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**What role does anxiety play in the link  
between alexithymia and coping styles?**

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## Abstract

**Background:** In recent years research into the topic of the association of alexithymia and coping styles gained relevance in the field of behavioral psychology. Previous investigations of the two concepts revealed independent associations with the concept of anxiety. However there has yet been no study addressing the issue of anxiety, as a possible moderator, in exploring an answer to what it is that strengthens or weakens the relationship between alexithymia and coping styles. Exploring the role of anxiety could thus yield new insights into the relation between alexithymic individuals and their use of certain coping styles.

**Aim:** The present study aims to investigate to what extent anxiety moderates the link between alexithymia and coping styles.

**Methods:** To analyze this an online questionnaire consisting of three psychological measurement instruments was administered to a total of two-hundred and forty-two participants. General levels of anxiety were measured via the State-Trait Anxiety Inventory (STAI). To assess the level of alexithymia, the Twenty-Item Toronto Alexithymia Scale (TAS-20) was used. The level of coping was assessed via the COPE inventory, testing for problem-focused coping, emotion-focused coping and avoidance-focused coping. Correlation analyses were used to address the proposed link between alexithymia and coping styles. A possible moderation of anxiety on the link between alexithymia and coping styles was then assessed via moderation analysis, using ‘model 1’ of the PROCESS Macro for SPSS (IBM Corp., 2017).

**Results:** The analyses yielded a statistical significant positive correlation between alexithymia and avoidance-focused coping as well as significant negative correlation’s of alexithymia with both emotion-focused and problem-focused coping. Moderation analysis showed the relationship between problem-focused coping and alexithymia to be more negative at higher levels of anxiety and the relationship between avoidance-focused coping and alexithymia to be more positive at higher levels of anxiety. However, at lower levels of anxiety there was no statistical significant relationship to be found.

**Conclusion:** In accordance with the reviewed literature, findings suggest a link between alexithymia and coping styles. Although anxiety could not be determined to have a statistically significant moderating effect on the link between alexithymia and the three main coping styles, findings indicate that, only in certain cases, this differs at higher levels of anxiety. Further research is therefore recommended.

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## Introduction

In the last decades alexithymia submerged from being mostly used within the context of psychosomatic illness to being observed within a wide variety of medical and psychiatric disorders (Coriale et al., 2012). Commonly associated with psychological and psychiatric problems like anxiety and depression, alexithymia became a more and more popular topic (Bilotta, Giacomantonio, Leone, Mancini, & Coriale, 2016). The present study addresses this topic within a general population from a behavioral psychological point of view rather than that of a clinical perspective. Namely, by putting the spotlight on the association of alexithymia with how people cope in the face of adversity or stressful events. Results of a recent study about alexithymia and avoidance coping in 110 alcoholic inpatients indicated that patients with high levels of alexithymia were more prone to misuse alcohol to cope with stressful life situations than those with low levels of alexithymia (Coriale et al., 2012). In addition to that, correlational research done by Bernard (2014) into the association between alexithymia and coping strategies demonstrated that alexithymia predicted higher avoidance coping, lower emotional approach coping and lower active approach coping. Study done by Parker, Taylor, and Bagby (1998) showed that undergraduate students, previously categorized as alexithymic, used more avoidance, distraction and emotion-oriented coping strategies, in part contradictory to the findings of Bernard (2014), while non-alexithymic students engaged more in task-oriented coping. Based on these previous studies, it can be presumed that alexithymia is foremost positively associated with the coping strategy of avoidance coping. On a related vein, there is some evidence that alexithymia is positively correlated with anxiety (Berthoz, Consoli, Perez-Diaz, & Jouvent, 1999). These findings point to a research gap concerning the possibility of an interfering phenomena, influencing the link between alexithymia and coping styles.

The aim of this study is to explore if anxiety moderates the link between coping styles and alexithymia, and in what way. Anxiety as a moderator would have either a positive or negative influence on the strength of the link between alexithymia and coping styles, thus actively influencing their relationship. Because there are other ways to cope with challenges and adverse events besides avoiding them (i.e. avoidance-focused coping) one could argue that there is yet unexplored territory regarding the link between alexithymia and coping that could yield important new insights. This study will look into this unexplored territory by first taking a closer look at the condition of alexithymia and its main facets.

To address the differences in subjective coping, this research investigates the association of certain coping styles with the condition of alexithymia, as well as the association of alexithymia and anxiety, by reviewing the evidence in scientific literature. This lays the ground for addressing the main aim of this study, which is to assess the existence and if so, the nature of the link between anxiety, alexithymia and coping styles. More specific, it will be examined whether anxiety is a moderator of the link between alexithymia and coping styles. To achieve this aim, the study uses an online questionnaire consisting of three separate measurement instruments, measuring alexithymia, anxiety and coping styles. The study focusses on a random sample of the general population, collected via convenience sampling primarily in the Netherlands and Germany.

To be able to have a clear understanding the main concepts involved, a more detailed account of each of them will be provided in the following.

## **Alexithymia**

The term alexithymia, derived from the Greek meaning “lack of words for emotions” was first introduced in 1972 (Sifneos, 1972). It manifests itself by the individual experiencing difficulties in identifying as well as communicating his or her feelings, having an impoverished imaginative life and an externally orientated cognitive style (Taylor, Parker, Bagby, & Bourke, 1996). The occurrence of alexithymia is not limited to a certain population; research shows that alexithymia is a relatively common personality characteristic in the general public (Karukivi & Saarijärvi, 2014). The prevalence rate of alexithymia was assessed in a study referring to a proportion of the general population of Finland and was found to be 13%, over this sample (Salminen, Saarijärvi, Äärelä, Toikka, & Kauhanen, 1999).

### **Theoretical concept of Alexithymia**

In order to do empirical research Taylor, Bagby, and Parker (1985), while making use of its clinical description by Nemiah and Sifneos (1976), constructed a model of alexithymia consisting of four, interrelated (positively correlated), facets as the following:

- Difficulty identifying feelings in the self (DIF);
- Difficulties describing feelings (DDF);

- An externally oriented, cognitive, thinking style (EOT) i.e. a stronger focus on the external world, expressing oneself through once active behavioral actions rather than laying the focus on internal states and verbal expressive behavior;
- Difficulty fantasizing (DFAN) which manifests as absence or scarcity of daydreams, fantasies and imaginal processes.

