

Is the relationship between alexithymia and aggression context-dependent?

Impact of group membership and belief similarity

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## \*Highlights (for review)

- Alexithymia involves difficulty identifying, describing, and interpreting emotion
- We examine how alexithymic people react to people who are different from them
- Interacting with people from different groups activates anger in alexithymic people
- Such interactions also make them believe that they are aggressive people
- However, they do not act more aggressively

## Abstract

Previous research finds positive relationships between alexithymia and aggression. This study examined potential interpersonal factors that might elicit aggressiveness among people with high levels of alexithymia. College student participants completed the Toronto Alexithymia Scale online prior to interacting with their partners in the laboratory. Participants interacted with a partner who i) was from their in-group versus out-group, and ii) held similar versus different beliefs on an important topic. Results show that compared to low-alexithymic individuals, individuals with high levels of alexithymia reported increased anger after interacting with out-group members who held different beliefs. This corresponded to increased trait aggressiveness when interacting with out-group members. No differences emerged regarding behavioral aggression. Implications for the association between alexithymia and aggression are discussed.

Keywords: Alexithymia, aggression, self-construal, independence, interdependence, in-group, out-group

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## 1. Introduction

Emotions serve important functions in our daily lives. They signal us when personal concerns are at stake, motivate us to attain goals, and teach us which situations should be avoided or approached (Frijda, 1986). Although these functions can be and often are unconscious (Levenson, 1999), an awareness of which emotion one is feeling, and why, helps to regulate (negative) emotions in healthy and socially appropriate ways (Lambie & Marcel, 2002; Rieffe et al., 2010). Alexithymia is the inability to differentiate, describe, and label one's emotions (Bagby, Parker, & Taylor, 1994). This inability has been related to various mental health problems, interpersonal problems, and even aggression at times. However, research on the relation between alexithymia and aggression has been focused on finding overall effects, rather than examining potential factors that might elicit increased aggressiveness among people with alexithymia. Such factors are likely to be found within interpersonal situations, which are inherently emotional, and features of these situations might elicit more or less aggressiveness for alexithymic individuals. The aim of the current study was to experimentally examine two factors that were varied within a social interaction: the similarity of the group membership versus the personal beliefs of a social interaction partner.

*A brief history of alexithymia.* According to Krystal (1979), a clinician and pioneer in alexithymia, typical alexithymic individuals are 'emotion-blind.' They are primarily focused on bodily symptoms, without being able to associate somatic responses with emotions, to differentiate between emotions, or to link feelings to causes of elicitation (Sifneos, 1996; Taylor, 1999). In other words, alexithymic people may fail to use their emotions adaptively. Indeed, Krystal's observations have been supported by numerous psychological studies, showing positive relations between alexithymia, somatic complaints, and other internalizing disorders

such as depression and anxiety disorders (Mattila et al., 2008; Picardi et al., 2011, Rieffe et al., 2010).

In addition to consequences for one's private psychological functioning, alexithymia is also related to interpersonal functioning. People with alexithymia exhibit lower empathy (Grynberg, Luminet, Comeille, Grezes, & Berthoz, 2010; Jolliffe & Farrington, 2006), fewer social relationships, a lower likelihood of marriage, and more interpersonal difficulties (Kauhanen, Kapalan, Julkunen, Wilson, & Salonen, 1993; Spitzer, Siebel-Jurges, Barnow, Grabe, & Greyberger, 2005), compared to people without alexithymia.

But are alexithymic individuals more aggressive? According to Levenson (1999), awareness of one's own emotions can prevent us from primitive, uncontrolled emotional responses when facing negative events. Past research supports Levenson's theory by showing that alexithymia is related to externalizing problems such as increased expressions of anger and higher trait aggressiveness (Fossati et al., 2009; Manninen et al., 2011; Payer, Lieberman, & London, 2011), and that violent offenders have higher levels of alexithymia relative to controls (Ates et al., 2009; Berenbaun & Irvin, 1996; Hornsveld & Kraaimaat, 2011; Kroner & Forth, 1995; Moriarty, Stough, Tidmarsh, Eger, & Dennison, 2001; Teten, Miller, Bailey, Dunn, & Kent, 2008). However, no research that we are aware of examines the direct relationship between alexithymia and *behavioral aggression* in addition to self-reported trait aggressiveness.

