victim (Brooks, 1999), and hence to increase the prospect of both parties reconciling (Hodgkins & Liebeskind, 2003; Robbennolt, 2003; Scher & Darley, 1997; Tomlinson, et al., 2004). This shows that transgressors are motivated to apologise by changing their perception in the eyes of the victim and of others.

Finally, bearing in mind the high cost of apology, the potential benefit of being forgiven is one of the reasons why offenders take the risk of offering one (Exline & Baumeister, 2000). Numerous studies have found apology to be critical in eliciting forgiveness (Exline, et al., 2007; Palanski, 2012; Schmitt, Gollwitzer, Forster, & Montada, 2004). In a group of studies, participants were more likely to be forgiven for their transgressions after eliciting the victim's empathy by apologising (McCullough et al., 1997; McCullough et al., 1998). In a meta-analytic study, apology was found to be a strong predictor of victim forgiveness (Fehr, Gelfand, & Nag, 2010), making it an essential element in repairing damaged relationships. Hence, apology is one of the key factors in offenders' conflict management (Ohbuchi et al., 1989; Sitkin & Bies, 1993) since it increases the likelihood of victim forgiveness (Cox, Bennett, Tripp, & Aquino, 2012; Darby & Schlenker, 1982; McCullough, et al., 1997; Ohbuchi, et al., 1989; Weiner, et al., 1991). Studies showed that victims are more likely to grant forgiveness to the transgressors who confess (Weiner, Graham, Peter, & Zmuidinas, 1991) or apologise (Couch, Jones, & Moore, 1999; Darby & Schlenker, 1982; O'Malley & Greenberg, 1983; Ohbuchi, et al., 1989) compared to when they do neither. Apology was found to benefit transgressors by improving the outcome of the judiciary mediation process with the victim (Dhami, 2012; Levi, 1997). For instance, when apology was

offered in a restorative justice programme, a high probability of victims forgiving the offenders (75%) was found (Sherman et al., 2005). Moreover, Hareli and Eisikovits (2006) reported that victims are more inclined to forgive when they know that apologies are an expression of guilt or shame rather than pity.

In summary, apology resolves interpersonal conflicts by promoting trust, discouraging re-offence, restoring the victims' well-being, dignity and initial role, altering the perception of the transgressor, reaffirming social rules, and finally, by increasing forgiveness, restoring the relationship between the transgressor and the victim.

Apology vs. Practical Repair. Apology and practical repair are both common outcomes of guilt (Freedman et al., 1967) nevertheless, choosing one or the other depends on the nature of the transgression. It is worth mentioning that apology and practical repair share a characteristic of being obvious to the victim. Thus, victims can easily understand that the apology, or the practical repair, were directed towards them. In studies of this thesis participants find themselves in situations in which they would be expected, if given a chance, to use apology and/or practical repair to communicate their guilt.

Nevertheless, there is a discrepancy between apology and practical repair in terms of some of their characteristics. Firstly, apology and practical repair differ in terms of their availability. Technically, apology is an response option transgressors most often have at their disposal, whereas material damage is subject to the transgressor's material situation. Secondly, apology and practical repair differ in the extent of transgressor's involvement. Practical repair carried out by a third-party serves the purpose of compensating for the material damage, whereas apology given by a third-

party is likely to be less well received than when delivered by the transgressor. Indeed, Okimoto and Wenzel (2014) found that following a workplace transgression, compared to a personal apology from a transgressor, an apology from a third-party on behalf of an organization did not lead to forgiveness. Finally, practical repair and apology differ in their requirements for the acknowledgement by the victim. Practical repair is completed at the moment when it is carried out and the material situation of the victim is restored. The effect of apology however is unclear until a reaction of the victim is received. This can make it complicated for the transgressor to quantify apologies, e.g. how many times should one apologise in an absence of a victim's response. In summary, practical repair and apology differ in terms of their availability, dependence on the transgressor's involvement, and requirement of the victim's response. In other words, apology is more accessible for the transgressor, more dependent on the transgressor's involvement, and more sensitive to the victim's response.

Two vignette studies (Studies 1 and 2) and one laboratory-based experiment (Study 3) of this chapter assess the separate and combined effects of intrapersonal and interpersonal repair of guilt. The purpose of these studies is to investigate whether apology (interpersonal) alleviates guilt independently of the practical repair (intrapersonal).

Study 1

The interpersonal relationship between the transgressor and the victim has been the focus of increasing attention from researchers investigating guilt. Baumeister and colleagues (1994) suggested that one of guilt's functions is to motivate behaviours that sustain relationships, such as mutual concern and respect. Furthermore, the interpersonal nature of guilt is supported by findings showing that blame can elicit guilt

even in people who are not responsible for the transgression (Parkinson & Illingworth, 2009), and that guilt is positively associated with greater willingness to apologise (Howell, Turowski, & Buro, 2012) and higher rates of apologising (Baumeister & Leary, 1995). Thus, it seems reasonable to conclude that guilt serves an interpersonal, relationship-repair function that helps to resolve social inequities (Baumeister et al., 1994; Hareli & Parkinson, 2008).

However, recent findings obtained by De Hooge (2012) suggest that the interpersonal basis of guilt has been overestimated. The author argues that guilt's central function is to achieve compensation for material damage rather than restoration of an interpersonal relationship. In her study, De Hooge (2012) showed that guilt feelings reduced following reparative action that solved the harm done to the victim, regardless of who performed that action. More precisely, finding a bicycle that had been stolen when under the transgressor's care reduced perceptions of the transgressor's feelings of guilt even when a third party had found the bike. According to De Hooge (2012), third-party repair reduces guilt when it is directly related to the damage done. In other words, anyone's actions can reduce guilt if they put right the specific harm that induced guilt in the first place. De Hooge therefore concluded that it is not interpersonal repair that is important but simply the righting of the initial wrong. However, De Hooge's study (2012) was focused solely on practical repair since it did not manipulate damage caused to the relationship between transgressor and victim. This is important since many misdemeanours that provoke guilt also carry implications about the nature of the relationship between the transgressor and victim. In these cases, I argue that an intrinsically interpersonal form of repair continues to be important.

In the present research, I attempted to manipulate practical and interpersonal repair independently, and assessed the extent to which they have separate effects on guilt for the material damage (practical guilt), guilt for the damage made to the interpersonal relationship (interpersonal guilt) and guilt overall. To the best of my knowledge, no previous study has investigated effects of apology on guilt under different practical repair conditions. To assess the effects of both practical and relationship repair, I used modified versions of De Hooge's (2012) vignettes that included additional information about apology alongside the original manipulations of practical repair (finding a stolen bicycle). I hypothesised that that relationship repair in the form of apology will alleviate guilt more compared to when apology was not delivered to the victim independently of practical repair. Moreover, I expected to replicate De Hooge's findings concerning the guilt-reducing effects of third-party practical repair. Finally, I hypothesised the effect of practical repair to alleviate intrapersonal guilt and action tendency measures, and apology to alleviate interpersonal measure of guilt and action tendencies.

Method

Participants. I recruited 120 participants (71 men and 49 women, M_{age} = 34.71, *SD* = 9.44) using Amazon Mechanical Turk (mTurk) and paid them $1 each for completing the study. The number of recruited participants was based on the previous experiments that employed same vignette scenario (De Hooge, 2012). Inclusion criteria ensured participants resided in the United States of America and had a minimum 95% approval rate from previous studies they participated in. This latter criterion was used to exclude participants who were unlikely to pay close attention to the vignette procedure (Peer, Vosgerau, & Acquisti, 2014). The study received ethical approval from the

Central University Research Ethics Committee of Oxford University. Posteriori power analysis using the program G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) reported statistical power of 72%.

Design. Participants were randomly assigned to one the six conditions created by a 2 X 3 factorial design, with apology (apology vs. no-apology) and type of practical repair (self-repair vs. no-repair vs. third-party repair) as between-subjects factors. The key dependent variables in this study were general guilt (guilt), guilt for damage done to the relationship (interpersonal guilt) and guilt for material damage (practical guilt), as well as measures of appraisals (self-blame) and action tendencies thought to relate to guilt (practical and interpersonal action tendencies). Because guilt was assessed at two separate time-points, I included the additional within-subjects factor of time T1 (after transgression) and T2 (after practical repair and apology manipulation) when analysing this measure.

Procedure. Participants who responded to the mTurk advertisement followed the link to the study provided. After this, participants read the first part of the scenario, adapted from De Hooge's (2012) study:

*"*Imagine you are in a hurry because you want to get a special offer at a shop just before closing time. You do not have a means of transportation but you know that your friend Robert has a bicycle. This bicycle is very special to him because it is the last present given to him by his grandmother before she died. Nevertheless, he lets you use the bicycle. You cycle to the shop and get the special offer. When you leave the shop you find out that the bicycle has been stolen; you forgot to lock it*."*

After reading the scenario, participants rated their level of experienced emotions listed above using 11-point scales running from 0 (*not at all*) to 11 (*extremely*).

Subsequently, participants read the conclusion of the vignette, which differed depending on their randomly assigned experimental condition. As in De Hooge's (2012) study, practical repair was manipulated by specifying who if anyone found the stolen bicycle. In particular, the self-repair vignettes stated that "After spending a few hours searching for Robert's bicycle, you finally manage to find it and fortunately it has not been damaged. You immediately take the bicycle back to him." By contrast, in third-party-repair conditions, participants read that they were unable to find the bicycle themselves but "that a complete stranger just came and brought him his bicycle back, and fortunately it has not been damaged. Apparently, this person works in a bicycle shed, and during the regular bicycle serial number check, he found Robert's address." In the no repair condition, Robert's bicycle remained missing. Next, the vignette manipulated relationship repair by specifying whether or not an apology was delivered. In apology conditions, participants then read that "Robert has to rush off to an urgent appointment but you get to apologise to him before he leaves" whereas in no-apology conditions they read that Robert had to rush off before they had a chance to apologise. Finally, participants rated the same nine emotions as before for a second time (T2 ratings) and reported the extent to which they had apologised to Robert and the extent to which Robert's practical problems remained unsolved as manipulation checks.

Measures. All items were rated on an 11-point scale running from 0 (*not at all*) and 10 (*extremely*).

Apology manipulation check. Two items assessed whether the apology manipulation was successful ("To what extent did you apologise directly to Robert for what happened?" and "To what extent have you apologised to Robert?"). These items were combined to form a reliable scale, r (120) = .72.

Guilt. Participants rated the level of experienced emotions (ashamed, guilty, happy, sad, regretful, proud, remorseful, upset, sympathetic), and two specific measures of guilt (guilty about practical inconvenience to Robert, guilty about the damage to your relationship with Robert) twice: after transgression (T1) and after practical repair and apology manipulation (T2).

Self-blame. Smith and Lazarus (1991) argue that the appraisals underlying guilt can be represented by the core relational theme of self-blame. I used their three items for measuring this appraisal pattern: "I have done something bad"; "Things are bad because of me"; and "I am to blame for this bad situation". The resulting scale was reliable ($\alpha = .80$).

Guilt-related Action Tendencies. In order to investigate the behavioural intentions guilt evokes, participants answered guilt action tendency measures relating to desire for interpersonal repair ("How much do you want to repair the damage to your relationship with Robert?") and for practical repair ("How much do you want to remove the practical inconvenience that Robert suffered?").

Results

Unless otherwise stated, the analyses of variance (ANOVA)reported below follow a 2 X 3 design with apology (apology vs no-apology) and practical repair (self-repair vs no-repair vs third-party repair) as between-subjects factors. Table 2.2 presents means and standard deviations of key variables at both time-points and correlations with other variables.

Apology manipulation check. Results on the apology manipulation check revealed that neither apology nor practical repair had a significant effect on participants' judgement about whether they apologised in a given scenario or not, Fs < 1.29, ps > .40.

Contrary to my intentions, participants apparently believed that they had apologised when they met Robert in person even in the no-apology conditions. This was confirmed using a one sample t-test which revealed that the ratings in the no-apology condition (M = 7.53) were significantly higher than the mid-point of the scale (M = 5.00), $t(59)$ = 8.03, $p < .001$.

Guilt. Directly after reading the first part of the scenario which described the transgression, participants reported more guilt (M = 8.26, SD = 2.54) than shame, sympathy, sadness, happiness and pride, all ps < .01, but not more than regret, remorse and upset, all ps > .12. see Table 2.1. According to studies which employed a similar guilt-eliciting scenario (De Hooge, 2012) these findings indicate that manipulation of guilt was successful.

To assess the impact of practical repair and apology on experienced guilt, participants' reported levels of guilt were entered into 2 x 3 x 2 ANOVA with time as the additional within-subjects factor (T1 - after transgression; T2 - after practical repair and apology manipulation). There was a significant main effect of time, $F(1, 114)$ = 55.37, $p < .001$, $\eta_p^2 = .33$, such that guilt reduced significantly from T1 (M = 9.02, SD = 1.68) to T2 (M = 6.98, SD = 3.00). There was a significant main effect of practical repair, $F(2, 114) = 6.39$, $p < .01$, $\eta_p^2 = .10$. Bonferroni post-hoc tests revealed that participants felt less guilty when the practical damage was repaired by either the transgressor (M = 6.61, SD = 2.61) or the third-party (M = 6.75, SD = 2.86), compared to when the practical damage was not repaired at all (M = 8.40, SD = 2.03). The main effect of apology was not significant, $F(1, 114) = 0.41$, $p = .52$, $\eta_p^2 < .01$. There was also a significant interaction between time and practical repair, $F(2, 114) = 12.54$, $p <$ .001, $\eta_p^2 = .18$. Simple main effects analysis revealed a significant decline in guilt from

T1 (M = 8.28, SD = 2.92) to T2 (M = 4.95, SD = 3.35) in the self-repair condition, $F(1, 114) = 50.59$, $p < .001$, $\eta_p^2 = .31$, and in the third-party repair condition, $F(1, 114) = 29.76$, $p < .001$, $\eta_p^2 = .20$ (T1 M = 8.03, SD = 2.74; T2 M = 5.47, SD = 3.85). However, there was no significant simple main effect of time in the no-repair condition, $F(1, 114) = 0.11$, $p = .75$, $\eta_p^2 < .01$. This indicates that practical repair reduced guilt only when the material damage was repaired either by a third-party or by the transgressor.

There was also a significant interaction between apology and practical repair, $F(1, 114) = 3.08$, $p = .05$, $\eta_p^2 = .05$. Simple main effects analysis revealed that guilt was significantly higher in the apology (M = 7.68, SD = 2.34) compared to no-apology condition (M = 5.83, SD = 3.10) in the third-party repair condition, $F(1, 114) = 5.53$, $p = .02$, $\eta_p^2 = .05$, but there were no comparable differences in in the self-repair and no-repair condition, both ps > .33. However, there was no corresponding interaction in a two-way ANOVA of T2 guilt scores, $F(2, 114) = 1.90$, $p = .15$, $\eta_p^2 = .32$. The interaction was near significant at T1, $F(2, 114) = 2.96$, $p = .06$, $\eta_p^2 = .05$, suggesting that the effect partly resulted from a failure of randomization prior to the implementation of apology and practical repair manipulations. There were no other significant main effects or interactions (all ps > .07).

Practical and interpersonal guilt. To assess the impact of practical repair and apology on practical guilt and interpersonal guilt, an ANOVA was conducted with type of guilt (material damage - practical; damage done to the interpersonal relationship with the victim – interpersonal) and time (T1 - after the transgression; T2 - and practical repair and apology manipulation) as added within-subjects factors. Results revealed a significant main effect of the type of guilt $F(1, 114) = 3.85$, $p = .05$, $\eta_p^2 = .05$, indicating that guilt for the damage done to the interpersonal relationship was higher (M = 7.15,

SD = 2.78) than guilt elicited by the material damage (*M* = 6.80, *SD* = 2.81). There was also observed a main effect of time $F(1, 114) = 41.27$, $p < .001$, $\eta_p^2 = .27$, precisely a decline from T1 (*M* = 7.75, *SD* = 2.59) to T2 (*M* = 6.21, *SD* = 3.35). Finally, an interaction effect of time and repair was observed $F(2, 114) = 15.23$, $p < .001$, $\eta_p^2 = .21$. Simple effects analysis revealed a significant decline in the self-repair condition $F(1, 114) = 55.04$, $p < .001$, $\eta_p^2 = .33$, from T1 (*M* = 7.75, *SD* = 2.75) to T2 (*M* = 4.75, *SD* = 3.76), and in third-party repair condition $F(1, 114) = 16.57$, $p < .001$, $\eta_p^2 = .13$, from T1 (*M* = 7.87, *SD* = 2.64) to T2 (*M* = 6.27, *SD* = 3.77), but no decline T1 (*M* = 7.02, *SD* = 3.00) to T2 (*M* = 7.15, *SD* = 2.92) in the no-repair condition $F(1, 114) = 0.14$, $p = .72$, $\eta_p^2 = .001$. These findings indicate that participants overall reported stronger guilt for the damage done to the interpersonal relationship with Robert, than for having his bicycle stolen.

A separate ANOVA with time as added within-subjects factors (after the transgression – T1; after practical repair and apology manipulation - T2) was conducted on practical guilt. Findings revealed a significant main effect of time $F(1, 114) = 37.15$, $p < .001$, $\eta_p^2 = .25$. More precisely a decline from T1 (*M* = 7.94, *SD* = 2.75) to T2 (*M* = 6.36, *SD* = 3.57). There were no other main effects, all *p*s > .32. A significant interaction of time and practical repair factors was observed $F(2, 114) = 12.11$, $p < .001$, $\eta_p^2 = .18$. Simple effects analysis revealed a significant decline in self-repair condition $F(1, 114) = 44.45$, $p < .001$, $\eta_p^2 = .28$, from T1 (*M* = 7.75, *SD* = 2.75) to T2 (*M* = 4.75, *SD* = 3.76), and in third-party repair condition $F(1, 114) = 12.65$, $p < .001$, $\eta_p^2 = .10$, from T1 (*M* = 7.87, *SD* = 2.64) to T2 (*M* = 6.27, *SD* = 3.77), but no decline T1 (*M* = 7.02, *SD* = 3.00) to T2 (*M* = 7.15, *SD* = 2.92) in the no-repair condition $F(1, 114) = 0.08$, $p = .78$, $\eta_p^2 = .001$. There were no other interaction effects observed, all *p*s > .32.

These findings indicate that transgressors' practical guilt elicited by the material damage was reduced when the bicycle was returned to Robert by the transgressors or by someone else. However, guilt remained unchanged when Robert did not receive his bicycle back.

To assess the impact of practical repair and apology on interpersonal guilt, a 2 X 3 X 2 ANOVA was conducted on participants' reported levels of guilt for interpersonal inconveniences, with time (after the transgression – T1; after practical repair and apology manipulation - T2) as the added within-subjects factor. Results revealed a significant main effect of time $F(1, 114) = 32.98$, $p < .001$, $\eta_p^2 = .224$, more precisely a decline from T1 ($M = 7.55$, $SD = 2.80$) to T2 ($M = 6.06$, $SD = 3.56$). There were no other main effects, all ps > .32. Also an interaction effect of time and practical repair factor was observed $F(2, 114) = 13.78$, $p < .001$, $\eta_p^2 = .19$. Simple effects analysis revealed a significant decline of interpersonal guilt in self-repair condition $F(1, 114) = 49.01$, $p < .001$, $\eta_p^2 = .30$, from T1 ($M = 8.25$, $SD = 2.90$) to T2 ($M = 5.10$, $SD = 3.71$), and in third-party repair condition $F(1, 114) = 15.56$, $p < .001$, $\eta_p^2 = .12$, from T1 ($M = 7.82$, $SD = 2.71$) to T2 ($M = 6.05$, $SD = 3.72$), but no decline T1 ($M = 7.75$, $SD = 2.71$) to T2 ($M = 7.92$, $SD = 2.56$) in the no-repair condition $F(1, 114) = 0.15$, $p = .70$, $\eta_p^2 < .01$. There were no other interaction effects observed, all ps > .15. These findings replicated the effect practical repair had on guilt elicited by the material damage. Transgressors' interpersonal guilt, elicited by the damage caused to their relationship with the victim, was reduced when the bicycle was returned to Robert by the transgressors or by someone else. However, interpersonal guilt remained unchanged when Robert did not receive his bicycle back.

Table 2.1
Means, standard deviations and correlations of T1 emotions of Study 1.

		M (*SD*)		1	2	3	4	5	6	7	8	9	10	11
1	Guilt	8.26	(2.54)	-	.69***	.57***	.78***	.76***	.67***	.68***	.61***	.31***	-.25**	-.27**
2	Interpersonal Guilt	7.94	(2.75)		-	.74***	.63***	.55***	.51***	.65***	.55***	.27**	-.21*	-.28**
3	Practical Guilt	7.55	(2.80)			-	.64***	.55***	.51***	.53***	.57**	.29**	-.23*	-.27**
4	Ashamed	7.53	(2.90)				-	.68***	.51***	.53***	.57***	.29**	-.18*	-.24**
5	Regretful	8.34	(2.52)					-	.77***	.69***	.73***	.39***	-.36***	-.37***
6	Remorseful	7.97	(2.77)						-	.69***	.64***	.42***	-.32***	-.27**
7	Upset	8.07	(2.69)							-	.77***	.39***	-.25**	-.24**
8	Sad	6.13	(3.51)								-	.42***	-.15†	-.20*
9	Sympathetic	7.33	(2.96)									-	-0.01	-0.05
10	Happy	0.68	(1.88)										-	.72***
11	Proud	0.64	(1.78)											-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 2.2

Means, standard deviations and correlations of key variables in Study 1.

		M (*SD*)	1	2	3	4	5	6	7	8	9
1	T1 guilt	8.26 (2.54)	-	.48***	.69***	.43***	.57***	.34***	.55***	.48***	.281**
2	T2 guilt	6.25 (3.54)		-	.38***	.76***	.33***	.64***	.55***	.35***	.24**
3	T1 interpersonal guilt	7.94 (2.75)			-	.54***	.74***	.44***	.48***	.51***	.35***
4	T2 interpersonal guilt	6.36 (3.57)				-	.40***	.77***	.52***	.38***	.36***
5	T1 practical guilt	7.55 (2.80)					-	.55***	.46***	.39***	.43***
6	T2 practical guilt	6.06 (3.55)						-	.41***	.32***	.45***
7	Self-blame	7.32 (2.32)							-	.43***	.25**
8	Interpersonal action tendency	8.62 (2.02)								-	.57***
9	Practical action tendency	7.54 (2.56)									-

$^{\dagger}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

Self-blame. An ANOVA was conducted to assess the impact of apology and practical repair on self-blame. There was a significant main effect of apology on self-blame, $F(1, 114) = 6.47$, $p = .01$, $\eta_p^2 = 0.05$, indicating that participants who were presented as apologising rated their self-blame at higher levels than those who were presented as not apologising. This main effect was qualified by a significant interaction between apology and practical repair on self-blame, $F(2, 114) = 3.89$, $p = .02$, $\eta_p^2 = .64$ indicating that apology had a different effect on self-blame depending on the type of practical repair. Specifically, when a third person repaired the material damage, apologising significantly increased levels of self-blame ($M = 8.47$, $SD = 1.87$) compared to not apologising ($M = 5.90$, $SD = 3.22$). However, levels of reported self-blame were not significantly different for self-repair and no-repair conditions respectively in either the apology ($M = 7.23$, $SD = 1.94$; $M = 7.85$, $SD = 2.07$) no-apology condition ($M = 7.37$, $SD = 1.7$; $M = 7.13$, $SD = 2.26$). The main effect of practical repair on self-blame was not significant, $F(2, 114) = .19$, $p = .82$, $\eta_p^2 < .01$. These findings indicate that when someone else found and returned the bicycle to Robert, transgressor felt more self-blame after apologising compared to not apologising.

Guilt action tendencies. To assess the impact of practical repair and apology on guilt related action tendencies, a 2 X 3 X 2 ANOVA was conducted with type of action tendency (tendency to repair material damage – practical; tendency to repair damage done to the interpersonal relationship with the victim – interpersonal) as added within-subjects factors.

Results revealed a significant main effect of the type of action tendency $F(1, 114) = 29.65$, $p < .001$, $\eta_p^2 = .21$, indicating that the tendency to repair the interpersonal relationship was higher ($M = 8.62$, $SD = 2.02$) than the tendency to repair the material damage ($M = 7.54$, $SD = 2.56$). There was also an interaction effect of type of action tendency and apology $F(2, 114) = 5.78$, $p = .02$, $\eta_p^2 = .05$. Simple effect analysis revealed that the tendency to repair the interpersonal relationship was higher in both apology $F(1, 114) = 30.82$, $p < .001$, $\eta_p^2 = .21$

and no-apology condition $F(1, 114) = 4.62$, $p = .03$, $\eta_p^2 = .04$. There was a stronger difference observed in the apology condition between interpersonal ($M = 8.95$, $SD = 1.73$) and practical ($M = 7.40$, $SD = 2.67$) compared to the difference in the no-apology condition between the interpersonal ($M = 8.28$, $SD = 2.23$) and the practical ($M = 7.68$, $SD = 2.45$). These findings show that transgressors overall felt a stronger tendency to repair the interpersonal relationship with Robert than to find Robert's bicycle. Moreover, this difference was more prominent when transgressors apologised compared to when they did not. A univariate ANOVA on practical and interpersonal action tendencies revealed no significant main or interaction effects of apology and practical repair, all *p*s > .07.

Discussion

Experiment 1 used a modified version of De Hooge's vignette (2012) to examine whether apology had additional guilt-reducing effects over and above those of practical repair. After reading the guilt eliciting part of the scenario, participants reported guilt more than shame indicating that guilt manipulation was successful. Results replicated findings from the original study (De Hooge, 2012). Participants' guilt was reduced when the practical damage was repaired, regardless of whether this was done by the transgressor or an unrelated third-party. Contrary to what was expected, participants who apologised reported overall higher levels of guilt compared to those who did not apologise, only if practical repair was carried out by a third-party. However, further analysis showed that this effect depended on a pre-manipulation difference in participants' guilt. Results on specific measures showed that interpersonal guilt was overall reported higher than practical guilt. Furthermore, pattern of the practical repair effect observed on general measure of guilt was replicated with both specific guilt measures. There was no effect of apology on either of specific measures of guilt. It is also worth noting that guilt reduced from T1 to T2 for general and specific guilt measures. The most likely explanation is that participants tended to feel less guilty at T2 simply because

of the time that had passed since the original transgression reflecting a familiar decay process in addition to the demonstrated effects of the two kinds of repair.

It is important to note that participants misunderstood the part of scenario which manipulated the apology factor. Participants assumed that the imagined transgressor apologised even when no apology was mentioned in the vignette. This might be a result of participants' implicit understanding of the normative nature of apology (Baumeister et al., 1995; Howell et al., 2012). Study 2 attempted to correct the two main issues with Study 1's apology manipulation. First, vignettes specified that the transgressor wanted to apologise even in the no-apology condition, thus avoiding the implication that apology was motivated by greater guilt in the apology condition. Second, this change also allowed me to specify explicitly that no apology was delivered in the no-apology condition, thus preventing participants from inferring that an apology had been delivered.

Apology significantly increased self-blame in the third-party practical repair condition. This may suggest that participants inferred from the explicit apology information that the transgressor experienced greater self-blame when someone other than the transgressor had repaired the situation, suggesting that the lack of transgressor-implemented repair in this condition did make a difference to participants' judgements about relational appraisals. However, the effect may also have depended on the higher pre-manipulation levels of guilt in this condition. Participants might have rated their self-blame as higher because they already felt more guilty before reading about repair and apology. Self-blame was only assessed at a single time-point, so it is impossible to determine whether similar differences applied to this variable.

Findings on action tendencies show that participants felt stronger tendency to repair the interpersonal than practical damage. Moreover, they felt more inclined to repair interpersonal damage more than material damage when they apologised compared to when

they did not apologise. This shows that participants were more concerned with interpersonal relationship rather than the practical damage. However, the finding that apology increased the tendency to repair the interpersonal relationship might indicate that participants might have understood the action tendency question as an attention check question referring to the apology manipulation. Contrary to what was observed in the original study (De Hooge, 2012) there was no effect of practical repair on either of action tendency measures. This might indicate that participants felt no tendency to repair the material damage since they imagined apologising in every condition due to the issues with apology manipulation. Furthermore, findings that the practical action tendencies were not affected might indicate that having to imagine action tendencies such as offering a certain amount of imaginary financial assets is not a viable solution. Namely, I would expect findings to be different if in real life situation if participants would have to distribute a certain amount of financial assets, especially if it was coming out of their own pocket.

Study 2

Study 2 used a revised apology manipulation to more sensitively assess the effects of relationship repair on guilt. Instead of omitting apology information in the no-apology condition, participants read a sentence describing how they were prevented from apologising to Robert. I also filtered out participants who had not read the vignettes carefully enough to register the apology information using a simple yes/no question about whether an apology had been delivered. As in Study 1, I hypothesised that guilt will be more alleviated when participants apologise compared to when they do not apologise, and for this effect to be independent of the practical repair. Moreover, I expected to replicate De Hooge's (2012) findings that practical repair by someone other than the transgressor or victim would alleviate guilt to a similar extent as when it was repaired by the transgressor. Finally, I hypothesised

the effect of practical repair to alleviate intrapersonal guilt and action tendency measures, and apology to alleviate interpersonal measure of guilt and action tendencies.

Method

Participants. I recruited 182 participants (91 men and 91 women, M_{age} = 36.20, *SD* = 11.78) using Amazon Mechanical Turk (mTurk) and paid each of them $1 for completing the study. Inclusion criteria ensured participants resided in the United States of America and had a minimum 95% approval rate from previous studies they participated in. I based the number of recruited participants on the previous experiments that employed same vignette scenario (De Hooge, 2012) and increased in comparison to Study 1 to achieve higher statistical power. Eighteen participants who incorrectly answered the binary (yes/no) question about the apology manipulation were excluded, leaving one hundred and sixty-four participants for further analysis. Posteriori power analysis using the program G*Power (Faul et al., 2007) reported statistical power of 95%. The study received ethical approval from the Central University Research Ethics Committee of Oxford University.

Design. In the initial part of the study, all participants read the same scenario. They were then randomly assigned to one of six condition created by a 2 X 3 factorial design, with apology (apology or no-apology) and type of practical repair (self-repair, no-repair, and third-party repair) as between-subjects factors. Similarly to Study 1, the key dependent variables assessed levels of guilt concerning damage to the relationship and practical damage and general guilt measure for overall damage, as well as measures of appraisals and action tendencies thought to relate to guilt (self-blame). Because guilt was assessed at two separate time-points, the additional within-subjects factor of time (after the transgression – T1; after practical repair and apology manipulation - T2) was included when analysing this measure.

Measures. Study 2 used the same measures as Study 1 except for the inclusion of the yes/no-apology exclusion item (“In the story above did you apologise to Robert?”) and the

deletion of one of the two apology manipulation check items (leaving only "To what extent did you apologise directly to Robert for what happened?").