DIF assesses the level of mental representation of affects to identifying and distinguishing between feelings and bodily sensation, DDF, also referred to as the ability to communicate emotions, assesses the personal ability to attach words to one's feelings in order to verbally communicate them and EOT, or the ability of externally oriented thinking, assesses operative thinking including the level of one's attentiveness in his or her inner emotional life (Bagby, Taylor, & Parker, 1994; Taylor, Bagby, & Parker, 2016). Externally oriented thinking or “pensé opératoire” is also referred to as a reality based cognitive style (Bankier, Aigner, & Bach, 2001), with an emphasis on external concrete stimuli rather than inner emotions (Dere et al., 2013).

The fourth facet of the construct was defined as a difficulty to fantasize, or DFAN, describing an impoverished imaginative life or the absence of daydreams and fantasies (Preece, Becerra, Allan, Robinson, & Dandy, 2017). However explored by Taylor, Bagby, and Parker (1985) as part of the original construct, DFAN was removed from the most common measuring instruments because of a positive correlation with social desirability and/or low magnitude corrected item-total correlations (Berthoz et al., 1999; Taylor et al., 2016).

These categorizations resulted in the creation of the, as of today, most widely used instrument for the measurement of alexithymia, the Toronto Alexithymia Scale (TAS-20; Bagby, Taylor, & Parker, 1994), a psychometric, self-report questionnaire to assess the difference in levels of alexithymia. Figure 1 shows a model of the alexithymia construct composed by Taylor, Bagby, and Parker (1985) on which the TAS-20 ultimately was based. The model displayed in this figure was adopted from Preece and colleagues (2010) who made an effort in visualizing a number of constructs related to alexithymia. This model further specifies two broader components, affect awareness, resulting out of a close link between DIF and DDF and operative thinking, resulting out of a close link between EOT and DFAN (Bagby, Taylor, Parker, & Dickens, 2006; Taylor et al., 1999). Double headed arrows in Figure 1 indicate that these components were found to be positively correlated (Preece et al., 2017).

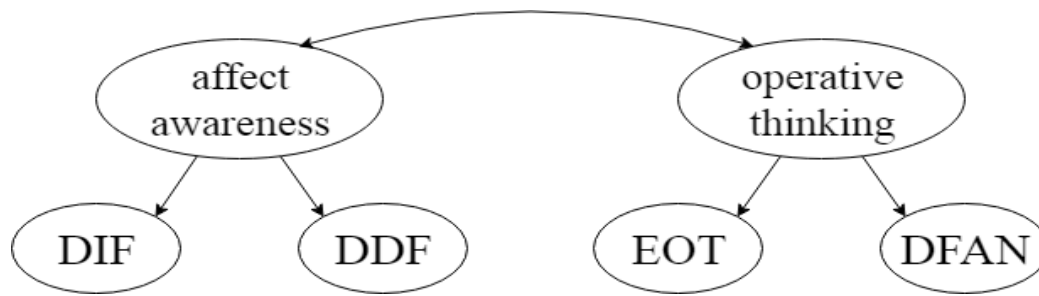


Figure 1.

Alexithymia construct by Taylor, Bagby, & Parker (1999), illustrated by D. Preece et al. / *Personality and Individual Differences* 119 (2017) 341–352

Other efforts by various research groups like the group around Vorst & Bermond (2001), tried to categorize alexithymia in a slightly different manner and introduced the facet difficulties emotionalizing (DEMO). They also proposed a different way of organizing the facets (the four original ones and the newly added DEMO-facet) on a higher level of organizing, introducing the higher order structures “cognitive alexithymia” and “affective alexithymia”. The categorization of their five facets of alexithymia into these two structures was based in part on their clinical/statistical observations assuming that people could be affected by alexithymia by ways of experiencing problems within both of these structures or just within the cognitive alexithymia structure (Vorst & Bermond, 2001; Preece et al., 2017). See Figure 2. Of these two models the model presented by Taylor, Bagby, & Parker (1985), still is the most widely used and implemented (Preece et al., 2017).

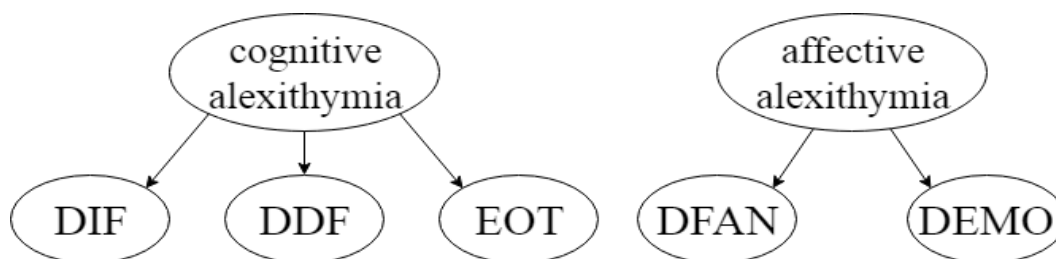


Figure 2.

Alexithymia construct composed by Vorst & Bermond (2001), illustrated by D. Preece et al. / *Personality and Individual Differences* 119 (2017) 341–352

### **Coping strategies and coping styles**

Coping strategies are defined as an individual's cognitive, behavioral, and emotional efforts to handle internal, as well as external, demands that put a strain on the individual, or exceed the individual's resources (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). The subject of coping strategies appears frequently in correlational research. On one hand this is in many cases due to the subjective reaction of a person to external and internal stressors and on the other related to the application of certain coping mechanisms to relief oneself of these stressors. Research and practice have produced several different conceptualizations of coping over the last decades. "The method of coping", for example, divides active events to resolve the stressful event into *cognitive* and *behavioral* strategies (Billings & Moos, 1981). A detailed account on how people cope is given by Kardum and Krapić (2001), who focused on three main coping styles, namely *problem-focused coping*, *emotion-focused-coping* and *avoidance-focused coping*. Their research suggests that all three coping styles can be viewed as the efforts to minimize distress. They mention that of the three styles of coping, avoidance-focused coping has a relatively short term adaptive impact and thus does not have a satisfactory long term outcome but is nonetheless frequently used (Kardum & Krapić, 2001).

