

**Avoiding Affect in Intergroup Relations: The Roles of Dispositional and Intergroup
Empathy in the Relationship between Alexithymia and Prejudice**

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Abstract

Alexithymia, i.e., difficulties in recognizing, communicating, and processing one's own emotions, is associated with poorer interpersonal relations. Emotional processes are key drivers and mechanisms of prejudice and its reduction, and alexithymia is thought to influence individuals' empathic responses. This research examined the relationship between alexithymia and prejudice, and the role of empathy in this relationship. Three studies were conducted in three intergroup contexts to test whether alexithymia is also associated with poorer intergroup relations with LGBT+ individuals (Study 1, $N = 126$ heterosexual late adolescents) and Asian British people (Study 3, $N = 300$ White adults) in the United Kingdom, and immigrants in Italy (Study 2, $N = 381$ Italian adults). Participants completed the Toronto Alexithymia Scale (TAS-20), measures on dispositional and intergroup empathic concern and perspective-taking as well as measures of prejudice (anti-outgroup hostility, anti-outgroup attitudes, anti-outgroup behavioral intentions). Lower dispositional empathic concern (Studies 1, marginal effect in Study 2) and intergroup empathic concern and perspective-taking (Study 3) mediated the relationship between the externally oriented thinking subscale of the TAS-20 (i.e., avoiding emotions and affective thinking) and greater prejudice. The findings are important for understanding the challenges of late adolescents and adults with alexithymia in intergroup relations, highlighting the role of dispositional and intergroup empathy for individual differences such as alexithymia in endorsing prejudice.

Keywords: alexithymia, empathic concern, intergroup empathy, prejudice

Avoiding Affect in Intergroup Relations: The Roles of Dispositional and Intergroup Empathy in the Relationship between Alexithymia and Prejudice

Taking the perspective of another person and having a sense of the kind of emotions another person is feeling are key for relations in today's society, where more and more individuals of different social backgrounds live, learn and work together. Whereas conflicting relations typically result in hostility and discrimination toward minority groups (Brown & Hewstone, 2005; Birtel et al., 2020), empathy and perspective-taking are crucial factors for improving interpersonal and intergroup relationships (Eisenberg & Eggum, 2010; Pettigrew & Tropp, 2008). However, not everyone has the same ability to consider another person's world, in particular individuals with difficulties understanding and communicating their own world, such as people with alexithymia (Bagby et al., 1994). This self-directed affective deficit occurs in 1 in 10 people (Franz et al., 2008; Salminen et al., 1999), and has been shown to have negative consequences on individual and interpersonal levels. However, despite 10% of the population being affected, and as contemporary societies are becoming more and more aware of discrimination against minorities (see e.g., Sidanius & Pratto, 1999), evidence of the impact of alexithymia on intergroup relations is scarce. In three studies, we examined how alexithymia relates to intergroup experiences with LGBT+ individuals and Asian British people in the United Kingdom and immigrants in Italy, in the form of anti-outgroup hostility, attitudes and behavioral intentions. As people with alexithymia have difficulties empathizing with other individuals, and empathy is crucial for improving relations with others, we test empathy as a mediator, in form of dispositional empathy as well as empathy toward outgroups (intergroup empathy).

Alexithymia, Greek for 'no words for feeling', is a subclinical individual differences construct that is characterized by a deficit in experiencing and processing emotions of the self (Nemiah, 1977; Taylor et al., 1997; Zackheim, 2007). The construct of alexithymia includes

affective difficulties encompassing: identifying and describing subjective feelings; inability to differentiate between feelings and bodily sensations of emotional arousal; limited capacity for imagination such as fantasies and dreams; and externally oriented style of thinking (i.e., avoiding feelings and affective thinking, and describing events rather than feelings associated with events; Franz et al., 2008; Nemiah & Sifneos, 1970; Nemiah et al., 1976; Parker, 2001; Taylor, 2000; Taylor et al., 1991, 1997).

On an individual level, alexithymia has been linked with certain psychiatric and psychosomatic disorders, for example autism (Bird & Cook, 2013), eating disorders (Taylor et al., 1996), schizophrenia (van 't Wout et al., 2007), anxiety and depression (Berthoz et al., 1999; Luminet et al., 2001), post-traumatic stress disorder and substance use (Taylor, 2000; Taylor et al., 1997), and generally lower life satisfaction (Mattila et al., 2007).

On an interpersonal level, alexithymia impacts social behavior, and consequently relationships. For example, higher levels of alexithymia are associated with a lower need for and greater discomfort with connectedness (Hesse & Floyd, 2011; Montebanocci et al., 2004), insecure attachment style (Mallinckrodt & Wei, 2005; Troisi et al., 2001; Hesse & Floyd, 2011), greater need for approval and lack of confidence (Montebanocci et al., 2004), fewer closer and more distant, passive relationships (Hesse & Floyd, 2011; Montebanocci et al., 2004; Vanheule et al., 2007; Vanheule et al., 2010). Indeed, Eid and Boucher (2012) examined the consequences for relationship satisfaction of the individual and their partner in 84 young heterosexual couples. They found a link between alexithymia and dyadic adjustment (i.e., relationship satisfaction and how each partner perceives the relationship). As people with alexithymia experience difficulties in identifying their own emotions, this may have implications for identifying other people's emotions, or feel empathy not only toward other individuals but also outgroups. The following sections review the role of alexithymia in these concepts.

Alexithymia and Empathy

Empathy plays a key role in interpersonal and intergroup relationships, such as prosocial and altruistic behavior, aggression, intergroup interactions (for a review see Eisenberg & Eggum, 2010). In contrast to alexithymia, which is a self-directed affective deficit, empathy is an other-directed affective process that is the ability to feel the emotions of other people. Meta-analytic social neuroscientific evidence (Lamm et al., 2011) suggests that one's own emotional states and emotional states of others share neural networks in the brain, leading to similar physiological states of the body. Therefore, given the overlap of neural networks between one's own and others' emotions, the difficulty identifying one's own feelings could pose problems feeling empathy or taking the perspective of another person, in interpersonal and intergroup situations.

Indeed, empirical studies have shown that individuals high in alexithymia display a lower ability to recognize and identify emotions in the facial expressions of others (Lane et al., 1996; Lockwood et al., 2013; Parker et al., 1993) and a lower ability to show affection and empathy (Guttman & Laporte, 2002; Grynberg et al., 2010; Krystal, 1979; Moriguchi et al. 2006, 2007), and a reduced ability to think about and use emotions to cope with stressful situations (Parker et al., 1998). They experience both lower affective empathy such as lower distress for others' suffering and altruistic motivation (FeldmanHall et al., 2013), and empathic concern, as well as cognitive empathy such as perspective-taking (Bird & Cook, 2013; Guttman & Laporte, 2002; Grynberg et al., 2010). Patil and Silani (2014) showed that alexithymia was associated with increased utilitarian moral judgments (i.e., endorsing to harm other people for the greater good) in 331 Italian participants, mediated by reduced empathic concern (but not perspective-taking) for the victim in a personal moral dilemma.

Empathy can be divided into affective and cognitive components (Davis, 1980, 1983). The affective components capture whether people can experience other-directed emotions

such as compassion (empathic concern) and self-directed emotions such as anxiety (personal distress). The cognitive components capture whether people are able to take the perspective of another person's mental state (perspective-taking), and imagine feelings and behaviors of characters in fictional stories (fantasy). These components of empathy are usually measured using Davis' Interpersonal Reactivity Index (IRI). Alexithymia is most commonly measured using the Toronto Alexithymia Scale (Bagby et al., 1994). This scale measures three subcomponents, namely Difficulty Describing Feelings (DDF), Difficulty Identifying Feelings (DIF) and Externally Oriented Thinking (EOT). The literature presents mixed findings on the different subscales of alexithymia and the capacity for empathy (empathic concern, perspective-taking). Previous research has noted that the alexithymia subscales might show different relationships to empathic concern/perspective-taking, and indeed different empathy factors appear to show different relationships to alexithymia.

For example, Grynberg et al. (2010) conducted a study with 645 young adults to test the associations between the subcomponents of the TAS-20 and the IRI. The cognitive components of alexithymia (externally oriented thinking, EOT) were associated with lower perspective-taking and empathic concern. There were also negative associations between the affective components of alexithymia (difficulty identifying and describing feelings, DIF, DDF) and perspective-taking. Additionally, DDF but not DIF was negatively associated with empathic concern. Interestingly, when controlling for depression and anxiety, the associations between DIF and DDF and empathic concern/perspective-taking were reduced. The negative associations with EOT however, were relatively unchanged after accounting for anxiety and/or depression. Nishimura et al. (2009) found in their study of adolescents positive associations between DDF and DIF scores and subscales on the IRI, and negative associations for the EOT. Consistently, those studies found a negative association between

EOT and empathy (empathic concern/perspective-taking), whereas the associations between DDF/DIF and empathy can be positive, negative, or absent.