Moreover, according to the General Aggression Model (Anderson & Bushman, 2002), it is important to consider how personality traits interact with situational variables in predicting aggression. Yet, no research that we are aware of directly examines *situational conditions* that may trigger *self-reported* and *behavioral aggression* within alexithymic individuals, which is a question that we address in the current study. One promising study examined the extent to which

males reported restricting feeling, sharing, expressing, and displaying strong emotions because of their masculine gender role identification. This emotional restriction may be related to alexithymia, however, it involves the *motivation* to limit emotional involvement rather than an *inability* to appropriately use emotional information. Participants with restricted emotionality were more likely to administer shocks to interaction partners, especially after their masculinity was threatened (Cohn, Seibert, & Zeichner, 2009). Although the study provides an important first step in understanding the potential relationship between alexithymia and behavioral aggression, the study does not examine alexithymia more broadly, nor does it examine the role of partner characteristics in triggering aggressive perceptions or behaviors. Thus, in the current study we examine the impact of *group membership* and *belief similarity* of a social interaction partner, which can shed light on when aggression (or self-perceptions of aggressiveness) is likely to be triggered in high-level alexithymic individuals.

*Alexithymia and sensitivity to interpersonal factors.* Why should the similarity or difference of a social interaction partner's group membership or beliefs affect people with alexithymia? Alexithymia has been linked to high preferences for interdependence and low preferences for independence between oneself and others (Konrath, Grynberg, Corneille, Hammig, & Luminet, 2011). Individuals with independent self-construals emphasize assertiveness and emotional expressiveness in interpersonal relations (Markus & Kitayama, 1991), and are more proficient in identifying and describing their emotions (i.e. low alexithymia) than individuals with interdependent self-construals who have strong in- and out-group boundaries and stress maintaining in-group harmony. Following this line of thinking, it is likely that high-level alexithymic individuals are more sensitive to their partners' group memberships compared to low-level alexithymic individuals. Specifically, after interacting with out-group

members, high-level alexithymic individuals may feel greater levels of threat and overall discomfort than low-level alexithymic individuals, whose emotional expressions may be less influenced by whether others belong to their group.

In a similar vein, having different beliefs than others may be more likely to impact an alexithymic individual's angry mood. A preoccupation with interpersonal relationships and a preference for interdependence is likely to increase sensitivity and value for similarities of beliefs with others (Yamada & Singelis, 1999). Consequently, compared to individuals with low alexithymia, individuals with high levels of alexithymia may feel more threatened when interacting with out-group members and people with different beliefs, which both may elicit primitive, uncontrolled aggressive responses, due to the failure to correctly identify and interpret how the underlying emotion affects them.

*The current study.* The aim of this study was to examine the relation between alexithymia and aggression within everyday social interactions. We specifically explored how interacting with partners who hold similar versus different *group memberships* and similar versus different *personal beliefs* affects the relationship between alexithymia and aggression. Specifically, we measured participants' 1) angry mood, 2) trait aggressiveness, and 3) behavioral aggression. Trait aggressiveness was included as a dependent measure in line with prior work demonstrating that even supposedly stable traits can be influenced by situations (e.g., Pool, Wood, & Leck, 1998; Sales & Friend, 1973; Schwarz et al., 1991).

Consistent with research described above, we predicted that high-level alexithymic participants would report more anger and increased trait aggressiveness, and correspondingly exhibit more behavioral aggression towards their interaction partners, compared to low-level alexithymic participants. However, we predicted that these effects would depend on the type of

social interaction partner to which they were assigned. We specifically expected that these effects would be strongest when interacting with *out-group* partners and partners with *different personal beliefs*, compared to when interacting with in-group partners and partners with similar beliefs.

## 2. Method

### 2.1. Participants

Participants were 126 college students (75 females; 70.6% Caucasian;  $M_{age}=19.9$ ) who participated for introductory psychology course credit.