In literature on coping, authors often refer to coping *strategies*, sometimes also mentioned as coping 'processes' (Bernard, 2014). Compared to the broader concept of coping styles, coping strategies refer to the specific coping efforts of individuals regarding the appraisal of a stressful encounter or particular stressful situation (Bernard, 2014). For example, if a person chooses to relief oneself of a stressful situation by means of substance abuse or by denying the problem at hand these can be defined as coping *strategies* which are part of the broader categorization of *avoidance-focused coping*. See appendix A Table 1 for a detailed overview on the categorization of different coping strategies into coping styles, adapted for the use in this study from Carver, Schreier, & Weintaub (1989).

### **The link between coping styles and alexithymia**

The basis of the present study is the link between alexithymia and coping styles. Research results show that alexithymia is associated with maladaptive coping styles and vulnerability too, as well as poor coping with stress (Parker, Taylor, & Bagby, 2001; Krystal 1979, 1982). Focusing on the three main coping styles, findings indicate that task-oriented coping, also referred to as problem-



focused coping, is used less by alexithymic individuals (Parker et al., 1998). This is consistent with the findings of Vingerhoets, Van Heck, Grim, and Bermond (1995), showing a negative association between problem-focused coping and alexithymia. One could assume that this negative association of alexithymia and problem-focused coping is based on the limitations alexithymic individuals experience, for example describing and communicating their emotions (Taylor et al., 1996). By taking a closer look at the coping strategies that form the coping style of problem-focused coping, one can see that an essential part of applying this style is the strategy of *instrumental support* (Appendix A, Table 1). This strategy is referring to actively communicating one's feelings with others and seeking social support (Carver, Scheier, & Weintraub, 1989), which could present a problem for individuals lacking these skills. This could explain the negative association between problem-focused coping and alexithymia, as difficulties communicating emotions could create a barrier that prevents these individuals from using this coping style.

The limitations alexithymic individuals experience could furthermore explain a positive association of alexithymia and avoidance focused-coping as in relation to Parker, Taylor, and Bagby (1998) finding that alexithymic students scored significantly higher on avoidance-oriented coping. Adding to this, avoidance behavior was also positively correlated with the alexithymia facets of DDF and DIF (Dalbudak et al., 2013). Along with that, the lack of ability's that could prevent a more problem-focused coping style could also explain the tendency for people with alexithymia to predominately apply a coping style that is easy to implement (Bilotta et al., 2016). Strengthening the assumption, research showed that alexithymic individuals used significantly more avoidance coping strategies than non-alexithymic individuals resulting in action oriented behavior such as bingeing on food and abusing alcohol as an attempt to regulate distressing emotional states (Parker, Bagby, & Parker 1997; Lane, & Schwarz, 1987). This behavior can also be found when looking at the coping strategy of *substance abuse*, a strategy of the coping style avoidance-focused coping, described as seeking comfort by using alcohol or other drugs (Carver et al., 1989).

In the case of emotion-focused coping, study done by Parker, Taylor, and Bagby (1998) showed that alexithymic students used significantly more emotion-focused coping than non-alexithymic students. Given the earlier established limitations alexithymic individuals face, the case for a positive association of alexithymia and emotion-focused coping could be made by looking at the strategies this coping style holds in. Under the premise that alexithymic individuals tend to use easy to implement coping strategies (Bilotta et al., 2016) the coping strategies *humor* (joking or

making fun of a situation) or *religion* (seeking comfort in prayer or meditation) could be used in order to compensate difficulty's describing ones feelings or difficulty identifying ones feelings as both play a role in the self-regulation of distressing emotional states (Taylor et al., 1996).

Earlier research shows a link between alexithymia and all three mentioned coping styles, yet there is little evidence that could shed a light on a possible factor influencing alexithymic individuals to predominantly make use of emotion- and avoidance-focused coping when dealing with internal or external stressors. Building on these findings one should view the link between alexithymia and coping styles as a more complex concept that could be prone to interference by a phenomena related to alexithymia, namely anxiety. Research done by Berthoz and colleagues (1999) showcased a strong relationship between trait anxiety and alexithymia giving grounds for further exploration into a possible role anxiety could play in the link between alexithymia and coping styles as addressed in the following.

## **Anxiety**

Anxiety can manifest itself in different ways and within different settings of an individual's personal life. Regarding the manifestation of anxiety in a person, anxiety can be heuristically divided into (1) *state anxiety*, also known as acute anxiety, which is transitory, and (2) *trait anxiety*, or chronic anxiety, which refers to a personality characteristic (Calsbeek, Rijken, Van Berge, Henegouwen, & Dekker, 2003). State anxiety fluctuates and is perceived by an individual mainly in imminent, dangerous or threatening situations, whereas trait anxiety is seen as a relatively stable personality trait (Barnes, 2002).

In relation to trait anxiety, a coping style also refers to a trait-like pattern which is moderately stable over the long term (Folkman et al., 1986). In addition to that, alexithymia was found to be an independent factor, separate from negative mood (Porcelli, Bagby, Taylor, De Carne, Leandro, et al., 2003), remaining stable over time with only limited evidence in fluctuation scores regarding negative emotions (Honkalampi, Hintikka, Saarienen, Lehtonen, & Viinamäki, 2000). Given that both, coping styles as well as alexithymia, can be accepted as traits the present study lays the focus on trait anxiety (T-Anxiety) in order to be able to acquire a closer understanding of individual behavior over time rather than depending on the outcome of an imminent situation. In addition to that it could be reasoned that a setup including trait concepts is

adding consistency to the study opposed to a setup that would mix both state and trait concepts ,i.e. adding state anxiety.

### **The relationship between alexithymia and anxiety**

The association between alexithymia and anxiety has been the subject of a number of previous studies (Franz et al., 2008; Mattila et al., 2009). As mentioned earlier, study done by Berthoz and colleagues (1999) even showcased a strong relationship between the two concepts. Given the way in which alexithymic individuals experience as well as manage anxiety, this could arguably indicate an interaction between the two concepts. As an example Berthoz and others (1999) suggested further that alexithymia could be seen as a defensive reaction against disturbing or painful effects, while simultaneously pointing out that successful treatment of panic disorders or anxiety could diminish alexithymia. Elaboration on this, one could suggest that at different levels of anxiety the reaction, or to be more precise the coping style that is applied, could be strengthened or weakened, leading to the central assumption that anxiety could play a moderating role on the link between alexithymia and coping styles. This assumption is further backed up by research done by Devine, Steward and Watt (1999) who found that high levels of anxiety sensitivity were associated with the tendency to use “alexithymic” coping strategies. However, these studies do point in a general direction regarding the role of a possible interaction effect between anxiety and alexithymia, they fall short in exploring anxiety as a possible moderator on the link between alexithymia and coping styles.