Procedure. The apology information contained in the no-apology vignettes read that: "Robert has to rush off to an urgent appointment and you do not get to apologise to him before he leaves." In the apology condition, the vignette specified that participants were able to apologise to Robert before he rushed off to an urgent appointment.

Results

Unless otherwise stated, all reported analyses of variance (ANOVA) refer to a 2 X 3 design with apology (apology vs no-apology) and practical repair (self-repair vs no-repair vs third-party repair) as between-subjects factors. Descriptive statistics for both time points and correlations with other variables are presented in Table 2.4.

Apology manipulation check. An ANOVA of scores on the apology manipulation check item revealed only a significant main effect of apology, $F(1, 158) = 508.37$, $p < .001$, $\eta_p^2 = .76$. Ratings of the extent of apology were significantly higher in the apology condition ($M = 8.98$, $SD = 1.54$) than in the no-apology condition ($M = 1.12$, $SD = 2.77$) as intended.

Guilt. Directly after reading the first part of the scenario which described the transgression, participants reported more guilt ($M = 9.02$, $SD = 1.67$) than shame, sympathy, sadness, happiness and pride, all ps $< .01$, but not more than regret, remorse and upset, all ps $> .99$, see Table 2.3. Again, according to studies which employed a similar guilt-eliciting scenario (De Hooge, 2012) these findings indicate that manipulation of guilt was successful..

A 2 X 3 X 2 ANOVA, including the additional within-subjects factor of time (after the transgression – T1; after practical repair and apology manipulation - T2), was conducted on guilt ratings. Results revealed a significant main effect of time, $F(1,158) = 105.27$, $p < .001$, $\eta_p^2 = .40$, showing that guilt reduced significantly from T1 ($M = 9.02$, $SD = 1.68$) to T2 ($M = 6.98$, $SD = 3.01$). There was also a significant main effect of apology, $F(1,158) = 6.75$,

$p = .01$, $\eta_p^2 = .41$, showing that participants felt less guilty in the apology condition (M = 7.57, SD = 2.20) than in the no-apology condition (M = 8.41, SD = 1.71). The main effect of practical repair was significant too, $F(2,158) = 10.83$, $p < .001$, $\eta_p^2 = .12$. Participants felt less guilty when the practical damage was repaired by either the transgressor (M = 7.73 SD =1.90) or the third-party (M = 7.36, SD = 2.19), than when it was not repaired at all (M = 8.99, SD = 1.52). As in Study 1, there was a significant two-way interaction between practical repair and time, F (2, 158) = 19.46, $p < .001$, $\eta_p^2 = .20$. Simple main effects showed a significant reduction in guilt from T1 to T2 in both self-repair, F (1, 158) = 89.08, $p < .001$, $\eta_p^2 = .36$, and third-party repair conditions, F (2, 158) = 62.37, $p < .001$, $\eta_p^2 = .28$), but no significant reduction in guilt in the no-repair condition, F (2, 158) < 1, $p = .44$, $\eta_p^2 < .01$ (see Figure 2.1a). This indicates that practical repair reduced guilt over time only when the material damage was repaired either by a third-party or by the transgressor. This means that participants had their guilt reduced if the bicycle was returned to Robert either by themselves or someone else. When Robert did not get his bicycle back, transgressors' guilt was not reduced.

Finally, there was a significant two-way interaction between apology and time, $F(1,158) = 4.45$, $p = .03$, $\eta_p^2 = .03$. Simple main effect analysis revealed a decline of guilt from T1 to T2 both in the apology, $F(1,158) = 74.28$, $p < .001$, $\eta_p^2 = .32$ and no-apology, $F(1,158) = 34.24$, $p < .001$, $\eta_p^2 = .18$, condition, but this decline was greater in the apology condition (see Figure 2.1b). These findings indicate that apologising reduced guilt more, compared to not apologising independent of whether the material damage was repaired by the transgressor, someone else, or remained unrepaired. In other words, when transgressors apologised, their guilt was reduced regardless of what happened to the bicycle, if it was returned (and by whom) or not. There were no other significant interaction effect observed, all ps > .25.

Table 2.3
Means, standard deviations and correlations of T1 emotions of Study 2.

		M (*SD*)		1	2	3	4	5	6	7	8	9	10	11
1	Guilt	9.02	(1.67)	-	.55***	.39***	.67***	.70***	.66***	.71***	.51***	.26***	-.41***	-.46***
2	Interpersonal Guilt	8.86	(1.72)		-	.55***	.48***	.61***	.53***	.56***	.43***	.19*	-.15*	-.28***
3	Practical Guilt	8.23	(2.44)			-	.40***	.50***	.34***	.45***	.44***	.25**	-0.07	-.20**
4	Ashamed	8.21	(2.33)				-	.66***	.59***	.62***	.52**	.37***	-.24***	-.25**
5	Regretful	9.04	(1.56)					-	.66***	.74***	.57***	.28***	-.29***	-.42***
6	Remorseful	8.80	(1.94)						-	.60***	.47***	.32***	-.38***	-.34***
7	Upset	8.82	(1.84)							-	.61***	.31***	-.30***	-.41***
8	Sad	6.90	(3.23)								-	.46***	-0.13	-.21**
9	Sympathetic	7.99	(2.35)									-	0.03	-0.01
10	Happy	0.41	(1.40)										-	.63***
11	Proud	0.32	(1.06)											-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 2.4

Means, standard deviations and correlations of key variables in Study 2.

		M (*SD*)	1	2	3	4	5	6	7	8	9
1	T1 guilt	9.02 (1.68)	-	.42***	.56**	.37***	.40***	.31***	.41***	.45***	.35**
2	T2 guilt	6.98 (3.00)		-	.37***	.75***	.30***	.64***	.33***	.38***	.37**
3	T1 interpersonal guilt	8.86 (1.73)			-	.39***	.55***	.32***	.37***	.48***	.22**
4	T2 interpersonal guilt	7.18 (3.07)				-	.25***	.74***	.33***	.33***	.30***
5	T1 practical guilt	8.23 (2.45)					-	.54***	.23***	.25***	.35***
6	T2 practical guilt	6.79 (3.30)						-	.21***	.25***	.45***
7	Self-blame	7.67 (2.13)							-	.50***	.21**
8	Interpersonal action tendency	9.04 (1.69)								-	.52***
9	Practical action tendency	8.09 (2.44)									-

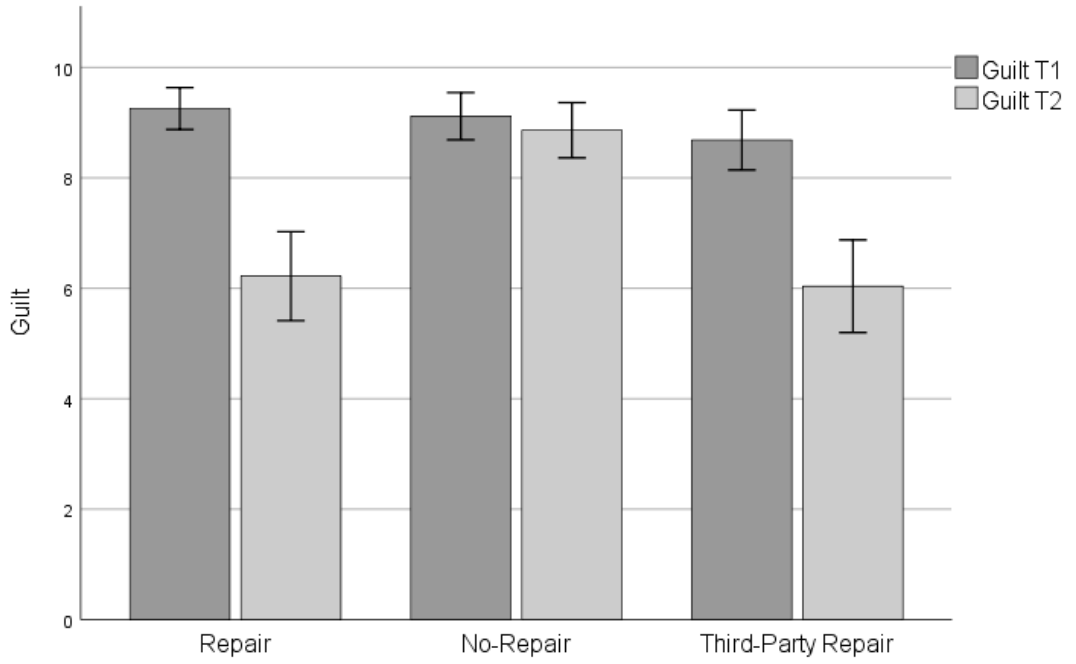
$^{\dagger}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

Practical and interpersonal guilt. A 2 X 3 X 2 X 2 ANOVA including type of guilt (material damage - material; damage done to the interpersonal relationship with the victim – interpersonal) and time (after the transgression – T1; after practical repair and apology manipulation - T2) as within-subjects factors was conducted on specific measures of guilt, for material and interpersonal damage.

Results revealed a significant main effect of time, $F(1,158) = 68.86$, $p < .001$, $\eta_p^2 = .30$, showing that guilt reduced significantly from T1 ($M = 8.55$, $SD = 1.85$) to T2 ($M = 6.98$, $SD = 2.96$). There was also a significant main effect of the type of guilt $F(1,158) = 10.88$, $p = .01$, $\eta_p^2 = .064$, showing that participants felt more guilty for the interpersonal damage ($M = 8.02$, $SD = 2.04$) than for the material damage ($M = 7.51$, $SD = 2.53$). The main effect of practical repair was significant too, $F(2,158) = 6.25$, $p < .01$, $\eta_p^2 = .07$. Participants felt less guilty when the practical damage was repaired by either the transgressor ($M = 7.37$ $SD = 2.07$) or the third-party ($M = 7.44$, $SD = 2.09$), than when it was not repaired at all ($M = 8.56$, $SD = 1.88$), all ps $< .01$. There was no difference between the self-repair and third-party repair conditions, $p = .98$. Interaction effects were also observed, between guilt type and apology $F(1,158) = 10.57$, $p < .01$, $\eta_p^2 = .06$. Simple main effect analysis show that participants reported similar levels of both material and interpersonal guilt when they apologised $F(1,158) = .01$, $p = .97$, $\eta_p^2 < .001$, however, when they did not apologise, guilt relating to interpersonal damage ($M = 8.25$, $SD = 1.73$) was found to be higher $F(1,158) = 22.11$, $p < .001$, $\eta_p^2 = .12$ than guilt relating to material damage ($M = 7.274$, $SD = 2.82$). These findings indicate that when they did not apologise, transgressors overall felt stronger guilt for damaging the relationship with Robert, than guilt for Robert's bicycle being stolen.

A univariate ANOVA was conducted on reported levels of practical guilt. Results revealed a significant effect of time, $F(1,158) = 46.37$, $p < .001$, $\eta_p^2 = .23$, showing a reduction in guilt from after the transgression ($M = 8.24$, $SD = 2.45$) to after the apology and practical repair manipulation ($M = 6.87$, $SD = 3.3$). There was also a significant main effect of practical repair $F(2,158) = 57.9$, $p = .01$, $\eta_p^2 = .06$. Break-down of this effect shows that practical guilt in no-repair ($M = 8.41$, $SD = 2.37$) was higher than in self-repair ($M = 7.06$, $SD = 2.55$) and third-repair conditions ($M = 7.20$, $SD = 2.52$), both ps < 0.04, while self-repair and third-repair conditions were reported as similar $p = 1.00$. There was no significant main effect of apology observed $F(1,158) = 2.04$, $p = .15$, $\eta_p^2 = .01$. Results also revealed a significant interaction between time and practical repair F (2, 158) = 19.46, $p < .001$, $\eta_p 2 = .20$. There was a reduction in self-repair condition from T1 ($M = 8.32$, $SD = 2.34$) to ($M = 5.81$, $SD = 3.44$) and in third-party repair condition from T1 ($M = 8.15$, $SD = 2.61$) to ($M = 6.26$, $SD = 3.27$), both ps < .01. Practical guilt remained unchanged in no-repair condition ($p = .44$) T1 ($M = 8.22$, $SD = 2.43$) to ($M = 8.49$, $SD = 2.48$). There was no significant two-way interaction between apology and practical repair, $F(2,158) = 1.17$, $p = .31$, $\eta_p^2 = .02$, nor three-way interaction $F(2,158) = 6.88$, $p = .13$, $\eta_p^2 = .03$. This indicates that guilt elicited by the practical damage caused to Robert was reduced when the bicycle was returned, regardless whether this was done by the transgressor or by someone else. On the other hand, practical guilt remained unchanged when the bicycle remained unreturned.

(a)



(b)

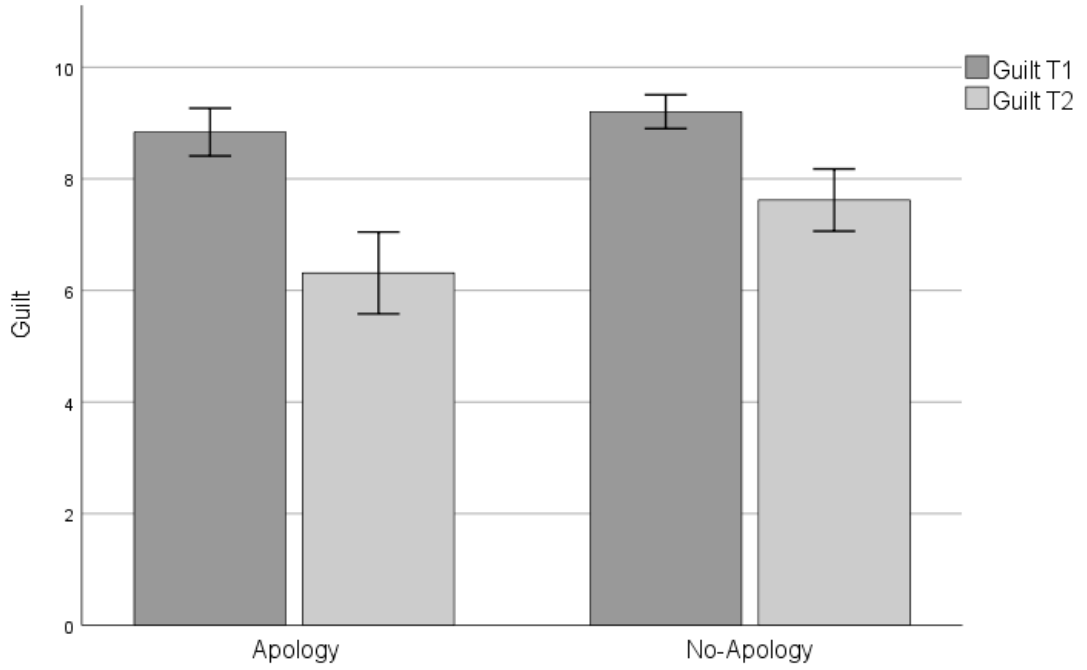


Figure 2.1. Mean guilt ratings at T1 (after the transgression) and T2 (after the practical repair and apology manipulation) in Study 2 as a function of practical repair (a) and apology (b). Error bars indicate 95% confidence intervals.

An ANOVA was conducted on ratings of interpersonal guilt with time (after the transgression – T1; after practical repair and apology manipulation - T2) as the added within-subject factor. Results revealed a significant main effect of time, $F(1,158) = 70.64$, $p < .001$, $\eta_p^2 = .03$, showing a reduction in guilt from after the incident ($M = 8.86$, $SD = 1.73$) to after the resolution ($M = 7.18$, $SD = 3.07$). There was also a significant main effect of practical repair, $F(2,158) = 5.78$, $p < .01$, $\eta_p^2 = .07$. Bonferroni post-hoc tests revealed significantly higher ratings of interpersonal guilt in no-repair ($M = 8.80$, $SD = 1.74$) than in both self-repair ($M = 7.67$, $SD = 2.10$) and third-repair conditions ($M = 7.68$, $SD = 2.10$), both ps < .01. There was no significant main effect of apology, with ratings of interpersonal guilt remaining similar in apology ($M = 7.84$, $SD = 2.30$) and no-apology ($M = 8.26$, $SD = 1.73$) conditions, $F(1,158) = 1.9$, $p = .17$, $\eta_p^2 = .01$. However, there was a significant interaction effect between apology and practical repair, $F(2,158) = 3.37$, $p = .04$, $\eta_p^2 = .04$. Post-hoc tests showed that in third-repair condition interpersonal guilt was reduced significantly more $F(1, 158) = 7.42$, $p = .01$, $\eta_p^2 = .05$, when participants apologised ($M = 6.96$, $SD = 2.36$) compared to when they did not apologise ($M = 8.41$, $SD = 1.49$). The difference between apology and no-apology conditions in self- and no-repair conditions was insignificant, both *p*s > .34. This indicates that when someone else was involved in repairing the material damage, interpersonal guilt was alleviated more if participants apologised compared to if they did not (i.e. when someone else found the bicycle, participants who apologised to Robert, experienced stronger alleviation of guilt, compared to those who did not apologise).

The interaction between time and apology was significant $F (1, 158) = 8.62$, $p < .01$, $\eta_p2 = .05$. Simple main effects showed that guilt reduced significantly from T1 (*M*

= 8.94, *SD* = 1.74) to T2 (*M* = 6.60, *SD* = 3.57) in the apology condition, *F*(1,158) = 62.43, *p* < .001, η_p^2 = .28, and in no-apology condition as well from T1 (*M* = 8.79, *SD* = 1.72) to T2 (*M* = 7.73, *SD* = 2.39), *F*(1, 158) = 15.42, *p* < .001, η_p^2 = .09. However, the reduction was stronger in the apology condition. These findings indicate that transgressors' guilt elicited by the concern over the damage caused to their relationship with Robert was reduced more when transgressors apologised.

The interaction between time and practical repair was also significant, *F* (2, 158) = 25.17, *p* < .001, ηp2 = .24. Simple main effects showed that guilt reduced significantly from T1 (*M* = 9.05, 1.57) to T2 (*M* = 6.30, *SD* = 3.26) in the self-repair condition, *F*(1,158) = 74.85, *p* < .001, η_p^2 = .32, and in third-repair condition as well from T1 (*M* = 8.89, *SD* = 1.71) to T2 (*M* = 6.48, *SD* = 3.16), *F*(1, 158) = 52.36, *p* < .001, η_p^2 = .25. However, there was no reduction observed from T1 (*M* = 8.64, *SD* = 1.91) to T2 (*M* = 8.97, *SD* = 1.76), in the no-repair condition, *F*(1,158) = 0.93, *p* = .34, η_p^2 = .01. These findings indicate that transgressors' guilt elicited by the concern over the damage caused to their relationship with Robert when the bicycle was returned to Robert.

Self-blame. Smith and Lazarus (1993) argue that the appraisals underlying guilt are integrated in the core relational theme of self-blame. I used their three-item measure to assess this core relational theme. The items were: "I have done something bad"; "Things are bad because of me"; and "I am to blame for this bad situation". The resulting scale was reliable (α = .74). An ANOVA on self-blame scores revealed no effects that approached significance (all *F*'s < 1.14, all *p*s > .29). These findings indicate that the self-blame core relational theme was not affected by any of the

manipulated factors. In other words, transgressors did not have their self-blame reduced by either the bicycle being returned to Robert or by apologising to him.

Guilt action tendencies. To assess the impact of practical repair and apology on guilt related action tendencies, a 2 X 3 X 2 ANOVA was conducted with type of action tendency (tendency to repair material damage - material; tendency to repair damage done to the interpersonal relationship with the victim – interpersonal) as added within-subjects factors. Results revealed a significant main effect of type of action tendency $F(2, 158) = 32.33$, $p < .001$, $\eta_p^2 = .17$. Ratings of tendency to repair the damage done to the interpersonal relationship were reported significantly higher ($M = 9.04$, $SD = 1.691$) than tendency to repair the practical damage ($M = 8.09$, $SD = 2.44$). Results revealed an interaction between type of action tendency and repair, $F(2, 158) = 5.29$, $p < .01$, $\eta_p^2 = .01$. Simple effects analysis revealed that participants had a stronger tendency to repair the interpersonal damage ($M = 9.20$, $SD = 1.55$) than practical damage ($M = 8.05$, $SD = 2.55$) when they repaired the material damage $F(1, 158) = 14.41$, $p < .001$, $\eta_p^2 = .08$ and a stronger tendency to repair the interpersonal damage ($M = 8.63$, $SD = 2.04$) than practical damage ($M = 7.09$, $SD = 2.77$) when someone else repaired it instead $F(1, 158) = 29.35$, $p < .001$, $\eta_p^2 = .16$. There was no difference between tendency to repair material ($M = 9.43$, $SD = 1.34$) and interpersonal damage ($M = 9.20$, $SD = 1.28$) when the material damage was not repaired $F(1, 158) = 0.55$, $p = .46$, $\eta_p^2 < 0.01$. These findings indicate that when participants or someone else returned the bicycle to Robert, participants had a stronger tendency to restore the relationship with Robert than to return his bicycle. When the bicycle was not found, the tendency to return the bicycle and restore the relationship with Robert remained similar.

A separate ANOVA analysis on practical action tendencies revealed a significant main effect of practical repair $F(2, 158) = 10.85$, $p < .001$, $\eta_p^2 = .12$. Simple effects analysis revealed a significant difference ($p = .03$) between higher ratings of no-repair ($M = 9.12$, $SD = 1.31$) and both lower self-repair ($M = 8.21$, $SD = 1.82$) and lower ratings of third-party repair ($M = 7.55$, $SD = 2.08$; $p < .001$), but not by the difference between self-repair and third-party repair ($p = .09$). There was no significant main effect of apology, $F(1, 158) = 0.07$, $p = .30$, $\eta_p^2 = .02$, nor interaction effect of apology and practical repair observed, $F(2, 158) = 0.97$, $p = .38$, $\eta_p^2 = .01$. These findings indicate that when the bicycle was not returned to Robert, there was a stronger tendency to find and return the bicycle to Robert, compared to when this was already done by participants or someone else. A separate ANOVA on interpersonal action tendencies revealed no significant main or interaction effects of apology and practical repair, all *p*s > .06.

Discussion

Findings show that guilt was reported by participants as stronger than emotion of shame. This helps to distinguish the two emotions commonly used interchangeably. Like Study 1, Study 2 successfully replicated De Hooge's (2012) finding that practical repair reduces guilt and specific measures of guilt regardless of whether it is implemented by the transgressor or a third-party. As predicted, findings report that apology significantly reduced general guilt across all levels of practical repair, suggesting that relationship repair plays its own separate role in determining guilt. Interpersonal guilt was overall reported as higher than practical. Moreover, in no-apology condition, guilt for the interpersonal damage was reported as stronger than for the practical damage. Same as in Study 1, guilt reduced from T1 to T2 across all repair

and apology conditions probably resembling a decay process in addition to the demonstrated effects of the two kinds of repairs.

Similarly to Study 1, present study reported level of action tendency to repair the interpersonal damage to be stronger than the tendency to repair the material damage. However, when the material damage was repaired by the transgressor or someone else, there was a stronger tendency to repair the interpersonal damage than to repair the material damage. This finding might give an insight into prioritizing process when it comes to damage repairing. Namely, it indicates that repairing the interpersonal relationship with the victim might need to be preceded by the repair of the material damage. Results also show that participants had a stronger tendency to repair the material damage when it was not repaired, than when it was repaired by them or by someone else. This means indicates that there were no intentions of participants overcompensating for the material damage after it was repaired. By contrast, the tendency to repair the interpersonal damage remained unaffected by any of the factors. As mentioned before, this might have been caused by the sentimental importance of the object of transgression, which left participants wanting to apologise further regardless of whether the bicycle was returned or not, and of whether they apologised already or not. Unlike state measures of guilt, findings indicate that core relational theme of guilt (self-blame) remained unaffected by manipulated factors. This was the opposite of what was expected according to the appraisal theory.

The revised apology manipulation successfully revealed the hypothesised effects on guilt. As predicted, participants who apologised reported a greater reduction in guilt over time than those who tried but failed to apologise. Moreover, this effect did not interact with the effect of practical repair. Regardless of whether Robert's bicycle was

found by the transgressor, someone else or not found at all, the transgressor's guilt was alleviated more when they apologised compared to when they did not. This pattern of findings supports my claim that relationship repair and practical repair independently influence guilt, and that interpersonal factors play an important role in this emotion over and above the role of alleviation of practical harm.

Study 3

Study 3 was conducted after Study 4, nevertheless it completely followed the research questions set in Studies 1 and 2. The main limitation of Studies 1 and 2 is that participants had to imagine the situation described in the scenario rather than being actively involved in real time. As suggested by Parkinson and Manstead (1993), responses to vignettes may be based on stereotypic beliefs about emotions rather than actual experience. To substantiate the findings, Study 3 used an experimental manipulation to examine the effect of apology and practical repair on guilt in a directly involving laboratory task. This task involved participants failing to win a reward for a social partner and has been previously shown to elicit guilt by De Hooge et al. (2011) and Nelissen (2012). To replicate Study 2, the practical damage (failing to attain the reward) was repaired by the participant or a third party (the experimenter) or not repaired by anyone. Following this, participants were either provided with an opportunity to apologise or not. I expected to replicate the findings of Experiment 2. More specifically, I hypothesised that guilt would be alleviated more in the apology condition than in no-apology condition independent of practical repair. Furthermore, I expected to replicate the effect of participant and third-party practical repair obtained in De Hooge's (2012) previous research. Finally, I expected action tendencies and appraisal components to follow the pattern of effects reported on measures of guilt.

Method

Participants. A priori power analysis using the program G*Power (Faul et al., 2007) suggested that a sample size of 150 is capable of obtaining the effect size of the significant result of Study 2 with an adequate amount of statistical power (.95). One hundred and fifty six participants (96 women and 60 men, M_{age} = 20.97, *SD* = 4.72) were recruited using university recruitment platforms, advertisements and 'word of mouth'. The study received ethical approval from the Central University Research Ethics Committee of Oxford University. Participants were paid £5 for their time and were given a chocolate bar of their choice. Six participants who raised suspicion about the purpose of the study were excluded, leaving 150 participants for further analysis.

Design. The study utilised a 2 (time: after transgression vs. after apology and practical repair manipulation) x 3 (practical repair: self-repair vs. third-party repair vs. no-repair) x 2 (apology: delivered vs. not-delivered) mixed design with repeated measures on the time factor. Participants were randomly assigned to one of six experimental conditions, with 25 participants per condition. The key dependent variables were guilt (reported as part of the Positive and Negative Affect Schedule; Watson et al., 1988), related action tendencies and appraisal components relating to core-relational theme of guilt (Smith & Lazarus, 1993).

Procedure. Participants completed the study in pairs. Prior to the experimental task, participants met each other (or met with confederate) and selected a chocolate bar they would receive as a reward if task performance met the required standard. Participants played one round of a performance task adapted from one that had previously been demonstrated to elicit guilt (De Hooge et al., 2011; Nelissen, 2012). The task was modified so that participants did not have to complete an initial round

where they were supposed to earn points for themselves. Results from the pilot study showed that completing a short practice session was sufficient to convince participants of their ability to win the required number of points. The task required participants to press the corresponding letter key for each letter that appeared in the centre of the screen, in their assigned colour. Letters appeared in two different colours, and to earn points, participants had to press the correct letter key for each letter in their assigned colour, and to do this during the brief half a second period that the letter remained on screen. Pressing the wrong letter key or pressing the correct key after the letter changed colour did not earn any points. Depending on their performance, participants completed up to five practice trials to familiarise themselves with the task. Participants were informed they had to earn 60 points or more to win chocolate for the other player. Likewise they were told that they would receive their selected chocolate bar if the other participant earned over 60 points. At the end of the first round all participants saw false feedback indicating that they failed to earn 60 points, while the other participant did earn over 60 points. This meant that while the participant would receive their selected chocolate bar the other participant would not. This imbalance, whereby the participant failed to win the chocolate bar for the other participant who did win a chocolate bar for them, should elicit feelings of guilt (Caplovitz Barrett, 1995). Following the performance task, participants completed the 20-item Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), which includes an item assessing guilt. Subsequently, participants in the self-repair condition were given the option of allowing the other participant to have the chocolate bar that they had failed to earn for them. In the third-party repair condition, participants read that as the previous participant did not take their chocolate bar, the experimenter would allow the other participant to have their

chosen chocolate. In the no-repair condition, the participant received no message. After this, participants indicated the extent to which they would like to apologise to the other participant, and to write a 140-character message they would like to send to the other participant if they were given a chance. In the apology conditions, participants were informed that their message was sent to the other participant. In the no-apology conditions participants were told their message would be kept confidential. Subsequently, participants completed the PANAS (Watson et al., 1988) for a second time. Upon the completion of the questionnaire, participants were fully debriefed.

Measures.

Apology manipulation check. To check that the apology manipulation was correctly understood, participants indicated whether or not the other participant had received their message.

Guilt. To measure emotions, participants completed the PANAS (Watson et al., 1988) twice, the first time (T1) immediately after completing the guilt eliciting task, and the second time (T2) after the concluding part of the procedure specified by the two between-subject factors (apology and practical repair). Since there was no significant difference in Study 1 and Study 2 between specific and general measures of guilt, in this Study I measured only general guilt.

Appraisal components. Study 3 assessed the appraisal components that contribute to the core relational theme of guilt (Smith & Lazarus, 1993): 'How important was what was happening in this situation to you?' (motivational relevance), 'Think about what you wanted from this situation. To what extent were those desirable elements present?' (motivational congruence) and 'To what extent did you consider yourself to be responsible for this situation?' (self-accountability). Participants were

asked to rate on an 11-point scale (where 0 indicated 'not at all' and 10 indicated 'completely') the extent to which they found the situation relevant to their well-being, incongruent to their expectations and to what extent they felt responsible for the situation.

Guilt related action tendencies. Participants were asked to rate on an 11-point scale running from 0 (*not at all*) to 10 (*extremely*) the extent to which they would like to give their chocolate bar to the other participant. Using the same 11-point scale, participants were asked to rate the extent to which they would like to apologise to the other participant.

Results

Unless otherwise stated, all reported analyses of variance (ANOVA) used a 2 X 3 design with apology (apology vs no-apology) and practical repair (self-repair vs no-repair vs third-party repair) as between-subjects factors. Table 2.6 presents means of key variables at both time-points and correlations with other variables.

Apology manipulation check. All 150 participants responded correctly after being asked if their message was delivered to the other participant. Therefore, no exclusions were made.

Guilt. Directly after reading the first part of the scenario which described the transgression, participants reported more guilt (M = 3.23, SD = 1.35) than any other negative emotion all ps < .001, see Table 2.5. According to studies which previously applied a similar guilt-eliciting task (De Hooge, 2012; De Hooge et al., 2011) these findings indicate that manipulation of guilt was successful.

These findings indicate that manipulation of guilt was successful, since it was reported to be the strongest reported negative emotion.