### 2.2. Design

This study employed a 2 (Group: In-group versus Out-group) X 2 (Belief: Similar versus Different) design. Participants were randomly assigned to interact with partners from similar (in-group) versus different (out-group) groups, who held similar versus different beliefs from themselves.

### 2.3. Procedure

*Part 1: Online questionnaire.* We first measured participants' in-groups versus out-groups, using an affect-based assessment of various on-campus groups. Participants ranked 10 social groups on campus from 1 (*most warm/favorable*) to 10 (*most cold/unfavorable*). This allowed us to indirectly identify participants' in-groups (rank 1) and out-groups (rank 10). The 10 groups were: *Atheists, Buddhists, Catholics, Democrats, Gays and Lesbians, Hindus, Jews, Muslims, Protestants, and Republicans*. At the end of the survey participants listed their actual religious or political background, and these all matched their top three favorability rankings, providing validity for this measure as an unobtrusive in-group preference assessment.



The participants then completed the Toronto Alexithymia Scale (TAS-20, Bagby et al., 1994). The TAS-20 measures the ability to identify and describe emotions, as well as the degree of externally oriented thinking. Participants indicated the extent to which they agreed with statements such as: “I am often confused about what emotion I am feeling” (1=*strongly disagree*; 5=*strongly agree*;  $\alpha=.82$ ).

*Part 2: Laboratory study.* Participants were told that they were participating in a “taste perception and social interaction” study with a partner who was selected by their online questionnaire responses. In reality, all information about the partner was bogus and prepared beforehand by experimenters. A time lapse of at least 48 hours between the online and in-lab parts of the study increased the believability that the experimenters needed time to match participants. Throughout the experiment, participants did not see their partner and were reminded that they would remain anonymous.

The experiment consisted of three sections: (a) *Social interaction*. This section involved exchanging background information, writing an essay, and exchanging that essay with their so-called partner. To make participants aware of their partner’s group, participants “formed an impression of their partner” by exchanging the name and description of their most important student organization. Suppose that in the online study participants indicated that Protestants were ranked 1 and Muslims, 10. In the In-group Condition participants would receive their partner’s form with “Student Union of *Protestants*” as his/her most important student organization. In the Out-group Condition, the form would have read “Student Union of *Muslims*.”

Next, we followed the protocol of many aggression studies by having participants write an essay on their abortion position (pro-life or pro-choice) that would later be exchanged with their “partner” (e.g. Bushman, Baumeister, & Stack, 1999; Konrath, Bushman, & Campbell,

2006). This allowed us to manipulate belief (same or different) on an important issue. Both partner essays were 250 hand-written words long and reflected key arguments from each side of the debate.

(b) *Taste perception.* Participants were next given an opportunity to engage in behavioral aggression by allocating hot sauce to their partner, under the guise of the ‘taste perception’ part of the study (Lieberman, Solomon, Greenberg, & McGregor, 1999). Participants were told that we aimed to determine how social interaction influenced taste perception. Participants completed a taste preference inventory and were also given their partner’s taste preference inventory, which indicated strong dislike for spicy foods. Next, participants were given a bottle of hot sauce (with the label “PAIN 100%”) and first got a sense of its strength by tasting a small amount. They then poured hot sauce into a cup and to sealed it with aluminum foil so the experimenter could not see the amount allocated. They knew their partner was required to consume *all* of the hot sauce that they allocated. The experimenter later measured the net weight (in grams) of the hot sauce using a high-precision food scale (0.01 gram graduations).

(c) *Self-report questionnaire.* Finally, participants completed a questionnaire in which they indicated how they felt towards their partner in terms of comfort, liking, and similarity (1=*not at all*; 7=*very much*). The three questions were averaged and served as our manipulation check ( $\alpha=.61$ ). They then completed the 29-item Aggression Questionnaire to assess self-reported aggressive traits (1=*extremely uncharacteristic of me*; 5=*extremely characteristic of me*;  $\alpha=.89$ ; Buss & Perry, 1992), and two items of the Positive and Negative Affect Schedule (*hostility* and *irritability*: 1=*very slightly or not at all*; 5=*extremely*;  $\alpha=.56$ ) to assess angry mood (Watson, Clark, & Tellegen, 1988).<sup>1</sup>

Before being debriefed, experimenters asked participants to guess its purpose. None guessed the true purpose of the study.