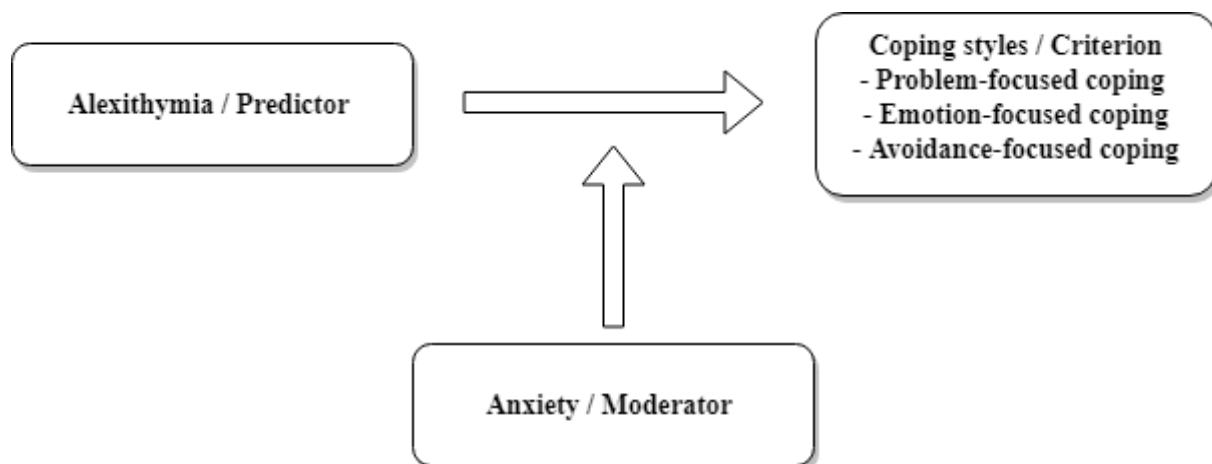
### **Anxiety as a moderator of the link between alexithymia and coping styles**

So far, we are not aware of any study dealing with a possible moderation of the link between alexithymia and the three main coping styles by anxiety. This is despite earlier mentioned research pointing out the relationship between alexithymia and anxiety, diminishing effects on alexithymia via successful treatment for anxiety (Berthoz et al., 1999; Franz et al., 2008; Mattila et al., 2009) and the association of anxiety sensitivity with a tendency to use “alexithymic” coping strategies (Devine et al., 1999). Considering the previously discussed preferences in use of coping styles alexithymia was associated with (Bilotta et al., 2016; Krystal, 1979, 1982; Parker et al., 2001, 1998; Taylor et al., 1996; Vingerhoets et al., 1995), it can be assumed that alexithymic

individuals with high levels of anxiety make more use of emotion- and avoidance focused coping and less use of problem-focused coping. Therefore moderation analysis could lead to new insights regarding the specific influence anxiety could have on the use of the most frequently applied coping styles of alexithymic individuals.

The principal of moderation can be defined as a qualitative or quantitative variable, in this case anxiety, that affects the direction and or strength of a certain relation between an independent or predictor variable, in the case of this study alexithymia, and a dependent or criterion variable, in this case the three mentioned coping styles (Baron & Kenny, 1986). See also Figure 3.

It is expected that, given the results of the previously discussed studies, first the moderation analyses will show a link between alexithymia and coping styles, second that this link is then strengthened by anxiety.



*Figure 3.* Basic illustration of the principal of moderation, based on Baron and Kenny, (1986), whereas the link between the predictor variable alexithymia (X) and the coping styles, problem-focused coping, emotion-focused coping and avoidance-focused coping all separately as the criterion variable (Y) is directly influenced, either positive or negative, by the moderator variable anxiety (M).

## Hypotheses

The aim of this study is to investigate what role anxiety plays in the link between alexithymia and certain coping styles. The main hypothesis is that the association between alexithymia and all three coping styles i.e. problem-focused coping, emotion focused coping and avoidance-focused coping is strengthened by anxiety. This hypothesis is based on results from previous studies that

were discussed above, laying out reasonable associative connections between alexithymia and the three main coping styles (Bilotta et al., 2016; Krystal, 1979, 1982; Parker et al., 2001, 1998; Taylor et al., 1996; Vingerhoets et al., 1995) as well research supporting the assumption of an interaction effect of anxiety and alexithymia (Berthoz et al., 1999; Devine, et al., 1999). To test this hypothesis two sets of sub hypotheses are composed as the following:

(1a) There is a negative association between problem-focused coping and alexithymia.

(1b) There is a positive association between emotion-focused coping and alexithymia.

(1c) There is a positive association between avoidance-focused coping and alexithymia.

Eventually discovered links between alexithymia and all three coping styles could be moderated by anxiety. It is hypothesized that:

(2a) The negative association between problem-focused coping and alexithymia is stronger with higher anxiety.

(2b) The positive association between emotion-focused coping and alexithymia is stronger with higher anxiety.

(2c) The positive association between avoidance-focused coping and alexithymia is stronger with higher anxiety.

## **Method**

### **Sampling and expanding the reach of the study**

The participants were recruited via multiple sources and through means of convenience- and voluntary sampling. Convenience sampling is the process of gathering a sample of research subjects out a population, in the present case the general public, that is easily accessible or meets certain practical criteria (Etikan, 2016). First, with the help of social media it was made possible to spread the online link to an easily accessible number of people. Second, voluntary sampling was used by means of indirectly spreading the online survey link via an open mail distribution service of the University of Hannover with an additional approximated reach of 1,500 people. Third, it was also made use of ‘Sona-Systems’, a service of the University of Twente, a common tool to expand the reach of a questionnaire within the limits of the faculty of behavioral science of the Univerity of Twente, specifically first and second year students of this faculty. Although this process seems heavily incentivized it has to be noted that each student has the choice to take

part in a variety of studies on ‘Sona- Systems’ making this part a voluntary sampling effort of gathering respondents.