Alexithymia in Intergroup Relations

Due to the inherent lack of awareness into own and others' emotional states, alexithymia may provide a challenge for positive intergroup relations, as emotions play an important role in relations between groups. For example, induced empathy has been associated with more positive attitudes toward and intentions to help stigmatized groups (Batson et al, 2002). Even though there is some research examining the links between alexithymia and empathy (e.g., Grynberg et al., 2010), and between empathy and prejudice (e.g., Batson et al., 2002; Hewstone et al., 2002), there is only scarce existing evidence linking alexithymia and prejudice. For example, in their study with 419 adults, Onraet et al. (2017) found that alexithymia was positively associated with prejudice toward immigrants. In their meta-analysis, Pettigrew and Tropp (2008) found that both forms of empathy (empathic concern and perspective-taking) are key mediators of the relationship between intergroup contact and prejudice, and that affect in particular plays an important role in intergroup relations. Therefore, we would expect for empathic concern to play a key role also in individuals with alexithymia when it comes to prejudice.

The link between alexithymia and prejudice is under explored and the inconsistent findings on the link between alexithymia and empathy are contrary to the intergroup relations literature. In addition, no previous study has, to our knowledge, considered intergroup empathy with the stigmatized outgroup under investigation yet, for example Onraet et al. (2017) focused on dispositional empathic concern. As individuals with alexithymia have difficulties identifying and processing emotions of the self and others, prejudice toward stigmatized groups may be greater for individuals with alexithymia, and specifically empathy toward outgroups (intergroup empathic concern and perspective-taking) may be reduced or

lacking. Intergroup empathy has been found to be a key mechanism for reduced prejudice through intergroup contact, but also perspective-taking (Swart et al., 2011; Turner et al., 2013; Pettigrew & Tropp, 2008). Therefore, we predicted for dispositional and intergroup empathy to mediate the relationship between alexithymia and prejudice.

The Present Research

The link between alexithymia and poor interpersonal relations is established, the aim of the present research was to examine its role in *intergroup* relations. We tested the relationship between alexithymia and prejudice, considering the mediating role of dispositional and intergroup empathy. We expand previous literature in three ways: (1) We include not only dispositional but also intergroup empathy (empathic concern, perspective-taking). We tested interpersonal empathy as a disposition, which refers to the general ability to empathize with others (and not only with outgroups) and has been shown to be reduced in individuals with alexithymia. Furthermore, we tested intergroup empathy, which refers to the ability to empathize with outgroup members, as this is more challenging than, for example, to empathize with ingroup members. (2) We measure prejudice as outcome variable not only via attitudes but also via behavioral intentions as a more proximate predictor of discriminatory behavior. (3) We study the role of empathy in intergroup relations for individuals with alexithymia in three different contexts in which minority group members experience prejudice and hate crime in the United Kingdom and in Italy, i.e., sexual orientation, ethnicity, and immigration. (4) Onraet et al. (2017) tested the composite score of alexithymia, we considered the predictive value of the three subscales separately in order to provide insight into the inconsistent findings in the literature on the link between alexithymia and empathy.

The present research considers two national contexts in which minority groups experience discrimination. In Britain, around 46% disclosed having experienced negative

attitudes or unfair treatment over the past year because of hostility or prejudice toward their sexual orientation (Abrams et al., 2018). Study 3 examined prejudice toward Asian British people, who are the largest ethnic minority group in England/Wales, constituting 8% of the population (Office for National Statistics, 2021). LGBT+ individuals and Asian British people have been target of rising numbers of hate crime (Home Office, 2021; Paterson et al., 2018). Similarly, in Study 2 in Italy, 80% of young immigrants have either experienced prejudice themselves or witnessed prejudice toward immigrants (UNICEF, 2017).

Our samples included late adolescents and adults. Longitudinal studies examining the stability of alexithymia among adolescents are scarce, and alexithymia levels appear to decrease in adolescence (Kekkonen et al., 2021). In adults, the prevalence of alexithymia is 8-10% and remains stable in late adolescence (Murphy et al., 2017). Similarly, longitudinal studies examining the development of prejudice from early to late adolescence are scarce, and prejudice seems to decrease in this period (van Zalk et al., 2014). Therefore, our study focussed on late adolescents and adults for whom alexithymia and prejudice are more stable constructs. The proposed age categories for adolescence vary in the literature, in our study we followed Sawyer et al.'s (2018) recommendation for the upper limit of 24 years. Regarding the lower limit for late adolescence, we chose 16 years, similar to Kekkonen et al. (2021).

As most common in previous research (for example see Grynberg et al., 2010; Onraet et al., 2017), we also measured alexithymia using the TAS (Bagby et al., 1994). Given the multidimensional nature of the construct, we tested the following hypotheses for the three subcomponents of alexithymia. Although findings relating to the TAS subscales are mixed in relation to the IRI, we made predictions based on the general alexithymia literature (Bagby et al., 1994) and the intergroup relations literature (Pettigrew & Tropp, 2008):

Hypothesis 1: Lower dispositional empathic concern and perspective-taking mediate the positive relationship between alexithymia (EOT, DDF, DIF) and prejudice (anti-outgroup hostility, anti-outgroup attitudes) (Studies 1, 2).

Hypothesis 2: Lower intergroup empathic concern and perspective-taking mediate the positive relationship between alexithymia (EOT, DDF, DIF) and prejudice (anti-outgroup attitudes, anti-outgroup behavioral intentions) (Study 3).

Study 1

Method

Participants

A total of 151 participants fully completed the survey. Twenty-three had to be excluded as they did not meet the inclusion criterion of being heterosexual. A further three had to be excluded as they did not meet the inclusion criterion of being under 24 years old. Participants were 126 heterosexual late adolescents (64 female, 61 male, 1 non-binary), aged between 16 and 21 years ($M = 17.55$, $SD = 1.25$) from different ethnic backgrounds (82 White British, 11 non-White British, 10 Black British, 4 Black non-British, 10 British Asian, 3 Asian, 5 Other) who took part in an online study administered via Qualtrics. Participants were recruited via social media platforms using convenience and snowball sampling in spring 2018. To test a mediation model considering three predictor variables and two mediators and detect a small to medium effect ($f^2 = .11$) with a power of .80, we aimed to collect a sample size composed by 120 participants (Cohen, 1988). The study received ethical approval from the local institutional ethics committee.

Measures

Alexithymia was measured using the 20 items from the Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994) that captures three factors on both affective and cognitive dimension on a 5-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*:

Difficulty Describing Feelings (DDF, affective, e.g., “I find it hard to describe how I feel about people.”), Difficulty Identifying Feelings (DIF, affective, e.g., “I am often confused about what emotion I am feeling.”), and Externally Oriented Thinking (EOT, cognitive, e.g., “I prefer talking to people about their daily activities rather than their feelings.”). Items were recoded so that higher scores indicate greater alexithymia. A confirmatory factor analysis (CFA) was carried out to test whether the three TAS dimensions were statistically distinct constructs. Model adaptation to the data is expressed by a nonsignificant χ^2 , a RMSEA smaller than .07, a CFI and a TLI higher than .95, and a SRMR smaller than .08 (Hu & Bentler, 1999; Kline, 2005; Steiger, 2007). The subset-item-parcel approach was used, namely, for each latent variable a subsets of items, which were used as observed variables, were created (Little et al., 2002). The tested model showed an acceptable fit, $\chi^2(6) = 12.70$, $p < .05$, RMSEA = .09, CFI = .98, TLI = .96, SRMR = .04. Factor loadings ranged from .71 to .95 ($ps < .001$), while all correlations were lower than $|1|$ (95% confidence interval), supporting the empirical distinction between measures. Then composite scores were created by the mean of the relevant items, which yielded reliable subscales (Cronbach’s $\alpha_{DDF} = .82$, Cronbach’s $\alpha_{DIF} = .92$, Cronbach’s $\alpha_{EOT} = .70$). The Cronbach's Alphas mirror those obtained in similar previous research, such as by Grynberg et al. (2010) in the interpersonal domain ($\alpha_{DIF} = .77$, $\alpha_{DDF} = .79$, $\alpha_{EOT} = .56$), albeit ours showing higher reliabilities. Although usually TAS-20 scores are a sum, we calculated means so that the analyses for the other measures are more comparable.

Interpersonal Reactivity Index. The Interpersonal Reactivity Index (IRI; Davis, 1980, 1983) was used to measure dispositional empathic concern (EC) and perspective-taking (PT) on 7 items each, ranging from 1 = *does not describe me very well* to 5 = *describes me very well*, e.g., “I often have tender, concerned feelings for people less fortunate than me” (EC) and “I try to look at everybody’s side of a disagreement before I make a decision” (PT).

Items were recoded so that higher scores indicate greater empathy and perspective-taking. Then composite scores were created by the mean of the relevant items, which yielded reliable scales (Cronbach's $\alpha_{EC} = .92$, Cronbach's $\alpha_{PT} = .88$).

