Emotional Intelligence as a Mediator in the Relationship between Alexithymia and Coping

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Abstract

Purpose: This study examined whether emotional intelligence (EI) is a mediator in the relationship between alexithymia and coping. Despite an overlap between EI and alexithymia, both constructs being linked to coping before and literature suggesting mediating roles of EI, no study until today has brought all three concepts together. Investigating interrelationships could help clarify similarities between EI and alexithymia and whether it is actually EI that alexithymic individuals lack which makes them respond more poorly to stress. Such findings would also implicate a new perspective on alexithymia and EI where, as Parker, Taylor, and Bagby (2001) state, alexithymia suggests the presence of low EI characteristics and a poorer response to stress. **Methods**: Two-hundred and forty-two participants, predominantly female and German, with a mean age of M = 21.96, SD = 5.40 completed an online survey that consisted of four questionnaires and some demographic questions. The Twenty-Item Toronto Alexithymia Scale (TAS-20) measured alexithymia, the Schutte's Emotional Intelligence Scale (SEIS; or Assessing Emotions Scale, AES) measured emotional intelligence, and the COPE Inventory measured coping in general, problem-focused, emotion-focused and avoidance-focused coping styles. Bootstrapping with Hayes' PROCESS SPSS macro tested a multiple parallel mediation model in which the four SEIS' subscales 'perception of emotion', 'managing own emotions', 'managing others' emotions' and 'utilization of emotion' were mediators in the relationship between alexithymia and different styles of coping. **Results**: The EI subscales 'managing own emotions' and 'managing others' emotion' were mediators in the relationship between alexithymia and problem-focused coping and emotion-focused coping. 'Managing others' emotions was additionally a mediator in the relationship between alexithymia and coping in general. For all mediations alexithymia negatively predicted the two EI subscales which in turn positively predicted the coping styles and coping in general. **Conclusions**: Although, technically, EI appeared as a partial mediator, a weak relationship between alexithymia (X) and EI (M) showed no satisfying fit of the model to predict coping and conclude mediation. Further research on the matter is recommended to use a longitudinal research approach and the Coping Inventory of Stressful Situations (CISS). Findings suggest that alexithymia and EI are barely related and independent with regards to coping where both, EI and alexithymia, are stronger predictors of coping on their own than in the tested model. Researchers and practitioners are advised that EI and alexithymia seem to concern different characteristics in the individual with regards to how they cope with stress.

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1. Introduction

Currently, we are witnessing how interest and attention in emotion and its relations to day-to-day functioning have been increasing over the last decades. Ever since its initial impulses and spread in the 1990's (Goleman, 1995; Salovey & Mayer, 1990), the concept of emotional intelligence (EI) has been increasing in popularity and established to be a major force fuelling the interests of both scientists and the general public (Cherniss, 2000; Parker, Taylor, & Bagby, 2001). EI involves the ability to perceive, understand, use and regulate own and others' emotions (Mayer, Caruso, & Salovey, 1999; Salovey & Mayer, 1990). Alexithymia is a conceptually similar but independent construct that is, although less known to the press, older and has generated more empirical research (Lane & Schwartz, 1987; Matthews, Zeidner, & Roberts, 2004; Nemiah & Sifneos, 1970; Parker et al., 2001). Alexithymia describes a deficit of emotional awareness that affects the accurate identification and expression, especially verbalization, of emotions as well as a reduced imagination and an externally oriented cognitive style (Gross & Jazaieri, 2014; Nemiah & Sifneos, 1970). EI and alexithymia have both been independently linked to how we cope with stress (Besharat, 2010; Brackett, Mayer, & Warner, 2004; Ciarrochi, Deane, & Anderson, 2002; Noorbakhsh, Besharat, & Zarei, 2010; Parker, Taylor, & Bagby, 1998; Tominaga, Choi, Nagoshi, Wada, & Fukui, 2014). Although the relationship between EI and coping and alexithymia and coping has been well-established in research and literature, looking at interrelations between all three concepts has fell short and no study until today has brought all three concepts together. That is despite EI and alexithymia showing to be strongly overlapping and inversely related (Matthews et al., 2004; Parker et al., 2001), a characteristic that is hypothesized to manifest in their relation to coping. This study's main objective is to study the interrelations between EI, alexithymia and coping with stress by testing for whether EI is a mediator in the alexithymia-coping relationship. Such might clarify similarities between EI and alexithymia and how such affect their relationship to coping. Findings could implicate a new perspective on alexithymia and EI where the presence of one might indicate the presence of the other and what that means for how the individual tends to cope with stress. Testing the broad concept of EI through more specific subscales is expected to further clarify which exact components of EI in alexithymia relate to how one copes with stress.