The two measures of guilt (after the transgression – T1; after practical repair and apology manipulation - T2) were strongly correlated, $r(150) = .54$, $p < .001$. A 2 X 3 X 2 ANOVA of guilt ratings, with the additional within-subjects factor of time (T1 *vs.* T2) revealed a significant main effect of the within-subjects factor of time, $F(1,144) = 76.37$, $p < .001$, $\eta_p^2 = .35$, showing that guilt reduced significantly from T1 ($M = 3.23$, $SD = 1.35$) to T2 ($M = 2.43$, $SD = 1.25$). There was also a significant main effect of practical repair, $F(1,144) = 4.67$, $p = .01$, $\eta_p^2 = .06$. Participants felt more guilty in the no-repair condition ($M = 3.22$, $SD = 1.19$) than in either the self-repair ($M = 2.68$, $SD = 1.14$) or third-party repair ($M = 2.59$, $SD = 0.99$) conditions, both ps $< .05$.

There was no significant two-way interaction between practical repair and time, $F(2, 144) = 0.75$, $p = .47$, $\eta_p^2 = .01$. However, the simple main effect of repair was significant at T2, $F(2,144) = 5.85$, $p < .01$, $\eta_p^2 = .07$, but not at T1, $F(2,144) = 2.22$, $p = .11$, $\eta_p^2 = .03$. T2 guilt was significantly higher in the no-repair condition ($M = 2.90$, $SD = 1.34$) than in either the self-repair ($M = 2.26$, $SD = 1.19$) or third-party repair ($M = 2.14$, $SD = 1.07$) conditions, both ps $< .01$, which did not significantly differ, $p = .62$ (see Figure 2.2a). Both the two-way interaction effect between apology and practical repair, $F(1,144) = 0.61$, $p = .51$, $\eta_p^2 = .01$, and the three-way interaction, $F(2, 144) = 1.85$, $p = .16$, $\eta_p^2 = .02$, were non-significant.

There was no significant main effect of apology, $F(1,144) = 0.98$, $p = .32$, $\eta_p^2 = .01$, however, there was a significant two-way interaction between apology and time, $F(1,144) = 38.96$, $p < .001$, $\eta_p^2 = .21$. Simple effects analyses revealed a decline of guilt from T1 to T2 in the apology delivered, $F(1,144) = 112.22$, $p < .001$, $\eta_p^2 = .44$ but not in the apology not-delivered condition, $F(1,144) = 3.12$, $p = .08$, $\eta_p^2 = .02$ (see Figure 2.2b). These findings indicate that guilt reduced over time, but this reduction was

Table 2.5
Means, standard deviations and correlations of T1negative emotions of Study 3.

		M	(*SD*)	1	2	3	4	5	6	7	8	9	10
1	Guilt	3.23	(1.35)	-	.52***	0.08	0.12	.34***	.23**	.25**	.17*	.15†	0.02
2	Ashamed	2.65	(1.27)		-	.19*	.32***	.55***	.42***	.34***	.19*	.20*	0.05
3	Scared	1.60	(0.96)			-	.44***	.19*	.39***	.38***	.20*	.19*	.22**
4	Afraid	1.52	(0.91)				-	.51***	.51***	.35***	.38***	.25**	.17*
5	Upset	1.85	(1.05)					-	.46***	.29***	.34***	.26**	0.07
6	Nervous	2.23	(1.13)						-	.66***	.47***	.39***	0.10
7	Jittery	2.11	(1.15)							-	.39***	.32***	.24**
8	Distressed	1.51	(0.77)								-	.30***	0.03
9	Irritable	1.69	(0.96)									-	.20*
10	Hostile	1.25	(0.61)										-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 2.6

Means, standard deviations and correlations of key variables in Study 3.

		M (*SD*)	1	2	3	4	5	6	7
1	T1 guilt	3.23 (1.35)	-	.54***	0.13	-0.04	-0.15†	.30***	.17*
2	T2 guilt	2.43 (1.24)		-	.32***	.14†	-.25**	.43***	.18*
3	Accountability	7.11 (2.63)			-	.34***	-0.02	.28***	.31***
4	Relevance	4.44 (2.63)				-	.37***	0.13	0.02
5	Congruence	4.69 (2.55)					-	-19*	-.15†
6	Interpersonal action tendency	7.76 (2.51)						-	.21*
7	Practical action tendency	8.01 (2.34)							-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

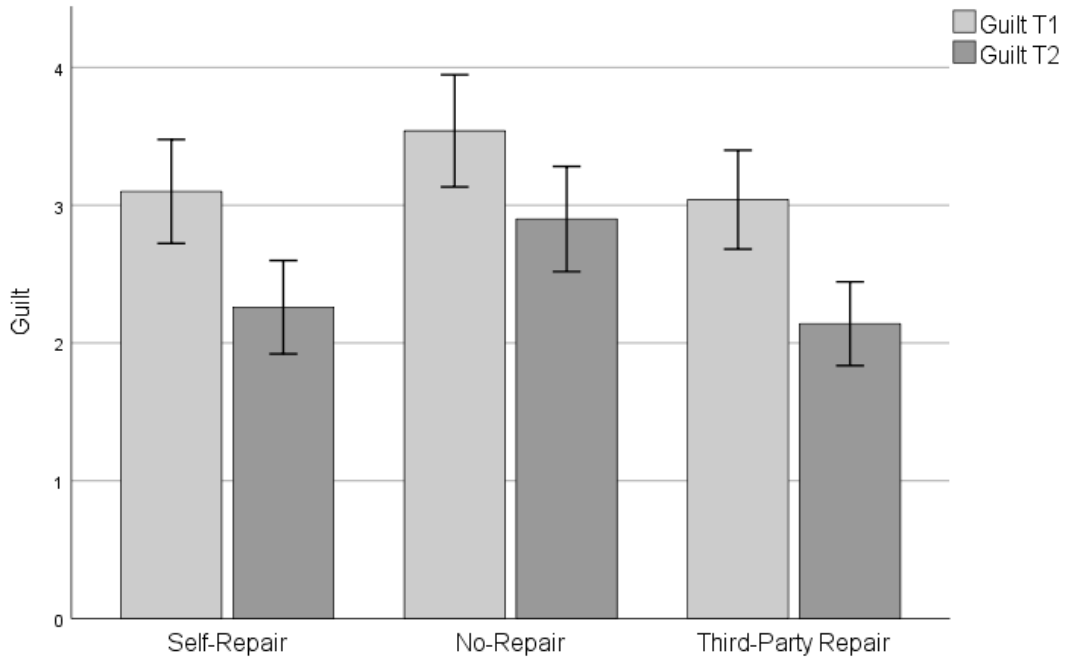
greater when the apology was delivered, independently of whether the practical damage was repaired.

Guilt appraisals. An ANOVA of the appraisal measures revealed no effect of the manipulated factors (apology; practical repair), nor of their interaction on any item, all *p*s > .08. Thus, having the bicycle returned to Robert, or apologising to him, did not reduce the reported relevance or incongruence of the event, or make participants feel less responsible for the transgression.

Guilt related action tendencies. An ANOVA with time and type of guilt action tendency as within-subject factors was conducted. The two types of guilt action tendencies were practical ("To what extent would you like to give your chocolate to person E?"), and interpersonal repair ("To what extent would you like to apologise to the other participant?"). Results revealed a significant main effect of practical repair, $F(2, 144) = 4.05$, $p = .02$, $\eta_p^2 = .05$. There was also a significant interaction effect between apology and type of action tendency showing a stronger tendency to repair the material damage ($M = 8.37$, $SD = 1.82$) than the interpersonal damage ($M = 7.55$, $SD = 2.78$) when participants apologised $F(1, 144) = 5.53$, $p = .02$, $\eta_p^2 = .04$. There were no other main or interaction effects found, all *F*s < 0.37, all *p*s > .37.

Univariate effects analysis on practical action tendencies revealed no significant main or interaction effects, all *F*s < 3.72, all *p*s > .06. Univariate effects analysis on interpersonal action tendencies revealed a significant main effect of practical repair, $F(2, 144) = 4.80$, $p = .01$, $\eta_p^2 = .06$, non-significant effect of apology $F(1, 144) = 1.12$, $p = .29$, $\eta_p^2 = .01$, and non-significant interaction effect $F(2, 158) = 0.15$, $p = .86$, $\eta_p^2 < .01$. Simple effects analysis revealed a significant difference ($p = .01$) between higher ratings in no-repair condition ($M = 8.62$, $SD = 1.85$) and third-party repair condition

(a)



(b)

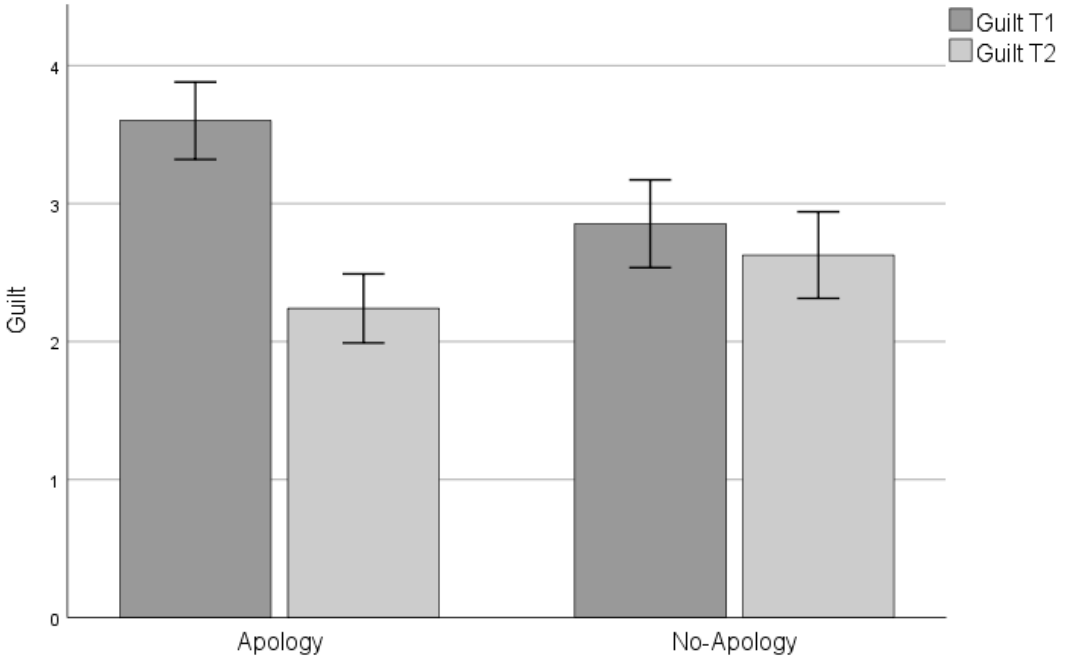


Figure 2.2. Mean guilt ratings at T1 (after the transgression) and T2 (after the practical repair and apology manipulation) in Study 3 as a function of practical repair (a) and apology (b). Error bars indicate 95% confidence intervals.

(M = 7.16, SD = 2.47). There were no significant differences between self-repair and no-repair, or between self-repair and third-party repair, both ps > .29. These findings indicate that participants overall had a stronger tendency to repair their relationship with the other participant, than to provide the other person the chocolate bar. Furthermore, when the chocolate bar was given to the victim by a third-party, transgressors felt less inclined to restore the interpersonal relationship with the victim, compared to when victim did not receive a chocolate bar.

Discussion

Guilt was successfully manipulated since it was reported the strongest negative emotion after the guilt eliciting part of the scenario. As in Study 2, apology and practical repair both had significant effects on guilt. Although I did not replicate the significant practical repair by time interaction, guilt ratings at T2 again showed the same pattern as in De Hooge's (2012) study, with third-party repair and self-repair having equivalent guilt-reducing effects. These findings support the idea that guilt is sensitive to practical repair, regardless of who implements it. However, as in Study 2, apology also had its own separate effect on guilt, suggesting that this form of relationship repair serves an additional alleviative role. Unlike in Study 2, guilt levels did not reduce from T1 to T2 in no-apology conditions, probably because there was less time between measurement points resulting in lower levels of emotional decay.

In the present study, I manipulated apology and practical repair in a laboratory experiment. The modified performance task successfully elicited guilt as in previous studies (De Hooge et al., 2011; Nelissen, 2012). Further, results revealed that when participants' apology was delivered to the victim, they experienced a significant

reduction in guilt, whereas guilt was not reduced in participants whose apology was not communicated. This effect was independent of the effect of practical repair. These findings indicate that apology reduces guilt, supporting the idea that a central function of guilt is to repair relationships. Results indicate that the intention to apologise was significantly lower when the practical damage was repaired by a someone else compared to when it was nit repaired at all. This implies that the involvement of the third-party in repairing the material damage reduced the transgressor's tendency to restore the relationship with the victim. One explanation is that transgressors perceived the third-party's involvement as a reduction of the potential value of their apology to restore the relationship with the victim. Tendency to restore the relationship with the other participant was lower when the chocolate bar was given to the victim by someone else, compared to when participant ended up not receiving a chocolate bar. This might indicate that when someone else repairs the material damage, the transgressor feels exempt and, hence becomes reluctant to be involved in its resolution.

General Discussion

These three studies were designed to demonstrate that interpersonal factors play a role in guilt over and above the effects of practical concerns relating to damage reduction. In addition, in all three studies I tried to replicate findings from De Hooge's studies (2012) showing that repair of material damage (practical repair) reduced the transgressor's guilt independent of whether it was implemented by the transgressors or someone else.

In Study 1, I hypothesised that participants who imagined apologising for their transgression would have their guilt reduced independent of whether the material damage was repaired, and by whom it was repaired. Results revealed no effect of

apology on guilt, because participants in the no-apology condition assumed that the transgressor had apologised despite receiving no explicit information about an apology. However, findings replicated results from De Hooge's (2012) earlier study, showing that guilt was alleviated when the material damage was repaired by the transgressor or someone else. Study 2 had the same aim, and its improved apology manipulation showed the hypothesised effect, producing greater guilt reduction in the apology condition than in the no-apology condition. De Hooge's (2012) findings and those of Study 1 concerning the effect of practical repair were replicated once again. The aim of Study 3 was to replicate the effect of apology reported in Study 2 using a more directly involving procedure. Findings confirmed my hypothesis, showing that guilt was alleviated only when participants were told that their apology was delivered to the victim, with guilt remaining unchanged when participants' apology was not delivered. Again, Study 3 replicated the effects of practical repair obtained in my previous two studies and in the De Hooge's (2012) earlier research.

Consistent effects of practical repair were observed across all three studies, replicating De Hooge's (2012) finding that this factor reduces guilt even when someone other than the transgressor implements the repair. However, De Hooge's (2012) earlier conclusion that interpersonal factors are less important to guilt than implied by contemporary relational accounts seems overstated. Studies 2 and 3 also provide consistent support for apology's effects on guilt (Baumeister, et al., 1994; Exline & Baumeister, 2000; Tangney et al., 2007; Tangney et al., 1992). Furthermore, these effects operated independent of whether the practical harm experienced by the victim was repaired. This indicates that apology and practical repair are not equifinal means of guilt alleviation but that they potentially have to different underlying subordinate goals

leading to guilt alleviation. Overall, findings from Study 2 and 3 support the idea that interpersonal factors are central to the causation of guilt (Baumeister et al., 1995), and thus to alleviate guilt interpersonal repair is necessary in addition to practical repair. Taken together, the findings strongly suggest that relationship repair remains an important function of guilt despite the separate influence of practical repair.

In all three studies reported here, the significant effects of the practical repair manipulation on guilt were not matched by corresponding effects on self-blame. In other words, I found consistent dissociations between appraisal and emotion (Parkinson, 1999). Such dissociations seem incompatible with those appraisal theories that suggest that the core relational theme of self-blame represents a necessary and sufficient condition for guilt (e.g., Smith & Lazarus, 1993). Such theories cannot account for the differences in guilt across conditions in these studies. One possible explanation is that the guilt reported here was driven by perceptions of blame from the victim rather than self-blame (Parkinson & Illingworth, 2009). Alternatively, the dissociations may have resulted from deficiencies in the self-report measures of guilt and self-blame used in this and previous research (e.g., Smith & Lazarus, 1993).

Studies of this chapter reported an inconsistent pattern of ratings on general, practical and interpersonal action tendencies. Furthermore, the only findings on general and specific measures of guilt that were followed by the same pattern of effects on action tendencies was in Study 2. However, even this finding was limited to effect of practical repair, whereas apology did not affect any of the action tendencies. Effects on action tendencies were also not replicated across studies. The failure of the practical repair effect on action tendencies might have been caused due to no, or limited, consequences of participants' responses. In vignette studies, participants were

redistributing imaginary assets and in laboratory experiment the object of repair was only a chocolate bar. I expect that a more realistic measure where participants would have to re-distribute real financial assets which, they would otherwise get to keep, would yield different results. Apology, on the other hand, did not significantly affect any of the action tendencies, however, the average reported values of action tendencies across all conditions were considerably high (in all studies $M > 7.16$ on a scale from "0" to "10") which emphasises the importance of apology in transgressive situations and potential dependence on victim's response.

In all three studies reported here, I manipulated transgressors' attempts to repair their relationship without providing any information about how victims responded to these apologies. By contrast, the harm-alleviating effect of practical repair was clear (the bicycle was either returned or not; the chocolate was either received or not). Participants probably felt that by apologising, they had properly acknowledged their transgression and demonstrated that they were sensitive to its negative consequences for the victim. In more realistic settings, the victim's immediate reaction probably provides clearer information about how a delivered apology is received by its target. Manipulating information about whether the victim forgives the transgressor following apology (Girard & Mullet, 1997; Hodgins & Liebeskind, 2003) in future research might reinforce my conclusion about the central role of relationship repair.

My research suggests that the experience of guilt following transgressions relates to concerns about repairing both material and relationship damage. However, one strength of apologising is that it is a frequently available action, compared to repairing the practical damage. This highlights the most important role of apology,

which is to make it possible for us to communicate our remorse and intentions when we are prevented from repairing the material damage more directly.

Limitations

My explanation of apology's alleviative effects assumes that participants felt less guilty because they had personally communicated their regret to the victim. However, it remains possible that the active ingredient of my manipulation was less relational than this account implies. In particular, separate intrapersonal factors relating to either the transgressor or victim may underlie the observed guilt reduction. Taking the transgressor first, simply acknowledging regret in the form of an apology might be sufficient to reduce guilt, even if the apology is not actually delivered to the victim. For example, the act of representing personally committed negative actions in words may help people come to terms with what they have done (e.g., Pennebaker, 1997) or may constitute a form of confession. However, this explanation cannot easily account for Study 3's findings because participants in both apology and no-apology conditions wrote down what they would like to say to the victim, providing a record for the experimenter. The only difference was that this message was sent to the victim only in the apology condition.

Turning to a victim-based interpretation, participants may have felt less guilty because the victim had received consolation in the form of their apology. Similar effects might therefore apply even if someone other than the participant had apologised or offered sympathy for what had happened. Such an explanation might be tested by adding a third-party sympathy or apology condition in future studies. However, previous research by Okimoto and Wenzel (2014) showed that third-party apology by the victim's supervisor following a workplace transgression by another employee does

not lead to forgiveness, unlike personal apology from the transgressor. Additional research needs to examine whether similar differences also apply from the transgressor's rather than the victim's perspective. However, it seems unlikely that third-party apology would reduce guilt in situations without any hierarchical structure of accountability.

With respect to practical rather than interpersonal repair, my findings corroborated De Hooge's (2012) earlier research showing that practical repair by a third party had equivalent effects on guilt to practical repair by the self. One possible explanation is that all forms of practical repair left perpetrators with less to feel guilty about. In other words, alleviation of the victim's material problems may have led transgressors to consider the harm they had caused as less serious, thus changing their primary appraisals (e.g., Smith, & Lazarus, 1993) of the guilt-inducing event. Future studies should examine mediators and moderators of this effect more directly.

However, it is also worth noting that self-repair may have stronger guilt-reducing effects than those of third-party repair in contexts other than those investigated in my studies (and those conducted by De Hooge, 2012). In this regard, it is worth noting that the transgressions I used to elicit guilt were not the direct result of actions taken by participants. In the vignette studies, the bicycle was stolen because the participant forgot to lock it, but the true transgressor was someone else, namely, the person who stole the bicycle. Under these circumstances it may seem relatively less important to repair practical damage personally because that really should be the responsibility of the thief. In the laboratory studies, the victim was left without a chocolate bar not because the participant took it away but because performance on the task did not meet the required criterion. Assuming that participants tried their best in the

task, they may well have attributed the practical damage to task difficulty or bad luck rather than personal agency. Again, this may have reduced their sense that they should make up personally to the victim. Recently published research by Hepach, Vaich, and Tomasello (2017) already provides preliminary evidence that transgressors do not react identically to self-repair and third-party repair in situations involving more direct responsibility for damage. In particular, two- and three-year-old children who believed they had crashed a toy train causing water to spill over a confederate's playing area showed less pupil dilation when they had personally provided tissues to mop things up than when the experimenter performed the same practical repair. This suggests that children in the third-party condition still felt physiologically aroused even when the damage had been put right. Future studies should directly compare the effects of self-repair and third-party repair on guilt resulting from different kinds of transgression, including those more actively caused by participants.

This research distinguished relational and practical repair in order to demonstrate that correcting any material damage suffered by a victim was not in itself sufficient to alleviate all guilt, and to re-establish the case for guilt as a relational emotion. Although the practical-relational distinction is useful in this particular context, it does not apply cleanly across all kinds of situation. For example, many guilt-inducing episodes involve no practical damage, only insult, inattention or damage to reputation. In such situations, I would expect apology and other forms of relationship repair to play an even greater role.

The literature on reconciliation and forgiveness suggests that a number of factors play a role not all of which fit neatly in my practical-relational dichotomy. For example, Nadler and Shnabel's (2008) socio-emotional route to intergroup reconciliation includes

repair to identity threats as a potentially important factor. The negligence implied by losing a bicycle may imply that the victim is not important enough to be treated with appropriate care and respect, and this may be one of the sources of suffering that require attention in any repair attempt. In my research, it therefore seems possible that using self-affirmation strategies to restore the victim's self-integrity (e.g., Steele, 1988) might have additional effects to simple apology.

There are obvious questions about the ecological validity of the methods used in my studies and in De Hooge's (2012) previous research. I was able to separately manipulate practical and relationship repair because the laboratory setting allowed me to control the information provided to participants and the behavioural options available to them. In most everyday guilt episodes relationship repair and practical repair go hand in hand. It would be unusual to make amends for interpersonal harm without also making at least an implicit apology, and the delivery of an apology often also implies a commitment to making amends. However, this fact does not make the experimental analysis of conceptually distinct aspects of reparative behaviour meaningless or unimportant. My findings suggest that the behaviours prompted by guilt can achieve two kinds of reparative effect that may operate by distinct interpersonal and practical processes, each of which is worthy of further investigation.

In sum, findings reported in Studies 1-3 indicate that the experience of guilt relates to both concerns about practical and relationship damage. Acting on both kinds of concern can alleviate our negative feelings. While repairing practical damage is not always possible, apologising is usually easier to achieve. Thus, part of the importance of apology is that it makes it possible for us to communicate remorse when we are prevented from putting right the practical situation.

CHAPTER 3: SOCIAL CONTEXT OF SELF-PUNISHMENT

ABSTRACT

This chapter presents one laboratory experiment (Study 4) investigating the effect of self-punishment on guilt reduction. I hypothesised that guilt will be more alleviated when the intention to self-punish is communicated to the victim than in victim's absence or when expecting punishment. In a laboratory setting participants completed a guilt inducing computer task ostensibly with another participant. The task feedback informed participants that they failed to win a prize for the other participant, but the other participant had won a prize for them. Subsequently, the social context and control over the level of electric shocks were manipulated. In victim's presence or alone, participants were given a chance to set the level of electric shocks or had the experimenter do it instead of them. Findings indicate that when the transgressor set the level of shocks, guilt was alleviated more than when the experimenter set the level of shock. Furthermore, guilt was alleviated more in the victim's presence compared to when the victim was absent while shock levels were set. Previously observed effect of victim's presence on the intensity of electric shocks was not replicated. These findings confirm self-punishment as a communication of guilt that mitigates the impact transgression had on the interpersonal relationship with the victim.

Introduction

"And you must cut this flesh from off his breast.
The law allows it, and the court awards it."

In this scene of “Merchant of Venice” by William Shakespeare, the moneylender Shylock is granted to take a pound of Antonio's flesh since he was found guilty for not repaying the money in a timely.

Historically, it was common for such transactions to be governed by customs allowing a creditor to punish a debtor for belated repayment by damaging or extracting his body parts. Considering that remnants of this crude perspective on justice are observed today in most societies where serving a punishment is understood as a requirement from transgressors to be freed from their guilt, it is hard to conceive that people would try to harm themselves when punishment is omitted.

Self-Punishment

For a long time, guilt alleviation was one of the prevalent views on why people self-punish. For instance, the practice of mortification of the flesh for religious purposes (self-flagellation) is believed to cleanse humans of “original sin” [1] (Bible N.S.R.V., 1989). Nevertheless, it remains unclear why unreligious people would punish themselves when feeling guilty. One of the theories aimed at intrapersonal effects of guilt asserts that pain resulting from self-punishment purifies (Glucklich, 2001; Tangney et al., 2007) by rebalancing the scales of justice (Darley & Pittman, 2003). Since pain (physical or psychological) is a common element of punishment, by self-inflicting pain, people may feel that they are paying their dues for the damage they have caused, and thus have their guilt alleviated. Furthermore, this supports the idea of guilt being an intrapersonal process elicited by negative evaluations of a specific behaviour inconsistent with internal standards (Lewis, 1971). Findings from studies indeed

[1] New testament, Proverbs 20:30: “For if you live according to the flesh you will die, but if by the Spirit you put to death the deeds of the body you will live.”; Old Testament, Romans 8:13 “Blows that wound cleanse away evil; beatings make clean the innermost parts.”

indicate that when people feel guilty, they are more likely to punish themselves. When asked to set the level of shocks they were to receive, participants who reported feeling guilty after imagining a hypothetical scenario set higher levels of shock (Nelissen & Zeelenberg, 2009). Similarly, participants who felt guilty, punished themselves physically by holding their hand in cold water longer than participants who did not feel guilty (Bastian et al., 2011). Moreover, in the latter study the level of pain participants reported from holding their hand in the cold water predicted the alleviation of guilt. Similarly, participants who wrote about a guilt-inducing event they experienced, subsequently self-administered more intense electric shocks than those who wrote about events that made them feel sad or that elicited no specified emotion (Inbar et al., 2013). Furthermore, the stronger the shocks that guilty participants administered to themselves, the more their feeling of guilt was alleviated. According to these studies, people will self-punish more when they feel guilty and the resulting self-inflicted pain alleviates guilt.

Opposingly, more recent experimental findings suggest that episodes leading to guilt are interpersonal. They emphasize the adaptive functions of guilt, particularly for interpersonal behaviour (Baumeister, Stillwell & Heatherton, 1994, 1995; Hoffman, 1982; Tangney, 1992, 1994, 1995; Tangney et al., 2007) and report that when feeling guilty, people are motivated to take action to repair the damage done to those who suffered from their mistakes (De Hooge et al., 2007; Ketelaar & Au, 2003; Sheikh & Janoff-Bulman, 2010; Tangney et al., 1996; Wicker, Payne, & Morgan, 1983). Moreover, some authors claim that the experience of feeling guilty itself can be interpreted as "serving" a part of the sentence (Ohbuchi, et al., 1989). According to this perspective, the guilt self-punishment link might be explained as a means of guilt

communication in the absence of other options to indicate the intention to restore the relationship with the victim rather than an attempt to substitute the absence of punishment. For instance, according to Costly Signaling Theory (Zahavi, 1977), self-punishment could be interpreted as a means of communication of a costly (expensive) signal. This theory postulates that receivers perceive costlier signals as more convincing and more reliable since they entail a stronger value. By self-punishing, participants may be signalling their guilt in order to indicate that they made investments into their relationship repair. This seems more likely knowing that transgressors might face revenge from the victim (Cashdan, 1980). Hence, by increasing the self-inflicted pain, transgressors might expect increasing likelihood of mending the relationship with the victim.

A more recent experiment, however, directly investigated whether self-punishment is a means of communication of remorse to the victim. Findings from this study reported that participants who felt guilty punished themselves more when in presence of the victim than when alone (Nelissen, 2012). This finding supports the view of guilt as a social emotion focused on repair of the interpersonal relationship and suggests that even in the absence of other means, self-punishment might be used as a means of signalling remorse to the victim. This finding highlighted the effect of social context on alleviation of guilt through self-punishment and indicated that self-punishment might also be an effective means of guilt communication. If guilt relates to an interpersonal relationship (Baumeister, 1994), social context might have affected the transgressor's intention to communicate guilt through increasing the intensity of self-punishment and alleviated guilt. Adding to these findings from a recent study showing that level of perpetrator's self-punishment predicted victim's forgiveness (Zhu, Shen,

Tang, Ye & Wang, 2017), my hypothesis in Study 4 was that the communicated intention to self-punish will alleviate guilt.

Study 4

This study manipulates two factors at the moment when the level of expected pain is being determined. One is the transgressor's involvement, and the other is the presence of the victim. Hence, electric shocks were set by the transgressor, or by the experimenter, and the victim was either absent or present. Moreover, to make sure that the expected effect will be completely due to communication but not due to pain, transgressors never received electric shocks.

Since it was shown in previous studies that guilt motivates transgressors to repair the damage (Tangney, June & Tracy, 2011), I expect the action tendencies related to guilt to be affected by the manipulation in the same pattern as the emotion of guilt. I expect the same pattern of findings for the core relational theme of guilt. Precisely, I predict both in a core-relational theme of guilt and action tendencies to reduce more when the self-punishment is communicated to the victim. This study also attempts to replicate findings (Nelissen, 2012) that in the presence of the victim, participants will increase the intensity of shocks more compared to when they do it in solitude. I hypothesised that participants will set higher level of shocks in the victim's presence compared to when the transgressor does this in the victim's absence. I also hypothesised communicated intention to self-punish to alleviate guilt more than in any other condition. Furthermore, I expected appraisal components and guilt action tendencies to follow the pattern of effects observed on guilt. Finally, since communicated guilt was found to increase forgiveness (O'Malley & Greenberg, 1983; Zhu, et al., 2017), I hypothesise expected forgiveness to be reported as higher when participants

communicated their intention to self-punish. These findings would support the theory that guilt is a social emotion arising out of interpersonal transactions and that it serves multiple relationship-enhancing functions (Baumeister et al., 1994).

Method

Participants. A priori power analysis using the program G*Power (Faul et al., 2007) suggested that a sample size of 100 is capable obtaining the effect size of the significant result of study 2 with an adequate amount of statistical power (.90). I recruited 111 participants (54 women, M_{age} = 27.41, *SD* = 7.32) using university recruitment platforms, advertisements and word of mouth. They had to be in good health, between 18 and 35 years old, fluent in English, and have no neurological or psychiatric history, including depression or anxiety. Participants were paid £5 for their time, and were included in a lottery draw with £50, £30, and £20 prizes. The study was approved by the Central University Research Ethics Committee (CUREC) of Oxford University, and all participants provided informed consent. Eleven participants were excluded due to raised suspicion about authenticity of the other participant.