Anti-LGBT+ hostility. To measure prejudice toward LGBT+ individuals, we adapted the 25-item Homophobia Scale (Wright et al., 1999) by replacing "gay" with "LGBT+", that measures three factors on a scale from 1 = *strongly agree* to 5 = *strongly disagree*: Behavior/Negative Affect (e.g., "I make derogatory remarks about LGBT+ people."), Affect/Behavioral Aggression (e.g., "I would hit a LGBT+ person for coming on to me."), and Cognitive Negativism (e.g., "Homosexual behavior should not be against the law.", reverse coded). Items were recoded so that higher scores indicate greater anti-LGBT+ hostility. Then a composite score created by the mean of the items yielded a reliable scale (Cronbach's $\alpha = .98$).

The measures were presented in the following order: anti-LGBT+ hostility, TAS-20, IRI.¹

Results

Initial Analyses

Descriptive statistics and correlations for all measures can be found in Table 1. The maximum possible score on the TAS-20 is 100, with ≤ 51 indicating no alexithymia ($n = 61$), $52-60 =$ possible alexithymia ($n = 30$), and $\geq 61 =$ alexithymia ($n = 35$, 27.78%) (Bagby et al., 1994). In our sample scores ranged from 29 to 77. The alexithymia subscales were associated with the subscales of the IRI and anti-LGBT+ hostility. Specifically and as predicted, EOT was negatively associated with empathic concern and perspective-taking, and positively associated with anti-LGBT+ hostility. Contrary to our predictions, DIF was positively associated with perspective-taking, DDF was positively associated with empathic concern, DIF and DDF were also both negatively associated with anti-LGBT+ hostility. Empathic

concern and perspective-taking were negatively correlated with anti-LGBT+ hostility. Scores on the anti-LGBT+ hostility indicated a low prejudice-level in the sample.

Mediation Model

To test Hypothesis 1 that empathic concern and perspective-taking mediate the relationship between alexithymia and anti-LGBT+ hostility, we ran a mediation model with the PROCESS macro (model = 4) for SPSS (Hayes, 2012). While PROCESS allows for only one criterion variable, it is possible to run a mediation model with several predictors and mediators. In order to obtain all indirect effects, it is necessary (in the case of more than one predictors and/or mediator) to run the same model in PROCESS multiple times, i.e., as many times as the number of predictors. This means specifying one predictor while controlling for the other variables, and this analysis is repeated while changing the predictors. Thus, these are the same regressions (i.e., the regression coefficients R^2 , F and df remain the same) with the difference that PROCESS calculates the relevant indirect effect each time.

Specifically, first, to test the relation between the predictors and the mediators, the three alexithymia dimensions were included simultaneously as predictors, while empathic concern (regression one) and perspective-taking (regression two) were the criterion variables. Then, to test the indirect effects, the three TAS-20 dimensions (i.e., DDF, DIF, EOT) were entered simultaneously as the predictor variables, the two dimensions of the IRI scale (i.e., empathic concern, perspective-taking) were entered simultaneously as the mediators, and anti-LGBT+ hostility was the outcome variable (see Table 2). The significance of the indirect effects was assessed using bootstrapping with 5,000 resamples (Fritz & MacKinnon, 2007). Lastly, to test the direct effect, the outcome variable (i.e., anti-LGBT+ hostility) was regressed on the three TAS-20 factors.

As can be seen in Figure 1, alexithymia-EOT was associated with lower empathic concern and perspective-taking, and higher anti-LGBT+ hostility. Alexithymia-DDF was

associated with higher empathic concern and lower anti-LGBT+ hostility. Alexithymia-DIF was marginally associated with lower empathic concern. Finally, regarding the mediators, empathic concern (but not perspective-taking) was negatively associated with anti-LGBT+ hostility. As can be seen in Table 3, all indirect paths for alexithymia (EOT, DDF, DIF) to anti-LGBT+ hostility via empathic concern were significant, that is, EOT and DIF were positively indirectly related, and DDF was negatively indirectly related, via empathic concern (for additional analyses see Supplement A, B).

Study 2

Study 1 found that the EOT and DIF subscales were indirectly associated with higher anti-LGBT+ hostility, via lower empathic concern, supporting H1 for EOT and DIF. The DDF subscale was indirectly associated in lower anti-LGBT+ hostility, via higher empathic concern, this is contrary to H1 but in line with the mixed findings in the literature. Study 2 tested our hypotheses in a different cultural context, with prejudice toward immigrants in Italy, and aimed at replicating the results of Study 1 with a larger sample size to achieve greater power.

Method

Participants and Procedure

A total of 381 Italians (221 women, 154 men, 4 participants preferred not to say, 2 missing data) aged between 18 and 76 years ($M = 32.53$, $SD = 12.57$) took part in the study. An online questionnaire was shared by trained researchers via social network, instant messaging apps, or word of mouth in spring 2020.

As the sample size from Study 1 was rather underpowered (but see f^2 emerged, Table 2), we increased the number of participants of Study 2 in order to run a regression model with three predictors and two mediators allowing a power of .80 to detect a small effect size ($f^2 = .04$) (Cohen, 1988; see, also, Cohen et al., 2003), the minimum required sample size was 320.

Measures

Alexithymia was measured as in Study 1 using the TAS-20. As in Study 1, a CFA was conducted to test the empirical distinction between the three alexithymia dimensions. Results showed acceptable fit indexes, $\chi^2(6) = 21.57, p < .01$, RMSEA = .08, CFI = .99, TLI = .96, SRMR = .03; loadings ranged from .69 to .94 ($ps < .001$), and all correlations were lower than $|1|$ (95% confidence interval), supporting the distinction between alexithymia dimensions. Composite scores yielded reliable subscales (Cronbach's $\alpha_{DDF} = .81$, Cronbach's $\alpha_{DIF} = .88$, Cronbach's $\alpha_{EOT} = .71$).

Interpersonal Reactivity Index. Dispositional empathic concern and perspective-taking were measured as in Study 1. Composite scores yielded reliable scales (Cronbach's $\alpha_{EC} = .85$, Cronbach's $\alpha_{PT} = .79$).

Prejudice was measured in form of **anti-immigrant attitudes** using six bipolar adjectives on a semantic differential (*negative-positive, cold-warm, suspicious-trustful, disgusting-agreeable, hostile-friendly, contemptuous-respectful, disgusting-admirable*) (Wright et al., 1997). Participants were asked “How do you evaluate immigrants? Immigrants are...” on the 5-step scale, 1 represented the positive pole and 5 the negative pole. The mean of all items yielded a reliable measure of attitudes (Cronbach's $\alpha = .88$), higher scores represented more negative attitudes. We considered immigrants in general without giving any further information, so participants responded with their perception about the outgroup they have in mind. This kind of approach is widely used in psychosocial research in Italian contexts (see., e.g., Vaes et al., 2015; for a similar measure, see, also, Vezzali et al., 2023).

The measures were presented in the following order: anti-immigrant attitudes, TAS-20, IRI.

Results

Initial Analysis

Descriptive statistics and correlations for all measures can be found in Table 4. TAS-20 scores ≤ 51 indicate no alexithymia ($n = 127$), 52-60 = possible alexithymia ($n = 59$), and ≥ 61 = alexithymia ($n = 195$, 51.18%), scores ranged from 21 to 100, alexithymia levels were higher than in Study 1. As in Study 1 and as predicted, EOT was negatively associated with empathic concern and perspective-taking (no correlation with anti-immigrant attitudes). In contrast to Study 1, DDF was negatively correlated with empathic concern and perspective-taking. DIF was negatively correlated with perspective-taking and negatively with anti-immigrant attitudes. As in Study 1, empathic concern and perspective-taking were negatively correlated with anti-immigrant attitudes.

Mediation Model

The same mediation model (PROCESS macro, model = 4) presented in Study 1 was tested in Study 2. Thus, DIF, DDF, and EOT were the predictor variables, empathic concern and perspective-taking were the mediators, anti-immigrant attitudes was the outcome variable (see Table 5 and Figure 2). It emerged that EOT was the only alexithymia dimension associated with both lower empathic concern and perspective-taking. In addition, DIF was negatively associated with anti-immigrant attitudes, the negative association between empathic concern and anti-immigrant attitudes was marginally significant. Bootstrapping procedures (5,000 resamples) showed a marginally significant indirect effect of empathic concern in the relation between EOT and anti-immigrant attitudes (90% confidence interval). No indirect paths were significant (Table 6, for additional analyses see Supplement A, B).

Study 3

In Study 1, we found that EOT had an indirect effect on greater prejudice toward LGBT+ individuals in the United Kingdom (anti-outgroup hostility) via empathic concern and perspective-taking. In Study 2, the indirect effect of empathic concern on anti-outgroup attitudes towards immigrants in Italy was only marginally significant.

Although there was a similar correlational pattern in Studies 1 and 2, the indirect effect in Study 2 was only marginal. Study 3 aimed at replicating the results of Study 1, as well as examining intergroup empathy in addition to dispositional empathy as a mediator of the negative effect of alexithymia on prejudice, and include an outcome measure of behavioral intentions, in the context of prejudice toward Asian British people in the United Kingdom.