1.1 Emotional intelligence

EI was first introduced in the 1990's by Salovey and Mayer (1990) and defined as "the ability to monitor one's own and others' emotions, to discriminate among them and to use the

information to guide one's thinking and actions" (p. 189). Mayer and Salovey (1990) distinguish between three broader components of EI (see *Figure 1*). Firstly, 'appraisal and expression of emotion' refers to the accurate identification of own and others' emotions through, for example, language (i.e. verbal), bodily sensations and facial expressions (i.e. non-verbal perception), and the accurate expression of such by for example showing empathy. Such competencies are often referred to as emotional awareness (Mayer, Salovey, Caruso, & Cherkasskiy, 2011; Mayer & Salovey, 1995). The second branch 'regulation of emotion' refers on the one hand to "a willingness and ability to monitor, evaluate and regulate emotions" (pp. 195-196) in the self, and on the other hand, an ability to regulate and influence the emotions of others. As such, an emotionally intelligent person might be able to both manage his own emotions and for example motivate himself/herself as well as he/she might be able to elicit a particular strong emotional reaction in an audience on purpose. Lastly, 'utilization of emotion' refers to a set of competencies. Generally, the utilization of emotion refers to an individual's ability to use emotions, and emotional knowledge that derives from such, to solve problems. Such ability to solve problems is theorized to take in the form of firstly, flexible planning which refers to the ability to handle emotion swings in which positive moods lead to perceive better outcomes and negative moods to perceive worse. Secondly, emotions might alter memorizing as research has shown that more positive moods generate more creative outcomes. Utilizing one's emotions might thus enrich one's ability to solve problems by thinking of creative solutions to a problem. Thirdly, emotionally intelligent people are theorized to use their emotions to redirect attention so that emotions may lead the individual to identify a problem of greater, immediate nature. Lastly, emotionally intelligent people are said to be able to use their emotions to better motivate themselves. For example, anxiety may be used to encounter the anxiety-loaded situation better prepared (Mayer & Salovey, 1990).

Besides it's structured understanding, EI is not predetermined nor immune to change (Schutte et al., 1998). EI can be increased by for example directed training for the wider population (Sarabia-Cobo et al., 2017) as well as in psychotherapy (Greenberg, 2011) picturing it as a dimensional entity.

