

Appendix A: AIBT task items

Ambiguous Bodily Threat Situation	Benign Word	Negative Word
Your dad jumps out of his chair and puts his hands to his face, making a loud noise. He is	surprised	hurt
You see a boy breathing heavily. His chest is quickly going up and down. He is	exercising	asthmatic
Your friend tells you that he visited his doctor this morning. He has received test results. The results say that he is	fine	unwell
Yesterday your bicycle was hit by a car. You will not be able to cycle for a while because the car broke your	bike	leg
Your friend takes a pill every morning at breakfast. He takes this every day. The pill is a	vitamin	medicine
It is 10am on a Monday and you are still in bed. You are at home because you have a	holiday	cold
You finally got your test results. You have been worried about them all week. The results are from your	school	doctor
Someone kicks a ball and it hits you in the face. In the mirror you see your face is covered in	mud	blood

Ambiguous Social Situation	Benign Word	Negative Word
Your school is looking for a new person to join their debating team. You ask for more details. After hearing these, you decide you would be	welcomed	rejected
You really like the new kid at school. At a birthday party the two of you talk for a long time. When you meet the next day at school, they smile at you and then leave the room quickly when you come in. You are sure that this is because they find you quite	attractive	irritating
Your maths teacher likes to give short quizzes at the beginning of each lesson. One day you and one of the cool kids are picked to do the quiz. The other kid does not take the quiz seriously and gets all his answers wrong whereas you do quite well. You are sure that your classmates think you are	smart	geeky
You receive a notification that one of your classmates has put a comment on your picture on Facebook. While opening the webpage you think that it will be something	nice	nasty
You raise your hand to give your views during a debate in the English lesson. When the teacher picks you, you think that the others will find your opinions	important	ridiculous
During a year group assembly your drama teacher asks you to make a quick announcement about the upcoming play. You try to make it interesting and some people begin to giggle. This is because your jokes are	funny	stupid
You are asked to be the DJ at the school's disco night. While playing music you see a few of your classmates. You can see that they think your choice of music is	awesome	silly
Your best friend invites you to go out with their new friends from the drama club. You hesitate at first but then agree to come along. At the end of the evening you think that the other people thought that you were	lovely	dull

Appendix B: Forced choice data

Pain catastrophizing and interpretation bias

To examine the association between pain catastrophizing and interpretations, a 2 (block) x 2 (context) ANCOVA was conducted with pain catastrophizing score entered as a covariate (Table 3 presents the *Ms* and *SDs* of this analysis. Means closer to 1 reflect more negative word choices. Means closer to 0 reflect more benign word choices). The multivariate test yielded significant effects for **pain catastrophizing**, $F(1, 113) = 11.07, p = .001$, partial $\eta^2 = .09$, and **block**, $F(1, 113) = 7.60, p < .01$, partial $\eta^2 = .06$. There was also a significant two-way interaction for **context x block**, $F(1, 113) = 5.55, p < .05$, partial $\eta^2 = .05$. Pain catastrophizing did not interact with context or block to form any two- or three-way interactions.

The main effect of block occurred because, across context, participants gave stronger ratings for how easily interpretations came to mind ($M = 0.49, SD = .19$) than their belief in interpretations ($M = 0.37, SD = .19$). Decomposing the context x block interaction revealed that participants gave significantly stronger ratings when considering whether interpretations came to mind compared with their belief in those interpretations for both the bodily threat items ($t(114) = -7.42, p < .001$) and social items ($t(114) = -4.10, p < .001$). However effect was larger for the bodily threat items (interpretation generation; $M = 0.51, SD = 0.25$; interpretation belief: $M = 0.35, SD = .21$) than the social items (interpretation generation; $M = 0.46, SD = 0.26$; interpretation belief: $M = 0.38, SD = .25$).

To further examine the main effect of **pain catastrophizing**, we conducted a Pearson correlation between pain catastrophizing and participants' word choice, collapsed across block and context. This analysis revealed that adolescents with higher levels of pain catastrophizing were significantly more likely to select negative interpretations than adolescents with low levels of pain catastrophizing ($r = .30, p = .001$).