Method

Participants

A total of 300 participants (151 women, 149 men, 298 White British, 2 White European) aged between 19 and 67 years ($M = 40.36$, $SD = 11.67$) took part in an online study administered via Qualtrics in January 2022, advertised on Prolific (reward: £2.38). TAS-20 scores ≤ 51 indicate no alexithymia ($n = 159$), 52-60 = possible alexithymia ($n = 77$), and ≥ 61 = alexithymia ($n = 64$, 21.33%), scores ranged from 23 to 76, this distribution is similar to Study 1.

Regarding sample size, an a priori power analysis revealed that about 300 participants represented a pertinent number in order to conduct a regression analysis considering seven predictors (i.e., three independent variables and four mediators) allowing a power of .80 to detect a small effect size ($f^2 = .05$).

Measures

Alexithymia was measured as in Study 1 using the TAS-20. As in Study 1 and 2 we conducted a CFA, the model adaptation was acceptable, $\chi^2(6) = 21.83$, $p < .01$, RMSEA = .09, CFI = .98, TLI = .96, SRMR = .04; factor loadings ranged from .48 to .95 ($ps < .001$) and since correlations were lower than $|1|$ (95% confidence interval), the three alexithymia factors were empirically distinct constructs. Composite scores yielded reliable subscales (Cronbach's $\alpha_{DDF} = .81$, Cronbach's $\alpha_{DIF} = .88$). Since the EOT subscale showed low reliability ($\alpha_{EOT} =$

.57), one item (“I prefer to watch ‘light’ entertainment shows rather than psychological dramas”) was discharge from the scale reaching a reliability of .60. Results did not change when considering the full EOT set of items.

Interpersonal Reactivity Index. Dispositional empathic concern and perspective-taking were measured as in Study 1. Composite scores yielded reliable scales (Cronbach’s $\alpha_{EC} = .88$, Cronbach’s $\alpha_{PT} = .84$).

Intergroup Empathy. Participants reported their level of intergroup empathic concern on three items adapted from the IRI to the intergroup context (“If I heard that an Asian British was upset, and suffering in some way, I would also feel upset”, “If I saw an Asian British being treated unfairly, I think I would feel angry at the way they were being treated”, “If an Asian British I knew was feeling sad, I think that I would also feel sad”; 1 = *strongly disagree* to 7 = *strongly agree*). Higher scores represented higher intergroup empathic concern ($\alpha = .87$).

Intergroup Perspective-Taking. Participants reported their level of intergroup perspective-taking on three items adapted from the IRI to the intergroup context (“I find it difficult to see things from the point of view of Asian British”, “I try to understand Asian British better by imagining how things look from their perspective”, “If I was having a discussion with an Asian British, I wouldn’t waste much time listening to their arguments”; 1 = *strongly disagree* to 7 = *strongly agree*). Higher scores represented higher intergroup perspective-taking ($\alpha = .65$).

Prejudice was measured via anti-outgroup attitudes and anti-outgroup behavioral intentions.

Anti-outgroup attitudes. Participants reported their attitudes toward Asian British on two items how much they *greatly like-greatly dislike* and *highly disfavor-highly favor* Asian British in general on a semantic differential, 1 indicated the positive pole and 7 the negative

pole (Wright et al., 1997). The mean of the items yielded a reliable measure of attitudes ($r = .82$), higher scores represented more negative attitudes.

Anti-outgroup behavioral intentions. Participants reported their behavioral intentions for contact with Asian British using nine items (e.g., “talk to them” (reversed coded), “avoid them”, “confront them”: 1 = *not at all* to 7 = *very much so*, Tam et al., 2009). Positive intentions were reverse coded. The mean of the items yielded a reliable measure of intentions ($\alpha = .85$), higher scores represented greater negative intentions.

The measures were presented in the following order: TAS-20, IRI, anti-outgroup attitudes, anti-outgroup intentions, intergroup empathy, intergroup perspective-taking.

Results and Discussion

Initial Analyses

Descriptive statistics and correlations for all measures can be found in Table 7. As in Studies 1 and 2 and as predicted, EOT was negatively associated with dispositional empathic concern and perspective-taking as well as positively with anti-outgroup attitudes (Study 1). Additionally, it was negatively associated with intergroup empathic concern and perspective-taking as well as positively with anti-outgroup intentions. As in Study 2, DDF was negatively correlated with dispositional empathic concern and perspective-taking, and additionally negatively correlated with intergroup empathic concern and perspective-taking as well as positively with prejudice (anti-outgroup attitudes, anti-outgroup intentions). As in Study 2, DIF was negatively correlated with dispositional perspective-taking and additional with intergroup perspective-taking. As in Studies 1 and 2, dispositional empathic concern and perspective-taking were negatively correlated with prejudice (anti-outgroup attitudes, anti-outgroup intentions). Furthermore, intergroup empathic concern and perspective-taking were negatively correlated with prejudice (anti-outgroup attitudes, anti-outgroup intentions).

Mediation Model

To replicate and extend the results from Study 1, we tested two mediation regression models (PROCESS macro, model = 4), separately for attitudes and intentions. EOT, DDF and DIF were the predictor variables, dispositional and intergroup empathic concern and perspective-taking were the mediators, anti-outgroup attitudes and anti-outgroup intentions toward British Asian people were the outcome variables (see Figure 3).

As can be seen from Table 8 all the three alexithymia dimensions were significantly associated with dispositional empathic concern; EOT and DDF negatively and DIF positively. Higher EOT and DIF predicted lower dispositional perspective-taking. Higher EOT also predicted lower intergroup empathic concern and perspective-taking. Higher DDF and DIF only marginally predicted lower intergroup empathic concern. Higher DFF only marginally predicted lower intergroup perspective-taking. Intergroup empathy and intergroup perspective-taking predicted less anti-outgroup attitudes and anti-outgroup intentions.

Regarding indirect effects (Table 9), alexithymia-EOT had indirect effects on anti-outgroup attitudes as well as anti-outgroup intentions via intergroup empathic concern and intergroup perspective-taking, supporting H2. Higher scores on the EOT subscale were associated with lower intergroup empathic concern and intergroup perspective-taking, and in return with higher anti-outgroup attitudes as well as anti-outgroup intentions toward Asian British people. When intergroup empathic concern and intergroup perspective-taking are removed from the model, results for dispositional empathic concern and dispositional perspective-taking are similar to Study 1 (supporting H1, see also Supplement C). In addition, the indirect relations for DFF and DIF via intergroup empathic concern on anti-outgroup attitudes as well as anti-outgroup intentions were only marginally significant (90% confidence interval).

Study 3 tested our hypotheses using intergroup in addition to dispositional empathic concern, and anti-outgroup intentions in addition to anti-outgroup attitudes as a prejudice

measure, with Asian British people in the United Kingdom as target outgroup. Our findings replicate correlational patterns from Studies 1 and 2. Additionally, they replicate the mediation results from Study 1 using intergroup variables, in other words, Study 1 showed that dispositional empathic concern mediates the relationship between alexithymia and prejudice, Study 3 replicates this finding using intergroup empathic concern.

General Discussion

Previous research has shown that alexithymia has negative consequences on individual and interpersonal level. The purpose of the present set of studies was to examine the role of alexithymia in intergroup relations. We were interested in 1) the mediating processes between alexithymia and prejudice (anti-outgroup hostility, attitudes, behavioral intentions), 2) the role of both interpersonal and intergroup empathic concern and perspective-taking, 3) three different intergroup contexts, and 4) the predictive value of the alexithymia subscales. We discuss these results in terms of the challenges of alexithymia for intergroup relations and the design of prejudice-interventions. Finally, we acknowledge limitations of the present study and recommend directions for future research on alexithymia in intergroup relations.

We found that dispositional empathic concern mediated the relationship between alexithymia-EOT and anti-LGBT+ hostility (Study 1), supporting H1. The indirect effect on anti-outgroup attitudes toward immigrants in Italy was only marginally significant (Study 2). Furthermore, we found that intergroup empathic concern and perspective-taking mediated the relationship between alexithymia-EOT and prejudice (anti-outgroup attitudes and intentions) toward Asian British people in the United Kingdom (Study 3, H2). Our results provide evidence that individuals with externally oriented patterns of thinking (TAS-EOT), i.e., who have a preference for thinking about non-psychological material, also report lower empathic concern toward others (Studies 1, 3) and lower ability to take the perspective of another

person (Study 3). These findings are in line with previous studies which have shown a negative correlation between alexithymia and empathy, but showed inconsistent results with regard to how the different components of alexithymia relate to empathy, in line with the mixed findings in the literature. For example, the TAS-20 EOT subscale was associated with empathic concern and perspective-taking (Grynberg et al., 2010; Nishimura et al., 2009), and the association between alexithymia and empathic concern can be driven by the EOT subscale (Lyvers et al., 2017). We show that not only interpersonal empathy but also specifically intergroup empathy mediates the negative effect of alexithymia on anti-outgroup attitudes and anti-outgroup behavioral intentions toward stigmatized groups.