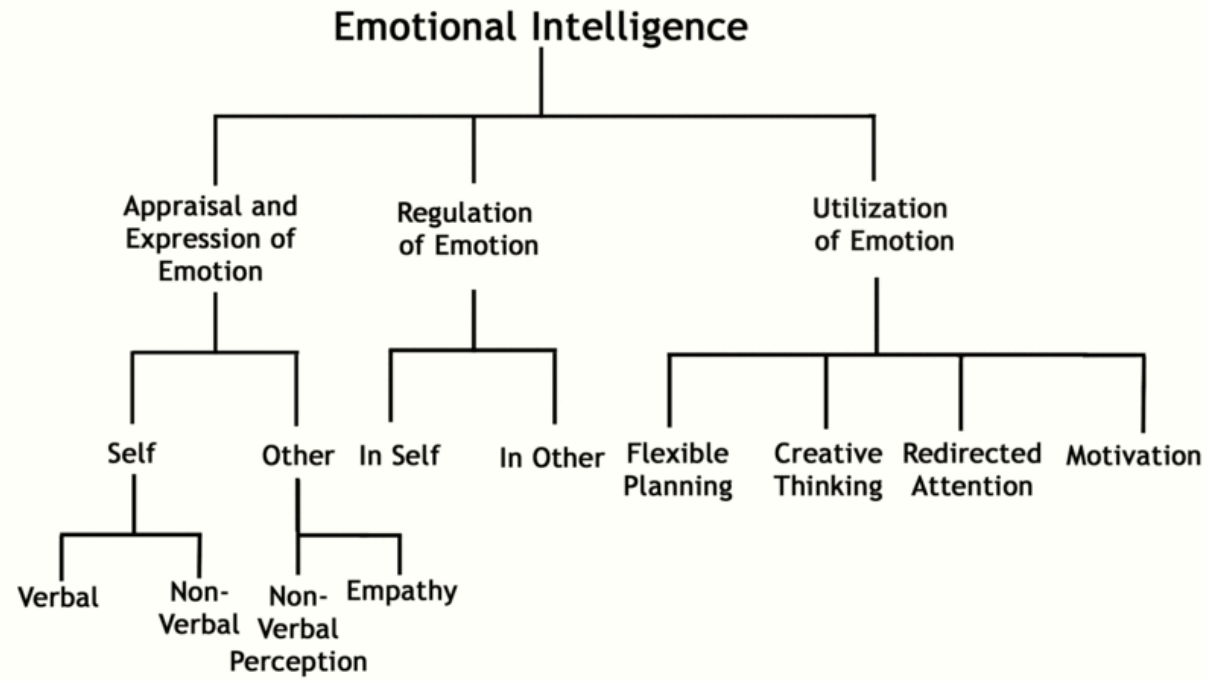


Figure 1. Conceptualization of emotional intelligence. EI is divided into three major branches of competencies with sub-distinctions made for EI concerning own emotions (i.e. 'self') and others' emotions (i.e. 'other' or 'in other'). Adapted from "Emotional Intelligence" by J. D. Mayer and P. Salovey, 1990, in *Imagination, cognition and personality, 9*(3), p. 190. Copyright [1990] by Sage.

Higher EI has been linked to both competencies and benefits whereas lower EI has been linked to disadvantages and found prevalent in psychopathologies. Higher EI has been positively associated with increased work performance, social competencies, well-being, and physical and mental health (Pekaar, Bakker, van der Linden, & Born, 2018). Lower EI has been associated with impaired social skills and problems in interpersonal relationships as well as low EI scores have been found prevalent in, among others, substance-abuse disorders and mood disorders (Ciarrochi, Forgas, & Mayer, 2001). Themes that showed to be central in EI are: The awareness of the emotion and the regulation of the emotion (Mayer, Salovey, Caruso, & Cherkasskiy, 2011; Mayer & Salovey, 1995). The first often being integral for the latter to be successful (Farrell & Shaw, 1994; Gross & Jazaieri, 2014; Kee et al., 2009).

1.2 Alexithymia

A lack of such can often be observed in alexithymic individuals. Alexithymia (*a lexis thymos* = no words for feelings) was first documented and observed in psychosomatic patients

in the 1970's who showed to be "less aware of their inner worlds" (Nemiah & Sifneos, 1970; Panaite & Bylsma, 2012, p. 92). An alexithymic individual falls into the low end of the emotional ability continuum (Matthews et al., 2004), characterized by what Nemiah and Sifneos (1970) and Parker, Taylor, and Bagby (1998) term:

- a reduced ability to distinguish among own and others' feelings and to separate such from bodily senses
- difficulties identifying and describing, especially verbalizing, feelings
- reduced imaginal processes showing in a scarcity of fantasies and dreams
- 'an externally oriented cognitive style', meaning there's higher tendency to express oneself through action and nonverbal behaviour

Although at times when the term alexithymia was first coined in the 1970's by Nemiah and Sifneos (1970) and primarily understood as a symptom of severe mental health states, it has since been recognized as a trait characteristic for the wider general population, extending its relevance to research even more (Besharat, 2010; Moriguchi et al., 2006; Salminen, Saarijarvi, Aarela, Toikka, & Kauhanen, 1999). Studies across different populations have shown that about 10-13 percent can be classified as alexithymic (Brosig, Kupfer, & Brahler, 2004; Honkalampi, Hintikka, Tanskanen, Lehtonen, & Viinamäki, 2000; Khan & Fatima, 2017; Kokkonen et al., 2001; Lumley & Roby, 1995; Mason, Tyson, Jones, & Potts, 2005). Moreover, alexithymia is linked to various psychopathologies. Alexithymia has been found prevalent in people with mental disorders such as Borderline Personality Disorder (BPD), somatoform patients, eating, panic and anxiety disorders, substance abuse, depression and more (Bydlowski et al., 2005; Farrell & Shaw, 1994; Marchesi, Ossola, Tonna, & De Panfilis, 2014; Matthews et al., 2004).

1.2.1 Alexithymia's relationship to EI. Generally, alexithymia is associated with low EI (Parker et al., 2001; Taylor, 2000). Characteristics of alexithymia such as reduced abilities to identify and verbalize emotions are capacities reflected in Mayer and Salovey's first branch of EI – the 'appraisal and expression of emotion' (Panaite & Bylsma, 2012; Parker et al., 2001; Salovey & Mayer, 1990). It is theorized that the cognitive processing of emotions, what alexithymic individuals struggle with (American Psychiatric Association, 2013; Taylor, 2000), is a central ingredient to EI. Since alexithymia is characterized by a lack in emotional awareness (Lane et al., 1997; Tominaga et al., 2014), and such is important for emotional regulation to be effective (Gross & Jazaieri, 2014), alexithymic individuals experience impairments in the regulation and utilization of emotions (Panaite & Bylsma, 2012) – the second and third branch of EI. For adaptive emotion regulation to succeed, emotional awareness is a powerful support