Table S1. Means and SDs (in brackets) for the AIBT ratings data

Interpretation generation (Block 1)	
Bodily threat word choice	0.51 (0.20)
Social word choice	0.46 (0.26)
Interpretation belief (Block 2)	
Bodily threat word choice	0.35 (0.21)
Social word choice	0.38 (0.25)

Pain experiences and interpretation bias

To examine the association between recent pain experiences and interpretations, a 2 (block) x 2 (context) ANCOVA was conducted with pain experiences score entered as a covariate. The multivariate test yielded significant effects for **recent pain experiences**, $F(1, 113) = 12.18, p = .001$, partial $\eta^2 = .10$, and **block**, $F(1, 113) = 10.46, p < .01$, partial $\eta^2 = .09$. There was also a significant two-way interaction for **context x block**, $F(1, 113) = 4.77, p < .05$, partial $\eta^2 = .04$. Pain catastrophizing did not interact with context or block to form any two- or three-way interactions. As the main effects and interaction effects not including pain experiences were explored earlier, these were not explored again here.

To further examine the main effect of **recent pain experiences**, we conducted a Pearson correlation between recent pain experiences and participants' word choice, collapsed across block and context. This analysis revealed that adolescents who experienced more pain were significantly more likely to select negative interpretations than adolescents with low levels of pain catastrophizing ($r = .31, p = .001$).

Testing for mediator effects

Similarly to the ratings data, the analysis using the forced choice data reported above confirmed that a negative interpretation bias was associated with both higher pain catastrophizing and higher experiences of recent pain. Analysis was therefore performed to determine whether a negative interpretation bias mediated the association between pain catastrophizing and recent pain experiences. Following analyses for the ratings data, given that context (bodily threat/social) and block (interpretation generation/belief) did not interact with valence and pain catastrophizing or recent pain, we first performed the mediation analysis using the mean word choice score that was collapsed across context and block. However, given that we may expect a more specific role of bodily threat interpretations to act as a mediator between two pain-related variables, we also performed the mediation analysis separately for the bodily threat items and the social items.

First, when using the word choice score collapsed across context and block, there was a significant indirect effect of pain catastrophizing on recently experienced pain through interpretation bias, $b = 0.04$, BCa CI [0.008, 0.112]. This represents a small-to-medium effect, $\kappa^2 = .064$, 95% BCa CI [0.015, 0.161]. Next, when using the word choice score

for bodily threat items only (collapsed across block), there was again a significant indirect effect of pain catastrophizing on recently experienced pain through interpretation bias, $b = 0.03$, BCa CI [0.003, 0.096]. This represents a small-to-medium effect, $\kappa^2 = .053$, 95% BCa CI [0.068, 0.147]. Finally, when using the word choice score for social items only (collapsed across block), there was not a significant indirect effect, $b = 0.02$, BCa CI [-0.010, 0.081]. As with the ratings data, the analyses with the forced choice data indicates that, when considered separately, only negative interpretations of ambiguous information regarding pain and bodily threat mediated the association between pain catastrophizing and recent pain experiences. A negative social interpretation bias did not play a mediating role.

Appendix C: Validity of social items in the AIBT

Using the final AIBT task, we aimed to explore the validity of the social items by investigating whether interpretations of these items significantly correlated with social anxiety scores. Indeed, previous studies have reported strong associations between self-reported social anxiety and negative interpretations of ambiguous social situations¹⁻⁶. We aimed to replicate these findings using the AIBT task's social items, to support the validity of our new task. Thus, we included a measure of social anxiety in the final sample (see below), and we conducted bivariate correlations between social anxiety and ratings of social situations. These analyses yielded significant positive associations between social anxiety and negative interpretations of social situations ($r = .61$, $p < .001$) and belief in those interpretations ($r = .44$, $p < .001$), as well as significant negative associations with benign interpretations of social situations ($r = -.42$, $p < .001$) and belief in those interpretations ($r = -.40$, $p < .001$).

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