Importantly, we also provide evidence that such individuals who avoid emotional perceptions and affective thinking report less positive affect, cognition, and more negative behavioral intentions toward this group (Study 1: anti-LGBT+ hostility subscales, Study 3: anti-outgroup attitudes, anti-outgroup behavioral intentions). Study 2 (anti-outgroup attitudes) showed a similar, albeit marginally significant, pattern. Compared to Onraet et al. (2017), in our study dispositional empathic concern was a more consistent mediator than perspective-taking of the relationship between alexithymia and prejudice (H1). This is in line with the intergroup relations literature that emphasizes affective empathy (empathic concern) rather than cognitive empathy (perspective-taking) as a key variable in reducing negative outgroup attitudes (Pettigrew & Tropp, 2008), and findings from the interpersonal literature on utilitarian moral judgments (Patil & Silani, 2014). Our findings demonstrate the importance of empathy (in particular empathic concern) not only as a mediating mechanism between intergroup contact and prejudice (Swart et al., 2011; Turner et al. 2013) but also between externalizing feelings and prejudice.

Additionally, we considered the predictive value of the three subscales of alexithymia instead of combining them into one composite score (Onraet et al., 2017). The differential

results for the different alexithymia subscales complicate the picture on the relationship between alexithymia and prejudice, and are in line with previous mixed findings (Grynberg et al., 2010; Nishimura et al., 2009). The discrepant results likely reflect the multi-factorial nature of alexithymia, and the fact that certain aspects of alexithymia a) may be differentially related to empathy and b) may be differentially confounded by other important factors.

Grynberg et al. (2010)'s study also highlights an additional factor that was not controlled in the present study: depression and/or anxiety. Alexithymia is associated with higher depression and anxiety, and it is possible that these may have affected the observed relationships between the DIF and DDF subscales and empathy and prejudice especially. Depression and/or anxious patients show higher alexithymia than controls, and these differences are driven by scores on the DIF and DDF factors (Marchesi et al., 2000). Meta-analyses have shown that whereas DIF and DDF show medium associated with depression, the association with EOT are weak (Li et al., 2015). Similarly, in adolescents, anxiety has been shown to be associated with scores on the DIF and DDF subscales, but not the EOT subscale (Karukivi et al., 2010). Our findings regarding the association between EOT and empathy and prejudice are thus unlikely to have been affected by depression and/or anxiety; however, the associations between DIF and DDF factors and our variables of interest may have been impacted, as previous research suggests depression and anxiety have important effects on alexithymia apparent association to empathy (Grynberg et al., 2010). Their omission in the present study therefore constitutes a limitation of the present study.

Our results mirror the mixed findings on the different subscales of alexithymia and empathy in the literature. Future research will be necessary to consider the affective factors (DIF and DDF) of alexithymia in relation to prejudice, nevertheless our results shed light on the cognitive factor (EOT) and its importance for prejudice and intergroup relations.

Another point to note is that the proportion of individuals scoring over the standard cut-off indicating a high alexithymia score were quite high all three samples. In the general population, it is estimated that around 10% of individuals surpass this threshold (Franz et al., 2008), though the prevalence is higher in adolescence. It is unclear why alexithymia would be elevated in the samples, though it is possible that increased depression or anxiety symptoms could elevate reports of alexithymia; the exclusion criteria for the current sample did not state that people with depression and/or anxiety should not take part.

Implications

Experiencing empathic concern and taking the perspective of others are crucial abilities in interpersonal and intergroup relationships (e.g., Eisenberg & Eggum, 2010). As people with alexithymia experience difficulties in identifying their own emotions, this may have implications for identifying other people's emotions, or feel empathy not only toward other individuals but also outgroups. The present research considers alexithymia in the context of intergroup relations. Individuals high on the EOT subscale of alexithymia show a tendency to avoid emotional perceptions and rather focus on facts and describing events, this was associated with lower empathy and in return greater anti-LGBT+ hostility. Future research should consider testing our predictions in a longitudinal study, and examine the association between the alexithymia subscales and empathy further. It is also an outstanding question what the direction of effect is between these variables: Our approach has been to consider alexithymia to influence empathy and in turn intergroup relations, but plausibly poor interpersonal skills could impact emotional development, meaning some bi-directionality between these variables. One way to test theories regarding causality would be to use intervention studies. Arguably, under the framework we present, interventions that reduce alexithymia (especially the EOT component) should increase empathy and have positive impacts on intergroup relations. Mindfulness-based interventions have been shown to reduce

alexithymia (Norman et al., 2019), and it would be interesting to test whether these interventions have secondary impacts on interpersonal and intergroup behaviours.

Furthermore, future research should consider feasibility and challenges of designing prejudice-interventions for individuals with alexithymia. In friendships and intimate relationships, a certain amount of self-disclosure is necessary, otherwise encounters may remain at a superficial level only, and therefore not have the capacity to reduce prejudice (Davies et al., 2011). Reducing intergroup anxiety (Stephan & Stephan, 1985; Swart et al., 2011; Turner et al., 2007) and building trust (Cehajic et al., 2008; Kenworthy et al., 2016; Tam et al., 2009) may be more difficult for people with alexithymia. As individuals with alexithymia have difficulties processing emotions of the self and others, reducing prejudice toward stigmatized groups may require modified interventions. The effectiveness of interventions in reducing prejudice may work through different, yet to be explored, mechanisms for individuals with alexithymia due to the lower levels of empathy. If people with alexithymia experience lower empathy, interventions based on intergroup contact may not influence empathy and subsequent prejudice. Future longitudinal research will need to establish how alexithymia interacts with prejudice-interventions.

Conclusion

Appropriate processing of the emotions of the self and others is crucial for empathy, and for interpersonal and intergroup relations. This research contributes to the literature on inhibiting factors in intergroup relations. Our findings demonstrate that externally oriented thinking is negatively associated with dispositional and intergroup empathic concern, and thereby prejudice. These findings have implications for prejudice-reduction in individuals with alexithymia.

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Footnotes

¹ The dataset was part of an MSc project that included other measures not relevant to the research question and current analysis, such as the personal distress and fantasy subscales of the IRI.

Table 1*Zero Order Correlation Matrix for All Measures of Study 1 (N = 126)*

Measure	1	2	3	4	5	6	<i>M</i>	<i>SD</i>
1. Alexithymia – DIF	–						2.34	1.05
2. Alexithymia – DDF	.70***	–					2.90	0.96
3. Alexithymia – EOT	-.34***	-.13	–				2.72	0.63
4. IRI – Empathic Concern	.16	.23*	-.43***	–			3.73	0.95
5. IRI – Perspective Taking	.21*	.14	-.54***	.77***	–		3.30	0.88
6. Anti-LGBT+ Hostility	-.43***	-.39***	.61***	-.65***	-.63***	–	1.83	0.99

Note: DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking.

* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Table 2*Results of Regression Analyses, Study 1 (N = 126)*

Predictors	Outcome Variables		
	Empathic Concern	Perspective Taking	Anti-LGBT+ Hostility
Alexithymia – DIF	-.20 (.11) [†]	-.04 (.09)	-.10 (.08)
Alexithymia – DDF	.31 (.11)**	.09 (.10)	-.19 (.09)*
Alexithymia – EOT	-.71 (.13)***	-.75 (.11)***	.52 (.11)***
IRI – Empathic Concern	-	-	-.35 (.10)***
IRI – Perspective Taking	-	-	-.16 (.11)
R^2	.24	.29	.62
f^2	.32	.41	1.63
F	12.57***	16.96***	39.81***
df	(3,122)	(3,122)	(5,120)

Note: Unstandardized (Standard Errors in Parentheses) regression coefficients are reported. DDF = Difficulty Describing Feelings;

EOT = Externally Oriented Thinking; DIF = Difficulty Identify Feelings. [†] $p < .10$, * $p < .05$, *** $p < .001$.

Table 3*Indirect Effects of the Hypothesized Mediated Model, Study 1 (N = 126)*

Predictor Variable	Mediator	Outcome Variable	Mean Bootstrap Estimate (SE)	Percentile Confidence Interval (95%)
DDF	IRI – Empathic Concern	Anti-LGBT+ Hostility	-0.1096 (.05)	[-0.2302, -0.0374]
DDF	IRI – Perspective Taking	Anti-LGBT+ Hostility	-0.0147 (.02)	[-0.0847, 0.0118]
EOT	IRI – Empathic Concern	Anti-LGBT+ Hostility	0.2457 (.09)	[0.0963, 0.4436]
EOT	IRI – Perspective Taking	Anti-LGBT+ Hostility	0.1235 (.08)	[-0.0183, 0.2950]
DIF	IRI – Empathic Concern	Anti-LGBT+ Hostility	0.694 (.04)	[0.0078, 0.1723]
DIF	IRI – Perspective Taking	Anti-LGBT+ Hostility	0.0060 (.02)	[-0.0240, 0.0685]

Note: Mean bootstrap estimates are based on 5,000 bootstrap samples. Significant indirect effects are boldfaced. DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking; DIF = Difficulty Identify Feelings.