### 3. Results

#### 3.1. *Descriptive statistics*

The majority of participants in this study (56.7%) ranked their most favorable group to be Protestants, Democrats, or Catholics, and their least favorable group to be Atheists, Republicans, or Muslims (76.3%; Table 1). In addition, most participants (64.6%) were pro-choice.

#### 3.2. *Data analytic strategy*

Alexithymia was calculated by summing all 20 items. Consistent with much prior research (e.g. Berenbaun & Irvin, 1996; Ciarrochi & Bilich, 2006; Taylor, Bagby, & Parker, 1997, Loas, Fremaux, Otmani, & Verrier, 1995; Salminen, Saarijarvi, Aarela, Toikka, & Kauhanen, 1999), participants were categorized as high-level alexithymic if they scored above 60 on alexithymia (33% of sample), and low-level alexithymic if they scored 60 or below. A 2 (Alexithymia: Low versus High) X 2 (Belief: Similar versus Different) X 2 (Group: In-group versus Out-group) ANCOVA was conducted to examine the effects of these factors on a) partner evaluation (comfort, liking, and similarity), b) angry mood, c) self-reported aggressiveness, and d) behavioral aggression. Gender and age were included as covariates; males and younger participants might feel more hostile and irritable, report more trait aggressiveness, and behave more aggressively (e.g., Ryan, 2009). Effects of these covariates are reported below when significant.

#### 3.3. *Manipulation check.*

A main effect of Group indicated that participants interacting with out-group members ( $M=4.35$ ,  $SE=.10$ ) reported feeling less comfort, liking, and similarity with their partners than

when interacting with in-group members ( $M=5.13$ ,  $SE=.11$ ),  $F(1,116)=27.96$ ,  $p<.001$ ,  $\eta^2$  *partial*=.19. A main effect of Belief emerged such that participants who interacted with partners holding different beliefs ( $M=3.83$ ,  $SE=.11$ ) evaluated their partners less positively than those in the similar belief condition ( $M=5.64$ ,  $SE=.10$ ),  $F(1,116)=156.02$ ,  $p<.001$ ,  $\eta^2$  *partial*=.57. This confirmed the effectiveness of our manipulations. There was no effect of Alexithymia,  $p=.60$ , or any interactions,  $ps>.13$ .

#### 3.4. Dependent variables.

*Angry mood.* A main effect of both Belief and Group emerged. Participants reported feeling more hostile and irritable when interacting with out-group ( $M=1.67$ ,  $SE=.08$ ) versus in-group partners ( $M=1.30$ ,  $SE=.09$ ),  $F(1,116)=10.47$ ,  $p=.002$ ,  $\eta^2$  *partial*=.08, and also when interacting with partners holding different ( $M=1.76$ ,  $SE=.09$ ) versus similar beliefs ( $M=1.25$ ,  $SE=.08$ ),  $F(1,116)=17.81$ ,  $p<.001$ ,  $\eta^2$  *partial*=.13.

These effects were qualified by an Alexithymia X Group interaction,  $F(1,116)=6.85$ ,  $p=.01$ ,  $\eta^2$  *partial*=.06. As can be seen in Figure 1, high-level alexithymic participants reported more anger after interacting with out-group ( $M=1.85$ ,  $SE=.15$ ) compared to in-group members ( $M=1.22$ ,  $SE=.17$ ),  $F(1,37)=7.32$ ,  $p=.01$ ,  $\eta^2$  *partial*=.17. No differences between in-group and out-group conditions emerged for low-level alexithymic participants ( $M=1.40$ ,  $SE=.10$  and  $M=1.39$ ,  $SE=.10$ , respectively),  $F(1,81)=.16$ ,  $p=.69$ ,  $\eta^2$  *partial*=.00. Additionally, since the three-way interaction (Alexithymia X Group X Belief) only emerged at the marginal level,  $F(1,116)=2.88$ ,  $p=.092$ ,  $\eta^2$  *partial*=.02, we cannot make any strong conclusions about it. No other effects emerged,  $ps>.13$ .