## **Procedure**

To conduct the study, subjects were given the questionnaire via Qualtrics, an online survey set up service (Qualtrics, Provo, UT, 2018). Linked to this was ‘Sona-Systems’, a cloud based participant management tool (Copyright © 1997-2019 Sona Systems Ltd.) to widen the reach of the study. In the case of participating via ‘Sona-Systems’ after completion theses participants were credited 0.5 ‘Sona Points’.

The participants were presented with general information and instruction on how to correctly fill in the survey. Participation was only after informed consent. The questionnaire was carried out by participants in the comfort of their home or a surrounding of their own choosing while going along with the requirements i.e. not to be disturbed during the process.

The questionnaire consisted of three separate blocks of scales and one block designed for demographical information’s i.e. the participants gender, age and nationality. The four blocks consisted of a total of 104 Items. Participants had an estimated time maximum of 30 minutes to get through the entire questionnaire, no maximum limit was imposed. Before the start of each of the four main blocks participants were given additional information on how to fill in the block at hand correctly.

The first questionnaire, after the demographics, consisted of the STAI, measuring the general level of trait anxiety. The second questionnaire made use of the TAS-20 to determine the level of alexithymia of each participant. The final questionnaire consisted of the COPE inventory scale, assessing the coping behavior of the participants.

## **Participants**

The target demographic for this study was a general population above the age of 18. Other than the completion of the 18<sup>th</sup> year of once life there were no restrictions to participate, like gender, ethnicity, social cultural background or occupation.

This study gathered a total of N= 310 participants. After correction, i.e. deleting unfinished questionnaires, the total was N = 242 including 62 men and 180 women. The average age of the participants was M = 21.98 years (SD = 5.4). Furthermore, the majority of participants were of

German decent,  $N = 199$ , the second most frequent country of origin was the Netherlands with  $N = 36$  and with an population of  $N = 7$  participants of various descents where represented, for the purpose of this study the latter were marked as ‘other’ with regards to their countries of origin.

## **Materials**

### **State Trait Anxiety Inventory**

The ‘*State-trait anxiety inventory*’ measures the general levels of (1) *state anxiety* and (2) *trait anxiety* (STAI; Spielberger, Gorsuch, Luschene, Vagg, & Jacobs, 1993). For the purpose of this study only the measurement scale for *trait anxiety* was used. Items within the scale are for example “*I am happy*” or “*I have disturbing thoughts*”. Each item is rated on a Likert scale ranging from a score of “1” (almost never) to “4” (almost always). A score of “4” indicates the presence of a high level of anxiety. The test-retest reliability of the initially developed scale ranged from 0.31 to 0.86 and the internal consistency alpha coefficient ranging from 0.86 to 0.95 (Julian, 2011). Validity of the STAI proves to be respectively high when correlated with other measurement tools, for example the Taylor Manifest Anxiety Scale and Cattell and Scheier’s Anxiety Scale Questionnaire, ranging from 0.73 to 0.85. The reliability of the STAI in this study was respectively high as assessed via Cronbach’s Alpha ( $\alpha = .96$ ). Dimensionality of the trait anxiety scale of the STAI was addressed by Balsamo et al. (2013) via with a bi-factor model consisting of *anxiety* and *depression* as well as a general factor namely *negative affect* (binding specific aspects of anxiety and depression).

### **Toronto Alexithymia Scale**

For the measurement of the level of alexithymia, the present applied the Twenty Item Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994). The TAS-20 consists out of 20 items and three subscales which are the following: Difficulties Identifying Feelings (DIF); Difficulties Describing Feelings (DDF); and Externally Oriented Feelings (EOT) whereas the latter is referring to a special tendency to deal with superficial themes in order to avoid emotional thinking (Bagby, Parker, et al., 1994). The TAS-20 addressed the main points behind alexithymia as this tool is generally used to collect data on perceiving, differentiating, and expressing own emotions (Leising, Grande, & Faber, 2009). Items within the scale, for example the item “*I am often confused about what emotion I am feeling*”, are rated on a Likert scale ranging from a score

of “1” (completely disagree) to “5” (completely agree). The total alexithymia score is the sum of responses to all 20 items. The TAS-20 makes use of cutoff scores and alexithymia scores can range from equal to or less than 51 (non-alexithymia) to equal or greater than 61 (alexithymia) with a middle ground of 52 to 60 (possible alexithymia) (Bagby, Parker, et al., 1994). The test retest reliability of the TAS-20 is reported as a respectable .77 with an acceptable internal constancy ( $\alpha = .81$ ) (Bagby, Parker, & Taylor, 1994). The present study assessed the reliability of the TAS-20 via Cronbach’s Alpha as well and, in accordance with the aforementioned literature, found it also to be respectively high ( $\alpha = .83$ ).

### **COPE inventory**

The final measurement tool that was used was the COPE inventory, a multidimensional coping inventory with the aim of assessing the difference in handling stressful life events (Kallasmaa & Pulver, 2000). The COPE consists of 60 items and 15 subscales: Active Coping; Suppression Social Support for Instrumental Reasons; Seeking Social Support for Emotional Reasons; Focus on and Venting of Emotions; Denial; Mental Disengagement; Behavioral Disengagement; Acceptance; Restraint Coping; Positive Reinterpretation and Growth; Turning to Religion; and a single-item Alcohol/Drug Use scale (Carver et al., 1989). These subscale are underlined by three general factors: Problem engagement; Avoidance and Social/Emotional (Kallasmaa & Pulver, 2000), which align with the three coping styles, problem-focused coping, emotion-focused coping and avoidance-focused coping. However, it is argued that underlying dimensionality of the COPE inventory is not yet clearly defined (Litman, 2006) the instrument is still one of the most widely used (Kato, 2015). Items within the scale, for example the item *“I try to grow as a person as a result of experience”*, are rated on a Likert scale ranging from a score of “1” (I usually don’t do this at all) to “4” (I usually do this a lot). The scores from each of the 15 subscales (ranging from 4-16 on each subscale) were added up to form total scores of a participant’s emotion -, problem -and avoidance-focused coping styles scores. The overall internal consistency of the COPE scales is given by Cronbach’s Alpha and is acceptably high with only one scale falling below an  $\alpha$  of .6, namely the mental disengagement scale, reasoning that this scale differs from others in terms of being a more multi-act criterion (Carver et al., 1989). In the present study, the COPE scale was assed via Cronbach’s Alpha which showed to be respectively high ( $\alpha = .87$ ) over the entirety of the scale. After computing the 15 subscales into



the three subscales Cronbach's Alpha remained respectively high for problem-focused coping ( $\alpha = .84$ ), emotion-focused coping ( $\alpha = .78$ ) and avoidance-focused coping ( $\alpha = .80$ ).