Table 4*Zero Order Correlation Matrix for All Measures of Study 2 (N = 381)*

Measure	1	2	3	4	5	6	M	SD
1. Alexithymia – DIF	-						2.79	1.32
2. Alexithymia – DDF	.60***	-					3.49	1.45
3. Alexithymia – EOT	.26***	.38***	-				3.06	0.95
4. IRI – Empathic Concern	-.06	-.12*	-.49***	-			5.31	1.05
5. IRI – Perspective Taking	-.13*	-.13**	-.50***	.52***	-		4.76	1.03
6. Anti-Immigrant Attitudes	-.21***	-.10 [†]	.07	-.15**	-.11*	-	2.64	0.63

Note: DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking.

[†] $p < .055$, * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Table 5*Results of Regression Analyses, Study 2 (N = 381)*

Predictors	Outcome Variables		
	Empathic Concern	Perspective Taking	Anti-Immigrant Attitudes
Alexithymia – DIF	.03 (.05)	-.04 (.04)	-.11 (.03)***
Alexithymia – DDF	.04 (.04)	.06 (.04)	≈ .00 (.03)
Alexithymia – EOT	-.57 (.05)***	-.56 (.05)***	.03 (.04)
IRI – Empathic Concern	-	-	-.07 (.04) [†]
IRI – Perspective-Taking	-	-	-.04 (.04)
R^2	.24	.25	.02
f^2	.32	.33	.02
F	40.17***	42.01***	2.98*
df	(3,377)	(3,377)	(5,375)

Note: Unstandardized regression coefficients (standard errors in parentheses) are reported. DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking; DIF = Difficulty Identify Feelings. [†] $p < .10$, * $p < .05$, *** $p < .001$.

Table 6*Indirect Effects of the Hypothesized Mediated Model, Study 2 (N = 381)*

Predictor Variable	Mediator	Outcome Variable	Mean Bootstrap Estimate (SE)	Percentile Confidence Interval (90%)
DDF	IRI – Empathic Concern	Anti-Immigrant Attitudes	-0.0024 (\approx .00)	[-0.0133, 0.0015]
DDF	IRI – Perspective Taking	Anti-Immigrant Attitudes	-0.0023 (\approx .00)	[-0.0115, 0.0008]
EOT	IRI – Empathic Concern	Anti-Immigrant Attitudes	<i>0.0373 (.02)</i>	<i>[0.0020, 0.0788]</i>
EOT	IRI – Perspective Taking	Anti-Immigrant Attitudes	0.0204 (.02)	[-0.0153, 0.0581]
DIF	IRI – Empathic Concern	Anti-Immigrant Attitudes	-0.0022 (\approx .00)	[-0.0123, 0.0017]
DIF	IRI – Perspective Taking	Anti-Immigrant Attitudes	0.0013 (\approx .00)	[-0.0010, 0.0095]

Note: Mean bootstrap estimates are based on 5,000 bootstrap samples. Marginally significant indirect effects in italics. DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking; DIF = Difficulty Identify Feelings.

Table 7*Zero Order Correlation Matrix for All Measures of Study 3 (N = 300)*

Measure	1	2	3	4	5	6	7	8	9	<i>M</i>	<i>SD</i>
1. Alexithymia – DIF	-									2.36	0.85
2. Alexithymia – DDF	.66**	-								2.78	0.82
3. Alexithymia – EOT	.15**	.33**	-							2.49	0.48
4. IRI – Empathic Concern	-.03	-.19***	-.40***	-						3.73	0.75
5. IRI – Perspective Taking	-.26**	-.31***	-.46***	.47***	-					3.50	0.68
6. Intergroup – Empathic Concern	-.00	-.15**	-.37***	.79***	.41***	-				5.35	1.23
7. Intergroup – Perspective Taking	-.17**	-.26***	-.38***	.58***	.57***	.58***	-			5.28	1.02
8. Anti-Outgroup Attitudes	.05	.14*	.18**	-.36***	-.20***	-.44***	-.41***	-		2.71	1.10
9. Anti-Outgroup Behavioural Intentions	.01	.13*	.23***	-.42***	-.27***	-.49***	-.58***	-.55***	-	2.04	0.75

Note: DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Table 8*Results of Regression Analyses, Study 3 (N = 300)*

Predictors	Outcome Variables					
	IRI – Empathic Concern	IRI – Perspective Taking	Intergroup – Empathic Concern	Intergroup – Perspective Taking	Anti-Outgroup Attitudes	Anti-Outgroup Behavioral Intentions
Alexithymia – DIF	.21 (.06)***	-.11 (.05)*	-.19 (.11) [†]	-.04 (.09)	-.03 (.09)	-.09 (.06)
Alexithymia – DDF	-.21 (.07)**	-.07 (.06)	-.19 (.11) [†]	-.15 (.09) [†]	.09 (.10)	.06 (.06)
Alexithymia – EOT	-.56 (.08)***	-.59 (.08)***	-.90 (.15)***	-.72 (.12)***	-.04 (.14)	-.01 (.09)
IRI – Empathic Concern	-	-	-	-	.06 (.13)	.08 (.08)
IRI – Perspective Taking	-	-	-	-	-.13 (.11)	.11 (.07)
Intergroup – Empathic Concern	-	-	-	-	-.32 (.08)***	-.18 (.05)***
Intergroup – Perspective Taking	-	-	-	-	-.29 (.08)***	-.37 (.05)***
R^2	.19	.25	.15	.17	.24	.39
f^2	.23	.33	.18	.20	.32	.64
F	23.84***	32.58***	17.21***	19.75***	13.04***	26.58***
df	(3,295)	(3,295)	(3,295)	(3,295)	(7,291)	(7,291)

Note. Unstandardized regression coefficients (standard errors in parentheses) are reported. DDF = Difficulty Describing Feelings; EOT =

Externally Oriented Thinking; DIF = Difficulty Identify Feelings. [†] $p < .10$; * $p < .05$; *** $p < .001$.

Table 9*Indirect Effects of the Hypothesized, Mediated Model, Study 3 (N = 300)*

Predictor Variable	Mediator	Outcome Variable	Mean Bootstrap Estimate (SE)	Percentile Confidence Interval (95-90%)
DDF	IRI – Empathic Concern	Anti-Outgroup Attitudes	-0.0142 (.03)	[-0.0889, 0.0436]
DDF	IRI – Perspective Taking	Anti-Outgroup Attitudes	-0.0085 (.01)	[-0.0475, 0.0043]
DDF	Intergroup – Empathic Concern	Anti-Outgroup Attitudes	0.0592 (.04)	[0.0015, 0.1478]
DDF	Intergroup – Perspective Taking	Anti-Outgroup Attitudes	-0.0437 (.03)	[0.0000, 0.1085]
EOT	IRI – Empathic Concern	Anti-Outgroup Attitudes	-0.0371 (.08)	[-0.1956, 0.1232]
EOT	IRI – Perspective Taking	Anti-Outgroup Attitudes	-0.0755 (.07)	[-0.2274, 0.0431]
EOT	Intergroup – Empathic Concern	Anti-Outgroup Attitudes	0.2855 (.08)	[0.1430, 0.4755]
EOT	Intergroup – Perspective Taking	Anti-Outgroup Attitudes	0.2054 (.07)	[0.0911, 0.3592]
DIF	IRI – Empathic Concern	Anti-Outgroup Attitudes	0.0141 (.03)	[-0.0428, 0.0900]
DIF	IRI – Perspective Taking	Anti-Outgroup Attitudes	-0.0147 (.02)	[-0.0614, 0.0062]
DIF	Intergroup – Empathic Concern	Anti-Outgroup Attitudes	-0.0608 (.04)	[-0.1412, -0.0070]
DIF	Intergroup – Perspective Taking	Anti-Outgroup Attitudes	0.0121 (.03)	[-0.0455, 0.0669]

DDF	IRI – Empathic Concern	Anti-Outgroup Behavioral Intentions	-.0181 (.02)	[-0.0651, 0.0125]
DDF	IRI – Perspective Taking	Anti-Outgroup Behavioral Intentions	-.0070 (.01)	[-0.0333, 0.0024]
DDF	Intergroup – Empathic Concern	Anti-Outgroup Behavioral Intentions	<i>.0340 (.03)</i>	<i>[0.0011, 0.0855]</i>
DDF	Intergroup – Perspective Taking	Anti-Outgroup Behavioral Intentions	<i>.0577 (.04)</i>	<i>[0.0010, 0.1271]</i>
EOT	IRI – Empathic Concern	Anti-Outgroup Behavioral Intentions	-.0472 (.05)	[-0.1448, 0.0415]
EOT	IRI – Perspective Taking	Anti-Outgroup Behavioral Intentions	-.0612 (.04)	[-0.1419, 0.0080]
EOT	Intergroup – Empathic Concern	Anti-Outgroup Behavioral Intentions	.1626 (.05)	[0.0736, 0.2731]
EOT	Intergroup – Perspective Taking	Anti-Outgroup Behavioral Intentions	.2717 (.06)	[0.1779, 0.4097]
DIF	IRI – Empathic Concern	Anti-Outgroup Behavioral Intentions	.0180 (.02)	[-0.0122, 0.0644]
DIF	IRI – Perspective Taking	Anti-Outgroup Behavioral Intentions	<i>-.0125 (.01)</i>	<i>[-0.0368, -0.0009]</i>
DIF	Intergroup – Empathic Concern	Anti-Outgroup Behavioral Intentions	<i>-.0347 (.02)</i>	<i>[-0.0803, -0.0049]</i>
DIF	Intergroup – Perspective Taking	Anti-Outgroup Behavioral Intentions	.0160 (.04)	[-0.0615, 0.0866]

Note. Mean bootstrap estimates are based on 5,000 bootstrap samples. Significant indirect effects (95% confidence interval) are boldfaced; marginally significant indirect effects (90% confidence interval) are reported in italics. DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking; DIF = Difficulty Identify Feelings.