*Trait aggressiveness.* There was a main effect of Gender,  $F(1,125)=5.07$ ,  $p=.03$ ,  $\eta^2$  *partial*=.04, indicating that males reported higher trait aggressiveness than females ( $M=2.51$ ,

$SE=.06$  and  $M=2.24$ ,  $SE=.08$ , respectively),  $F(1,125)=6.38$ ,  $p=.01$ ,  $\eta^2 \text{ partial}=.05$ . Further, there was a main effect of Alexithymia, such that high-level alexithymic participants ( $M=2.53$ ,  $SE=.08$ ) reported higher trait aggressiveness than low-level alexithymic participants ( $M=2.26$ ,  $SE=.06$ ),  $F(1,116)=6.68$ ,  $p=.011$ ,  $\eta^2 \text{ partial}=.05$ . This effect was qualified by an Alexithymia X Group interaction,  $F(1,116)=4.43$ ,  $p=.037$ . No other effects emerged,  $ps>.33$ . As can be seen in Figure 2, high-level alexithymic participants reported more aggressiveness after interacting with out-group ( $M=2.71$ ,  $SE=.10$ ) compared to in-group members ( $M=2.38$ ,  $SE=.11$ ),  $F(1,37)=4.35$ ,  $p=.044$ ,  $\eta^2 \text{ partial}=.11$ . No differences between in-group and out-group conditions emerged for low-level alexithymic participants ( $M=2.32$ ,  $SE=.09$  and  $M=2.19$ ,  $SE=.08$ , respectively),  $F(1,81)=1.22$ ,  $p=.27$ ,  $\eta^2 \text{ partial}=.02$ . Additionally, high-level alexithymic participants reported more aggressiveness after interacting with out-group members compared to their low-level alexithymic counterparts,  $F(1,60)=15.77$ ,  $p<.001$ ,  $\eta^2 \text{ partial}=.21$ .

*Aggressive behavior.* We log-transformed the grams of hot sauce allocated to partners to reduce effects of outliers. A main effect of Belief was revealed,  $F(1,116)=4.82$ ,  $p=.03$ ,  $\eta^2 \text{ partial}=.04$ . Participants gave more hot sauce to partners with different compared to similar beliefs ( $M=.29$ ,  $SE=.05$ ;  $M=.15$ ,  $SE=.04$ , respectively). No other significant findings emerged,  $ps>.11$ . In addition, hot sauce allocation was unrelated to self-reported aggressiveness, overall ( $r=.00$ ,  $p=1.00$ ), or within each experimental condition,  $ps>.14$ .

#### 4. Discussion

Our results suggest that interacting with partners who are different from the self may lead to feelings of discomfort, regardless of alexithymia level. As noted in the introduction, recognizing and describing such emotions is a prerequisite for adaptive emotion regulation, but is difficult for alexithymic individuals. Consistent with prior research, our findings replicate the

positive relationship between alexithymia and trait aggressiveness, but also provide new insight into *when* this association is likely. That is, high-level alexithymic individuals reported feeling *angrier* after interacting with out-group members, compared to interacting with ingroup members. This translated into higher self-perceptions of *aggressiveness* under the same circumstance. Given that high-level alexithymic people lack the ability to correctly interpret their feelings, it is not surprising that they would misconstrue temporarily elevated feelings of anger as meaning that they were aggressive individuals. People low in alexithymia, who are more in tune with the fleeting nature of emotional responses, did not see themselves as being more aggressive.