### Data Analysis

Descriptive statistics of the mean scores of alexithymia, anxiety, problem-focused coping, emotional-focused coping and avoidance-focused coping were composed to illustrate the data. The sample was tested on normal distribution via skewness and kurtosis following analysis of normal qq-plots histograms and a Shapiro-Wilk test. Regarding the measurement of coping via the COPE inventory the scale was sorted to address the three main coping styles of problem-focused coping, avoidance-focused coping and emotion-focused coping. Testing the first set of sub hypothesis (1a-c), if alexithymia is negatively associated with the coping style of problem-focused coping as well was positively associated with the coping styles of emotion- and avoidance-focused coping was done by means of correlational analysis via population Pearson correlation coefficient, ranging from  $r = -1$  ("perfect negative") to  $r = 1$  ("perfect positive").

To test the second set of sub hypothesis (2a-c), if eventually discovered links between alexithymia and all three coping styles could be moderated by anxiety it was made use of the template "*model 1*" of the PROCESS Macro v.2.11 for SPSS. PROCESS is a simple moderation model with the variable M moderating the effect of the variable X on the variable Y (Hayes, 2013). Variables were determined as *anxiety* (M) moderating the effect of *alexithymia* (X) on *coping styles* (Y). All analyses were conducted in SPSS version 25 (IBM Corp., 2017). A general alpha was managed ( $\alpha=0.05$ ). Reliability of the instruments was accounted for, prior to the main analysis, via Cronbach's Alpha. As the minimum of acceptance, a Cronbach's alpha of 0.6 was adapted.

## Results

### Descriptive statistics of the sampled population

The general alexithymia level within the sampled population was determined to be an average of 46.24 (SD = 10.12). The study found T-Anxiety levels to be  $M = 45.46$  (SD = 11.01). The measurement of coping styles yielded total scores of problem-focused coping ( $M = 51.69$ , SD = 8.06), emotion-focused coping ( $M = 45.52$ , SD = 7.14) and avoidance-focused coping ( $M = 41.82$ , SD = 8.12). Tests of the sample via skewness [-.322; .433] and kurtosis [-.770; .353] showed normal distributions across the used measurement instruments. Skewness and kurtosis analysis on normal distribution as well as analyses of normal qq-plots and histograms showed a normal distribution of the sample. Even though a Shapiro-Wilk tests did not confirm the normal distribution, it was dismissed on grounds of the results of the previous tests.

Table 1  
Descriptive statistics of the variables relevant for the moderation analysis

	N	min	max	M	SD
Alexithymia	242	24	81	46.24	10.12
T-Anxiety	241	26	73	45.46	11.01
Problem-focused coping	242	26	70	51.69	8.06
Emotion-focused coping	242	29	69	45.52	7.14
Avoidance-focused coping	242	23	69	41.82	8.12

### Correlational analyses

Pearson correlational analyses (Table 2) of the sample showed a significantly positive correlation between alexithymia and avoidance-focused coping ( $r = .311$ ,  $p < .01$ ). Alexithymia furthermore correlates negatively with problem-focused coping ( $r = -.262$ ,  $p < .01$ ) as well as emotion-focused coping ( $r = -.163$ ,  $p < .05$ ). Given the significant negative correlation between alexithymia and problem-focused coping the sub-hypothesis 1a was accepted. Due to significant negative

correlation between emotion-focused coping and alexithymia the sub hypothesis 1b was rejected. Furthermore, because of the significant positive correlation of avoidance-focused coping and alexithymia the sub-hypothesis 1c accepted.

Table 1  
Pearson Correlations

	1	2	3	4
1. Alexithymia				
2. T-Anxiety	.448**			
3. Problem-focused coping	-.262**	-.176**		
4. Emotion-focused coping	-.163*	-.113	.537**	
5. Avoidance-focused coping	.311**	.412**	.047	.321**

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

### Moderation analysis

The test of the sub hypotheses (2a-c) as to if there is a significant association between alexithymia and coping styles was conducted by means of the moderation template of PROCESS. The first sub-hypothesis (2a) states that the negative association between problem-focused coping and alexithymia is stronger with higher anxiety. The moderation model was found to be statistically significant in describing problem-focused coping,  $R^2 = .078$ ,  $F_{(3; 237)} = 6.65$ ,  $p < .001$  (Table 3).

The model found no association between alexithymia and problem focused coping ( $b = 0.029$ ,  $SE_B = 0.20$ ,  $p = .888$ ) nor between anxiety and problem focused coping ( $b = 0.157$ ,  $SE_B = 0.203$ ,  $p = .441$ ). Neither was an interaction effect found that anxiety would strengthen or weaken the effect of alexithymia on problem focused coping ( $b = -0.005$ ,  $SE_B = 0.004$ ,  $p = .287$ ). Therefore, the hypothesis 2a was rejected.

However, a more detailed look reveals that the correlation between alexithymia and problem-focused coping differs at different levels of anxiety (Table 4). One SD below the mean with  $b = -0.13$ , 95% CI [-0.278, 0.027] there is no relationship of alexithymia and problem-focused coping. In contrast to this, at the mean with  $b = -0.18$ , 95% CI [-0.286, -0.064] and one SD above the mean with  $b = -0.22$ , 95% CI [-0.358, -0.091] a relationship between alexithymia and problem-focused coping is shown. It appears that higher levels of alexithymia are related to

lower levels of problem-focused coping under the condition of a middle or high level of anxiety whereas at low levels of anxiety, the link between alexithymia and problem focused coping is not statistically significant. However, this more detailed look at the difference between the coefficients can only be used for further speculations, as the hypothesis 2a was rejected.