and seems to enhance the available strategies' range as well as their flexible use. Without it, "it is much more difficult to engage sophisticated emotion-regulation strategies, and strategies that are available may be less effective" (Gross and Jazaieri, 2014, p. 394). Further, studies using the Twenty-item Toronto Alexithymia Scale (TAS-20), one of the most widely used self-report alexithymia measurements by Bagby, Taylor, and Parker (1994a), showed that its factor scales loaded significantly on different scales related to EI that concerned emotional awareness (Matthews et al., 2004). Generally, EI and alexithymia have been found to overlap considerably to highly and both concepts appear inversely related but independent (Matthews et al., 2004; Parker et al., 2001). That relationship is hypothesized to manifest in the constructs' relation to coping as will be presented in the following.

1.3 Coping

Coping styles are major indicators of people's well-being and health in encounter with stress and have shown to be influenced by an individual's EI and alexithymia scores. Lazarus and Folkman (1984) defined coping as the cognitive and behavioural efforts that are made in specific stressful situations to reduce or manage the impact of external and internal demands. Over the last decades, scholars on coping have begun to emphasize the importance of emotions, in particular negative emotions, that stressful events evoke, suggesting that "where there is stress, there are also emotions" (Devonport, 2007, p. 2). Salovey, Bedell, Detweiler, and Mayer (1999) go as far as to say that although people cope with life events, what they actually respond to is the emotions these events elicit. Since EI is about the appraisal, expression, regulation and utilization of emotions (Mayer & Salovey, 1990), competencies that help the individual deal with emotions the stress might evoke, this is theorized by scholars to influence their choice and control of certain coping strategies (or styles) to the better (Ciarrochi et al., 2001; Matthews et al., 2004). That in turn is said to result in a change of adaptive outcomes, such as benefits for well-being, health, goal attainment, learning and more (Ciarrochi et al., 2001; Matthews et al., 2004). Alexithymia is associated with rather the opposite – maladaptive choices of coping styles which lead to more maladaptive outcomes. What individuals with high EI can – to use their emotional awareness and regulation capabilities as an advantage in coping with stress (Ciarrochi et al., 2001; Salovey & Mayer, 1990), is something highly alexithymic individuals cannot (Matthews et al., 2004). They are limited in their ability to use emotional knowledge to cope with stressful situations which makes them cope poorly with and more vulnerable to stress. The same maladaptive consequences have been stated for low EI (Ciarrochi et al., 2001; Fukunishi & Rahe, 1995; Matthews et al., 2004; Parket et al., 2001).

Research that investigated the relationship between coping and EI and coping and alexithymia has differentiated between broader coping styles (Enns, Eldridge, Montgomery, & Gonzalez, 2018; Mikolajczak, Nelis, Hansenne, & Quoidbach, 2008). Most often, it was distinguished between emotion-focused coping, problem-focused (or task-oriented) coping and avoidance-focused coping (Besharat, 2010; Noorbakhsh et al., 2010; Parker et al., 1998; Por, Barriball, Fitzpatrick, & Roberts, 2011; Sarabia-Cobo et al., 2017; Tominaga et al., 2014). Emotion-focused coping is the tendency to try and manage the (mostly negative) emotions that arise in encounter with a stressful situation and change the situation's meaning. For example: Forgiving someone can constitute an emotion-focused coping strategy that aims at reducing a stressful reaction and the negative emotions of unforgiveness (Worthington & Scherer, 2004). Problem-focused coping is associated with active cognitive and/or behavioural attempts to deal with the stress. Problem-focused coping, in contrast to emotion-focused coping, aims at changing the situation itself through, for example, finding a solution to the problem by seeking information (Carroll, 2013). Last, avoidance-focused coping centres on disengagement and distraction actions to 'get rid of' the stressing situation or stimuli (Besharat, 2010; Enns et al., 2018; Matthews et al., 2004; Mikolajczak et al., 2008; Nakano, 1991; Parker et al., 1998). Avoidance-focused coping could thus take in the form of meeting friends (i.e. social diversion) instead of tackling the problem (Matthews et al., 2004).