Design. The study utilised a 2 (time: after transgression vs. after context and shock-control manipulation) x 2 (context: social vs. non-social) x 2 (shock control: self-selected vs. yoked) mixed design, with repeated measures on the time factor. Participants were randomly assigned to one of four conditions; social self-selected (n = 29), social yoked (n = 28), non-social self-selected (n = 26), or non-social yoked (n = 28). The key dependent variables were guilt, reported at two time-points as part of the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) in all conditions, and the intensity of electric shocks in self-selected conditions.

Procedure. The experimenter met both the participant and a female confederate, posing as another participant, at the departmental reception and escorted both of them to the experimental laboratory, where they both completed consent forms. The lab contained two separate cubicles, one of which ostensibly contained an electric shock machine. The machine was in fact an electric resistance measurement device, with a functioning potentiometer and controlling dial at the front so that one could control the intensity of the 'shocks' by looking at the potentiometer and turning the dial (see Figure 3.1). Before going to separate cubicles, participants were told that electric shocks would be administered only in the second round, and only to one of the participants randomly selected by the computer. To manipulate social context the presence of the victim (confederate) was controlled by 'randomly assigning' participants to cubicles using a paper draw. In social conditions, participants were always assigned the cubicle that did not contain the electric-shock machine. Thus, the confederate was always in the cubicle containing the electric-shock machine. This meant that when participants were instructed they were selected to receive shocks they had to go to the confederate's cubicle, as the electric-shock machine was set in that room. In the non-social condition, the draw was set so that participants were assigned to the cubicle with the shock machine, and the confederate was assigned the cubicle without the shock machine. Participants completed the same guilt inducing task as in Study 3, previously demonstrated to elicit guilt (De Hooge et al., 2011; Nelissen, 2012). Participants believed that they did the task with the other person and that they both had to respond to letters appearing on their computer screen by pressing the corresponding letter on their keyboard before letters disappeared. In order to win the other person 8 lottery tickets

they had to meet a threshold of 60 successful hits. After the task, bogus results indicated that

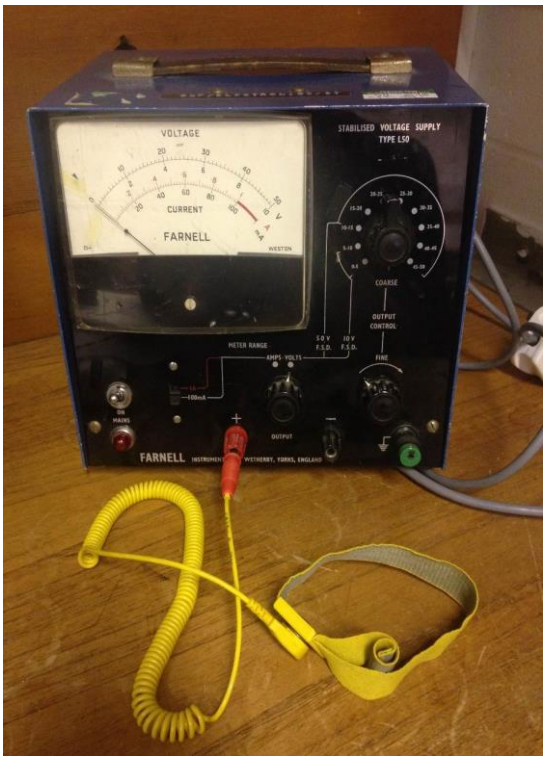


Figure 3.1. Mock shock machine.

participants did not win the other person lottery tickets they but that the other person did. Participants were expected to feel guilty for receiving lottery tickets based on the other person's performance when they did not manage to win a lottery tickets for them. The reason for having lottery tickets as the object of transgression was that Study 4 was the first laboratory experiment I conducted, hence I more closely followed the guilt manipulation task previously reported to be successful (De Hooge et al., 2011; Nelissen, 2012). In subsequent Study 3 I substituted lottery tickets for a chocolate bar as the object of transgression in order to make it more realistic, which consequently increased the level of initial guilt participants felt in Study 3. Following the performance task,

participants completed the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) for the first time. Subsequently, participants read on their computer screen that they had been randomly selected to complete the second round of the performance task which involved receiving electric shocks for each mistake they made. In the social condition, participants were escorted to the confederate's cubicle containing the bogus shock machine where the confederate appeared to have just finished answering questions from the first round. The confederate was asked to give their seat to the participant and to move to another chair, while still remaining sitting at the desk. The experimenter placed an electrode wristband around the participant's left wrist, which was connected to the bogus shock machine. In the non-social condition the participant was already in the room containing the shock machine so the confederate was not present in the participant's cubicle. Participants in the self-selected group were instructed to set the intensity of electric shocks themselves, whereas in the yoked condition the experimenter determined the intensity of electric shocks for participants. The yoked group mirrored the self-selected group in both non-social and social conditions, such that the experimenter selected a shock intensity for each participant that corresponded to the intensity selected by one of the participants in the self-selected condition. The purpose of the yoked group was to assess whether the intention to self-punish is necessary for the hypothesised alleviation of guilt, or if the expectation of punishment can have the same guilt-alleviating effect. The confederate was told in front of the participant that she had to wait in the cubicle until the experimenter prepared a questionnaire for her. This ensured the confederate was in the room while the electric shocks were set either by the experimenter or by the participant themselves. In the social conditions (both self-selected and yoked), the confederate clearly watched to see

what shock intensity was selected by either the experimenter or participant. Once the shock was set the experimenter entered the cubicle and asked the confederate to follow him to another room to complete the questionnaire. The participant then completed emotion measures and PANAS for a second time, after which they were debriefed and paid.

Measures.

Guilt. Participants rated their emotional experience on a scale from 1 (*very slightly*) to 10 (*extremely*) using the 20-item Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS was completed twice: first time after transgression (T1) and second time, after context and shock-control were manipulated (T2).

Appraisals. After completing the guilt inducing task, participants rated primary and secondary appraisal items based on those used by Smith and Lazarus (1993) on a scale from 0 (*not at all*) to 10 (*extremely*). The primary appraisal measuring items were: 'How important was what was happening in this situation to you?' (motivational relevance) and 'Think about what you wanted from this situation. To what extent were those desirable elements present?' (motivational congruence). The secondary appraisal item was 'To what extent did you consider yourself to be responsible for this situation?' (self-accountability).

Action Tendencies. Participants rated on a scale from 0 (*not at all*) to 10 (*extremely*) items assessing action tendencies relating to guilt and shame. The guilt item assessed interpersonal repair action tendencies (apology) and asked: "To what extent would you like to apologise to the other participant?" After being informed that they had received 8 lottery tickets, participants were asked: "Please indicate how many of

these 8 lottery tickets would you like to give to the other participant?". Participants had to insert a number from 0 to 8 using their keyboard The reported number is a measure of the transgressor's tendency to repair the practical damage suffered by the other participant.

Shock intensity. Participants assigned to the self-selected condition determined the intensity of shocks they were expecting to receive in the second round on a scale from 1 (*weakest*) to 30 (*strongest*). In the yoked condition shocks were set by the experimenter to match those selected by the participants in the self-selected condition.

Expected Forgiveness. Participants indicated on a scale from 0 (*not at all*) to 10 (*extremely*) to what extent they expect to be forgiven for their transgression: 'To what extent do you think the other participant would like to participate in another task with you?'; 'To what extent do you think you are forgiven by the other participant at this moment?' Subsequently, these measures were combined into a scale (r = .62)

Results

Unless otherwise stated, all reported analyses of variance (ANOVA) employed a 2 X 2 X 2 design with context (social vs. non-social) and shock-control (self-selected vs. yoked) as between-subject factors and time (after completing the computer task - T1; after setting the shock intensity - T2) as a within-subjects factor. Descriptive statistics for both time points and correlations with other variables are presented in Table 3.2.

Guilt. To assess whether guilt was the strongest negative emotion upon the completion of task, I conducted an ANOVA on guilt and all other negative emotions at T1 time measure. Guilt was reported at significantly higher levels than any other measured negative emotion (M = 2.54, SD = 1.16), all ps < .01, see Table 3.1. Again, according to studies which previously applied a similar guilt-eliciting task (De Hooge,

2012; De Hooge et al., 2011) these findings indicate that manipulation of guilt was successful.

Analysis of the guilt measure again revealed a significant main effect of time, F (1, 96) = 56.21, $p < .001$, $\eta_p^2 = .37$, showing a decrease of guilt from T1 (M = 2.54, SD = 1.17) to T2 (M = 1.71, SD = 1.04). There was no significant interaction of time with shock- control, F (1, 96) = 0.07, $p = .79$, $\eta_p^2 < .01$, or with the social context, F (1, 96) = 0.07, $p = .79$, $\eta_p^2 < .01$, nor an interaction effect between shock-control and social context F (1,96) = 0.33, $p = .57$, $\eta_p^2 < .01$. However, there was a significant three-way interaction between time, shock-control and context, F (1, 96) = 5.10, $p = .03$, $\eta_p^2 = .05$. Decomposition of this effect revealed a significant two-way interaction between time and shock-control in the social context F (1, 48) = 3.92, $p = .05$, $\eta_p^2 = .08$, but not in the non-social context, F (1, 48) = 1.67, $p = .20$, $\eta_p^2 = .03$.

Further analysis of simple main effects in the social context condition showed that guilt was alleviated more in the self-selected condition, F (1, 48) = 29.10, $p < .001$, $\eta_p^2 = .03$, from T1 (M = 2.68, SD = 1.22) to T2 (M = 1.60, SD = 1.08), than in the yoked condition, F (1, 48) = 6.75, $p = .01$, $\eta_p^2 = .01$ from T1 (M = 2.32, SD = 1.25) to T2 (M = 1.80, SD = 1.16), see Figure 3.2. Simple main effects in the non-social condition indicate significant reduction of guilt from T1 (M = 2.40, SD = 1.00) to T2 (M = 1.76, SD = 1.09) in self-selected F (1, 48) = 7.06, $p = .01$, $\eta_p^2 = .13$, and from T1 (M = 2.76, SD = 1.20) to T2 (M = 1.68, SD = 0.85) in yoked condition F (1, 48) = 20.11, $p < .001$, $\eta_p^2 = .30$. These findings show that in the victim's presence when transgressors set the shock intensity guilt was reduced more compared to when the experimenter set the intensity of shocks. Namely, this indicates that communication of intended self-punishment reduced guilt more than communication of punishment.

3.1

Means, standard deviations and correlations of T1 negative emotions of Study 4.

		M	(*SD*)	1	2	3	4	5	6	7	8	9	10
1	Guilt	2.54	(1.16)	-	.64***	.28**	.40***	.36***	.47***	.48***	.36***	.35***	0.13
2	Ashamed	2.04	(1.12)		-	.45***	.42***	.45***	.45***	.46***	.39***	.33**	.24*
3	Scared	1.36	(0.71)			-	.63***	.21*	.38***	.41***	.35***	.15	.38***
4	Afraid	1.35	(0.74)				-	.27**	.49***	.52***	.30**	.24*	.13
5	Upset	1.96	(1.06)					-	.26**	.28**	.46***	.26**	.26**
6	Nervous	1.83	(0.87)						-	.53**	.44***	.31**	.10
7	Jittery	1.98	(1.12)							-	.30**	.31**	.12
8	Distressed	1.88	(0.93)								-	.37***	.28**
9	Irritable	1.70	(0.90)									-	.22*
10	Hostile	1.18	(0.45)										-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 3.2

Means, standard deviations and correlations of key variables in Study 4.

		M (*SD*)	1	2	3	4	5	6	7	8	9
1	T1 guilt	2.54 (1.16)	-	.49***	.27**	.13	-.11	.53***	.19†	-.07	-.31**
2	T2 guilt	1.71 (1.04)		-	.28**	.33**	.1	.37***	.18†	.02	-.14
3	Accountability	6.3 (2.86)			-	.47***	.42***	.47***	.19†	-.04	.06
4	Relevance	4.81 (2.52)				-	.49***	.41***	.06	.01	.07
5	Congruence	4.67 (2.38)					-	.18†	.01	-.02	.33**
6	Interpersonal action tendency	5.62 (3.05)						-	.01	.04	-.26**
7	Practical action tendency	3.72 (1.89)							-	-.06	.-0.8
8	Shock Intensity	9.59 (7.74)								-	-09
9	Expected Forgiveness	4.68 (2.03)									-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Appraisals. ANOVAs revealed no significant effects of manipulated factors on any of the primary or secondary appraisal measures. There were moderate positive correlations of guilt at T2 with motivational relevance (r (100) = .33, p < .01) and self-accountability (r (100) = .28, p = .05), none of the correlations between guilt and other appraisal measures was significant. These findings indicate that manipulated factors did not affect the core-relational theme of guilt (self-blame). However, separate appraisal components were found to correlate with guilt. The less participants felt guilty, the less they felt responsible for the transgression and motivated to do something about it, and the more they felt more they that they will be able to cope with the emotional consequences.

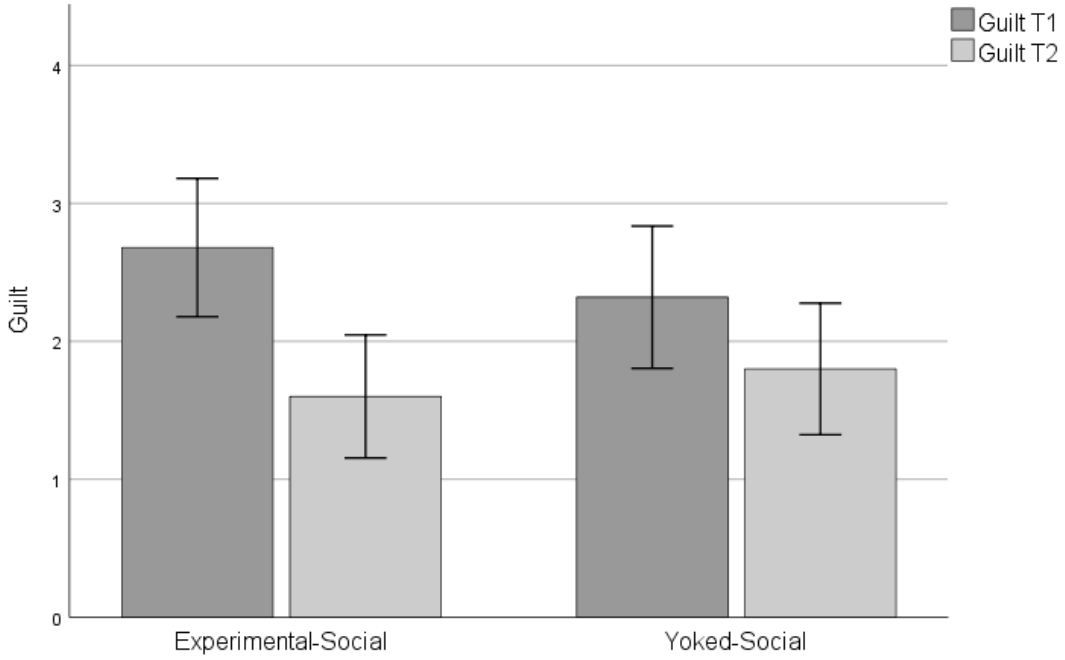


Figure 3.2. Mean guilt scores at T1 (after the guilt eliciting task) and T2 (after context and shock-control manipulation) in Study 4 as a function of social conditions. Error bars indicate 95% confidence intervals.

Action Tendencies. An ANOVA with type of action tendencies as a within-subject factor was conducted on two dependent variables: practical ("Please indicate

how many of these 8 lottery tickets would you like to give to the other participant?"), and interpersonal repair ("To what extent would you like to apologise to the other participant?"). Findings showed that there was a main effect of the type of action tendencies F (1, 96) = 30.03, $p < .001$, indicating that interpersonal action tendencies (M = 5.62, SD = 3.05) were reported as stronger than practical action tendencies (M = 3.72, SD = 1.89).

Simple effects analysis revealed no significant main or interaction effect on reported intensity of intention to apologise. A Pearson correlation coefficient was computed to assess the relationship between guilt at T2 and the extent of apology. There was a moderate positive correlation between the two variables (r (100) = .37, $p < .001$). This indicates that the less the participants felt guilty, the less they wanted to apologise for their transgression. Simple effects analysis revealed no significant main or interaction effects of shock-control or context factors on the number of lottery tickets that participants reported wanting to share with the victim. Participants on average indicated close to half of their lottery tickets to be given to the other participant (M = 3.72, SD = 1.88). This measure showed a non-significant positive correlation with guilt at T2 (r (100) = .18, p = .08). This indicates that there was no relationship between intensity of guilt and transgressors' tendency to repair the material damage.

Shock intensity. Context did not significantly affect shock intensity levels in the self-selected condition. This indicates that participants selected electric shocks of a similar intensity regardless of whether the victim was present or not. Overall participants selected relatively low shock intensity (M = 9.59, SD = 7.74; on a scale from 1 to 30).

Expected Forgiveness. A two-way ANOVA revealed no significant main or interaction effects on reported level of expected forgiveness. This indicates that, unlike guilt, transgressors' expectancy of forgiveness was not affected by victim's presence or transgressors' involvement in setting the intensity of electric shocks.

Discussion

As expected, guilt was the strongest reported negative emotion after the guilt eliciting task. Findings did not replicate the effect of victim's presence on increasing shock intensity (Nelissen, 2012). Moreover, practical and interpersonal action tendencies, core-relational theme of guilt and expected forgiveness remained unaffected by the manipulated factors.

As I hypothesised, guilt was alleviated when participants communicated to the victim their intention to self-punish more than in any other condition. These findings support the interpersonal nature of guilt (Baumeister et al., 1994) since the guilt alleviating effect was contingent on communication of transgressor's self-punishing intention to the victim. Furthermore, these findings highlight the importance of transgressor's involvement since the intention to self-impose suffering alleviated guilt more than transgressor's passive acceptance of punishment. Since no pain was inflicted, findings from current study question the 'purifying pain' hypothesis (Glucklich, 2003) which postulates that self-punishment alleviates guilt due to a delivery of pain in absence of punishment. Altogether, these findings indicate that the goal of the self-punishment is not to quench the intrapersonal turmoil by inflicting pain to oneself, but to strengthen the interpersonal relationships with the victim.

Appraisal components were unaffected by the experimental manipulation. Regardless of assigned condition, participants gave similar ratings for their

responsibility for the transgression; for its relevance and congruence with their goals. However, level of reported guilt after self-punishment (T2) correlated positively with accountability and relevance component. This indicates that after shock intensity was set, transgressors' guilt related to their perception of how important the event was for them and how responsible they felt for it, but not with their expectations of the outcome. This overall indicates that appraisal theory still fails to accommodate the emotion of guilt as not all appraisal dimensions related to measure of guilt. This might suggest that maybe elements of interpersonal interaction might be included as dimensions of cognitive processing of emotions.

Guilt action tendencies were measured separately as the extent to which the participants intended to apologise to the victim (Interpersonal action tendencies), and as the number of lottery tickets participants were to give to the victim (practical action tendencies). Results indicate that both measures of action tendency were not affected by experimental manipulations. This indicates that tendency to apologise and to make amends for the practical damage remain the same regardless of whether victim was present while electric shock intensity was set or not, and whether their shock-level was set by the experimenter or they set the intensity themselves. This might indicate that participants' tendency to repair the material damage, is unaffected by the suffering through punishment or self-punishment, or whether this will be communicated to the victim. However, further research is needed for such conclusion to be drawn whereas other reasons might have prevented the effect of manipulated factors on action tendencies. For instance, participants might have struggled with imagining the apology they proffered to be expressed in a form of scale. This might have led them to adhere to a fairness principle when determining the number of lottery tickets to give to the

victim. Nevertheless, the second measure of guilt still correlated with the level of intended apology, whereas there was no correlation with the number practical action tendency.

Results did not replicate findings from previous studies (Bastian et al., 2010; Nelissen & Zeelenberg, 2009) where guilt was reported to induce-self-punishment. One reason might be that participants did not attribute high importance to the intensity of electric shocks as much as they did to the victim's presence. Therefore, communicating the intensity of shocks by turning the dial might have been of subsidiary importance after communicating the intention to self-punish by allowing the experimenter to put an electrode on their wrist in the first place.

Contrary to my prediction, findings indicate that there were no differences in participants' expectancy to be forgiven in respect to whether the intensity of self-punishment or punishment was communicated to the victim or not. Although this was not predicted, it can be explained by the transgressors' realistic expectation that, due to its ambiguity, the communicated intention to self-punish will not for certain be understood by the victim as a communication of guilt.

Limitations

A first limitation concerns the manipulated punishment. Namely, in the yoked condition, participants had the experimenter set the level of shocks based on a corresponding participant from the self-selected condition. I named this 'punishment' in this study, however, perhaps participants did not perceive it like that. Participants were told before the study that they might receive electric shocks at one point by randomised computer selection. This might have led participants to understand that their performance and participation in the second round were not linked. However, after the

study, most of the participants pointed out that they expected to be selected for the second round since they underperformed in the first round. This might have been due to not reading the participant information sheet carefully, or that participants felt the need to be punished in order to rebalance the scales of justice (Darley & Pittman, 2003). Future studies should measure to what extent participants understood the yoked condition as a punishment for their underachievement in the first round.

A second limitation concerns the fact that there were no findings on the measure of shock intensity. One of the potential reasons why shock intensity remained unaffected by the manipulated factors was that participants were intimidated by the physical outlook of the machine (see Figure 3.1). Namely, participants reported verbally to the experimenter that the machine seemed old, threatening and unsafe, which might have discouraged them from setting higher intensity on the shock machine. Furthermore, in social conditions transgressors might have presumed that victims held a similar opinion of the machine's threatening appearance, which transgressors might have justified as a reason not to increase intensity of the shocks. This issue was addressed in Study 5. An alternative reason might have been that participants did not have their individual pain thresholds measured beforehand. This might have discouraged participants from setting higher intensity shocks levels since they knew they would need to endure this intensity of pain throughout the second stage of the experiment. In future studies, participants should have their pain threshold measured to increase their trust that they would not receive unbearably painful shocks.

A final limitation concerns the absence of the electric shocks expected by the participants. Reported results indicate that communication of guilt through intended self-punishment alleviates guilt, nevertheless this does not exclude the possibility that

delivery of electric shocks would not alleviate guilt even further. If possible, in order to compare the effect of intended and actual self-punishment, future studies should implement electric shocks as well.

CHAPTER 4: INTERACTIONS

ABSTRACT

This chapter reports on two studies (5 and 6) examining the interaction between different means of guilt communication. These studies examined both the extent to which guilt elicited the means of guilt communication, and in turn, the extent to which these means of guilt communication affected guilt. Study 5 was a laboratory experiment and in addition to the self-punishment manipulation used in Study 4, included an apology manipulation similar to that used in Study 3. More specifically, participants were given a chance to apologise or not, before getting a chance to set the level of electric shocks to punish themselves. One of the aims of this study was to see whether the changed measurement of self-punishment would give clearer results on the effect of guilt. More importantly however, the aim of the study was to investigate whether apology will reduce the intensity of intended self-punishment and whether communicated intention to self-punish in interaction with apology will reduce guilt the most. Results showed that participants who apologized, self-inflicted shocks of lower intensity and had higher expectations of being forgiven. However, neither apology nor self-punishment had a significant effect on guilt. Study 6 was conducted as an online experiment where participants had to imagine that they are participating in an adapted version of study 5. In addition to manipulations of apology and self-punishment, a manipulation of reparation (practical repair) similar to the one used in Study 3 was added. Participants had a chance to repair the damage themselves by giving the other party a chocolate bar; have the experimenter do this instead; or had to live with the fact that the other party received no practical repair. The aim of this study was to examine if the interaction between apology and self-punishment is independent of material

damage. Findings showed that participants set the intensity of shocks higher when they knew that the shock level would be communicated to the victim. Moreover, results showed that when participants communicated their intention to punish themselves, guilt reduced if they apologised or if the victim's material damage got repaired.

Introduction

"They say it is necessary for me to suffer! What's the object of these senseless sufferings? Shall I know any better what they are for, when I am crushed by hardships and idiocy, and weak as an old man after twenty years' penal servitude?"

Rodya Raskolnikov, the main character in Fyodor Dostoyevski's Crime and Punishment, has committed a terrible crime and is crippled by the tormenting effects of guilt almost to the point of insanity. In the above excerpt, he talks to his sister Dunya about his crime and (the perceived absence of) punishment: it is this discussion that will ultimately lead to his surrender and confession. More specifically, Rodya murdered an elderly pawn-broker, Alyona Ivanovna, and her sister Lizaveta, believing himself to be psychologically and emotionally strong enough to deal with guilt and regret. Alas, this turns out to be completely wrong, and the novel meticulously dissects and analyses his internal torment. Indeed, Rodya's struggle, which permeates the novel with unease and looming anxiety even to the reader, results in psychosomatic problems and eventually, his surrender. Shortly after this revealing discussion with his sister, Rodya turns himself into the police, who were in fact oblivious to his involvement in the crime and had no intention to prosecute him until this point. Later, while serving his sentence in Siberia, Rodya wonders whether his decision to confess and punish himself was beneficial, and

whether it even alleviated his guilt, finally concluding that he regretted subjecting himself to eight years of hard work and suffering.

One of the reasons for Rodya's regret was that the closure of the situation which made him feel guilty did not turn out the way he expected: there was no instant relief or atonement. The futility of suffering as a means to escape guilt became even more apparent now, making him doubt his guilt would ever be alleviated. It became clearer to Rodya that communicating guilt to his victims rather than punishment itself is the only chance of redemption. However, considering that the transgression was a double murder, this was not an option. In addition to reported guilt alleviating effects of communicated self-punishment (Study 4), this opens new questions about self-punishment. For instance, would Rodya punish himself more if he knew that the victim was aware of his intention to self-punish? Moreover, would Rodya be less willing to punish himself if he had a way of communicating his apology (perhaps to the sister of the victim) or compensating for the material damage to the victims? Finally, how would this effect his guilt?

Previous research reported that people choose self-punishment in the absence of other ways of communicating guilt (Nelissen & Zeelenberg, 2009) and that communication of the intention to self-punish alone reduces guilt (Study 4). Knowing that apology and practical repair do the same (De Hooge, 2012; Studies 1, 2 & 3 in this thesis) this opens up two new questions. Whether apology can reduce the intention to self-punish and whether guilt reduces the most when these two guilt outcomes are combined? Due to scarcity of literature on interaction of different means of guilt communication, the research done on separate means of guilt communication can help

us make an informed guess about the outcomes on the interaction of these means and their effect on guilt.

Self-punishment

Previous studies on self-punishment showed that people punish themselves more when they feel guilty (Nelissen & Zeelenberg, 2009). In both scenario and laboratory experiments, findings show that participants who felt guilty report higher imagined denial of pleasure and actual denial of potential material rewards, respectively. The effect observed in Nelissen and Zeelenberg (2009), called the 'Dobby effect', is defined as a transgressor's tendency to punish themselves in the absence of other means of atonement. The Dobby effect was later replicated in other studies, showing that after committing a transgression, participants punished themselves by reducing their economic gain (Ohtsubo et al., 2014; Tanaka, Yagi, Komiya, Mifune, & Ohtsubo, 2015; Watanabe & Ohtsubo, 2012) or self-inflicting physical pain (Bastian et al., 2011; Inbar et al., 2013; Nelissen, 2012). The authors of the original article (Nelissen & Zeelenberg, 2009, p. 119) interpreted their findings as "showing that guilt can induce self-punishment, but does so only if it is not possible to repair the inflicted damage." These results imply that wrongdoers seek to communicate their intention to punish themselves when all other options of communicating guilt are unavailable. Supporting this interpretation, findings from a follow-up study reported that participants who felt guilty punished themselves more when in presence of the victim than when alone (Nelissen, 2012). Self-punishment has also been found to alleviate guilt (Bastian et al., 2011). Furthermore, findings from Study 4 of this thesis supported previous findings (Nelissen, 2012) showing that participants' guilt decreased more when they communicated their

intention to self-punish (active) compared to when they communicated that they are being punished (passive).

Apology

What happens if the transgressor does have the option to apologise before considering self-punishment? Multifaceted benefits of apology as a common expression of guilt have been reported in numerous psychological studies and judiciary reports. Reports indicate that apology is the most common (and often the only) outcome of victim–offender mediation (Bolitho, 2012; Bonta, Wallace-Capretta, & Rooney, 1998; Morris & Maxwell, 1993; Miers et al., 2001; Strang, Barnes, Braithwaite, & Sherman, 1999; Umbreit, 1995; Umbreit & Coates, 1992). Moreover, it has been shown that receiving an apology improves the victim's wellbeing (Ohbuchi et al., 1989; Blecher, 2011), and makes them feel better about themselves (Eaton, Struthers, & Santelli, 2006). From the perspective of the transgressor, apologising has been found, across various types of studies, to be successful in alleviating unpleasant feelings of guilt (Baumeister, et al., 1994; Exline & Baumeister, 2000; Meek et al., 1995; Tangney et al., 1992; Tangney et al., 2007; Tedeschi & Reiss, 1981). The findings of this thesis's Study 2 (vignette experiment) also demonstrate the guilt alleviating effect of apology: i.e. participants who imagined apologising to the victim showed a greater reduction in guilt than those who did not get a chance to apologise. Study 3's (laboratory experiment) results showed that participants who apologise to the victim showed a greater reduction in guilt than those whose apology was not communicated to the victim. Importantly, the guilt-reducing effect of apology in Study 3 was found to be independent of repair of material damage. Overall, apology has a constructive role in resolving transgressions and benefits both the transgressor and the victim.

Practical repair

Finally, what if the object of the transgression is a material one? Material reparations certainly seem more appropriate after causing material damage compared to committing a non-material transgression. Findings have shown that in order to reach equity, transgressors experiencing guilt will allocate more resources to those whom they have wronged (Cryder et al., 2012). Moreover, this kind of compensation seems to be an effective way of alleviating guilt. The original study (De Hooge, 2012) and findings of my follow-up studies (2 & 3) indicate that practical repair committed by a third-party or the transgressor significantly alleviates guilt.

In conclusion, people who feel guilty are left with several options to communicate and express their guilt. Consider, then, the following thought experiment: imagine someone breaking a smartphone borrowed from a friend. If the smartphone stored important data or memories which could not be recovered, the transgressor's guilt might get reduced by refraining from using their own smartphone to take photos when the victim is around. However, would the transgressor's guilt be further alleviated if the victim received a new smartphone (likely followed by an apology[2])? It is hard to predict which means exactly the transgressor would employ, how those means of communication would interact, and finally, what their effect on guilt would be. To answer these questions this chapter reports two studies which manipulated apology, material reparation and social context of self-punishment as means of guilt communication.

[2] This is supported by the finding in Study 1, where most participants imagined apologising while repairing material damage, although apology was not mentioned in the scenario.