The second sub-hypothesis (2b) states that the positive association between emotion-focused coping and alexithymia is stronger with higher anxiety. The moderation model was found to be not statistically significant in describing emotion-focused coping,  $R^2 = .029$ ,  $F_{(3; 237)} = 2.33$ ,  $p = .075$  (Table 3). Therefore, the hypothesis 2b was rejected.

The third sub-hypothesis (2c) states that the positive association between avoidance-focused coping and alexithymia is stronger with higher anxiety. The moderation model was found to be statistically significant in describing avoidance-focused coping,  $R^2 = .191$ ,  $F_{(3; 237)} = 18.62$ ,  $p < .001$  (Table 3). No associations between alexithymia and avoidance focused coping ( $b = 0.005$ ,  $SE_B = 0.195$ ,  $p = 0.979$ ) nor between anxiety and avoidance focused coping ( $b = 0.132$ ,  $SE_B = 0.191$ ,  $p = 0.491$ ) were found. Neither was an interaction effect found that anxiety would strengthen or weaken the effect of alexithymia on avoidance-focused coping ( $b = 0.003$ ,  $SE_B = 0.004$ ,  $p = 0.519$ ). Therefore, the hypothesis 2c was rejected.

Once again, a more detailed look reveals that the correlation between alexithymia and avoidance-focused coping differs at different levels of anxiety (Table 4). At one SD below the mean  $b = 0.09$ , 95% CI [-0.051, 0.238] there is no relationship between alexithymia and avoidance-focused coping. In contrast to that at mean levels of anxiety  $b = 0.12$ , 95% CI [0.17, 0.226] and one SD above the mean  $b = 0.15$ , 95% CI [0.24, 0.276] a relationship between alexithymia and avoidance-focused coping is shown. It appears that higher levels of alexithymia are related to higher levels of avoidance-focused coping under the condition of middle or high levels of anxiety, whereas at low levels of anxiety, the link between alexithymia and avoidance-focused coping is not statistically significant. However, this more detailed look at the difference between the coefficients can only be used for further speculations as the hypothesis 2c was rejected.

Table 3  
Moderation Analysis via Process

	Coping: problem-focused				Coping: emotion-focused				Coping: avoidance-focused			
	b	se <sub>b</sub>	t	p	b	se <sub>b</sub>	t	p	b	se <sub>b</sub>	t	p
Alexithymia	0.03	0.21	0.14	0.86	-0.06	0.19	-0.33	0.74	0.00	0.20	0.03	0.98
T-Anxiety	0.16	0.20	0.77	0.44	0.00	0.18	0.02	0.98	0.13	0.19	0.69	0.49
IAT**	-0.00	0.00	-1.07	0.29	-0.00	0.00	-0.20	0.84	0.00	0.00	0.65	0.52
	R <sup>2</sup>	F	df	p	R <sup>2</sup>	F	df	p	R <sup>2</sup>	F	df	p
	.078	6.45	3, 237	.000	.029	2.33	3, 237	0.07	0.19	18.62	3, 237	.000

\* Interaction term between alexithymia and T-Anxiety

Table 4  
Relations between X (alexithymia) on Y (coping styles) on different values of the moderating variable “M” (anxiety)

	Coping: problem-focused			Coping: emotion-focused			Coping: avoidance-focused		
	b	se	p	b	se	p	b	se	p
One SD below Mean	-0.13	.08	.107	-0.09	.07	.207	0.09	.07	.203
Mean	-0.18	.06	.002	-0.10	.05	.056	0.12	.05	.022
One SD above Mean	-0.22	.07	.001	-0.11	.06	.085	0.15	.06	.020

## Discussion

The present study aimed to identify what role anxiety plays in the link between alexithymia and coping styles. In accordance with prior literature e.g. (Parker, Taylor, & Bagby, 1998; Bilotta et al., 2016) a link between alexithymia and coping was established. Correlational analysis showed significant correlations of alexithymia and all three coping styles (i.e. problem-focused, emotion-focused, and avoidance-focused coping). However, moderation analysis on a proposed

strengthening effect of anxiety on this link showed no interaction effects. In addition to that moderation analysis was only successful in showing non-linear moderation effects on under the condition of middle or high levels of anxiety. The correlational evidence and implications will be discussed first, second we will discuss the results of the moderation analysis. Lastly, possible limitations and methodical considerations will be addressed as well as possible implications for research and practice.

### **Correlation analysis between alexithymia and coping styles**

Results showed first and foremost that there is statistically significant correlational evidence supporting the link between alexithymia and coping styles. In line with earlier research into specific coping styles and their association with alexithymia done by Parker, Taylor, and Bagby (1998) the present results also indicated a positive association between avoidance-focused coping and alexithymia.

As expected and in accordance with previous studies done by Parker and colleagues (1998) as well as Vingerhoets and others (1995), the results also showed a negative association between alexithymia and problem-focused coping.

In contrast with Parker, Taylor and Bagby (1998) as well as findings by Schaffer (1993) the present study found emotion-focused coping to be negatively correlated with alexithymia. An explanation for this could lie in the application of coping strategies within the emotion-focused coping style by the participants. To elaborate on this, a coping strategy affiliated with emotion-focused coping is *emotional support* (Appendix A, Table 1), which consist of acquiring sympathy and getting emotional support and understanding from others (Carver et al., 1989). One could argue that, due to difficulties communicating their feelings and emotions (Parker et al., 1998), alexithymic participants in this study made less use of the coping strategy *emotional support*, thus accounting for the negative association of alexithymia and emotion-focused coping.

### **Moderation analysis of anxiety on the link between alexithymia and coping styles**

Despite the discussed literature on the associations between alexithymia, the three main coping styles and anxiety (Bilotta et al., 2016; Calvete & Estévez 2015; Dalbudak et al., 2013; Lane & Schwarz, 1987; Parker et al., 1998; Vingerhoets et al., 1995) as well as correlational analysis pointing to possible moderating properties of anxiety, results of the moderation analysis

showed no associations between alexithymia and coping styles. However, the moderation analysis that was carried out suggests that the correlation between alexithymia and coping styles differs at certain levels of anxiety. In detail, results show that at the mean level of anxiety the link between alexithymia and problem-focused coping is more negative and even more so one standard deviation above the mean. One standard deviation below the mean this link is not moderated by anxiety. The link between alexithymia and avoidance-focused coping became more positive at the mean level of anxiety, the effect was slightly stronger one standard deviation above the mean but also nonexistent one standard deviation below the mean. On this basis one could suggest that anxiety has to reach a certain threshold for the individual to be able to act as a moderator.