1.3.1 Research results on coping and EI and coping and alexithymia. Research on the associations between coping and EI showed that EI is positively associated with problem-focused coping and negatively associated with emotion-focused and avoidance-focused coping. That means that participants who scored higher on EI have been found to make more use of problem-focused coping and less use of emotion-focused and avoidance-focused coping in encounter with stressful situations (Noorbakhsh et al., 2010; Por et al., 2011; Saklofske, Austin, Galloway, & Davidson, 2007). In contrast, alexithymia has been positively associated with emotion-focused coping and subscales of avoidance-focused coping and negatively associated with problem-focused (or task-oriented) coping (Besharat, 2010; Parker et al., 1998; Tominaga et al., 2014).

1.4 EI as a mediator between alexithymia and coping

Until today, no study has brought all three concepts, EI, alexithymia and coping, together and looked for how the overlap and inverse relation between EI and alexithymia affects the three concepts' interrelationships. That is despite literature pinpointing a need to research mediating roles in the EI-coping relationship (Ciarrochi et al., 2001; Matthews et al., 2004).

Parker et al. (2001) make the significance of the relationship between EI and alexithymia in terms of how we cope with stress clear: The 'presence of alexithymic characteristics in patients suggest *low emotional intelligence* [emphasis added], and … highly alexithymic individuals not only lack the capacity to *use emotions to guide their behaviour* [emphasis added], but are also *intolerant of stress* [emphasis added] and have *limited adaptive resources* [emphasis added]' (p. 113). Then, as alexithymia seems to implicate low EI and intolerance of stress, there is good ground to look at possible mediating roles of EI in the relationship between alexithymia and coping.

In previous research on the EI-coping relationship, EI could account for 40-50% of the explained variance in coping (Downey, Johnston, Hansen, Birney, & Stough, 2010; Noorbakhsh et al., 2010). Such numbers manifest EI's strong influence on coping. The alexithymia-coping relationship shows similar results. In Tominaga et al.'s (2014) study on the relationship between alexithymia and coping styles, they found that the TAS-20 subscales can explain 42.5% of the variance in coping, picturing alexithymia as equally central in influencing coping. Investigating EI's possible mediator roles, by splitting the broad concept into specific competencies using subscales, could clarify why EI's and alexithymia's places seem to weigh equally in their relationship to coping yet both being independent concepts (Parker et al., 2001). Dividing the broad concept of EI into subscales and testing belonging single components of the broad concept is expected to help clarify which specific abilities and inabilities in alexithymic and more or less emotionally intelligent individuals are shared or overlap. This is expected to clarify which exact components of EI in alexithymia relate to how one copes with stress. Figure 2 below illustrates the hypothesized model of multiple parallel mediation with the SEIS subscales that will be tested. Coping, problem-focused coping, emotion-focused coping and avoidance-focused coping will all be tested separately as the dependent variable Y.