Study 5

This study investigates if communicating guilt to the victim in one way reduces the transgressor's tendency to communicate guilt further. Specifically, after apology will participants still self-punish? The study will also examine the effect of social context in which specific guilt communication appears. Furthermore, it will assess if there is additional guilt reduction when using multiple means of guilt compared to using only one.

Apology vs Self-punishment

To the best of my knowledge, there are no studies examining the interaction of apology and self-punishment. This calls for a comparison of the characteristics of these two means of guilt communication, thus the current study will manipulate apology and self-punishment.

In most situations, the transgressor has both apology and self-punishment at their disposal. However, due to its requirement to be communicated, apology is deemed to be slightly less accessible to the victim than self-punishment. While not being able to communicate the apology to the victim might prevent apologising, self-punishment remains an option whether through denial of pleasure (Nelissen & Zeelenberg, 2009).

Apology and self-punishment are fundamentally different in terms of their initial orientation. Self-punishment is initially oriented towards the self (transgressor), whereas apology is oriented towards the victim. For instance, to deny oneself pleasure by refusing to go on holiday due to a failed exam (Nelissen & Zeelenberg, 2009) transgressors have to execute an action that affects themselves. Whereas if a transgressor chose to apologise, the course of action would be oriented directly towards the victim (parents). The difference in initial orientation can contribute towards the

ambiguity of the communicated self-punishment. First, it might increase the victim's ambiguity on the nature of the transgressor's behaviour. For instance, the victim might have no experience of the transgressor's selected mode of self-punishment, which could potentially make it hard for the victim to understand transgressor's intention to self-punish. Second, the victim might not understand that self-punishment is aimed at them. In order for the interpersonal relationship to be restored, victims need to understand that the self-punishment is aimed at them. Third, even in situations when they are familiar with the specific self-punishing mode employed by the transgressor, and know it has been directed at them, victims still might be unaware of the transgressor's threshold of self-punishment. This might have the victim underestimate self-punishment or even consider it as mocking. By contrast, although varying in details of the message, apology mostly keeps its basic structure and communicates a clear underlying intention to restore the interpersonal relationship to the victim (Exline & Baumeister, 2000; Heider, 1958; McCullough, et al., 1997).

Apology and self-punishment also differ in terms of frequency of usage. To my knowledge, no studies have reported that transgressor's self-punishment has any benefits for the victim, opposingly there is an abundance of studies showing the victim benefiting from a transgressor's apology (Berry & Worthington, 2001; Karremans, Van Lange, Ouwerkerk, & Kluwer, 2003; Kim et al., 2004; Reb, Goldman, Kray, & Cropanzano, 2006; Tangney et al., 1992), hence it can be concluded that from the perspective of the victim, apology is more expected than self-punishment. Moreover, Study 1 of this thesis showed that most participants simply assumed that they apologised after transgressing, although this was never stated in the scenario. This

indicates that after transgression, for both the victim and transgressor apology is the expected course of action.

Finally, despite being more difficult to quantify, self-punishment is perceived as a more honest (costly) communication of guilt than apology (Zahavi, 1977) as it involves a painful experience that may leave physical or psychological scars. This makes self-punishment less likely to be used strategically to manipulate the victim's emotions. On the other hand, apology could be considered a *cheap* signal since it does not carry any immediate cost for the culprit. To summarize, compared to self-punishment, apology seems less ambiguous about the intended effect, more expected by both transgressor and the victim but perceived as less honest. In accord, this study will try to answer a couple of questions.

Expectations

The main aim of this study is to examine the social dimension of guilt by investigating the interaction of two means of guilt communication aimed at restoring the interpersonal relationship. Firstly, the findings should clarify whether people refrain from punishing themselves after apologising, or if they still self-punish and report additional guilt alleviation. The study will also examine whether one means of guilt communication is preferred over the other. If the statement "it is easier to wash one's hands than, to say, to cut one's hands" (Nelissen, 2012) is true, will transgressors who want to communicate their guilt find apology sufficient, or will they elect to communicating guilt using the more difficult (painful) mean? Secondly, this study will explore whether guilt is reduced more when both means of guilt communication are used. Finally, this study will test pain purification theory (Glucklich, 2001) by testing whether pain is a requirement for the self-punishment to reduce guilt.

As apology and self-punishment differ, they might complement each other as two means of communicating guilt. Notwithstanding, it is difficult to predict whether having an option to apologise will leave the participants still wanting to punish themselves, and how much. Authors of previous studies (Nelissen & Zeelenberg, 2009) postulated that self-punishment induced by guilt is a response utilized in absence of other reconciliatory options. Nevertheless, transgressors may increase the intensity of self-punishment after apologising, in order to confirm their intention to restore the relationship with the victim. On the other hand, due to its more frequent usage and higher transparency of intention, apology might decrease the intensity of self-punishment. Few studies have examined the different effects of two types of guilt communication. One of the few, by Watanabe and Ohtsubo (2012), found that people favour apologising over punishing themselves. After committing an unintentional transgression, participants who were given an option to pay for permission to apologise on average gave more money than those who were given the chance to punish themselves and have their monetary reward reduced[3]. For participants to apologise or self-punish, the payment amount they selected had to meet an unknown threshold. Results reported that participants dedicated higher payment to apologise than to self-punish. This indicates that participants were more concerned about meeting the predetermined amount to apologise, than to self-punish in isolation meaning that apology is preferred to self-punishment. To my knowledge no study has yet investigated whether apology indeed reduces the intensity of communicated self-punishment. Some studies examining the interchangeability of different means of guilt expression, have found that washing one's hands after recalling a bad deed diminished the participants'

[3] In this study the self-punishment was not communicated, and the measured behavior was not directed towards victim.

willingness to help a needy student (Zhong & Liljenquist, 2006). This indicates that when feeling guilty, one guilt-related behaviour can reduce the intensity of a subsequent one. In addition to these findings, several authors have posited that the main motivation of transgressors to self-punish is the absence of other means of guilt communication (Bastian et al. 2011; Inbar et al. 2013; Nelissen & Zeelenberg, 2012). Based on these findings I hypothesise that apology will reduce self-punishment.

Contrary to expectations based on findings reported by Nelissen (2012), Study 4 reported no effect of social context on intensity of electric shocks (self-punishment) and guilt. This finding may be explained by participants' concerns about the electric shocks they were about to receive. Participants gave high ratings for 'scared', 'afraid' and 'nervous', supporting the idea that they did not know their pain threshold and the fake shock machine looked threatening (see Figure 3.1). For this reason, in this experiment the participants will not encounter the shock machine when setting shock levels. Based on modifications made to the procedure, I hypothesised that participants will set higher shock intensity when given a chance to communicate their intention to self-punish to the victim (social context).

Since both means, apology and communication of intention to self-punish, are aimed at restoring the interpersonal relationship with the victim, self-punishment as an additional communication of guilt may further alleviate guilt regardless of the selected intensity. Specifically, expressing guilt through two means demonstrates a stronger intention to restore the relationship with the victim. This may, in turn, increase the likelihood of forgiveness (Skarlicki et al., 2004 – for apology; Zhu et al., 2017 – for self-punishment). Studies 2 and 3 showed that apology is independent of practical repair, and Study 4 demonstrated that communicating the intention to self-punish

alleviated guilt. This indicates that apology and self-punishment are directed at restoring interpersonal relationship with the victim, since they alleviated guilt independently of compensating for the material damage or self-inflicting pain. I hypothesized that participants who have both their apology and shock level communicated to the victim will report a stronger alleviation of guilt compared to participants in other conditions. I also hypothesized this effect to be observed on action tendencies and appraisal components. Furthermore, this effect should be independent of practical repair. Finally, I predict expected forgiveness to be reduced the most when apology and intention to self-punish are communicated to the victim in addition to repaired material damage.

Method

Participants. A priori power analysis using the program G*Power (Faul et al., 2007) suggested that sample size of 108 is capable of detecting an effect size given the effect size previously observed in Study 4 with 90% power. For this study, 113 participants were recruited (women, M_{age} = 22.19, SD = 4.33) using university recruitment platforms, advertisements and 'word of mouth'. Participants had to be in good health, between 18 and 45 years old, fluent in English, and have no neurological or psychiatric history, including depression or anxiety. Participants received a chocolate bar of their choice and a payment of £5 for their time. The study was approved by the Central University Research Ethics Committee (CUREC) of Oxford University, and all participants provided informed consent. Four participants who raised suspicion about the authenticity of the task, their or the other person's involvement were excluded, leaving 108 participants for further analysis.

Design. The study utilised a 3 (time: before apology vs. after apology vs. after context) x 2 (context: social vs. non-social) x 2 (apology: apology vs. no-apology)

mixed design, with repeated measures on the time factor. The participants were randomly assigned to one of four conditions; social apology (n = 26), social no-apology (n = 26), non-social apology (n = 30), or non-social no-apology (n = 26). The key dependent variable was guilt, reported at two time-points as a part of the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) in all conditions, and the intensity of electric shocks in self-selected conditions.

In the current study, apology was manipulated first- before self-punishment, in order to examine the possibility that apology can prevent self-punishment, or at least decrease its severity. At the same time, this study also examines the two means of guilt communication separately, thereby testing for the condition where the transgressors' message is communicated but the level of self-punishment is not, and vice versa. In fact, previous studies (Hareli & Eisikovits, 2006; Nelissen, 2012) noted a need for this kind of a study in the field, encouraging researchers to investigate whether the guilt induced tendency to self-punish may increase the effectiveness of apologies (to elicit forgiveness).

Procedure. The experimenter met the participants at the Department's reception, one at the time. The participants were told that the other participant had arrived earlier and was waiting in a separate room ready to start the experiment. In the verbal narrative delivered to the participant, concerning the experiment, the experimenter matched the gender pronouns used for the ostensible participant to the gender of the participant. The participant was then seated in a room alone and provided consent forms. Subsequently, participants chose which chocolate bar from a variety of five they wanted to keep with themselves. The experimenter made it clear that the participant would only be allowed to keep the chocolate bar if their "results met a

certain standard", and that this would be clarified further in the task instructions. The experimenter explained that the experiment consisted of two rounds. In round 1, participants would complete a task together with the other participant, using interconnected computers. They were also told that computer would randomly select one of them to complete round 2, which would involve receiving electric shocks every time they made a mistake. The other participant would predict the performance of the participant who was selected to receive the shocks.

At the beginning of the guilt inducing task, instructions stated that the participant's goal was to win a chocolate bar for the other participant. Participants completed the task, previously demonstrated to elicit guilt (Study 3; Study 4; De Hooge et al., 2011; Nelissen, 2012). Participants were made to believe that they completed a task with the other participant. In order to win the other person 8 lottery tickets, they had to earn 60 points. After the task, a bogus result indicated that participants did not win the other person lottery tickets, however, the other person won 60 points for them. Participants were expected to feel guilty for receiving lottery tickets based on the other person's performance when they did not manage to win lottery tickets for them. Following the task completion, participants completed the PANAS (Watson et al., 1988) for the first time. Subsequently, participants were asked to write a message to the other participant, they were then informed the message was either sent to the other participant (*apology* condition) or stored and kept confidential (*no-apology* condition). Participants then completed the second PANAS before being told, via the computer, that they had been randomly selected to complete round 2 of the performance task. As previously communicated to the participant, the second round entailed receiving electric shocks every time they made a mistake. Participants were asked to select the intensity of

the shocks they would receive on a slider on the computer screen from 0 (*weakest*) to 30 (*strongest*) using the computer mouse. Finally, after completing PANAS for the third and last time, participants answered questions relating to action tendencies, guilt appraisals and expected forgiveness. Upon the completion of this questionnaire, participants were paid and debriefed.[4,5]

Measures.

Guilt. To measure participants' emotions, including guilt, they completed the PANAS (Watson et al., 1988) immediately after the guilt eliciting task (T1), after the apology manipulation (T2), and after the manipulation of the context factor (T3).

Action tendencies. Participants rated measures assessing action tendencies on a scale from 0 (*not at all*) to 10 (*extremely*) after they rated guilt for the last time. The first guilt item assessed the interpersonal repair action tendencies (apology) asking "To what extent would you like to apologise to Person E?" Participants also answered "To what extent would you like to give your chocolate to Person E?" to assess their tendency to repair the material damage.

Appraisals. After rating the final measure of guilt, participants rated primary and secondary appraisal items based relating to those used by Smith and Lazarus (1993) on a scale from 0 (*not at all*) to 10 (*extremely*). The primary appraisal items were: 'How important was what was happening in this situation to you?' (motivational relevance)

[4] It is worth noting that this study was modified to address issues that arose in studies 3 and 4. First, setting the level of shock on the mock machine appeared to elicit fear in Study 4, therefore participants set the shock level on the computer. Second, in Study 3 the social condition involved a confederate being present in the room, in this study shock levels were sent via the computer. In current study, due to space/time/personnel limitations social condition was manipulated using a computer rather than with a confederate.

[5] The current experiment was conducted in two different locations, and by three different experimenters. Analysis conducted with these factors included found no main effects or interactions with any other factors, indicating that neither location or experimenter affected the results. Therefore, all analyses were conducted collapsing across location and experimenter.

and ‘Think about what you wanted from this situation. To what extent were those desirable elements present?’ (motivational congruence). The secondary appraisal item was ‘To what extent did you consider yourself to be responsible for this situation?’ (self-accountability).

Shock intensity. After apology manipulation, participants set the intensity of shocks they were expecting to receive in the second round on the scale from 1 (*weakest*) to 30 (*strongest*).

Expected forgiveness. To assess perceptions of forgiveness participants answered two questions on a scale from 0 (*not at all*) to 10 (*extremely*): ‘To what extent do you think the other participant would like to participate in another task with you?’ and ‘To what extent do you think you are forgiven by the other participant at this moment?’ These measures were combined into a scale, r (106) = .55, $p < .001$.

Results

All reported analyses of variance (ANOVA) employed a 2 X 2 design with context (social vs. non-social), apology (apology vs. no-apology) as between-subject factors. Table 4.2 presents means of key variables at both time-points and correlations with other variables.

Guilt. An ANOVA was conducted on the 10 negative emotions from PANAS at T1 (Watson et al., 1988). There was a significant main effect of emotion $F(9, 96) = 25.05$, $p < .001$, $\eta_p^2 = .70$. Bonferroni post-hoc tests revealed that guilt was reported significantly higher than the other 9 negative emotions, all ps < .001, see Table 4.1. As in previous studies of this thesis, according to studies which previously applied a similar guilt-eliciting task (De Hooge, 2012; De Hooge et al., 2011) these findings indicate that manipulation of guilt was successful.I conducted an ANOVA on ratings of guilt

including time as an additional independent repeated measures variable (after guilt inducing task – T1; after apology manipulation – T2; after self-punishment – T3). Results indicate that there was main effect of time, $F(1, 102) = 73.59$, $p < .001$, $\eta_p^2 = .42$ showing that guilt reduced from T1 ($M = 3.24$, $SD = 1.37$) to T2 ($M = 2.76$, $SD = 1.21$) and from T2 to T3 ($M = 1.85$, $SD = 1.00$), all ps < .001. There were no other main or interaction effects, all Fs < 1.96, and all ps > .24. This shows that participants' guilt reduced over time, and this did not differ according to apology or context (see Figure 4.1).

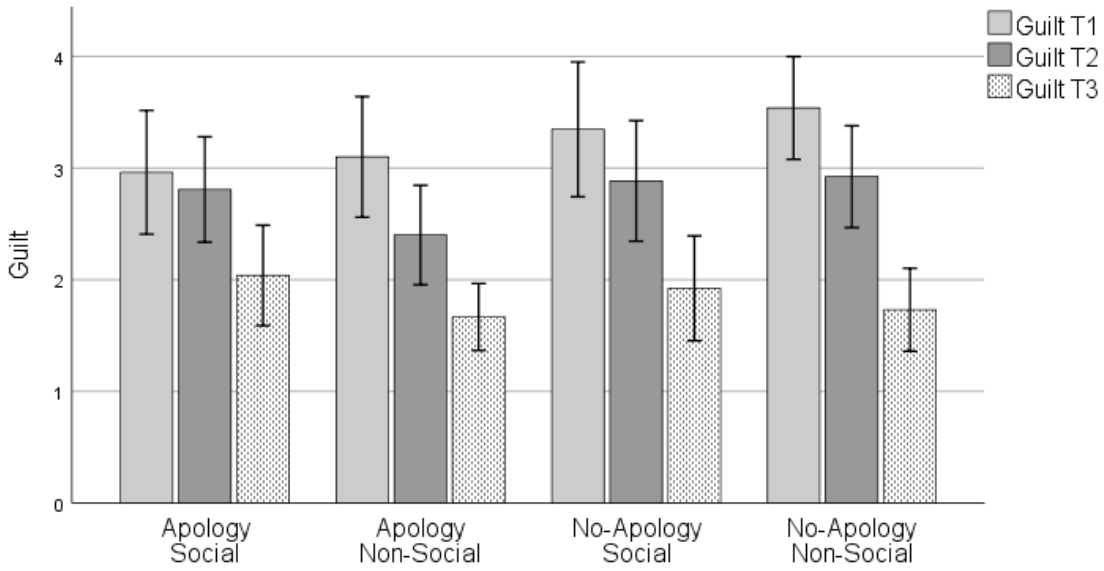


Figure 4.1. Mean guilt scores at T1, T2 and T3 (after the guilt eliciting task, after the apology manipulation, and after the manipulation of the context factor) in study 5 as a function of apology and context conditions. Error bars indicate 95% confidence intervals.

Action tendencies. ANOVA was conducted with type of action tendency (practical vs. interpersonal) as an additional within-subject factor. Results yielded no significant effects of manipulated factors, all Fs < 2.02, all ps > .16. This indicates that participants' tendencies to repair material or interpersonal damage remained unchanged

Table 4.1
Means, standard deviations and correlations of T1 negative emotions of Study 5.

		M (*SD*)		1	2	3	4	5	6	7	8	9	10
1	Guilt	3.19	(1.37)	-	.70***	.28**	.24**	.53***	.41***	.28**	.32***	.17†	0.07
2	Ashamed	2.61	(1.29)		-	.39***	.37***	.70***	.57***	.37***	.54***	.17†	0.08
3	Scared	1.47	(0.91)			-	.69***	.52***	.60***	.45***	.44***	.26**	.41***
4	Afraid	1.35	(0.71)				-	.50***	.59***	.34***	.52***	.46***	.38***
5	Upset	1.83	(1.05)					-	.65***	.39***	.55***	.27**	.20*
6	Nervous	2.06	(1.11)						-	.63***	.52***	.43***	.39***
7	Jittery	1.94	(1.11)							-	.37***	.40***	.37***
8	Distressed	1.65	(0.87)								-	.33***	.34***
9	Irritable	1.50	(0.85)									-	.51***
10	Hostile	1.35	(0.73)										-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 4.1

Means, standard deviations and correlations of key variables in Study 5.

		M (*SD*)	1	2	3	4	5	6	7	8	9	10
1	T1 guilt	3.19 (1.37)	-	.57***	.41***	.37***	.23*	-.04	.44***	.20*	-.15	.10
2	T2 guilt	2.71 (1.20)		-	.56***	.41***	.37***	.04	.55***	.17†	-.36***	.07
3	T3 guilt	1.82 (0.98)			-	.30**	.16†	.00	.37***	.25**	-.16†	.02
4	Accountability	7.04 (2.65)				-	.55***	.12	.59***	.17†	-.14	.12
5	Relevance	5.05 (2.73)					-	.16†	.49***	.14	-.08	.15
6	Congruence	5.39 (2.76)						-	.04	-24*	.13	-.05
7	Interpersonal action tendency	5.62 (2.87)							-	.277**	-.17†	-.02
8	Practical action tendency	7.77 (2.74)								-	.10	-.13
9	Expected forgiveness	4.38 (2.01)									-	-.15
10	Shock intensity	7.36 (7.01)										-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

whether they already apologised or if the material damage was repaired.

Appraisals. Separate ANOVAs were conducted for each appraisal dimension. Results revealed no main or interaction effects on any of the appraisal items, all *F*s < 3.49, all *p*s > .65. This indicates that, similarly to guilt and action tendency measures, appraisals were unaffected by the both the apology and context manipulations.

Shock intensity. I conducted an ANOVA on selected shock intensity. Results indicate a significant main effect of apology, $F(1, 105) = 5.72$, $p = .02$, $\eta_p^2 = .05$. Bonferroni corrected post-hoc tests revealed that participants set higher intensity of electric shocks in the no-apology ($M = 9.06$, $SD = 7.72$) compared to apology condition ($M = 5.59$, $SD = 6.01$). There were no other main or interaction effects, all *F*s < 1.02, all *p*s > .31. These findings show that participants whose apology message was not communicated to the victim set higher intensity shocks than those who apologised. This suggests that there may be a relationship between apology and self-punishment where in the absence of the former the later might be increased in its intensity.

Expected Forgiveness. An ANOVA conducted on the expected forgiveness scale revealed a significant main effect of apology $F(1, 105) = 4.74$, $p = .03$, $\eta_p^2 = .04$. Ratings of expected forgiveness were higher in apology condition ($M = 4.70$, $SD = 1.91$) compared to no-apology condition ($M = 3.87$, $SD = 2.02$). No other significant main effects or interactions were observed, all *F*s < 0.25, all *p*s > .61. These findings indicate that transgressors who apologise to the victim have higher expectations of forgiveness than those who have not communicated their apology to the victim.

Discussion

Findings of current study did not confirm the expected alleviating effect when participants both apologise and self-punish. Furthermore, manipulated factors did not

affect appraisal components nor action tendencies. However, as expected, apology increased expected forgiveness and decreased the intensity of electric shocks.

Findings show that immediately after the guilt eliciting task, participants felt guilt more than any other emotion. Subsequently, guilt overall reduced after the apology and practical repair manipulations, and furthermore reduced after the context manipulation. I expected participants who apologised and communicated their intention to self-punish to report a significantly stronger reduction of guilt than participants in other conditions. This expectation was based on Study 4 results that showed social condition reducing guilt more when participants had a chance to set the level of shocks themselves compared to when the experimenter did this for them. In addition to Study 4 design, the current study employed an additional manipulation of apology. One reason why these manipulations did not show the expected effect might be that participants did not have direct physical interaction with the other, ostensible participant. Even though participants believed in completing task with them, the absence of seeing the other person might have undermined the importance of their relationship and hence, depreciated the effect of the intended repair by apologising or communicating the intention to self-punish.

Findings showed that participants' appraisals for relevance, congruence and self-accountability were not affected by apology, or social context manipulations. I predicted that participants who apologised and communicated their intention to self-punish will report less accountability, less importance and more congruence. Moreover, I expected them to correlate significantly with guilt measure. However, results instead suggest apology and communication of the intention to self-punish did not to influence the extent to which participants considered the situation important, congruent and felt

responsible for what happened. In short, the findings refute appraisal theory (Smith & Lazarus, 1993). The reason why appraisal components remained unaffected by manipulated factors might have been that, similarly to guilt measures, the participant did not physically meet the other person which might have reduced the importance of these factors on their cognitive assessment of their emotional state.

Results found that participants' tendency to repair material or interpersonal damage was unaffected by both apology and social context factors. According to these findings, people hold to their intention to apologise and repair the material damage (chocolate bar) regardless of whether they apologised or indicated to the victim their intention to self-punish.

In addition to the reason suggested for findings on measures of guilt and appraisal components, there seem to be separate factors for the inter and intra-personal action tendencies. Tendency to repair the material damage might have been unaffected because neither of the manipulated factors had repair the material damage. Whereas the tendency to apologise was not alleviated by apology or communicated intention to self-punish because transgressors received no response by the victim on being forgiven or not. Hence, they still have the tendency to apologise. Finally, there was a positive correlation of T3 state measure of guilt with both type of action tendencies (see Table 4.2), which potentially might indicate that, if guilt was alleviated in one of the conditions, the tendency to repair material and interpersonal damage would follow the pattern of results.

As predicted, participants whose apologies were not delivered to the victim selected a higher intensity of electric shock. This indicates that when unable to apologise, the participants utilised self-punishment as an instrument of relieving their

guilt. However, contrary to prediction there was no effect of whether they communicated their intention to self-punish or not. One explanation might be that they participants' pain threshold was not measured. Participant might have assumed the standardized intensity of shocks are too strong for them, and hence did not want to risk doing the second round of task while suffering unbearable pain. Finally, there was no correlation between the shock intensity and any of the three time measures of guilt. This shows that when the level of elicited guilt was increased, the level of self-punishment remained unchanged and, subsequently guilt was not alleviated. Reason for this, again might have been the absence of the physical appearance of the other person, which consequently did not lead to establishing a relationship between them. Hence transgressors felt less inclined to increase the level of self-punishment intensity with increase of guilt, and felt no change in their guilt by intending to self-punish more.

Participants whose apologetic message was delivered to the victim expected to be forgiven more than those whose messages were not delivered. This suggests that by apologising participants felt like their chances of restoring the interpersonal relationship with the victim increased. This supports findings from other studies (Palanski, 2012; Schmitt, Gollwitzer, Forster, & Montada, 2004) showing that apology has a direct effect on the transgressor's expectations of relationship restoration.

Study 6

This study is an online vignette experiment combining the design of Study 5 with the additional manipulation of the practical repair factor. The aim of this study is to investigate if self-punishment, like apology, is independent from practical repair (Study 3). Furthermore, this study aims to confirm that apology and self-punishment interact as in Study 5 (and to further examine if this interaction is independent of practical repair).

Practical repair vs self-punishment

In the introduction to Study 1, I outlined the difference between apology and practical repair. In summary, practical repair and apology differ in terms of their availability, dependence on the transgressor's involvement, and in terms of the requirement of victim's response. In the introduction to Study 5, I asserted that compared to self-punishment, apology seems less ambiguous about the intended effect, more expected by both transgressor and the victim but perceived as less honest. Below I will outline similarities and differences between practical repair and intention to self-punish.

Practical repair and self-punishment can be considered similar in terms of their potential usage (e.g., deliberate destruction of one's own material assets is considered to be a form a self-punishment, Watanabe & Ohtsubo, 2012). Moreover, both practical repair of material damage and self-punishment can be considered to be honest (costly) signals (Zhu et al., 2017) for self-punishment since they exert expensive consequences for the transgressor. Turning to differences, compared to self-punishment which is mostly accessible, material reparation in many cases depends on the material assets available to the transgressor. Furthermore, similarly to apology, practical repair differs from self-punishment in terms of transparency for the reasons I will outline below. Firstly, practical repair is more obvious for the victim since it directly compensates for the material damage, on the other hand the purpose of self-punishment is less obvious. Secondly, practical repair is directed towards the victim whereas self-punishment is initially directed towards the transgressor, making it less obvious whether self-punishment is something transgressor intended for the victim to witness. Finally, practical repair is easier to quantify than self-punishment. For instance, repairing the

material damage fully or partially demonstrates transgressor's intention to repair the damage and the extent of effort they are willing to invest in reparation. Opposingly, it is unclear what level of self-punishment is sufficient for the damage to be repaired. As more accessible and less transparent, in most cultures self-punishment is a less preferred response to guilt than practical repair. For instance, after breaking an object, most victims would expect the transgressor to provide material compensation rather than to self-punish. One of the potential reasons being that compared to self-punishment, practical repair yields direct benefit for the victim. In summary, self-punishment is more accessible, less transparent, and less common reaction to guilt than practical repair.

Expectations

Previous studies have shown that the guilt reducing effect caused by the practical repair does not distinguish between the transgressor's involvement and a third-party's involvement (De Hooge, 2012; current thesis Studies 2 & 3). Hence, guilt alleviation does not require the transgressor's direct involvement in resolving the object of transgression by repairing the material damage. This has led some researchers (De Hooge, 2012) to interpret guilt as an emotion aimed more at getting rid of the uncomfortable feeling caused by guilt, rather than at restoration of interpersonal relationships. Conversely, studies have demonstrated the ability of apology and self-punishment to successfully restore the relationship with the victim (Gundlach, Douglas & Martinko, 2003; Skarlicki et al., 2004 – for apology; Zhu, 2017- for self-punishment). One of the aims of this study is to investigate whether guilt will be alleviated the most when apology is offered and intention to self-punish is communicated , independently of practical repair. The other objective of this study is to examine whether apology has an alleviating effect on self-punishment.

Study 5 showed that participants who apologised had less intention to punish-themselves compared to those who did not get to apologise. This suggests that in absence of apology people resort to self-punishment as a substitutive form of guilt communication. This study aims to replicate this effect. I also expected to replicate the effect of communication of the intention to self-punish to the victim (social context) on the increase of shock intensity, reported by Nelissen (2012). In summary, I hypothesised that participants will select the highest intensity of shocks when they know it will be communicated to the victim. Furthermore, I predicted participants to report highest level of expected forgiveness when they repair the material damage themselves, communicate their intention to self-punish and apologise to the victim.

Turning to the expected effects on guilt, previous findings showed that apology and communicated self-punishment alleviate guilt (apology - Studies 2 & 3; intention to self-punish - Nellisen, 2012; Study 4). Furthermore, in Study 4, guilt was alleviated the most for participants who knew that their selected shock intensity would be communicated to the victim. Finally, compared to practical repair, apology and self-punishment are more accessible to transgressors and require a direct involvement of the transgressor (De Hooge, 2012; Studies 1-3). Based on these findings, in Study 5, I expected guilt to be alleviated the most in conditions where participants apologised and communicated their intention to self-punish. Contrary to my expectations, Study 5 did not report any main or interaction effects of apology and self-punishment on guilt. Nevertheless, in present study, I hypothesized that guilt will reduce the most when participants apologise and communicate their intention to self-punish. I also expected to replicate the effect of practical repair on guilt (De Hooge, 2012; Studies 1-3) showing that it decreased when practical repair was repaired by either the transgressor, or

someone else. Moreover, I expected these two effects to be mutually independent. For appraisals and action tendencies, similarly to previous studies, I expected to observe the pattern of findings reported on guilt.

Method

Participants. A priori power analysis using the program G*Power (Faul et al., 2007) suggested that this sample size is capable of detecting effect size previously observed in Study 4 with 95% of power. Three hundred and ninety-six participants were recruited (M_{age} = 36.56, *SD* = 11.34) using Amazon Mechanical Turk (mTurk) and paid $3 each for completing the study. Inclusion criteria ensured participants resided in the United States of America and had a minimum 95% approval rate from previous studies they participated in. This latter criterion was used to increase the likelihood that participants would pay close attention to the vignette procedure (Peer et al., 2014). The study was approved by the Central University Research Ethics Committee (CUREC) of Oxford University, and all participants provided informed consent. In order to reduce the number of participants excluded from the study, participants answered two manipulation check questions prior to completing the main task. Those who answered incorrectly, were presented the manipulation information and subsequently answered the manipulation check questions again. Participants who answered incorrectly a second time had their participation terminated. Nevertheless, 14 participants who indicated that they did not want to apologise or wrote a clear non-apologetic message were excluded from the analysis, leaving 382 for further analysis. Exclusion of these participants did not affect the pattern of results.