Even though results indicated non-linear moderation effects of anxiety, the differences between the coefficients were not found to be statistically significant. This led to the conclusion that the main hypothesis, i.e. that the link between alexithymia and all three coping styles is strengthened by higher levels of anxiety, had to be rejected. Despite this, one could suggest that the collected results of the moderation analysis do point, at least to some degree, to anxiety as a variable with potentially moderating qualities on the link between alexithymia and coping styles. Possibilities for further research on this topic are addressed in the following.

### **Limitations and methodological considerations**

The present study faced a number of limitations both in aspects of the design and of methodological nature. These limitations present an opportunity to make suggestions for further research. Starting with the issue of sampling, although the focus was set on the general public, the present study made great use of university related platforms and systems to acquire participants. This could have led to an overrepresentation of a specific population rather than the representation of the a general population. The study did not address the occupation as a variable. This is highly recommended for a follow-up study in order to distinguish between populations and compare results to other studies as a number of them lay their focus specific target demographics, namely students (Dalbudak et al., 2013; Parker et al., 1998).

Considering the methodological limitations, the measurement of the level of coping, Carver (2013) stated that he never tried to combine all items of the COPE to address coping behavior in a summarized score, for example combining items into scales as “problem focused” or “emotion focused” before. However, other instruments like the Coping Inventory for Stressful

Situations (CISS) (Calsbeek et al., 2003), seemed more suited to address this issue, they were not available for this study. Finally, regarding the measurement of anxiety Julian (2011) found the STAI, especially regarding the T-Anxiety scale, to be somewhat limited in discriminating between anxiety and depression as it was highly correlated with depression and in some cases did not differentiate between anxious and depressed patients at all. As a recommendation it is proposed to use alternative measurement tools like for example the Beck Anxiety Inventory (BAI) proven relatively independent of depression (Julian, 2011). Furthermore, the addition of an instrument measuring state anxiety is recommended in order to gather more information on a possible threshold regarding the moderating qualities of anxiety on the link between alexithymia and coping styles. State anxiety would introduce a level of anxiety that is momentarily felt by the individual (Barnes, 2002) and could thus provide a broader spectrum of the concept of anxiety.

### **Implication for research and practice**

As discussed in literature alexithymia is a common correlate of both psychological and psychiatric problems including anxiety (Coriale et al., 2012; Mattila et al., 2009). In addition to that, stronger alexithymia has been related to poor therapeutic outcome, acting as a barrier for the therapeutic alliance (Vanheule, Verhaeghe, & Desmet, 2011). A possible way to implicate the findings of this study, i.e. the confirmatory results regarding the link between alexithymia and coping styles, could be to try and strengthen the therapeutic relationship by focusing research on specified coping skills training. Gathered insights on the relationship between alexithymia and coping styles could be used to tailor coping skills for alexithymic individuals by focusing on coping strategies rather than coping styles. This goes in line with the notion put forward by Carver (1989) to generally look at each scale of the COPE inventory separately to see its relation to other variables instead of generating a dominant coping style. For example addressing the coping strategy *instrumental support* in an effort to train communicating feelings with others, rather than focusing on emotion-focused coping as a whole. Suggestions for further research on the basis of anxiety as a moderating variable on the link between alexithymia and coping styles could further be used to address specific coping strategies, related to anxiety. Arguably focusing on coping strategies could narrow down a possible effect anxiety could have on specific behavior applied by alexithymic individuals dealing with internal or external stressors.



## **Conclusion**

The findings of the present study contribute to broaden the spectrum of research conducted on the link between alexithymia and coping styles. It was made an effort to showcase the theoretical concept of alexithymia, compose coping styles and test the link between the two via a possible moderating variable namely anxiety. The study provided correlational evidence of a link between alexithymia and coping styles as well as partial evidence of non-linear moderation of anxiety on some of the composed coping styles. However, overall, a moderation effect of anxiety could not be proven via moderation analysis, one can say that both correlational evidence and non-linear moderation scores suggest that anxiety could be of some influence on the link between alexithymia and coping styles. For follow-up research into this topic it is proposed to address sampling issues to broaden the generalizability of the results. In addition to that it is advised to use different measuring tool that are better suited to address possible conflicting variables (i.e. the BAI) and include tests to specify the difference in experienced anxiety.

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What role does anxiety play in the link between alexithymia and coping styles?

## Appendix A

**Table 2**  
**Coping strategies and Definitions**

Coping Style	Coping strategy	Definition
Emotion-focused coping	Emotional support	Acquiring sympathy, getting moral support, getting understanding from others.
	Religion	Seeking comfort in religion, spiritual beliefs by means of for example prayer or meditation.
	Positive reframing	Making situations more positive by trying to address them in a different light. This includes actively looking for positive aspects within a difficult situation.
	Humor	Joking or making fun of a situation.
	Acceptance	Accepting the reality of a stressful situation, learning to live with it.
Problem-focused coping	Active coping	Taking active steps in the process of removing a stressor for example engaging in direct action to handle a certain problem.
	Planning	Actively considering a coping method, or how to cope, with a particular stressor or stressful situation to conceptualize on how to best handle the problem.
	Instrumental support	Instrumentalizing others in seeking support, information or assistance.
Avoidance/Dysfunctional coping	Self-distraction	Keeping ones mid of a stressor or stressful situation by shifting ones attention towards other activities like work or a certain hobby.
	Denial	Refusing to belief the reality of a certain situation.
	Venting	Focussing on distress an ventilating the feelings associated with it.
	Substance use	Seeking comfort by using substances like alcohol/or other drugs
	Behavioural disengagement	“Reducing one effort to deal with the stressor, even giving up the attempt to attain goals with which the stressor is interfering” (Carver et al., 1989, p.269).
	Self-blame	Blaming , and/or criticising, oneself for things that occur.

Adapted from Carver, Schreier, & Weintaub (1989)