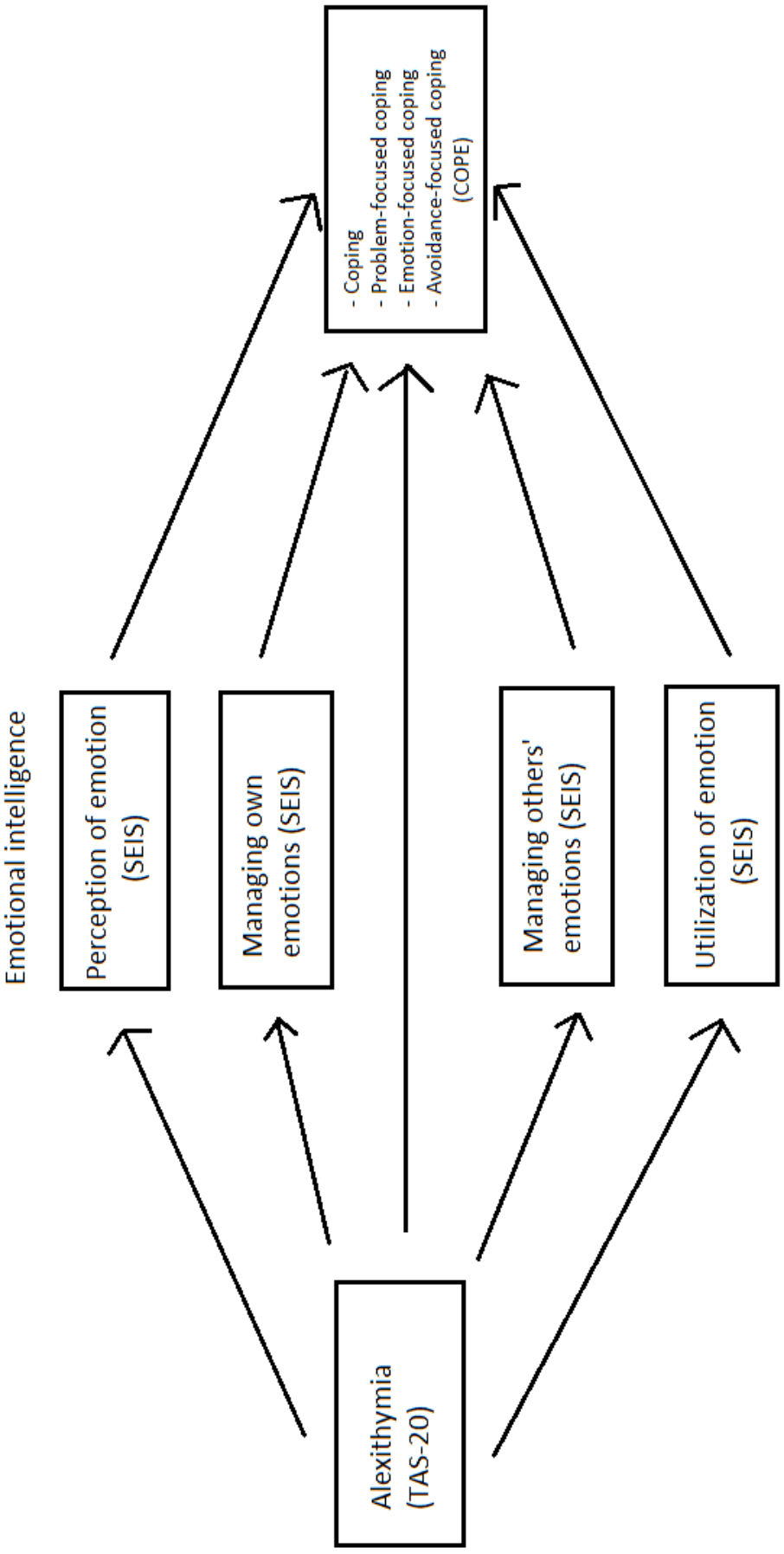


Figure 2. The tested model of the multiple parallel mediation with the EI subscales as mediators (M1, M2, M3, M4), alexithymia as the independent variable (X) and coping, problem-focused coping, emotion-focused coping and avoidance-focused coping all separately as the dependent variable (Y).

1.5 Research question and hypotheses

In testing whether EI is a mediator in the alexithymia-coping relationship, we can foresee a potential change in the perspective of alexithymia and EI and clarify, as Parker et al. (2001) suggest, whether alexithymia in individuals suggests low EI and how that relates to how they cope with stress. Yet, despite its relevance, no study until today has questioned the high overlap and inverse relation between EI and alexithymia that appears to manifest in coping and brought all concepts together in one study. This research aims at adding insight into the interrelationships between the three constructs. Doing so, it is expected to answer the main research question if EI is a mediator in the alexithymia-coping relationship. The sub-hypotheses derive from the model that will be tested and follow as: 1) EI is a mediator in the relationship between alexithymia and coping in general, 2) EI is a mediator in the relationship between alexithymia and problem-focused coping, 3) EI is a mediator in the relationship between alexithymia and emotion-focused coping, and/or 4) EI is a mediator in the relationship between alexithymia and avoidance-focused coping.

2. Methods

2.1. Procedure

Data was gathered through convenience sampling. Participants could either apply through the University of Twente's online application system SONA-systems and, if a student of the University of Twente, receive SONA study points as reward for participation or directly click on the link spread by the researchers online on for example social media. Participation was on a voluntary basis.

In the survey the participants first received a short introduction explaining the goal of the study, what the participants will encounter, how to take the survey and how long it will take. Participation was only after an informed consent had been signed by mouse click. The survey started with short demographics, followed by the State-Trait Anxiety Inventory (STAI) which served another study, the Twenty-Item Toronto Alexithymia Scale (TAS-20) (Bagby et al., 1994a), the Schutte Emotional Intelligence Scale (SEIS) (Schutte et al., 1998), and closed with the COPE Inventory (Carver, Scheier, & Weintraub, 1989). Each questionnaire was provided with a short instruction on how to correctly fill it in. While completing the questionnaires, the web survey provided the option to go back to previous filled-in pages by means of a back key, so that the participants could reconsider and change their answers before coming to the end where their results would be saved. To measure participation duration, a cut-off at the 30-minute

mark has been applied since a huge jump has been detected above that mark. The jump can be redirected to participants who did not fill out the survey in one session and/or left their browser tab open. The cut-off showed that the majority of participants (184, 76.03%) needed less than 20 minutes to fill out the survey (M = 18.12, SD = 5.59). The study was ethically approved by the Behavioral, Management and Social Sciences (BMS) Ethics Committee of the University of Twente.