The significance of partner characteristics in the relationship between alexithymia and aggression aligns with previous research showing that alexithymia is associated with more interdependence (Konrath et al., 2011). Individuals emphasizing group membership and harmonious relationships might appraise interactions with different others as threatening, even in the absence of other indicators of threat. Interpersonal difference itself, especially at the group level, seems to function as a threat among high-level alexithymic individuals. The inability to identify and interpret emotions might result in the misattribution of feelings of anger to self-perceptions of aggressiveness. For high-level alexithymic individuals, situations which trigger temporary feelings of anger also seem to create perceptions of increased chronic aggressiveness. It is almost as if they are thinking, “I am feeling pretty angry right now, so I must be a pretty aggressive person.” Although deficits in emotion-processing among high-alexithymic individuals have been demonstrated by numerous studies (e.g. Lane, Sechrest, Riedel, Shapiro, & Kaszniak, 2000; Luminet, Vermeulen, Demaret, Taylor, & Bagby, 2006; Roedema & Simons, 1999), this

particular *mood-to-trait misattribution effect* is likely to be context dependent and relevant in emotionally-arousing interpersonal situations.

Although social interactions without explicit provocations created more anger and self-perceived aggressiveness among high-level alexithymic individuals, this had no consequences for their actual behavior. Participants were less likely to allocate hot sauce to partners with similar beliefs, but this effect did not depend on alexithymia. The lack of relation between participants' trait aggression and behavioral aggression might be due to the low-threat situation. Previous hot sauce studies involved manipulated levels of high-threat (e.g. social rejection), which is strongly related to behavioral aggression (e.g., Ayduk, Gyurak, & Luerssen, 2008; DeWall, Finkel, & Denson, 2011; Wesselmann, Butler, Williams, & Pickett, 2010). Examining the role of high-threat in eliciting aggression in alexithymia would be an interesting avenue for future research.

Another possibility is that although our non-clinical group of alexithymic participants might have difficulties in understanding and recognizing emotions, they may have intact knowledge of socially appropriate behaviors. When this knowledge does not differ from low-level alexithymic individuals, especially in low-threat situations, no difference in behavior is to be expected. This is another reason to examine the effect of other more threatening situations in future studies.

A strength of the current research is that the experimental design goes beyond the majority of research on alexithymia and aggression, which is correlational. However, despite this advantage and the possibility of controlling many factors in the lab, our behavioral measure might be inadequate because of social desirability, compared to real-world situations. Furthermore, future research could also benefit from replicating our findings among different

populations (e.g. clinical, non-student, and more diverse cultural populations). In our sample, approximately one-third (33%) of participants could be classified as high-level alexithymic, which is a relatively high number given past prevalence estimates ranging from 7.3% to 20% in non-clinical populations from various countries and using various measures of alexithymia (e.g. Kokkonen et al, 2001; Posse & Hallstrom, 1999). The unusually high prevalence in our sample is noteworthy, and warrants future examination. Whether it was a quirk of this particular sample, or a trend toward increased alexithymia in recent years, cannot be determined from this one example.

In sum, our findings suggest that high-level alexithymic individuals may be especially sensitive to the group membership of their interaction partners. Even in non-threatening interactions they report feeling angrier and see themselves as more aggressive than low-level alexithymic individuals. We propose that this contextual influence on emotional awareness should be investigated further, which will improve our understanding of the relationship between alexithymia and aggressive self-perceptions and behaviors.



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Table 1. *Distributions of in-group and out-group rankings in the current study.*

	Rank 1 (In-groups)	Rank 10 (Out-groups)
Atheists	5.5%	<b>30.7%</b>
Buddhists	11.8%	2.4%
Catholics	<b>17.3%</b>	3.9%
Democrats	<b>18.1%</b>	3.9%
LGBT	4.7%	2.4%
Hindus	8.7%	1.6%
Jews	7.1%	3.9%
Muslims	1.6%	<b>23.6%</b>
Protestants	<b>21.3%</b>	5.5%
Republicans	3.9%	<b>22.0%</b>
Sum of Top 3	<b>56.7%</b>	<b>76.3%</b>

*Note.* Top 3 most frequent rankings by participants bolded.

Figure 1. The effect of Group Membership and Alexithymia on angry mood.

Note. Error bars represent Standard Errors.