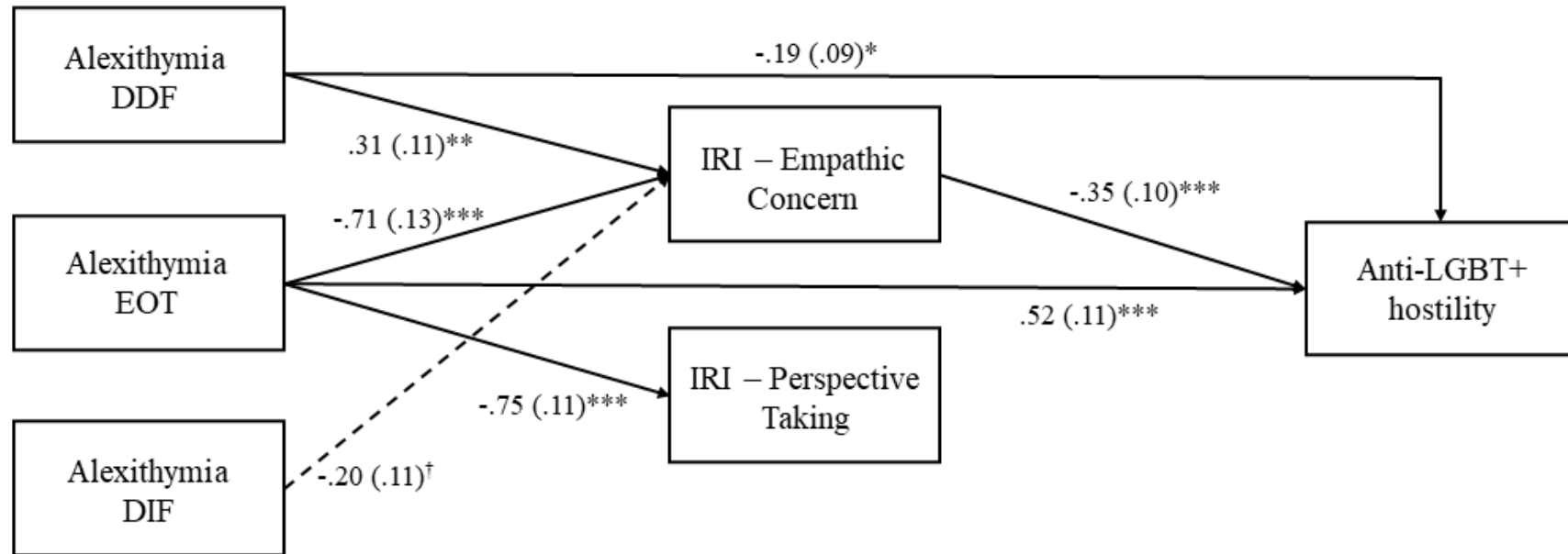


Figure 1. Regression model of the association between alexithymia with anti-LGBT+ hostility, mediated by empathic concern, Study 1 ($N = 151$). Significant unstandardized coefficients (standard error in parentheses) are reported. Solid lines indicate significant coefficients; dashed lines correspond to marginally significant associations. DDF = Difficulty Describing Feelings; EOT = External Oriented Thinking; DIF = Difficulty Identifying Feelings. † $p < .07$, * $p < .05$, ** $p < .01$, *** $p < .001$.

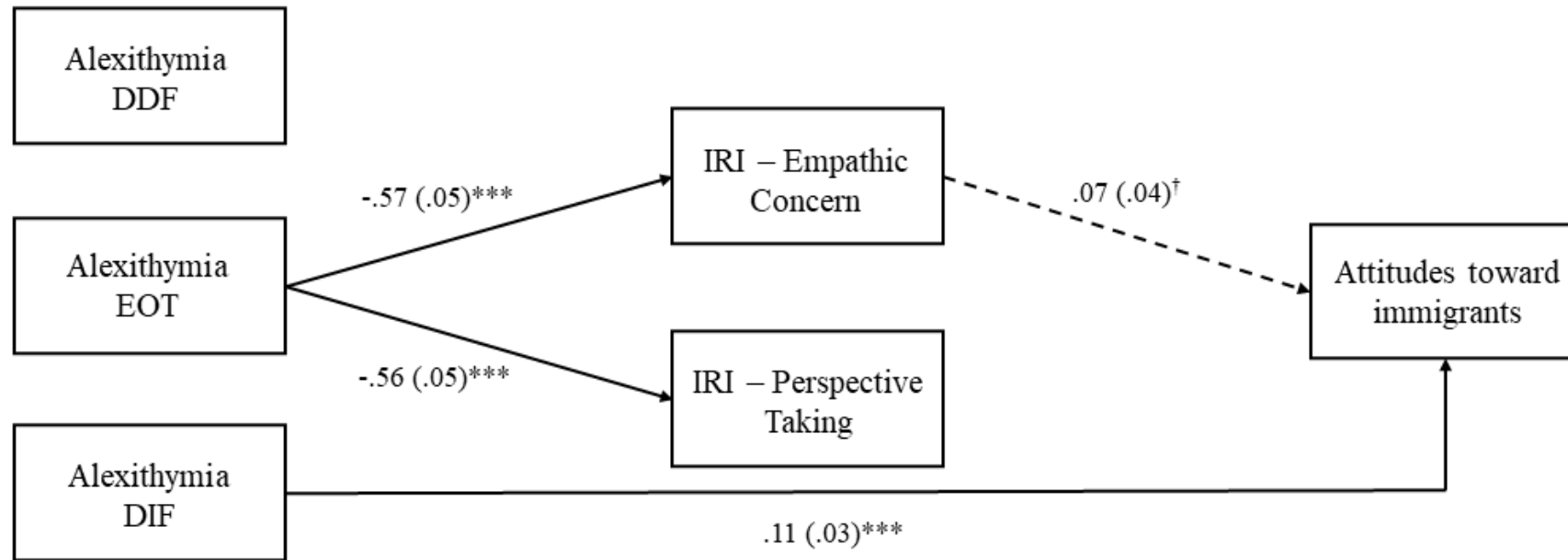


Figure 2. Regression model of the association between alexithymia with anti-immigrant attitudes, mediated by empathic concern, Study 2 ($N = 381$). Significant unstandardized coefficients (standard error in parentheses) are reported. Solid lines indicate significant coefficients; dashed lines correspond to marginally significant associations. DDF = Difficulty Describing Feelings; EOT = External Oriented Thinking; DIF = Difficulty Identifying Feelings. $^{\dagger} p < .08$, $^{***} p < .001$.