2.2. Participants

Two-hundred and forty-two (74.38% female and 25.62% male) participants with an age range of 18 to 61 years (M = 21.96, SD = 5.40) voluntarily participated in this online survey. The sample was predominantly German (82.23% German, 14.88% Dutch, and 2.89% other). 68 responses (21.94%) have been deleted due to partial completion (63; 20,32%), unreliable completion (2; 0,65%) or an age below 18 (3; 0,97%).

2.3 Materials

The study design is a web-based survey encompassing four questionnaires additional to short demographic questions. Each questionnaire handles one of the variables at interest: EI, alexithymia, coping styles, and anxiety. A measure of anxiety is included for use in a different study not relevant to this research and thus not further discussed. EI is assessed by using the Schutte Emotional Intelligence Scale (SEIS) (Schutte et al., 1998), alexithymia is assessed by using the Twenty-Item Toronto Alexithymia Scale (TAS-20) (Bagby et al., 1994a), anxiety is assessed by the State-Trait Anxiety Inventory (STAI), and coping styles are assessed by using the COPE (Carver et al., 1989).

2.3.1 Schutte Emotional Intelligence Scale. The SEIS (also referred to as Assessing Emotions Scale; AES) is a 33-item self-report inventory based on the 1990-model of EI by Salovey and Mayer (Schutte et al., 1998). Factor analyses studies suggested a four-factor subscale solution for the SEIS. The four subscales derive as followed: ‘Perception of emotion’ (i.e. items 5, 9, 15, 18, 19, 22, 25, 29, 32, 33), ‘managing own emotions’ (i.e. items 2, 3, 10, 12, 14, 21, 23, 28, 31), ‘social skills’ or ‘managing others’ emotions’ (i.e. items 1, 4, 11, 13, 16, 24, 26, 30), and ‘utilization of emotion’ (i.e. items 6, 7, 8, 17, 20, 27) (Ciarrochi, Chan, & Bajgar, 2001; Schutte, Malouff, & Bhullar, 2009). Each item is formulated as a statement for which the participant indicates on a Likert scale ranging from “1” (“strongly disagree”) to “5” (“strongly agree”) in how far the statement reflects himself/herself. Three items are reverse-scored. Scores thus range from one to five per item resulting in a total score between 33 and 165 with a higher score indicating higher EI (Schutte et al., 1998). Per subscale, means give a score range of one

to five.

Schutte et al. (1998) demonstrated that the SEIS is a reliable and valid tool in measuring EI. High internal consistency was represented by a Cronbach's alpha of .87 to .90. Validity was demonstrated as the SEIS' scores related to eight of nine measures predicted to be related to EI (Schutte et al., 1998). More recent studies confirmed acceptable reliability (α = .71 to .75; *MIC* = .21 to .40) and validity of the SEIS (Kun, Balazs, Kapitany, Urban, & Demetrovics, 2010; Schutte et al., 2009). In the present sample, internal consistency was demonstrated by a good Cronbach's alpha of α = .80.

2.3.2 Twenty-Item Toronto Alexithymia Scale. The TAS-20 is a 20-item self-report inventory. The TAS-20 is the most widely used self-report instrument to assess alexithymia and consists of three subscales: 'Difficulty identifying feelings' (7 items), 'difficulty describing feelings' (5 items) and 'externally oriented thinking' (8 items) (Bagby et al., 1994a; Bermond, Oosterveld, & Vorst, 2015; Taylor, 2000). The latter partly covers the remaining characteristic of alexithymic individuals – their scarcity of fantasy and imagination (Taylor, Bagby, & Parker, 2003). Each item contains a statement for which the participant indicates on a Likert scale ranging from "1" ("strongly disagree") to "5" ("strongly agree") in how far the statement reflects himself/herself. Five of the items are reverse-scored. Total scores range from 20-100 whereby higher scores indicate higher alexithymia and thus higher impairment. Cut-off scores differentiate between non-alexithymic (i.e. equal to or less than 51), alexithymic (i.e. equal to or greater than 61) and possibly alexithymic (i.e. 52 to 60) (Bagby et al., 1994a).