Design. The study utilised a 3 (time: after completing the guilt eliciting task, after the apology and practical repair manipulation, after the manipulation of the context

factor) x 2 (context: social vs. non-social) x 2 (apology: apology vs. no-apology) x 3 (practical repair: self-repair vs. no-repair vs. third-party repair) mixed design, with repeated measures on the time factor. Participants were randomly assigned to one of twelve conditions with at least 30 participants per condition (see Figure 4.2): *social apology self-repair* , *social no-apology self-repair* , *non-social apology self-repair* , or *non-social no-apology self-repair* , *social apology no-repair* , *social no-apology no-repair* , *non-social apology no-repair* , or *non-social no-apology no-repair* , *social apology third-party repair* , *social no-apology third-party repair* , *non-social apology third-party repair* , or *non-social no-apology third-party repair*. The key dependent variables were guilt, reported at three time-points as part of the PANAS (Watson et al., 1988) and the intensity of electric shocks, in all conditions.

Procedure. Participants first read the participant information sheet, and then provided consent. Task instructions explained that the vignette study was a representation of a previous laboratory study (Study 5 reported above) and that they should imagine participating in a laboratory experiment with another person. Participants were shown a video of the guilt eliciting task, followed by a video indicating that they did not earn enough points in the task to win the other participant a chocolate bar, whereas the other participant was successful in winning a chocolate for them. Subsequently, participants completed the first PANAS. Then the participants were allocated to one of three repair conditions; either they were given the option to give a chocolate bar to the other person (self-repair)[6] or were told that the other person will get a chocolate bar another participant elected not to take (third-party repair), or did

[6] There was one participant who indicated not wanting to repair the material damage. However, this participant was excluded based on the previous criteria, for explicitly writing in their note to the victim 'I would not apologise…'

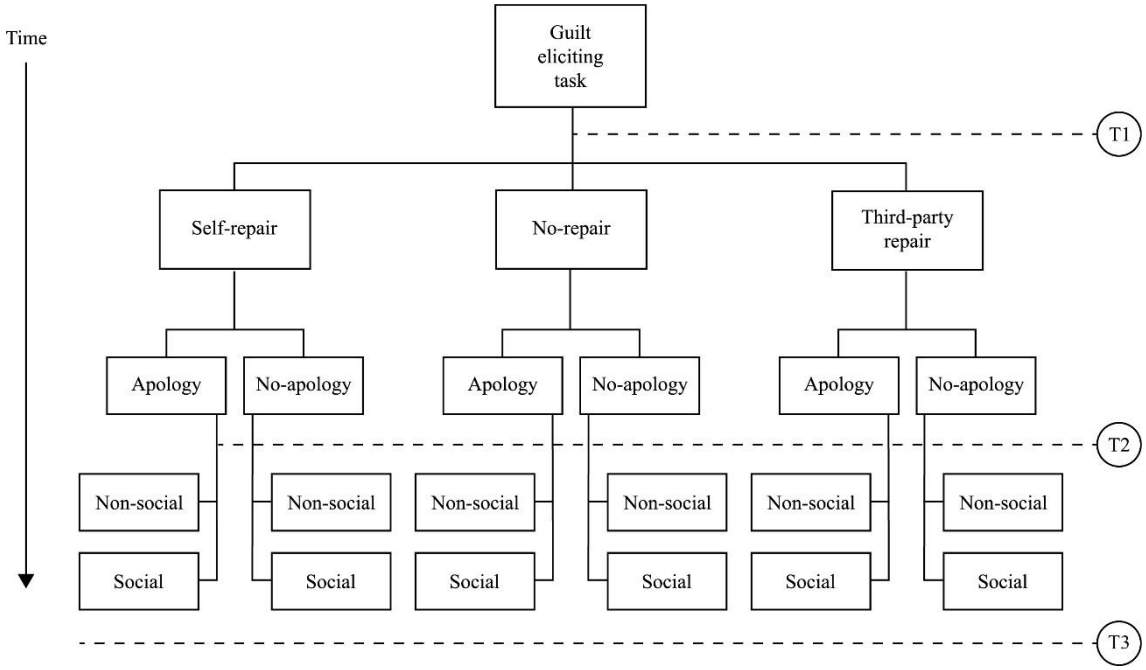


Figure 4.2. Flow diagram of Study 6 (T1, T2 and T3 represent three repeated measures of Positive and Negative Affect Schedule).

not see any further information about the chocolate bar (no-repair). Next, participants were asked to indicate the extent to which they would like to apologise to the other person, and to write a message they would like to send him/her. For the apology condition, participants were informed that their message was sent to the other person (apology) or that the message was not sent (no-apology). The participants then completed the second PANAS measure and questions concerning action tendencies, appraisal dimensions and expected forgiveness. Next, participants were told either the level of shocks they selected would be shared with the other person (social context) or not (non-social context), before indicating the level of shocks they would receive in the next part of the study. Finally, participants completed the third PANAS along with other questions on their feelings and thoughts, before seeing the written debrief.

Measures.

Guilt. To measure emotions, participants completed the PANAS (Watson et al., 1988) three times, immediately after completing the guilt eliciting task (T1), after the apology and practical repair manipulation (T2), after the manipulation of the context factor (T3).

Action tendencies. Participants rated on a scale from 0 (*not at all*) to 10 (*extremely*) two items assessing action tendencies relating to guilt. The items assessed interpersonal repair action tendencies (apology): "To what extent would you like to apologise to the other participant?" and practical repair action tendencies: "To what extent would you like to give your chocolate to Person 2?"

Appraisals. After completing the guilt inducing task, participants rated primary and secondary appraisal items based on those used by Smith and Lazarus (1993) on a scale from 0 (*not at all*) to 10 (*extremely*). The primary appraisal items were: 'How important to you is the outcome of the first round of the task?' (motivational relevance) and 'Think about what you expected from the outcome of the first round of the task. To what extent are those desirable elements present?' (motivational incongruence). Secondary appraisal items were 'To what extent do you consider yourself to be responsible for the outcome of the first round of the task?' (self-accountability).

Shock intensity. Participants were asked to set the intensity of shocks they would receive in the second round, on a scale from 1 (*weakest*) to 30 s*Strongest*).

Expected forgiveness. Participants indicated on a scale from 0 (*not at all*) to 10 (*extremely*) to what extent they expect to be forgiven for their transgression: "To what extent do you think the other participant would like to participate in another task with you?"; "To what extent do you think you are forgiven by the other participant at this

moment?" Subsequently, these measures were combined into a scale, $r(382) = .64$, $p < .001$.

Results

Unless otherwise stated, all reported analyses of variance (ANOVA) employed a 3 X 2 X 2 between-subjects design with practical repair (self-repair vs. no-repair vs. third-party-repair), apology (apology vs. no-apology), and self-punishment context (social vs. non-social) as factors. I have presented descriptive statistics for both time points and correlations with other variables are presented in Table 4.4.

Guilt. A ANOVA was conducted on the 10 negative emotions from PANAS (Watson et al., 1988). There was a significant main effect of emotion $F(9, 362) = 26.30$, $p < .001$, $\eta_p^2 = .07$. Bonferroni post-hoc tests revealed that guilt was reported higher than 8 other negative emotions, all *p*s < .01, except for feeling "Nervous", $p = 1$, see Table 4.3. Similar to other laboratory experiments of this thesis, according to studies that previously applied a similar guilt-eliciting task (De Hooge, 2012; De Hooge et al., 2011) these findings indicate that manipulation of guilt was successful.An ANOVA including the additional independent variable of time (after guilt inducing task – T1; after apology and practical repair manipulations – T2; after self-punishment – T3) was performed on ratings of guilt. Results indicate that there was main effect of time, $F(2, 370) = 59.06$, $p < .001$, $\eta_p^2 = .14$. Bonferroni corrected post-hoc tests revealed that guilt at T3 ($M = 1.64$, $SD = 0.99$), was lower than guilt at both T2 ($M = 2.00$, $SD = 1.14$), and T1 ($M = 2.12$, $SD = 1.28$), both *p*s < .001. However, guilt at T1 and T2 did not significantly differ, $p = .12$. This indicates that guilt reduced significantly after participants determined the level of electric shocks, but not after the apology and practical repair manipulations. There was also main effect of practical repair $F(2, 370) =$

4.05, $p = .02$, $\eta_p^2 = .02$ showing that guilt in third-party repair ($M = 2.09$, $SD = 0.98$) was higher than the no-repair condition ($M = 1.78$, $SD = 0.85$), $p = .02$. However, guilt in self-repair condition ($M = 1.85$, $SD = 0.99$) did not differ from either the third-party or no-repair condition, both ps > .08. Differences between other conditions of repair were not significant, all ps > .08. The four-way interaction effect between time, repair, apology, and context was significant, $F(4, 370) = 2.90$, $p = .02$, $\eta_p^2 = .02$. In order to decompose the four-way interaction, I conducted two separate ANOVAs, one for T1 to T2 interval and the other for T2 to T3 interval.

For the analysis on the interval from T1 to T2 I included only factors of time, apology and repair, since social context factor was manipulated after this interval. Findings reported significant main effect of time, $F(1, 370) = 4.13$, $p = .04$, $\eta_p^2 = .01$, indicating decline of guilt from T1 ($M = 2.12$, $SD = 1.28$) to T2 ($M = 2.00$, $SD = 1.14$). Main effect of practical repair was also significant, $F(2, 370) = 3.99$, $p = .02$, $\eta_p^2 = .02$, and replicated the pattern of effects observed in the analysis on all three time points. Namely, third-party repair ($M = 2.26$, $SD = 1.08$) was reported as higher than the no-repair condition ($M = 1.94$, $SD = 0.97$), $p = .04$. There were no other significant differences between conditions of the practical repair factor, all ps > .06. Furthermore, there were no other significant main or interaction effects observed from T1 to T2 time measures of guilt (all Fs < 0.58, all ps > .56). This implies that apology and practical repair had no effect on the guilt decline from T1 to T2.

ANOVA with time as a within-subject factor with T2 and T3 time points reported significant main effect of time, $F(1, 370) = 54.91$, $p < .001$, $\eta_p^2 = .13$, indicating decline of guilt from T2 ($M = 2.00$, $SD = 1.14$) to T3 ($M = 1.64$, $SD = 0.99$). The main effect of practical repair was also significant, $F(2, 370) = 4.00$, $p = .02$,

Table 4.3
Means, standard deviations and correlations of T1 negative emotions of Study 6.

		M	(*SD*)	1	2	3	4	5	6	7	8	9	10
1	Guilt	2.08	(1.27)	-	.82***	.48***	.52***	.70***	.53***	.50***	.62***	.37***	.35***
2	Ashamed	1.93	(1.15)		-	.56***	.62***	.77***	.60***	.56***	.71***	.47***	.42***
3	Scared	1.65	(1.01)			-	.72***	.64***	.65***	.62***	.67***	.54***	.70***
4	Afraid	1.59	(1.04)				-	.71***	.67***	.72***	.77***	.58***	.58***
5	Upset	1.76	(1.07)					-	.62***	.65***	.75***	.58***	.54***
6	Nervous	1.96	(1.12)						-	.71***	.69***	.52***	.52***
7	Jittery	1.78	(1.10)							-	.71***	.60***	.62***
8	Distressed	1.78	(1.04)								-	.62***	.58***
9	Irritable	1.71	(1.06)									-	.66***
10	Hostile	1.51	(0.99)										-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 4.4

Means, standard deviations and correlations of key variables in Study 6.

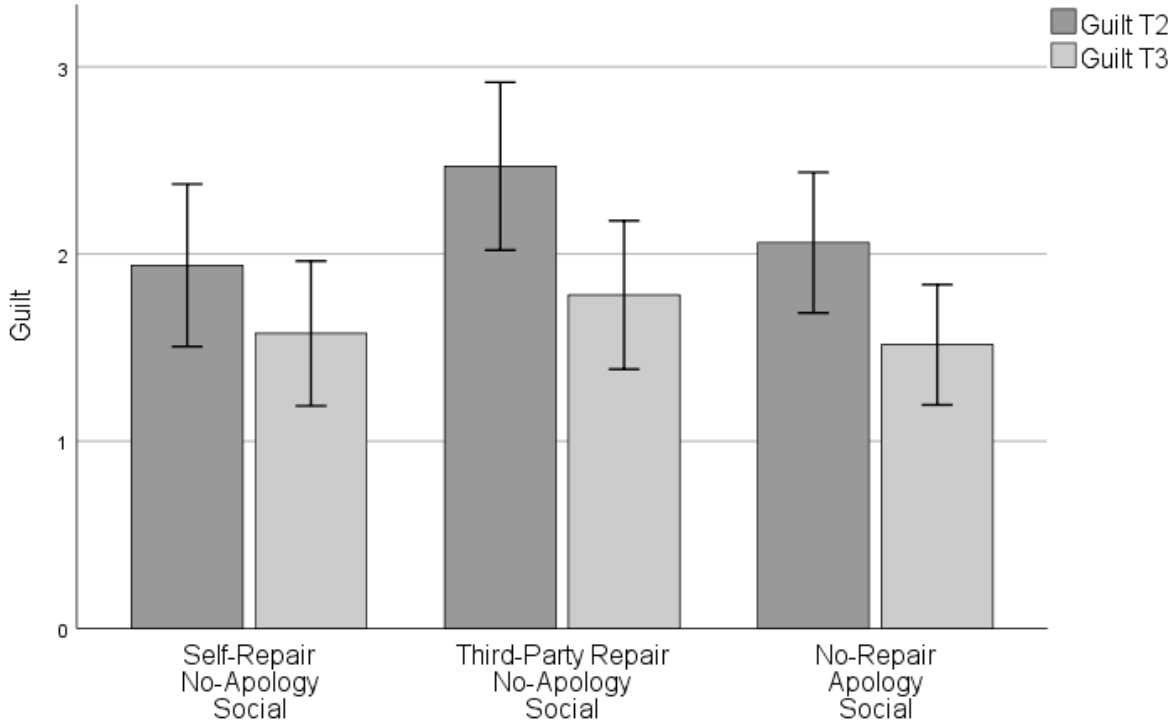
		M (*SD*)	1	2	3	4	5	6	7	8	9	10
1	T1 guilt	2.08 (1.27)	-	.54***	.48***	.16**	.14**	.01	.26***	.19***	.04	.26***
2	T2 guilt	1.96 (1.14)		-	.63***	.20***	.23***	.01	.34***	.24***	-0.02	.32***
3	T3 guilt	1.62 (0.98)			-	.07	.14**	.12*	.19***	.04	0.08	.39***
4	Accountability	7.41 (2.55)				-	.45***	.16**	.45***	.47***	.09†	.03
5	Relevance	6.71 (2.52)					-	.17**	.48***	.39***	.21***	.07
6	Congruence	5.48 (2.67)						-	.14**	.06	.31***	.10*
7	Interpersonal action tendencies	6.33 (2.87)							-	.62***	.16**	.10*
8	Practical action tendencies	2.95 (3.06)								-	.14**	.03
9	Expected Forgiveness	4.92 (2.38)									-	.21***
10	Shock Intensity	7.69 (8.07)										-

†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

η_p^2 = .02, and replicated the effect observed in the analysis across all three time points. Namely, third-party repair (*M* = 2.01, *SD* = 1.04) was reported as higher than the no-repair condition (*M* = 1.70, *SD* = 0.85), *p* = .03. There were no other significant differences between conditions of the practical repair factor, all *p*s > .08. The key finding was the significant three-way interaction effect from T2 to T3, *F*(2, 370) = 3.53, *p* = .03, η_p^2 = .02. After decomposing the three-way interaction according to the social context factor, results reported a significant interaction effect of practical repair and apology within the social condition *F*(2, 188) = 3.30, *p* = .04, η_p^2 = .03, however there was no significant interaction effects within the non-social condition *F*(2, 188) = 0.60, *p* = .55, η_p^2 < .01. Focusing on the significant two-way interactions within the social condition, simple effect analysis show that guilt declined from T2 to T3 time measure of guilt in self-repair no-apology *F*(2, 188) = 4.34, *p* = .04, η_p^2 = .02 (*M* = 1.94, *SD* = 1.22; *M* = 1.58, *SD* = 1.10), third-repair no-apology *F*(2, 188) = 15.05, *p* < .001, η_p^2 = .07 (*M* = 2.47, *SD* = 1.24; *M* = 1.78, *SD* = 1.10;) and in no-repair apology condition *F*(2, 188) = 9.77, *p* < .01, η_p^2 = .05 (*M* = 2.06, *SD* = 1.59; *M* = 1.52, *SD* = 0.91), see Figure 4.3a. Furthermore, guilt did not decline in in self-repair apology *F*(2, 188) = 1.63, *p* = .2, η_p^2 = .01 (*M* = 1.57, *SD* = 0.89; *M* = 1.33, *SD* = 0.76), third-repair apology *F*(2, 188) = 0.27, *p* = .06, η_p^2 < .01 (*M* = 2.15, *SD* = 1.23; *M* = 2.06, *SD* = 1.19) and no-repair no-apology conditions *F*(2, 188) = 1.93, *p* = .17, η_p^2 = .01 (*M* = 1.94, *SD* = 0.99; *M* = 1.70, *SD* = 0.92), see Figure 4.3b. These findings indicate that apology and practical repair had an alleviating effect on guilt only if participants were given a chance to communicate their intention to self-punish. Precisely, guilt was alleviated if the intention to self-punish was communicated and the material damage was either repaired or apology was delivered to the victim.

Action tendencies. A ANOVA was conducted on the practical and interpersonal repair action tendencies. Results revealed an interaction between practical repair, context, and type

(a)



(b)

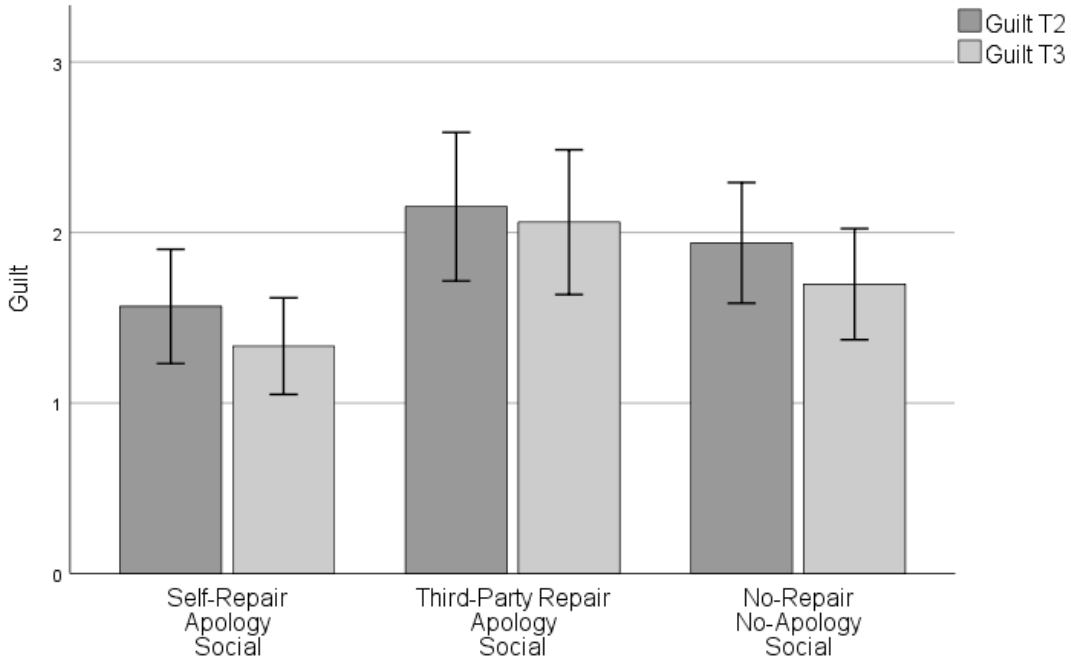


Figure 4.3. Mean guilt scores at T2 (after the guilt-eliciting task, practical repair and apology manipulations) and T3 (after the manipulation of the social context factor) in Study 6 as a function of social conditions. Error bars indicate 95% confidence intervals.

of action tendency $F(2, 370) = 3.47$, $p = .03$, $\eta_p^2 = .02$. Simple effects analysis revealed stronger tendency to repair the material damage than the interpersonal damage in all conditions (all *p*s < .04) except in no-repair non-social and in third-repair social conditions (both *p*s > .65). This shows that participants were more concerned with repairing the material damage than to apologise in all manipulated situations except in situations when material damage was not repaired and intended self-punishment was not communicated, and in situations when someone else repaired the material damage and intention to self-punish was communicated.

A separate ANOVA on intention to apologise revealed no main or interaction effects, all *F*s < 2.11 all *p*s > .15. Similarly, a separate ANOVA on tendency to repair material damage revealed no main or interaction effects, all *F*s < 2.15all *p*s > .14.

These findings indicate a preference to repair the material damage over apologising when someone else repaired the material damage and participants' intention to self-punish was not delivered to the victim. However, when separately observed, tendency to repair the material damage or to apologise was unaffected by the manipulated factors.

Appraisals. An ANOVA conducted on the motivation relevance item revealed a significant interaction between practical repair and apology, $F(2, 370) = 3.12$, $p = .04$, $\eta_p^2 = .02$. Simple effects analysis showed higher ratings in no-apology ($M = 7.22$, $SD = 2.17$) compared to apology condition ($M = 6.34$, $SD = 2.56$) when there was no repair, $F(1, 370) = 3.98$, $p = .04$, $\eta_p^2 = .01$. There was no difference between apology and no-apology conditions for self-repair ($M = 6.50$, $SD = 2.43$; $M = 7.14$, $SD = 2.35$) and third-party repair conditions ($M = 7.02$, $SD = 2.54$; $M = 6.47$, $SD = 2.52$), both *F*s < 2.18 both *p*s > .14. There were no other significant main effects or interactions, all *F*s < 1.65, all *p*s > .20. This suggests that when the material damage was not repaired, participants whose apology was delivered to the

victim felt that the situation was more important than those whose apology was not delivered to the victim.

An ANOVA conducted on the congruence item also revealed an interaction of repair and apology, $F(2, 396) = 3.29$, $p = .04$, $\eta_p^2 = .02$. Simple main effects analysis showed that in the third-party repair condition, participants in the apology condition reported higher level of congruence ($M = 6.11$, $SD = 3.03$) than participants in the no-apology condition ($M = 4.98$, $SD = 2.45$), $F(1, 370) = 5.58$, $p = .02$, $\eta_p^2 = .01$. There was no difference between apology and no-apology conditions for self-repair ($M = 5.53$, $SD = 2.75$; $M = 5.41$, $SD = 2.62$) and no-repair conditions ($M = 5.19$, $SD = 2.52$; $M = 5.78$, $SD = 2.74$), both Fs < 1.57, all ps > .21. There were no other main and interaction effects observed, all Fs < 2.04, all ps > .15. This indicates that if a third-party repaired the material damage, participants felt that the situation was more in line with what they expected if they apologised compared to if they did not.

An ANOVA on the self-accountability item revealed an interaction of apology and social context, $F(1, 370) = 11.26$, $p < .01$, $\eta_p^2 = .03$. Simple main effects analysis show that in the apology condition, participants in the non-social condition reported higher level of accountability ($M = 8.06$, $SD = 2.06$) than participants in the social condition ($M = 6.99$, $SD = 2.79$), $F(1, 370) = 9.45$, $p < .01$, $\eta_p^2 < .01$. Simple effects analyses, however, did not yield a significant difference in the no-apology condition between social ($M = 7.79$, $SD = 2.37$) and non-social condition ($M = 7.20$, $SD = 2.38$), F (1,370) = 2.8, $p = .10$. There were no other main or interaction effects, all Fs < 2.60, all ps > .08. These findings indicate that when their apology was delivered to the victim, people felt more accountable if their intention to self-punish was not communicated to the victim compared to when it was.

Shock intensity. An ANOVA was conducted on the intensity of electric shocks set by the participants. Findings show that there was a main effect of context, $F(1, 370) = 12.57$, $p < .001$, $\eta_p^2 = .03$, indicating that participants in the social condition set higher intensity of

electric shocks (M = 9.14, SD = 8.24) than in non-social condition (M = 6.27, SD = 7.65). There were no other main and interaction effects observed, all Fs < 2.00, all ps > .14. This suggests that when participants knew the level of electric shocks they selected would be communicated to the victim, participants set higher level of electric shock compared to when the shock level would not be communicated.

Expected forgiveness. An ANOVA was conducted on the forgiveness scale. Results revealed a main effect of repair, $F(2, 370) = 6.01$, $p < .01$, $\eta_p^2 = .03$. Bonferroni corrected post-hoc test revealed that in the self-repair condition participants felt more forgiven (M = 5.40, SD = 2.40) than in the no-repair condition (M = 4.51, SD = 2.11), $p < .01$. Whereas, the third-repair condition (M = 4.85, SD = 2.54) did not differ from either the self-repair or and no-repair condition, both ps > .08. Findings also reported an interaction effect between repair and context, $F(2, 370) = 3.77$, $p = .02$, $\eta_p^2 = .02$. Simple main effects analysis on the interaction between repair and context revealed that in self-repair condition participants in the social condition (M = 6.04, SD = 2.37) reported more forgiveness than those in the non-social condition (M = 4.75, SD = 2.27), $F(1, 370) = 8.69$, $p < .01$, $\eta_p^2 = .02$. However, simple effects did not yield significant differences between social and non-social conditions in the no-repair (M = 4.32, SD = 1.76; M = 4.65, SD = 2.39) or third-party repair conditions (M = 4.91, SD = 2.34; M = 4.78, SD = 2.67), both ps > .41. There were no other main and interaction effects observed, all Fs < 1.99, all ps > .16. These findings indicate that participants who repaired the material damage themselves felt more forgiven than those who did not repair the material damage. Moreover, of the participants who repaired the material damage themselves, those who communicated their selected shock level to the victim felt more forgiven than those who did not.

Discussion

As expected, results indicate that guilt was reported to be significantly stronger than the emotion of shame immediately after the guilt eliciting task, which implies that the computer-based task elicited the exact emotion it was directed at. The emotion of guilt showed a different dynamic over time comparing to previous studies. The main question this study addressed was whether apology and self-punishment combined have the strongest alleviating effect on guilt, independent of material damage. In the current study, I expected strongest reduction of guilt when participants apologised and communicated their intention for self-punishment. I also hypothesised that guilt will decrease when practical repair was repaired by either the transgressor, or someone else. Moreover, I expected these two effects to be independent of each other. However, findings revealed the strongest reduction of guilt when apology, communicated intention to self-punish and practical apology interacted. Precisely, communicated intention to self-punish was a prerequisite for guilt alleviation, nevertheless it had to be combined either with reparation of material damage (by the transgressor or by the third-party), or by an apology in absence of material repair. Furthermore, these findings yield also a substitutive interaction of apology and practical repair, since apology was a requirement of guilt alleviation only when material damage was not repaired. Assuming that victims perceive apology and practical repair having a more transparent (less ambiguous) aim than the communication of the intention to self-punish, these results demonstrate that in order for guilt to be alleviated, transgressors require certainty that the victim will understand their intentions.

I expected appraisal components to yield a similar pattern of results observed on state measure of guilt. However, results show that when the material damage was not repaired, participants rated the event as less important when they apologised compared to when they did not. This might indicate that in situations when the material damage remains unrepaired,

due to communication of the intention to repair the interpersonal relationship, apology alleviates the importance of the what happened. Results also show that participants considered the situation more aligned with their expectation when they apologised to the victim while someone else repaired the material damage. This might indicate that having the material damage repaired by someone else and offering apology to the victim, both of which were earlier demonstrated to alleviate guilt[7], is closest to what participants expected as an outcome. Adding to this the fact that this measure correlates positively with the guilt T3 time measure, we might infer that what participants expected from this situation is not to feel guilty. Findings also indicate that after apologising, participants felt more accountable if they did not communicate their intention to self-punish compared to when they did. This suggests that apologising may elicit feelings of responsibility, however this can be alleviated by communicating self-punishment intentions. Finally, contrary to what I predicted, action tendencies did not replicate the pattern of findings observed on guilt measures.

One of the hypotheses concerning the shock intensity was rejected. Participants did not select the lower shock intensities when their apology reached the victim, probably since they were aware that they would not receive shocks due to the experiment being conducted online. However, the second hypothesis was confirmed as findings showed that when they were aware that the intensity of shocks they selected will be communicated to the victim, participants selected higher levels of shock compared to when the victim was not to be informed. This finding replicates finding observed earlier (Nelissen, 2012) and supports the assumption that communication of the intention to self-punish is a means of guilt communication. Finally, participants who repaired the practical damage themselves felt more forgiven than when it was repaired by someone else or not repaired at all. Further, participants who self-repaired and communicated their intention to self-punish felt more

[7] Practical Repair (De Hooge, 2012; Studies 1 to 4 of this thesis); Apology (Study 3).

forgiven than those who did not communicate their intention. This indicates that self-repairing material damage is important for one's expectation of being forgiven, and provides some support for the idea that communicating self-punishment may also increase expectations of forgiveness.

General discussion

This chapter presented two studies, a laboratory experiment (Study 5) and a vignette study (Study 6), that examined the interaction of different means of guilt expression on guilt and the intention to self-punish. Inspired by earlier research (Bastian et al., 2011; Inbar et al., 2013; Nelissen, 2012), the current studies focused on examining whether apology and social context have a cumulative effect in reducing guilt, and whether their effect on guilt is independent of practical repair. These studies are novel in examining the combined effect of apology and self-punishment on guilt.

My first hypothesis on shock intensity was that participants who apologised will set lowest shock intensity. The second hypothesis was that participants who communicate their intention to self-punish (social context) will set the highest shock intensity. The laboratory experiment (Study 5) confirmed the former hypothesis. This demonstrates that when feeling guilty, apology has an alleviating effect on self-punishment. This might imply that apology and self-punishment have a substitutive role when it comes to expression of guilt (Nelissen & Zeelenberg, 2009). Study 6 did not replicate these findings, but did show, in line with previous research (Nelissen, 2012) that when participants knew that their intention to self-punish would be communicated to the victim, they punished themselves more. Furthermore, this supports the idea that self-punishment may function as an expression of guilt to the victim rather than a desire to receive pain (cf. Glucklich, 2001). Contrary to prediction, there was no interaction of apology and social context on the level of shock intensity which, in Study 5. This may be because participants were unsure about their pain threshold, leading

them to select shock intensity conservatively. In Study 6, participants knew that they would not receive shocks, therefore they were less conservative. However, while in Study 5 participants believed there was another participant with them, in Study 6 participants were imagining another participant which may have reduced the impact of apology on the intensity of electric shocks. Since the intensity of self-punishment in both studies was measured not manipulated, correlations assessed the effect of shock intensity on guilt. Only Study 6 showed a significant correlation such that participants who set higher intensity shocks also reported higher levels of guilt beforehand. However, results show an even stronger positive correlation between the intensity of shocks and guilt afterwards. This is opposite from what previous studies have shown (Bastian, et al., 2011; Inbar et al., 2013) where higher levels of shocks (higher intensity of self-punishment) alleviated guilt more.