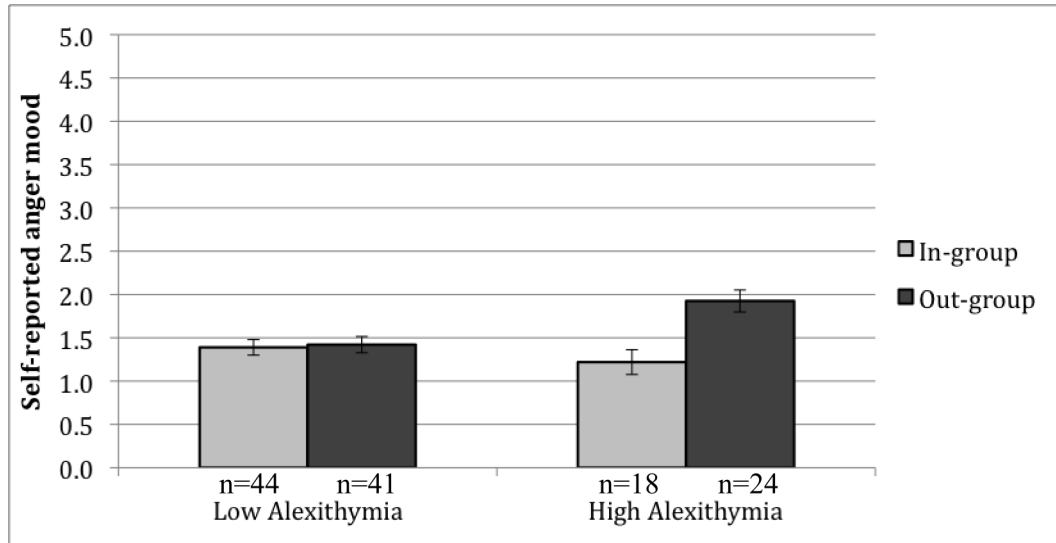
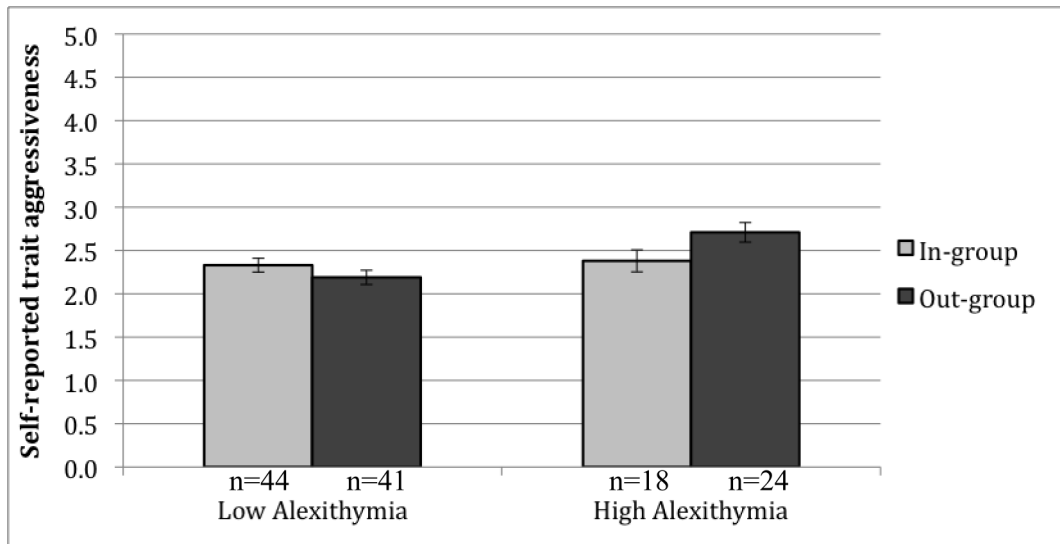




Figure 2. *The effect of Group Membership and Alexithymia on self-reported trait aggressiveness.*

Note. Error bars represent Standard Errors.



Endnote

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<sup>1</sup> As the angry mood score was missing for one participant, we substituted the mean (3.88), which allowed us to keep this participant in our sample. The results remain similar when excluding this participant.