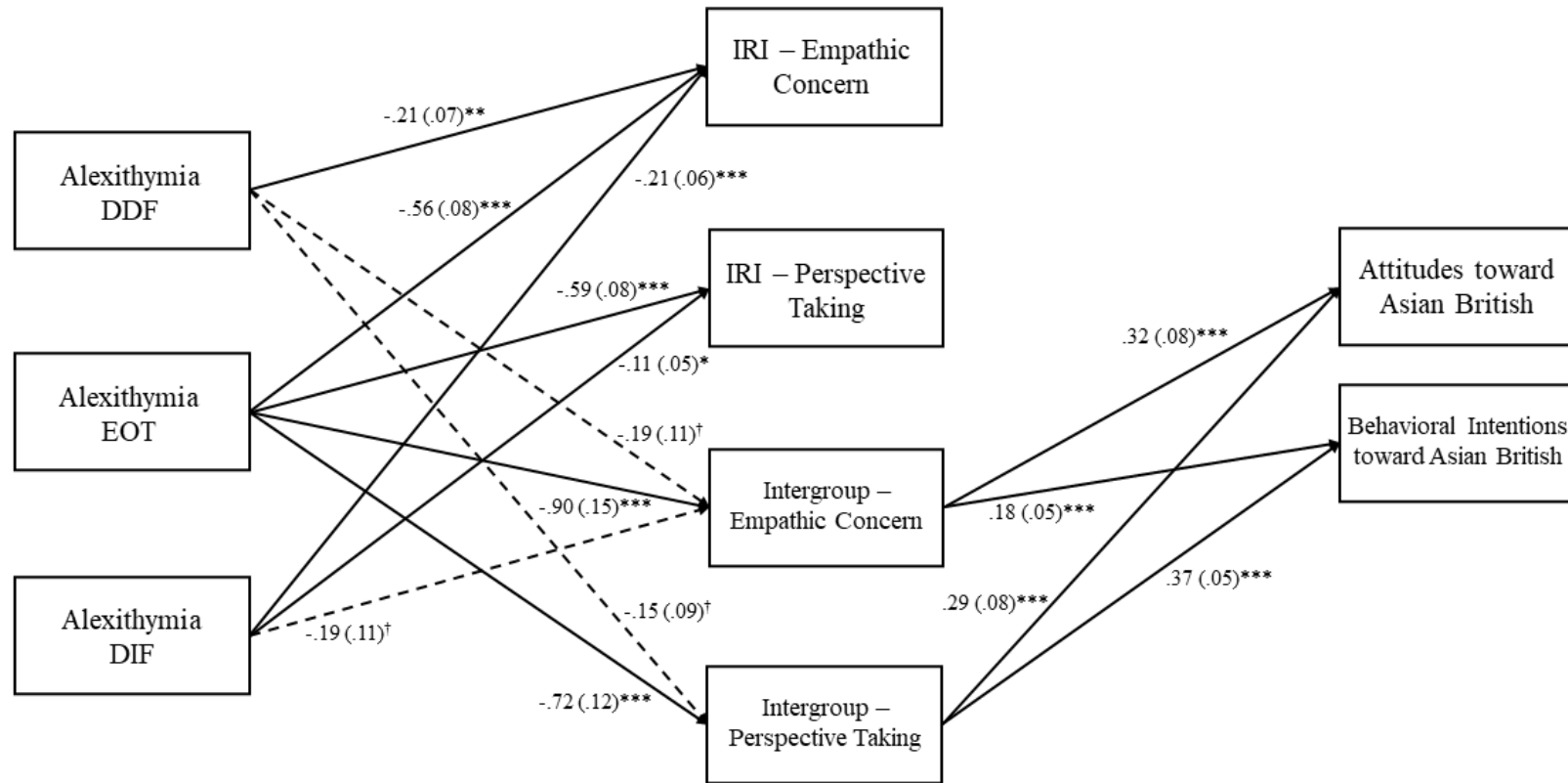


Figure 3. Regression model of the association between alexithymia with anti-outgroup attitudes and anti-outgroup behavioral intentions toward Asian British people, mediated by intergroup empathic concern and perspective-taking, Study 3 ($N = 300$). Significant unstandardized coefficients (standard error in parentheses) are reported. Solid lines indicate significant coefficients; dashed lines correspond to marginally significant associations. DDF = Difficulty Describing Feelings; EOT = External Oriented Thinking; DIF = Difficulty Identifying Feelings. † $p < .08$, *** $p < .001$.

Supplementary Material

Avoiding Affect in Intergroup Relations: The Roles of Dispositional and Intergroup Empathy in the Relationship between Alexithymia and Prejudice

Additional Analyses

A. Gender Differences

As there is literature generally showing gender differences in experiencing empathy (i.e., women are generally more empathic than men, see e.g., Zahn-Waxler et al., 1991), the hypothesized models in Studies 1-3 were replicated including gender (coded as 1 = man and 2 = woman) as a covariate. In Study 1, confirming the literature, results showed that gender is positively associated with both IRI dimensions, that is, women presented higher levels of empathic concern and perspective-taking than men. Regarding the main findings, no differences emerged when comparing the two models, i.e., adding gender as a covariate did not significantly affect the results. Similarly, the significance of the three indirect effects were confirmed, specifically, for DIF, *mean estimate* = 0.0704 (*SE* = .04), 95% CI [0.0071, 0.1756]; for EOT, *mean estimate* = 0.2413 (*SE* = .08), 95% CI [0.0968, 0.4349]; finally, for DDF, *mean estimate* = -0.0935 (*SE* = .04), 95% CI [-0.2077, -0.0276].

In Study 2, similar to Study 1, the hypothesized mediation model was tested including gender as a covariate (missing data and participants who preferred not to report gender were discharged from the analyses). Results partially supported the results of Study 1; on the one hand, women reported more empathic concern than men, while no gender differences emerged when considering perspective-taking; further, results replicated the relations between EOT and both IRI dimensions, along with the direct association between DIF and attitudes; finally, on the other hand, the regression coefficient, and the relative indirect effect,

linking EOT and the VD via empathic concern turned out being nonsignificant, *mean estimate* = 0.0305 (*SE* = .02), 95% CI [-0.0009, 0.0625].

In Study 3, as in Studies 1 and 2, gender was tested as a covariate in the hypothesized mediation model. First, it emerged that women indicated being more empathic than men in all four empathy measures. In addition, it was observed that women hold less anti-outgroup attitudes compared to men; no gender differences emerged considering anti-outgroup intentions. Second, findings generally replicated the main model, that is, EOT was significantly associated with all the four mediators, DIF was related with the two IRI dimensions (but not with the intergroup empathic concern as in the main model), and DDF was associated only with empathic concern (but not with the two dimensions of intergroup empathy as in the previous analysis); regarding the mediators, results were replicated, namely, the four paths from both intergroup empathic concern and perspective-taking to anti-outgroup attitudes and anti-outgroup intentions turned out being significant. Similarly, the mediated paths from EOT to the VDs via the indirect effects of intergroup empathy, were confirmed as significant; specifically, EOT → intergroup empathic concern → anti-outgroup attitudes, *mean estimate* = 0.2385 (*SE* = .07), 95% CI [0.1131, 0.4112], EOT → intergroup perspective-taking → anti-outgroup attitudes, *mean estimate* = 0.1753 (*SE* = .06), 95% CI [0.0759, 0.3112], EOT → intergroup empathic concern → anti-outgroup intentions, *mean estimate* = 0.1184 (*SE* = .04), 95% CI [0.0457, 0.2168], EOT → intergroup perspective-taking → anti-outgroup intentions, *mean estimate* = 0.2193 (*SE* = .05), 95% CI [0.1337, 0.3416]. Regarding the marginally significant mediated paths, only the indirect effect from DDF to anti-outgroup attitudes via IRI perspective-taking was confirmed, DIF → IRI perspective-taking → intentions, *mean estimate* = -0.0149 (*SE* = .01), 95% CI [-0.0427, -0.0011].

B. Intergroup Contact

We also measured contact quantity (Voci & Hewstone, 2003) and quality (Islam & Hewstone, 1993) in all three studies. Intergroup contact has been associated with reduced prejudice (Allport, 1954; Brown & Hewstone, 2005; Pettigrew & Tropp, 2006), and could moderate the negative effect of alexithymia on prejudice. Results revealed that contact was a moderator in Study 1, but not in Studies 2 and 3. Specifically, contact moderated the indirect path between alexithymia and prejudice via empathic concern, and the direct paths between EOT and DDF with the outcome variable, i.e., these relationships were significant when prior contact quality by quantity were low.

C. Empathy and Perspective-Taking

In order to replicate models from Studies 1 and 2, a further analysis for Study 3 was run, considering only the two IRI dimensions as mediators. Similarly with the previous models, the three alexithymia factors were the predictor variables, and anti-outgroup attitudes and anti-outgroup intentions were the outcome variables. Results showed that trait empathic concern (but not perspective-taking) was negatively associated with both anti-outgroup attitudes ($B = -.49$, $SE = .10$, $p < .001$) and anti-outgroup intentions ($B = -.35$, $SE = .06$, $p < .001$). Regarding the indirect effects, the following paths were significant: DIF → empathic concern → anti-outgroup attitudes ($mean\ estimate = -.1039$, $SE = .04$, 95% CI [-0.1983, -0.0385]), DDF → empathic concern → anti-outgroup attitudes ($mean\ estimate = .1044$, $SE = .04$, 95% CI [0.0376, 0.2084]), EOT → empathic concern → anti-outgroup attitudes ($mean\ estimate = .2733$, $SE = .07$, 95% CI [0.1522, 0.4335]), DIF → empathic concern → anti-outgroup intentions ($mean\ estimate = -.0743$, $SE = .03$, 95% CI [-0.1409, -0.0281]), DDF → empathic concern → anti-outgroup intentions ($mean\ estimate = .0747$, $SE = .03$, 95% CI

[0.0284, 0.1448]), EOT → empathic concern → anti-outgroup intentions (*mean estimate* = .1952, *SE* = .05, 95% CI [0.1134, 0.3046]).