The main aim of the current research was to investigate the interaction of apology, social context and practical repair on guilt. Study 5 reported no effect of any of the manipulated factors on guilt, separately or in interaction. Study 6 found an interaction of all three manipulated factors, such that participants who communicated their intention to self-punish had their guilt alleviated only when the material damage was repaired by them or someone else, however an apology was necessary when the material damage was not repaired. According to these results, to alleviate guilt, the communication of the intention to self-punish had to be combined with a mean of guilt communication that is more transparent and clear to the victim, in this case apology or self-/third-party repair. In other words, for guilt to be alleviated it needs to be expressed through at least one honest/costly mean (practical repair or intention to self-punish) and at least one transparent means (practical repair or apology). These findings support the theory of guilt as a social emotion directed towards repairing the interpersonal relationship with the victim (Baumeister et al., 1994) rather than towards material compensation (De Hooge, 2012) since communicated intention

to self-punish (social context), and not self-punishment in isolation, was a prerequisite for the guilt alleviation. One of the hypotheses was that practical repair would show separate guilt alleviating effects, as observed in previous studies[8]. However, practical guilt was found to alleviate guilt only in interaction with communicated intention to self-punish and apology in Study 6. The reason for this might have been that participants struggled with imagining practical repair conditions, especially as the object was a chocolate bar.

The findings in both studies showed that appraisal dimensions of guilt (importance, congruence, and self-accountability; Smith & Lazarus, 1993) did not relate together. In Study 5 none of these appraisal dimensions were affected by the manipulations. In Study 6, participants reported feeling the situation being more congruent to their expectations when someone else repaired the material damage and they apologised; they felt more responsible when they apologised but did not communicate the intention to self-punish, compared to when they did communicate it; and when the material damage remained unrepaired, they felt the situation is less important if they apologised. This shows that findings on appraisal components were unaffected in one study and inconsistent in the other and between the two studies. This further indicates that appraisal theory (Smith & Lazarus, 1991) might acquire social components int its assessment of cognitive processes leading to guilt.

Action tendencies

Action tendencies where expected to show the same pattern of results as guilt. Precisely, I expected the tendency for interpersonal guilt to be alleviated most by the interaction of apology and communicated self-punishment, and tendency for practical guilt to get alleviated the most when material damage is repaired. In Study 5, similar to guilt, action

[8] Studies 1, 2 and 3 showed that guilt was alleviated in self-repair and third-party repair more than in the no-repair condition. Moreover, Studies 1 and 2 found a decline over time in the two conditions where practical repair was carried out. In Study 2 the decline in guilt from T1 to T2 was stronger in apology than in no-apology condition. In Study 3 the interaction between apology and time was such that guilt only declined in the apology condition.

tendencies were unaffected by the manipulated factors. Again, the reason might be that the transgressor participant did not have direct contact with the victim participant before starting the experiment. This might have decreased the emotional involvement participants had with the victim's experience. In Study 6, action tendencies did not follow the pattern of findings observed on measures of guilt. Findings indicate that overall participants had a stronger tendency to repair the material damage in all conditions except in two situations, when material damage was not repaired and intention to self-punish was not communicated, and when the material damage was repaired by someone else and the intention to self-punish was communicated. This might indicate that overall participants were more concerned with repairing the material damage than the interpersonal damage; however, since separate measures for practical and interpersonal action tendencies remained unaffected, this conclusion cannot be drawn on the basis of the given results.

Expected forgiveness

I predicted that expected forgiveness would be reported as strongest when participants repair the material damage themselves, apologise and communicate their intention to self-punish. Study 5 results indicated that by apologising, participants felt like they increased their chances of restoring the interpersonal relationship with the victim. This supports findings from other studies showing that apology has a direct effect on transgressor's expectations of the relationship being restored (Lawson, 1988). This effect was not replicated in Study 6. However, Study 6 results suggest that repairing the material damage is important for one's expectation of being forgiven. However, the expectation of forgiveness was greater more after self- compared to third-party repair indicating that practical repair is not focused merely on compensation and that their involvement in repairing the material damage is not irrelevant, like previously claimed (cf. De Hooge, 2012). These findings show that repair of material

damage can also contain elements directed towards the repair of interpersonal damage since the expected forgiveness was found as lower in self-repair but not in third-party repair. Overall findings from both studies in this chapter indicate that expected forgiveness was reported as higher when one of the two manipulated interpersonal means of guilt communication was employed (apology or intention to self-punish). This shows that the expectation of forgiveness depends on employment of the interpersonal communication of guilt. This further supports the idea of guilt as a social emotion (Baumeister et al., 1994) since both apology and communicated self-punishment, previously found to be elicited by guilt (Nelissen & Zeelenberg, 2009; Zahn-Waxler & Kochanska, 1990), and to increase forgiveness (Cox et al., 2012; Zhu et al., 2017), had participants expect to be forgiven more.

Limitations and future directions

The first limitation concerns the fact that there were elements in both studies that participants needed to imagine. In Study 5 this was applied due to the scarcity of the participant pool, and in Study 6 due to the task being conducted online. In particular in Study 5, despite being a laboratory experiment, the participants had to imagine a victim they have not met. This arguably reduces personal involvement, personal responsibility, as well as the level of control over the participants' mental image of the victim. Moreover, in Study 6, instead of experiencing the guilt inducing task, the participants had to imagine it by watching a video presentation. This means that in their responses, participants indicated how they would have acted if they felt guilty compared to genuinely feeling guilty. In future research, experiments where participants meet are likely to find stronger results.

The second limitation concerns the measure of shock intensity levels. As Study 4 null results may relate to the fact that the shock machine elicited fear in participants, Study 5 used the computer not the mock shock machine to set shock levels. Still, participants genuinely expected to receive electric shocks, which might have discouraged them from

increasing the intensity. In Study 6 they only imagined expecting to receive them as it was conducted online. Combined with the fact that participants were informed beforehand whether the set shock intensity would be communicated to the victim, demand characteristics may have impacted findings in Study 6. In future studies I would utilise a standardized pain threshold measurement prior to measuring intended shock level.

The third limitation pertains to the practical repair limitation. In Study 6 participants, when they were asked to write a note to the victim, in addition to apologising, some participants also offered to repair the material damage as well. This indicates that making reparations is a strong tendency after a transgression, therefore, future studies should more clearly delineate manipulation of apology from manipulation of practical repair.

The last potential limitation concerns the use of self-report measures, as they have been criticized for their susceptibility to social desirability response bias (Van de Mortel, 2008). Staying in the scope of self-report measures, future research should focus on measures relating more to mundane reality which allow participants to report real-life situations, similar to diary method.

Conclusion

The primary purpose of the studies reported in this chapter was to test the effects of apology and self-punishment on intensity of self-punishment and guilt alleviation. The studies were successful in directly evoking guilt in a laboratory (Study 5) and online setting (Study 6). The findings of the two studies reported in this chapter support the idea that the intensity of self-punishment is affected separately by apology (Study 5) and by social context (Study 6) but not by practical repair or by any interaction of those factors. Findings indicate a guilt alleviating interaction effect of all three manipulated factors. Namely, if the intention to self-punish was communicated, guilt was alleviated if material damage was repaired, or if apology was offered instead (Study 6). Broadly convergent results obtained in these two

studies using two different methodologies support the claim that the intention to self-punish is a means of communicating guilt to the victim.

CHAPTER 5: CONCLUSIONS AND IMPLICATIONS

This final chapter summarizes and discusses the main findings of the research reported in this thesis. I first provide an overview of all the findings emphasizing their relations to the research aims of this thesis, then discuss the theoretical and methodological contributions of the studies to the understanding of guilt. I conclude my thesis by considering the general limitations of this research, and proposing future directions for the psychological investigation of the emotion of guilt.

Introduction

The aim of this thesis was to investigate the interpersonal and intrapersonal processes that are associated with guilt. Although previous research has often considered the behavioural consequences of guilt, relatively few studies have simultaneously assessed intrapersonal and interpersonal means of guilt communication. My thesis therefore aimed to go beyond the previous focus. Its primary goal was: first, to investigate whether the interpersonal effects operate independently of intrapersonal effects on guilt; second, to establish whether there is an interpersonal basis for the motivation to self-punish associated with guilt experiences; and third, to examine whether apology and self-punishment have an interactive effect on guilt, and whether their effects operate independently from practical repair.

More generally, the thesis pit two contrasting theoretical approaches to guilt against each other. The first considers guilt as a social emotion motivating to interpersonal relationship restoration (Baumeister et al., 1994), while the second posits that guilt motivates selfish actions that benefit the transgressor more than the victim (De Hooge, 2012).

Summary of Main Findings

Interpersonal vs Intrapersonal Factors

The first aim of this thesis was to investigate whether the interpersonal and intrapersonal aspects of guilt processes are independent of each other. I hypothesised that apology would have an alleviating effect on guilt independently of practical repair. This prediction was grounded in the social-adaptive approach which considers guilt to be an interpersonal emotion (Baumeister et al., 1994), which serves multiple relationship-enhancing functions. To test whether guilt is an emotion mainly directed towards restoring interpersonal relationships, I conducted 3 studies (Study 1 – Study 3, Chapter 2) assessing people's emotional responses to manipulated apology and practical repair. I predicted that apology would reduce levels of guilt. Moreover, I expected this effect to be independent of any effect of practical repair.

Across three studies, I obtained mixed results concerning the effect apology had on guilt. In Study 1, participants responded to an online vignette presenting a scenario previously shown to elicit guilt (De Hooge, 2012). After practical repair and apology manipulations, participants rated their levels of guilt and other emotions. Results showed no effect of apology on ratings of guilt. My explanation of these findings was that participants who were not asked to imagine that they apologised (according to the scenario), believed that they had done so anyway. This was confirmed using the apology manipulation check measure. In Study 2, successful changes were made to the apology manipulation yielding the intended significant difference between conditions on the manipulation check item. Participants who apologised now experienced greater guilt alleviation than participants who did not apologise in accordance with my predictions. Moreover, this effect of apology was statistically independent of the effect of practical repair. In order to confirm these findings using a different methodology, I conducted an experiment where guilt was directly elicited

rather than imagined (Study 3). The findings again supported the hypothesis, and in this case guilt was alleviated only in the apology condition and remained unchanged in the condition where an apology was not delivered. Results of all three studies also replicated the findings of De Hooge's (2012) earlier study, showing similar levels of guilt reduction regardless of whether practical damage was repaired by the transgressor or someone else (De Hooge, 2012), thus offering support to the claim that practical repair alleviates guilt.

Self-Punishment as Communication

I conducted Studies 4-6 partially to confirm Nelissen's (2012) finding that self-punishment can serve to communicate guilt to the victim and to assess whether self-punishment's guilt-alleviating effect depends on it being communicated to the victim. In Studies 4 and 5, the intensity of self-punishment did not increase when participants knew that the victim would be informed about it. I speculated that the absence of the effect in Study 4 was due to participants' fear of the shock machine which was perceived as outdated and unsafe (see Figure 3.1). Hence, I modified procedures for Study 5 so that participants indicated the level of the shock intensity on their computer screens. However, there was still no effect. I speculated that this was because participants were overly cautious and did not want to receive shocks that were stronger than they could bear, since their pain threshold was not measured beforehand. Study 6 exposed participants to online vignettes rather than directly involving laboratory procedures, and here, finally, the results showed that as expected, participants who knew that the victim would be informed of their intention to self-punish, set the intensity of shocks at significantly higher levels. Moreover, participants' reported guilt level prior to self-punishment positively predicted the intensity of electric shocks that they subsequently set for themselves. This supports the claim that self-punishment serves as a communication of guilt (Nelissen, 2012).

Turning to the effect of self-punishment on guilt, Study 4 showed that guilt was alleviated more when transgressors believed that victims knew what shock level they were setting, suggesting that transmission of this information was a reason for punishing the self. Since there was no difference in shock intensity between the communication and non-communication groups, it must have been the communication of the intention to self-punish that resulted in the alleviation of guilt. This finding supports the idea that guilt-elicited self-punishment is a means of guilt alleviation through communication with the victim, rather than a means of guilt alleviation through pain and suffering. Again, this provides confirmation of the social role of guilt in communicating the intention to restore the interpersonal relationship with the victim (Baumeister et al., 1994).

Interactions

Apology vs. self-punishment. I conducted Study 5 to investigate whether self-punishment is elicited by guilt due to the absence of other, potentially less harmful options (Nelissen & Zeelenberg, 2009), and to find out whether apology and self-punishment have a combined alleviating effect on guilt due to their similar functional characteristics. Findings showed that when people apologised beforehand, they set a lower shock intensity compared to when they did not apologise. These findings imply that apology has a substitutive role to self-punishment in guilt expression. However, guilt was not alleviated by either of the manipulated factors or correlated with shock intensity. Moreover, there was no effect of the victim's awareness of the self-punishment intention. I interpreted this as an effect of the absence of any direct contact between the transgressor and the victim (unlike in the previous laboratory experiments). Another relevant issue was the absence of a manipulation check of the social context.

Practical repair vs. apology vs. self-punishment. I conducted Study 6 to assess whether the interaction between the *interpersonal* expressions of guilt (self-punishment and

apology) is independent of what is considered an *intrapersonal* expression of guilt (practical repair). Apart from being presented with the necessary additional manipulations, participants in this study were required to answer the social context question correctly to avoid exclusion from the study. Findings showed that participants' guilt diminished when their intention to self-punish was communicated to the victim, and either the material damage was repaired, or they apologised. These findings indicate an interaction between all three manipulated expressions; however, the substitutive interaction expected from apology was observed with practical repair rather than with social context. I interpreted this as reflecting the requirement for honest signaling of guilt (communication of the intention to self-punish) to be supported by a more understandable expression of guilt (apologising to the victim or repairing the material damage).

Expected Forgiveness

Studies 4 – 6 also included measures of expected forgiveness. Studies 5 and 6 reported positive results, whereas in Study 4 expected forgiveness remained unaffected by the manipulated factors. In Study 5, participants who apologised to the victim had lower expectations to be forgiven than those who did not apologise. In Study 6, people who repaired the material damage themselves expected to be forgiven more than those whose reparation was executed by someone else or not at all. Overall, these findings showed inconsistencies across studies; however, they also indicated a consistent lack of correlation with reported guilt. This might imply that the two measures assess different things. One suggestion for further research on this topic would be to manipulate the victim's reaction.

Action Tendencies

Across studies, action tendencies were not consistently affected by the manipulated factors. The underlying reasons might have been that the object of transgression was either of imaginative nature (bicycle in online studies) or of low material value (chocolate bar/lottery

tickets). In Studies 1-3, action tendencies positively correlated with ratings on first and second measure of guilt, which supports Frijda's (1986) theory of action tendencies.

Appraisal Components

Results concerning appraisal components and the core-relational theme of self-blame (Smith & Lazarus, 1993) were also inconsistent across studies. The self-blame scores collected in Studies 1 and 2 did not respond to manipulations in the same pattern as guilt measures. In order to investigate appraisal components more closely, Studies 3-6 measured separate appraisal dimensions instead. Again, effects on appraisal failed to correspond to effects on guilt, and showed some differences across studies. None of the appraisal components correlated consistently with reported guilt in any of the studies, supporting previously reported dissociations between appraisals and emotions (e.g., Parkinson, 1999).

Contributions

The primary goal of this thesis was to investigate the interpersonal and intrapersonal processes that are associated with guilt. The approach to this work was guided by the theory of guilt as a social emotion (Baumeister et al., 1994) which posits that guilt motivates relationship-enhancing patterns of behaviour, empowers the weak and redistributes emotional distress within the dyad. Studies 2 and 3 in this thesis, to my knowledge, present the first evidence in the literature that guilt has an interpersonal role independent of the practical inconveniences. Study 4, to the best of my knowledge, presents first evidence of the guilt alleviating role of intended self-punishment. Finally, Studies 5 and 6 present a first attempt at combining three factors in attempt to observe their guilt alleviating interaction. Below I outline in more detail theoretical and methodological contributions of findings form this thesis' studies.

Guilt as a Social Emotion

The primary goal of this thesis was to investigate w*hether guilt is a social emotion* with motives rooted in repair of interpersonal relationships. This perspective was inspired by the Baumeister and colleagues' (1994) interpersonal approach, which posits that the main role of guilt is to serve multiple relationship-enhancing functions. To the best of my knowledge, my research (Studies 1 – 3) as reported in this thesis presents the first evidence that apology alleviates guilt independently of practical repair. This supports the social perspective on guilt and emphasises the importance of distinguishing different possible reactions to this emotion. Despite often being seen as eliciting a selfish intent to alleviate negative affect (De Hooge, 2012), guilt has been shown to be contingent on being communicated to the victim.

Studies 1-3 replicated De Hooge's (2012) previous finding that practical repair alleviates guilt. More specifically, repair of material damage significantly alleviates guilt regardless of whether it is implemented by the transgressor or someone else. These findings imply that an important function of guilt is to restore the victim's material state to its pre-transgression level. However, as the findings further indicate, this only tells part of the story. In reality, situations in which the transgressor only repairs material damage are relatively uncommon. More often practical repair is complemented by an offer of apology. Choosing not to apologise but only to repair the material damage would demonstrate that the transgressor is not interested in repairing the interpersonal relationship for whatever reason.

Five studies reported in this thesis focus on relationship repair that is achieved by apologising. Results of Study 1 failed to support the predicted guilt-alleviating effects of this factor, probably because participants imagined that transgressors had apologised to the victim even when not informed that they had done so. However, the improved apology manipulations and manipulation checks in subsequent studies allowed me to demonstrate that

apology achieved a form of relationship repair that reduced guilt independent of any effect of practical repair (Studies 2 and 3). This finding challenges the view that guilt is not centrally focused on restoring interpersonal relationships between the transgressor and the victim and is therefore less interpersonal than previous accounts implied (De Hooge, 2012). Moreover, it shows that apology alleviates guilt even in situations when the material damage remains unrepaired. This further supports the position that interpersonal factors are central to the causation of guilt (Baumeister et al., 1994). In fact, I argue that Study 1's finding that participants imagined apologising without being instructed to, already implies that apology is a normative response following transgressions (Baumeister et al., 1995; Howell et al., 2012).

This thesis also sheds light on the nature of self-punishment. In Study 4, I investigated whether self-punishment might be a method of communicating guilt to the victim, rather than an attempt to alleviate guilt through pain and suffering (cf. Glucklich, 2003). Guilt has been previously shown to elicit self-punishment (Nelissen & Zeelenberg, 2009) especially in the presence of the victim (Nelissen, 2012). However, no previous studies have shown that informing the victim of the intention to self-punish might alleviate guilt more than when the victim is unaware of this intention. Study 4 showed that an intention to self-punish communicated to the victim reduced guilt more than an intention to self-punish communicated to someone else. This complements previous findings (Nelissen, 2012) and implies that the main role of self-punishment for the transgressor is to communicate their guilt to the victim rather than to alleviate guilt by simply experiencing personal suffering (cf. Glucklich, 2003). However, since this study manipulated the intention to self-punish rather than genuine self-punishment, no direct conclusion can be made about the effects of actual, pain-inflicting self-punishment on guilt.

My studies found consistent dissociations between appraisals and specific emotions (Parkinson, 1999). Such dissociations seem incompatible with those appraisal theories that

suggest that the core relational theme of self-blame represents a necessary and sufficient condition for guilt. Such theories cannot account for the differences in guilt across the conditions in these studies because there were no corresponding differences in appraisal or core relational theme measures. One possible explanation is that the guilt reported here was driven by perceptions of blame from the victim rather than self-blame (Parkinson & Illingworth, 2009). Alternatively, the dissociations may have resulted from deficiencies in self-report measures of guilt and self-blame used in this and previous research (e.g., Smith & Lazarus, 1993). Future research should consider dimensions based on characteristics of the interpersonal relationship and expectations of the outcome. For instance, I speculate that some of the participant pairs showed more consideration for each other compared to others and had felt guiltier about their own performance.

Self-Punishment as Communication of Guilt.

Previous research has shown that people who feel guilty tend to punish themselves in the absence of alternative means of communicating their guilt (Nelissen & Zeelenberg, 2012). Studies 4-6 in this thesis measured the extent to which people opted to punish themselves after being made to feel guilty. In Study 4, the shock intensity selected for self-punishment remained unaffected by the victim's awareness of it. However, participants who had not apologised chose higher shock levels for self-punishment in Study 5. In Study 6, a similar effect only applied in the condition where the victim was not aware of the transgressor's level of self-punishment. Despite the inconsistency across studies, these findings at least demonstrate self-punishment's potential contingency on apology (Study 5) and on the victim's awareness (Study 6). They also confirm findings reported in previous study (Nelissen, 2012) and support the prediction that self-punishment is employed by guilty transgressors in absence of other options (Nelissen & Zeelenberg, 2012).

Interaction Effects

The goal of Studies 5 and 6 was to investigate the interactive effects on guilt of the three kinds of action tendency and communication investigated in the earlier studies (apology, practical repair, and self-punishment). Study 5 found no evidence that the effects of apology and communicated self-punishment interacted in alleviating guilt. However, the physical absence of the victim may have interfered with guilt manipulation.

Study 6 added a manipulation of practical repair and showed that guilt was alleviated when the practical repair and apology manipulation preceded the communicated intention to self-punish. In this experimental condition, guilt was alleviated only if it was accompanied by one of its two more direct expressions – apologising or repairing the material damage. This indicates that in situations when an honest signal such as self-punishment (producing consequences such as pain; Zhu et al., 2017) is expressed, for guilt to be alleviated, a more transparent (unambiguous) means of guilt expression (practical repair or apology) needs to be.

Methodological Contributions

This thesis adapted and developed a variety of methodologies which may be useful to future researchers. All of my studies except for Study 4 manipulated apology as a communication of guilt aimed at restoring interpersonal relationships. Due to the scarcity of studies which have manipulated apology I devised two novel methods, one for use in online vignettes and one for laboratory experiments. In the vignettes, the participants read a scenario adapted from De Hooge's (2012) earlier study, and modified to allow the inclusion of the new apology manipulation. Participants read that they either apologised to the victim, or not. The drawback of the original version of this manipulation used in Study 1 was that most participants in the intended no-apology condition in fact imagined apologising when meeting the victim, although this was not indicated in the scenario. This problem was corrected in

Study 2 by changing the wording of the no-apology vignette and including a more stringent check of the apology manipulation. The results of Study 1 suggest that an apology is such a common response to guilt that people assume that one has been delivered even when not informed of that fact, requiring researchers to include more careful controls.

For the experimental studies, I devised an apology manipulation that involved asking participants to write a message to the victim and subsequently receiving feedback on whether their message was delivered (apology condition) or not (no-apology condition). Although this gives participants a chance to offer their apologies, some participants also made use of the opportunity to express their intention to repair the material damage afterwards, possibly undermining the effects of manipulated practical repair.

Turning to practical repair manipulations, Studies 1 and 2 borrowed the method previously used in vignettes devised by De Hooge (2012), whereas Studies 3, 5 and 6 implemented my own modifications to the procedures used in earlier research. Nelissen and Zeelenberg's (2012) previous manipulation used lottery tickets that allowed a notional reward and compensation. By contrast, my laboratory studies manipulated guilt and practical repair by withholding or providing chocolate bars. More specifically, pre-programmed results of a guilt-eliciting task informed participants that they had not performed well enough to win a chocolate bar for the other person, despite that other person having succeeded in winning a chocolate bar for them. Subsequently, either the participant or the experimenter allocated an additional chocolate bar to the other person, or else no additional chocolate bar was provided (see Chapter 2 for full details). This new manipulation probably increased the effectiveness of the guilt eliciting task by making it more understandable and self-relevant for participants.

Studies 4-6 measured the extent of self-punishment (and externally delivered punishment in Study 4) using methods adapted from a previous study (Nelissen, 2012). One important difference was that the apparatus presented as a shock machine in the Nelissen's

study was of newer production date, with a digital display. In my study, the supposed shock machine was a much older device whose actual function was to measure electrical resistance. Either the participant or the experimenter had to set the level of electric shocks using a rotating dial which controlled the pointer indicating levels from 0 to 30 (see Figure 3.1). After the study, several participants reported that they had been scared of the "shock inducing machine", because they considered it to be unsafe. Hence, for Studies 5 and 6, I decided to have participants determine the level of electric shocks by entering values into the computer instead of actually seeing the physical shock generator. This was a successful modification, resulting in a significant effect of apology (Study 5) and of social context (Study 6).

Limitations

Action Tendencies

If guilt motivates relationship repair, then effects on guilt should be accompanied by corresponding effects on repair-related action tendencies (Tangney et al., 2007). However, this prediction was not consistently confirmed across studies, which often found discrepant effects on guilt and its supposedly associated action tendencies, regardless of whether these concerned practical or relationship repair. This might indicate that the reduced guilt following an attempt to repair the damage caused by a transgression does not always lead to a reduced desire to repair the material damage or to apologise to the victim. One reason why repair action tendencies might have persisted is that the object of the transgression in Studies 3, 5 and 6 was a single thing that victims failed to receive, and participants were asked to indicate their desire to replace this single thing. In one of the earlier studies (De Hooge, 2012), by contrast, action tendencies were assessed by asking how much of a given number of monetary units participants would spend to buy the victim a gift. This latter way of measuring action tendencies might provide a more realistic and imaginable means of repair than

assessing the extent to which participants would like to give a single chocolate bar to the victim.

Novel Manipulations and Measurements

The first limitation concerns the application of novel manipulations and measurements. This led to problems of implementation that meant that the initial versions of my operationalizations of practical repair, apology and intensity of self-punishment all needed to be modified in subsequent studies. The resulting inconsistencies in procedures across studies may explain some of the unexpected differences in findings and may also cast doubt on the reliability of apparently consistent findings.

These issues applied to a number of the studies reported in this thesis. Study 1's apology manipulation had to undergo changes in the script to clarify that participants should not imagine apologising in the no-apology condition of the scenario before implementation of the revised version in Study 2. The guilt-eliciting task underwent various modifications from Study 3 to Study 4 to increase the level of elicited guilt[9]. Measurement of self-punishment also had to be changed from analogue in Study 4 to digital in Study 5 to reassure participants that the electric shock machine was safe. Finally, instead of testing pairs of participants simultaneously as I had done in Study 4, I made a counterproductive modification by running them individually in Study 5. The resulting lack of direct contact with victims may have undermined the effectiveness of the manipulations in alleviating guilt. Nevertheless, this was a necessary step due to the scarcity of available participants.

Usage of Vignettes

The second limitation concerns the fact that half of my studies were conducted using online vignette studies rather than directly involving situations (Study 1, 2 and 6). While Studies 1 and 2 used vignettes that described hypothetical situations outside the laboratory,

[9] Study 4 was conducted before Study 3.

Study 6 described the experience participants would have had if they had participated in one of my experiments. A general issue with vignette studies is that participants may report how they would have acted if they were in the described situation rather than how they actually act when responding to it. In particular, my participants may have imagined how it might feel to experience guilt in a situation rather than actually experiencing guilt in response to imagining the situation. However, the results derived from vignette methods do seem to replicate in more directly involving situations (Clore & Robinson, 2001), thus increasing confidence in their validity. Indeed, similar findings were obtained when presenting participants with a vignette (Study 2) and when exposing them to a laboratory manipulation (Study 3) in the research reported in the current thesis. At minimum, then, vignettes can serve as a good starting point for more ecologically valid research (Parkinson & Manstead, 1993).

Future Directions

Based on the discussion of the contributions made by this thesis above, certain suggestions that might help future research in this field became apparent and I will share them below.

In this thesis I explored the effects that apology, practical repair and intention to communicate self-punishment have on guilt. In a real-life situation, the transgressor's usual expectation would be to receive some response from the victim following the delivery of any of these repair-oriented actions. In order to yield more ecologically valid findings, future studies should include additional manipulations of responses from victims. For instance, it would be interesting to find out to what extent the victim's positive response (e.g., forgiveness) would further alleviate guilt and whether a negative response would restore guilt to its initial level.

All studies in this thesis were experimental, hence demand characteristics and experimenter bias might have influenced the reported results. Future researchers should

consider employing methods similar to the diary method where participants could report their emotions in real-time, immediately after they have transgressed. Furthermore, research would benefit from naturalistic observations of real-time apology encounters. For instance, restorative justice procedures in legal cases, such as mediations, could provide more information on whether apologising or communication of (intended) suffering alleviates guilt, and furthermore, to what extent it is subject to the victim's response. Another future research direction pertains to assessing further difference between the effects that apologising, self-punishing and repairing practical damage have on the victim. Moreover, it would be interesting to find out to what extent perception of the victim's requirement for restorative or retributive justice (Wenzel, Okimoto, Feather, & Platow, 2008) affects transgressors' decisions about how to express their guilt. One possibility is that transgressors would apologise in order to attain restorative justice but self-punish in order to rebalance the scales by making their own situation worse and without benefiting the victim's situation. Finally, future research might also consider testing other interpersonal effects which were not tested in current studies. For instance, it would be interesting to assess whether communicated self-punishment would be as successful as apology and practical repair in raising satisfaction with ingroup members (Zaiser & Giner-Sorolla, 2013). With the internet rapidly becoming the primary arena of human interaction, these and similar questions could be researched using social media.

Turning now to methodological improvements, I will outline suggestions based on my experience of using novel means to manipulate independent variables in studies reported in this thesis. Novel manipulations were refined and improved as the research progressed but may still need further modifications. Any future studies on the interpersonal and intrapersonal effects of guilt would benefit from more controlled manipulations of apology, practical repair and social context. For instance, when participants are provided with an opportunity to

apologise as part of an experimental manipulation, it is important to separate the effects of relationship repair from those of practical repair. This means that the content or form of their provided apologies should be restricted to avoid any mention of practical repair. If this is not done, then any separate practical repair manipulation is likely to be undermined. A solution might be to have participants choose one from a range of already prepared answers, or to construct their own message using a specified set of possible words or phrases.

In Study 4, I manipulated the social context by having a confederate either present or absent at the time when the participant set the level of shocks. This method proved to be too resource-demanding as it required the confederate to sit through the first part of the experiment, before this manipulation. Changing this to informing the participant using a message presented on the computer screen whether or not the level of shocks would be shared with the victim (Study 5) eradicated the need for the confederate but may have increased demand characteristics and reduced the salience of the social context. Any future manipulation of this factor should probably include a physically present confederate rather than a simple explanatory message. Furthermore, unlike in the earlier vignette studies, the third party in Studies 5 and 6 was not a stranger but rather the experimenter whose virtual presence took a similar form to the victim's in the relevant social context condition. Any future studies would benefit from having someone unrelated to the actors of the experiment repair the material damage in the third-party repair condition, thus reducing the likelihood of the two conditions interfering with each other. I concluded above that the lack of direct contact with the victim interfered with the manipulation of guilt in Study 5. Hence, my final suggestion would be to manipulate guilt by having another person physically present either as another participant or as a confederate (similar to Studies 3 and 4).

Summary and Conclusions

This thesis focused on the interpersonal effects of guilt. My findings are consistent with the theory asserting that guilt performs the function of interpersonal relationship repair by encouraging apology and self-punishment. Moreover, I found that, depending on the situation, implementation of relationship repair has effects on guilt that are independent of those of practical repair. I used a modified experimental paradigm with novel manipulations and measures, in both online and laboratory settings. I have presented evidence for the communicative purpose of self-punishment and its susceptibility to prior effects of apology, suggesting that the two kinds of communication can be seen as alternative relationship-repair strategies. Finally, I demonstrated that the alleviative effect of the communicated intention to self-punish on guilt interacts separately with the effects of apology and of repair of material damage. This thesis thus advances the body of knowledge on the emotion of guilt empirically, theoretically and methodologically, and offers novel propositions for future research.

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APPENDICES

Appendix A: Vignette Used in Study 1

Guilt Manipulation

Please read the scenario below carefully and try to imagine yourself in the described situation. It is really important to try to visualize the situation as vividly as you can, and exactly as it is described. Please bear in mind that you will be asked questions regarding this description later.

"Imagine you are in a hurry because you want to get a special offer at a shop just before closing time. You do not have a means of transportation but you know that your friend Robert has a bicycle. This bicycle is very special to him because it is the last present given to him by his grandmother before she died. Nevertheless, he lets you use the bicycle. You cycle to the shop and get the special offer. When you leave the shop you find out that the bicycle has been stolen; you forgot to lock it. "

Apology and Practical Repair Manipulation

Please read the conclusion of the story and try to imagine yourself in the described situation. It is really important to try to visualize the situation as vividly as you can, and exactly as it is described. Please bear in mind that you will be asked questions regarding this description later.

Self-Repair Apology. "After you spend a few hours searching for his bicycle, you finally manage to find it and fortunately it has not been damaged. You immediately take the bicycle back to Robert and sincerely apologise to him for being irresponsible for not locking the bicycle."

Self-Repair No-Apology. “After you spend a few hours searching for his bicycle, you finally manage to find it and fortunately it has not been damaged. You immediately take the bicycle back to Robert.“

No-Repair Apology. “After you spend a few hours searching for his bicycle, you go to see Robert and tell him that you did not find it. You sincerely apologise to Robert for being irresponsible for not locking the bicycle.”

No-Repair No-Apology. “After you spend a few hours searching for his bicycle, you go to see Robert and tell him that you did not find it.”

Third-Party Repair Apology. “After you spend a few hours searching for his bicycle, you go to see Robert and tell him that you did not find it. He tells you that a complete stranger just came and brought him his bicycle back, and fortunately it has not been damaged. Apparently, this person works in a bicycle shed, and during the regular bicycle serial number check, he found Robert’s address. You sincerely apologise to Robert for being irresponsible for not locking the bicycle.”

Third-Party Repair No-Apology. “After you spend a few hours searching for his bicycle, you go to see Robert and tell him that you did not find it. He tells you that a complete stranger just came and brought him his bicycle back, and fortunately it has not been damaged. Apparently, this person works in a bicycle shed, and during the regular bicycle serial number check, he found Robert’s address.”

Appendix B: Vignette Used in Study 2

Study 2 vignette scenario was in its entirety copied from Study 1. Below are listed the modified Apology and Practical Repair manipulations.

Apology and Practical Repair Manipulation

Self-Repair Apology. "After spending a few hours searching for Robert's bicycle, you finally manage to find it and fortunately it has not been damaged. You immediately take the bicycle back to him. Robert has to rush off to an urgent appointment but you do get to apologise to him before he leaves."

Self-Repair No-Apology. "After spending a few hours searching for Robert's bicycle, you finally manage to find it and fortunately it has not been damaged. You immediately take the bicycle back to him. Robert has to rush off to an urgent appointment and you do not get to apologise to him before he leaves."

No-Repair Apology. "After spending a few hours searching for Robert's bicycle, you go to see him and tell him that you did not find it. Robert has to rush off to an urgent appointment but you do get to apologise to him before he leaves."

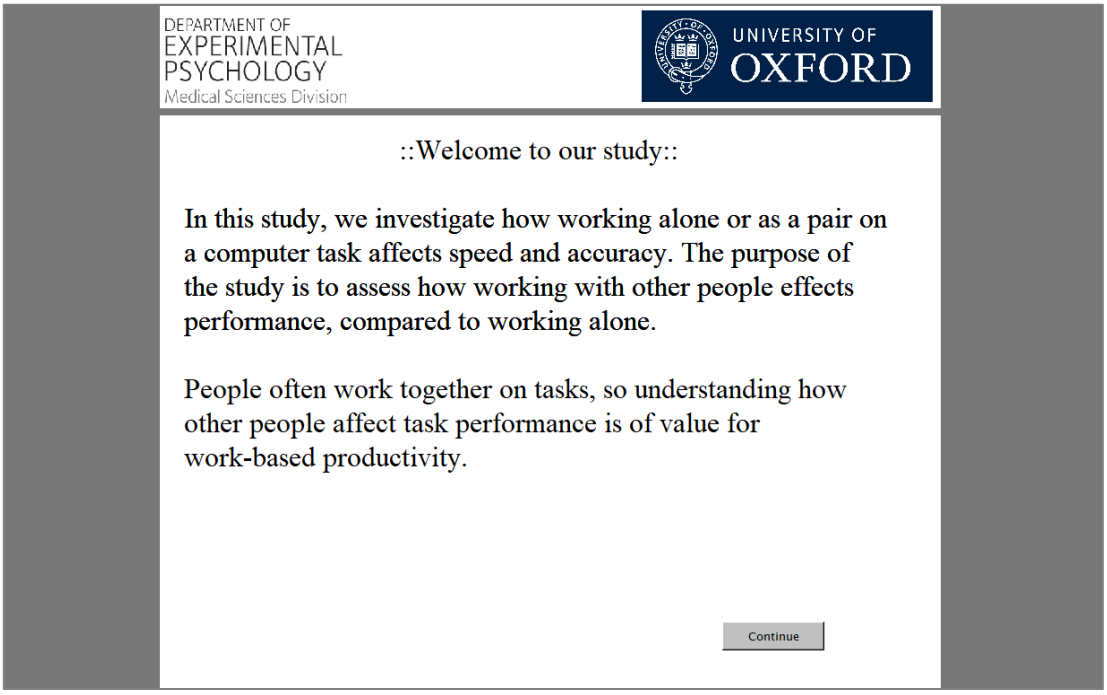
No-Repair No-Apology. "After spending a few hours searching for Robert's bicycle, you go to see him and tell him that you did not find it. Robert has to rush off to an urgent appointment and you do not get to apologise to him before he leaves."

Third-Party Repair Apology. "After spending a few hours searching for Robert's bicycle, you go to see him and tell him that you did not find it. Robert tells you that a complete stranger just came and brought him his bicycle back, and fortunately it has not been damaged. Apparently, this person works in a bicycle shed, and during the regular bicycle serial number check, he found Robert's address. Robert has to rush off to an urgent appointment but you do get to apologise to him before he leaves."

Third-Party Repair No-Apology. “After spending a few hours searching for Robert’s bicycle, you go to see him and tell him that you did not find it. Robert tells you that a complete stranger just came and brought him his bicycle back, and fortunately it has not been damaged. Apparently, this person works in a bicycle shed, and during the regular bicycle serial number check, he found Robert’s address. Robert has to rush off to an urgent appointment and you do not get to apologise to him before he leaves.”

Appendix C: Guilt inducing task used in Studies 3 to 6

Below are screen shots of translated and modified guilt inducing task (De Hooge et al., 2011; Nelissen, 2012). This task was used in Studies 3, 5 and 6. A version of this task modified for mentioning lottery tickets as a prize instead of the chocolate bar was used in Study 4.



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The computers from all cubicles in this lab are connected into a network. This means that responses of one participant can be displayed on another participant's computer screen.

If the task does not immediately move to the next section, most likely the other participant did not complete the task. We ask you to be patient in these situations.

Continue

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Each participant will be identified using a letter selected at random by the computer.

Throughout the tasks you will be: **Person K**

Continue

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The first task is a speeded response task called a letter task. Both participants will play this task. In this task you and the other participant will be playing to earn points.

If you gain 60 or more points you will win chocolate for the other participant.

The other participant will win chocolate for you if they earn 60 or more points.

Continue

Welcome to the letter task

In the task you are about to complete with another person, you will see letters presented in **red** or **green**.

You will be assigned a colour and should respond as quickly and accurately as possible to any letter presented in that colour.

Continue

You are **Person K** and you are assigned to **red** colour. This means that you are supposed to press the letters that appear in colour red as quickly and accuratelly as possible. **Person E** is assigned to **green** colour and he/she will respond to letters of this colour.



Continue

The computer will now set up the game and check both participants are connected.

This may take a few moments, we kindly ask for your patience.

Person K Checking connection... **Person E**

You are both connected.

Person K Person E

Continue

In this task, the letters may be shown only in one colour or may switch from **green** to **red**, or vice versa.

You need to respond as quickly as possible by pressing the key that corresponds to the letter shown on the screen. To earn a point you need to press the correct key while the letter is displayed in the colour you were assigned, before it disappears or changes colour.

You will now see an example.

Continue

D

In this example the letter ‘D’ appeared on the screen. It appeared in **red** and then switched to **green**.

While the letter was **red**, the person assigned to **red** should respond by pressing the ‘D’ key on the keyboard as quickly as possible. When the letter switched to **green**, the person assigned **green** should press the ‘D’ key on the keyboard as quickly as possible.

Continue

Participants should only respond to letters when they are displayed in their assigned colour.

If you respond after the letter has disappeared or changed colour you will not earn a point. Each participant must respond while the letter is in their assigned colour to earn a point.

Press continue to see the next example.

Continue

Summary:

You will now complete the speed and accuracy task.

Your goal is to earn more than 60 points in order to win a chocolate bar for the other participant.

Click continue when you are ready to start the speed and accuracy task. There may be a short delay as it will not start until both participants are ready.

Continue

Please indicate on a scale (where 0 indicates 'not at all, and 10 indicates 'extremely') to what extent you would like to eat the chocolate bar right now, and press 'enter':

The other participant indicated '9' as a the extent to which he/she would like to eat their chocolate bar now.

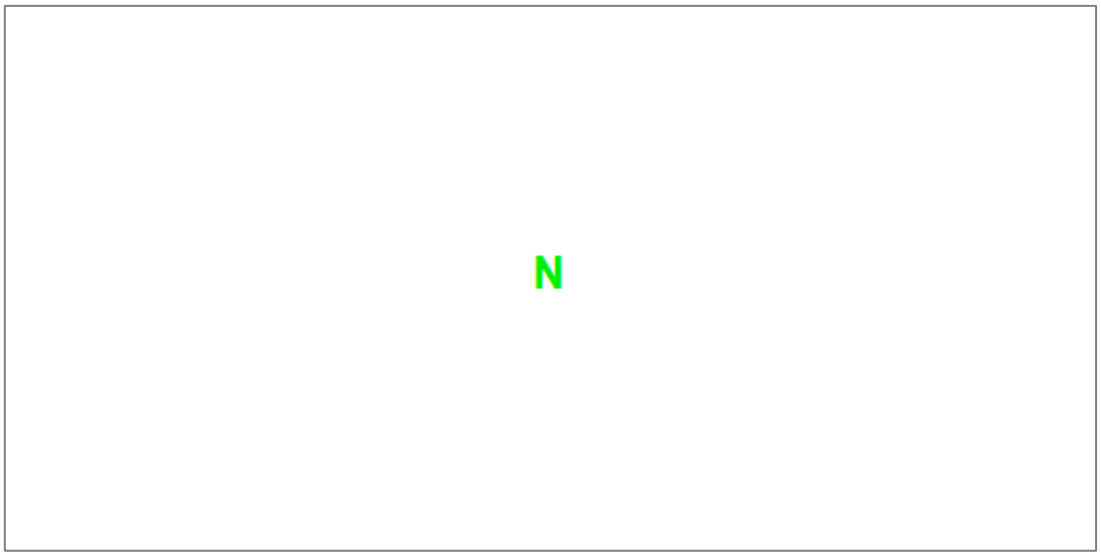
Continue

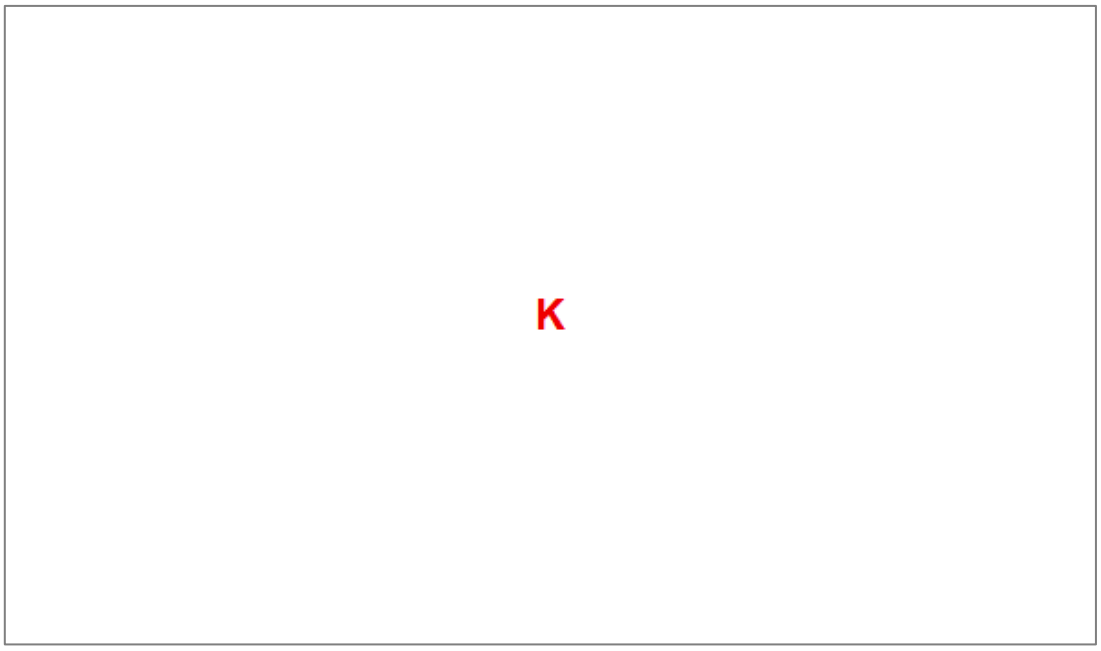
We will ask you now to indicate how many of maximum 80 points you think the other participant, and you will earn in the first round of the task.

Previous studies have shown that more than 75% of people reach over the 60 point threshold. Please note that your predictions will not be shared with the other participant, and press 'enter':

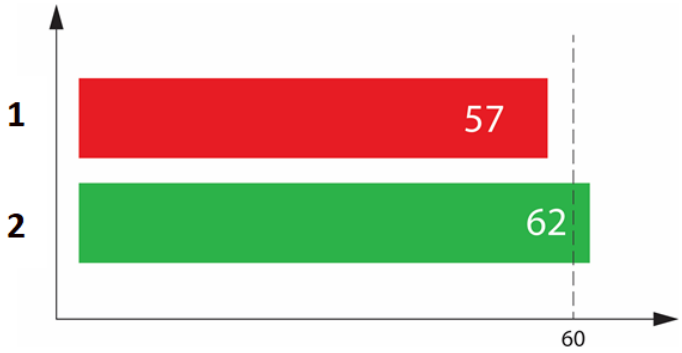
Letter task starts in 15 seconds.




N


K

RESULTS



Person **1** earned 57 points, Person **2** does not win a chocolate bar.

Person **2** earned 62 points, Person **1** wins a chocolate bar.

Continue

Thank you for completing this task,

these results are now saved in our database.

Appendix D: Manipulations study 3

Practical repair manipulation

Self-repair. You now have the chance to allow Person E to keep their selected chocolate bar even though performance in the task did not reach the required standard. Press 'Yes' button if you would like to make this happen. Press 'No' if not.

Third-party repair. Since one of the previous participants did not take their chocolate bar, we can allow Person E to keep their selected chocolate bar even though performance in the task did not reach the required standard.

No repair. *No message*

Apology Manipulation

If you were given a chance to send a message to Person E describing how you feel about the outcome, what would you say? Write your message below using.

Participants were given an empty space of 140 characters to write their message.

Apology. Your message has been saved and sent to the Person E.

No-apology. Your message has been saved and will be kept confidential.

Appendix E: Manipulations Study 4

Context Manipulation

Screen 1: The computer will now randomly determine which of the two players will proceed to the second round. Please wait...

Screen 2: Player A will proceed to the second part of the experiment.

Social condition. Screen 3a: You will now play another round of the same task. Only this time you will not play together with the other participant, but alone.
You will receive an electric shock each time when you do not respond correctly or in time.

Please note that you should avoid any verbal and non-verbal communication with the other participant. *Social condition manipulation ends.*

Non-social condition. Screen 3b: You will now play another round of the same task. Only this time you will not play together with the other participant, but you will be playing alone. You will receive an electric shock each time when you do not respond correctly or in time. *Non-social condition manipulation ends.*

Screen 4: Now please knock twice on your door to call the experimenter to set up the shock machine.

Screen 5: You should now have an electrode attached to your left wrist. The needle on the shock machine panel should be pointing to 0 on the upper scale.

Shock-Control Manipulation

Self-Selected. Screen 6a: We will now ask you to determine the level of shocks you will receive each time you make mistake in the next task. Please note that you will feel the shocks once the task starts. Don't worry; shocks will not be harmful, only discomforting.

Yoked. Screen 6b: The experimenter will now determine the level of shocks you will receive each time you make mistake in the next task. Please note that you will feel the shocks once the task starts. Don't worry; shocks will not be harmful, only discomforting. The strength of the shocks range from 1 (*weakest*) to 30 (*strongest*). The level of shocks the experimenter determines now will remain the same throughout the second part of the experiment.

Self-Selected. Screen 7a: Please now determine the level of shocks. Turn the knob 'FINE' on the shock inducing machine clockwise to increase the level of electric shocks, or counter-clockwise to decrease the level of shocks. The strength can be set on

the scale from 1 (*weakest*) to 30 (*strongest*). The level of shocks you determine now will remain the same throughout the whole experiment.

Yoked. Screen 7b: For the experimenter- Please enter the strength level of shocks (from 1 to 30):

Self-Selected. Screen 8a: Please make sure that you have adjusted the level of shocks on the shock machine! Now please enter the strength level of shocks you have decided to receive (from 1 to 30):

Appendix F: Manipulations Study 5

Apology Manipulation

Screen 1: Imagine that you were able to send a message to Person E describing how you feel about the outcome, what would you say? Write your message below using a maximum of 140 characters.

Apology condition. Screen 2a: Your message has been recorded and sent to Person E.

No-apology condition. Screen 2b: Your message has been saved and will be kept confidential.

Screen 3: The computer will now randomly determine which participant will play the second round of the task and which participant will be asked to predict their partner's performance in this task. This might take a while. Please press 'progress' button when it appears.

Screen 4: Person 'K' will complete the second round of the task. Person 'E' will predict Person K's performance.

Screen 5: We will now ask you to set the level of shocks you will receive each time you make a mistake in the next task. Please note that you will only receive the shocks once the task has started. Shocks can cause anything from mild to moderate levels of pain, but they are not harmful.

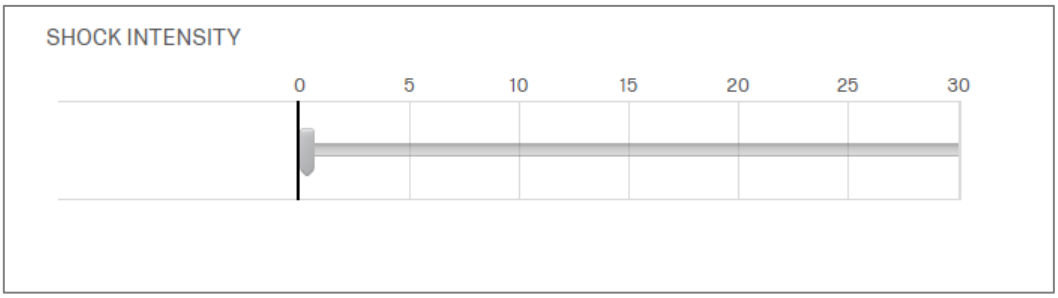
Context Manipulation

Social condition. Screen 6a: Please now select the level of shocks you will be receiving. Shock intensity can be set on the scale from 1 (*weakest*) to 30 (*strongest*). Please note that the other participant will be informed about the intensity of electric

shocks in order to increase the accuracy of his/her prediction. The level of shocks will remain the same throughout the whole experiment.

Non-social condition. Screen 6b: Please now select the level of shocks you will be receiving Shock intensity can be set on the scale from 1 (*weakest*) to 30 (*strongest*). Please note that the other participant will NOT be informed about the intensity of electric shocks. The level of shocks will remain the same throughout the whole experiment.

Screen 7:



Social condition. Screen 8a: The other participant has been informed about the shock level you have set. Please wait for the other person to enter predicted result.

Non-social condition. Screen 8b: The shock level you have set has been recorded and will be kept confidential. Please wait for the other person to enter predicted result.

Appendix G: Vignette Used in Study 6

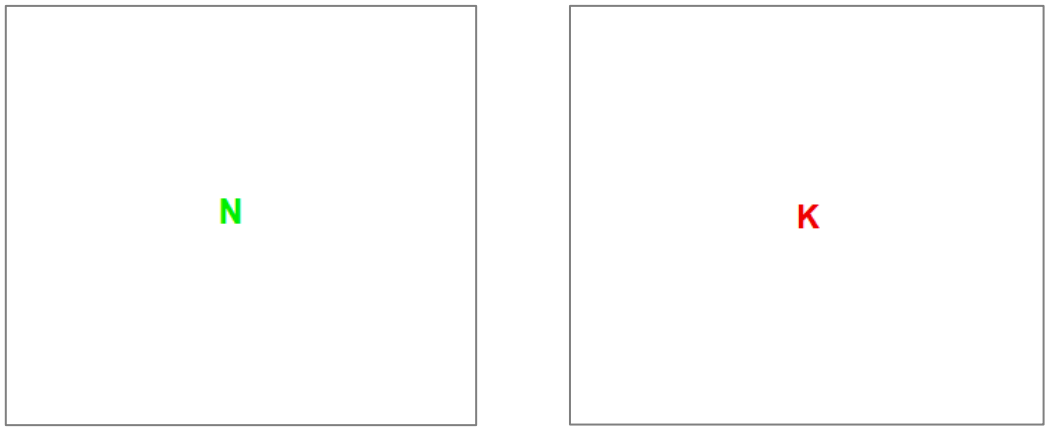
Page 1: This study is intended to clarify the results of an experiment that we recently completed, where participants came into our laboratory to perform a task that involved interacting with another participant. In order to understand how people responded to the various stages of the procedure, we need to collect information from a wider pool of participants. We are therefore asking you to imagine that you are actually taking part in the experiment in our laboratory. You should report your reactions to the procedures as if you were experiencing them directly rather than imagining them. Although the experiment involved interacting with another person and the prospect of receiving electric shocks, neither of these things will actually happen to you. However, you should try to put yourself in the position of genuinely experiencing these events. All described events and instructions are exactly as they occurred in the laboratory experiment.

Page 2: Imagine that you are paired up with another participant when you arrive at the laboratory. You are told that the experiment is about predicting performance. You are also told that the first task you will complete during the experiment allows you to win a chocolate bar, and that the second task may involve you or the other participant receiving mild electric shocks. The experimenter asks both you and the other participant to choose which of the available chocolate bars you would like to win if performance on the computer task reaches the required standard, and lets you pick it from a bowl. Next, you and the other participant are taken to separate cubicles and seated in front of computers which are interconnected for the purpose of the task you will complete together in round 1. You are told that one of you will be selected to complete the same computer task alone in round 2 and that the selected participant will

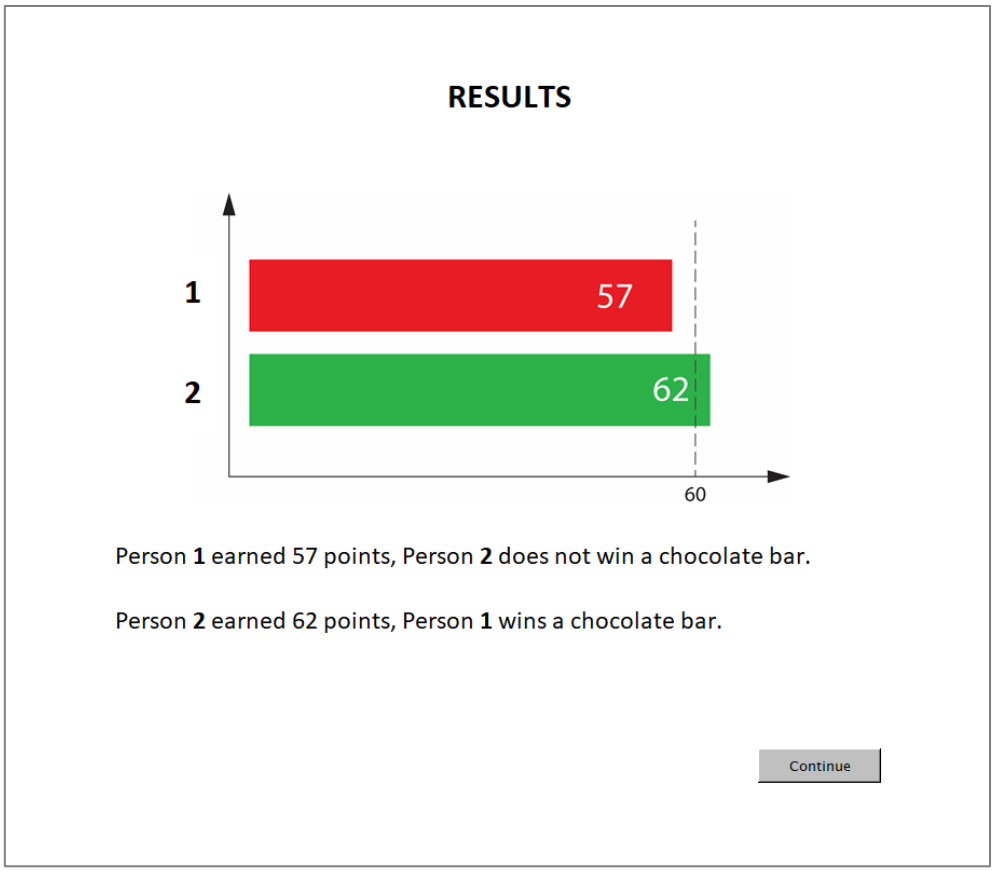
receive an electric shock every time they make a mistake in the task. The participant who is not selected for the round 2 task will be asked to predict the performance of the selected participant.

Page 3: Before starting the task, the computer randomly assigns you and the other participant a specific number. You are assigned the number 1 making you "Person 1" and the other participant is "Person 2". The computer also randomly assigns you and the other participant a specific colour. You (as Person 1) are assigned the colour RED, and theother participant (Person 2) is assigned the colour green.

Page 4: Below you will find a video clip that shows a shortened version of the task performed by you and Person 2 in the experiment. During the task, letters appear at the centre of the computer screen. Each participant has to press the appropriate key whenever a letter is shown in the colour they have been assigned. As Person 1, you need to press this key whenever a RED letter appears on the screen. As Person 2, the other participant has to press the appropriate key whenever a green letter appears. To earn points, both of you need to press the appropriate key quickly while the letter of the correct colour is still showing. Please click the 'play' button below and watch the video showing the task. Please pay close attention to how the task works as you will be asked questions about it later.



Page 5: After completing the computer task, you see the results presented in the video below.



Page 6: Please imagine that you have just completed the coloured letter task, and that you did not win the chocolate bar for Person 2, but Person 2 won a chocolate bar for you. Please try to keep this in mind while completing the rest of the experiment. Note that all instructions from now on are exactly as they appeared in the study and you should try to imagine that the events are directly affecting you.

Practical Repair Manipulation

Self-repair condition. Page 7a: You now have the chance to allow Person 2 to keep their selected chocolate bar even though performance in the task did not reach the required standard. Press 'Yes' button if you would like to make this happen. Press 'No' if not.

Third-party repair condition. Page 7b: As a previous participant did not take their chocolate, we will allow Person 2 to have their selected chocolate bar.

No-repair condition. Page 7c: No message

Practical repair manipulation ends.

Page 8: If you were able to send a message to Person 2 describing how you feel about the outcome, what would you say? Write your message below using a maximum of 140 characters.

Apology Manipulation

Apology condition. Page 9a: Your message has been recorded and sent to Person 2.

No-apology condition. Page 9b: Your message has been recorded and sent to Person 2. *Apology manipulation ends.*

Page 11: The computer will now randomly determine which participant will play the second round of the task and which participant will be asked to predict

their partner's performance in this task. This might take a while. Please press 'progress' button when it appears.

Page 12: Person 1 will complete the second round of the task. Person 2 will predict Person 1's performance.

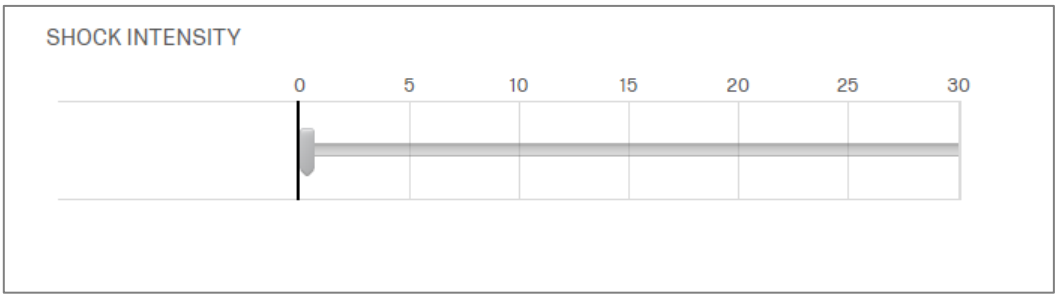
Page 13: We will now ask you to set the level of shocks you will receive each time you make a mistake in the next task. Please note that you will only receive the shocks once the task has started. Shocks can cause anything from mild to moderate levels of pain, but they are not harmful.

Context Manipulation

Social context condition. Page 14a: Please select the level of shocks you will be receiving. Shock intensity can be set on the scale from 1 (*weakest*) to 30 (*strongest*). Please note that the Person 2 will be informed about the intensity of electric shocks you have selected in order to increase the accuracy of his/her prediction of your performance. The level of shocks will remain the same throughout the whole experiment.

Non-social condition. Page 14b: Please select the level of shocks you will be receiving. Shock intensity can be set on the scale from 1 (*weakest*) to 30 (*strongest*). Please note that the Person 2 will NOT be informed about the intensity of electric shocks you have selected. The level of shocks will remain the same throughout the whole experiment.

Page 15:



Social context condition. Page 16a: Person 2 has been informed about the shock level you have set. Please wait for the other person to enter predicted result.

Non-social condition. Page 16b: The shock level you have set has been recorded and will be kept confidential. Please wait for the other person to enter predicted result.

Social context manipulation ends.