The TAS-20 and its subscales have demonstrated reliability and validity (Bermond, Oosterveld, & Vorst, 2015; Meganck, Vanheule, & Desmet, 2008; Panaite & Bylsma, 2012; Parker, Taylor, & Bagby, 2003; Taylor, 2000; Taylor et al., 2003). Acceptable to good reliability is represented in a Cronbach's alpha of .77 to .81 (Bagby et al., 1994a; Bermond et al., 2015). Besides factorial validity that has been demonstrated by re-testing for a unidimensional and two-factor model which failed to surpass the three-factor version, convergent, concurrent and discriminant validity have been demonstrated (Bagby et al., 1994a; Bagby et al., 1994b). In the present sample, reliability was good (α = .83).

2.3.3 The COPE Inventory. The dispositional version of the COPE is a 60-item self-report inventory (Carver et al., 1989). The original COPE Inventory was introduced in 1989 and had 13 subscales, each consisting of four items with an additional alcohol abuse item (53 items total). A revision of the scale resulted in two additional subscales, 'humor' and 'substance abuse', that the authors themselves added to the scale ("COPE," n.d.), each adding another four

items to the final version that since constitutes 15 subscales (Donoghue, 2004; Litman, 2006; Kallasmaa & Pulver, 2000; Carver et al., 1989; "COPE," n.d.).

Three conceptually distinct broader styles of coping underly the subscales: Problem-focused (i.e. active coping, planning, suppression of competing activities, restraint coping, seeking of instrumental social support), emotion-focused (i.e. seeking of emotional social support, positive reinterpretation, acceptance, denial, turning to religion) and avoidance-focused (i.e. focus on and venting of emotions, behavioral disengagement, mental disengagement, humor, substance abuse) coping responses (Carver et al., 1989; Donoghue, 2004; Kallasmaa & Pulver, 2000; Litman, 2006; Matthews et al., 2004; Mikolajczak et al., 2008; Nakano, 1991). Each scale's item contains a statement for which the participant indicates on a Likert scale ranging from "1" ("I usually don't do this at all") to "4" ("I usually do this a lot") in how far the statement reflects himself/herself. 15 different scores cover totals from 4 to 16 per subscale. Subscales were added up as listed above to identify the participant's emotion -, problem -and avoidance-focused coping styles scores. Five subscales with four items each result in a score of 20 to 80 per underlying broader coping style with higher scores indicating more use of that specific coping style.

The COPE's subscales demonstrated unacceptable (i.e. α = .45 for mental disengagement) to excellent reliability (i.e. α = .92 for turning to religion) and acceptable overall reliability (*Mdn* = .73) as well as evidence for convergent and discriminant validity (Carver et al., 1989; Kallasmaa & Pulver, 2000; Litman, 2006). Although the COPE has been criticized regarding above mentioned lack of reliability of subscales and overall stability (Donoghue, 2004), no revised version of it has successfully implemented itself in the field of research and the COPE remained one of the most used coping scales in academic journals (Kato, 2015). Moreover, timely availability limited the choices of the researchers. In the present sample, reliability showed to be good overall (α = .87), good for problem-focused coping (α = .84), acceptable for emotion-focused coping (α = .78) and good for avoidance-focused coping (α = 0.80) which indicate good ground for using the instrument despite the critique.

2.4 Data analysis

The data was analyzed using IBM SPSS Statistics 24. Sum scores and mean scores of the SEIS and its subscales, the TAS-20, the COPE and the COPE's three underlying coping styles (i.e. problem-focused, emotion-focused and avoidance-focused coping) were calculated and used for analysis. Descriptive statistics and frequencies were obtained to give an impression of the data. Thereafter, mediation was tested. To test mediation, bootstrapping was used with

the latest PROCESS 3.2 macro for SPSS by Hayes (2012). Bootstrapping has shown to be more powerful than other approaches in testing mediation and is the up-to-date procedure to test mediation (here often referred to as intervening or indirect) variable effects (MacKinnon, Lockwood, & Williams, 2004). Bootstrap samples were set to be 5,000 as recommended by Hayes (2012) and 95-% bootstrap confidence intervals were used. Mediation is said to be present if the confidence interval does not cross zero. For a precise outlay on how bootstrapping works see Hayes (2012). PROCESS gives unstandardized coefficients which were used. Alongside mediation analyses, variance analyses were conducted to give an impression of the proportion to which each concept accounts for the variation in the other. Simple linear regression analyses were executed to additionally investigate single linear predictions of interest. Lastly, since prior research suggests an overlap between alexithymia and EI (Parker et al., 2001), collinearity analyses were conducted.

3. Results

3.1 Preliminary analyses

First, the scores of the participants on the different questionnaires are given as sum scores and means (see *Table 1*). EI's mean scores fall slightly below those found in prior research that used the SEIS in comparable samples (Por et al., 2011; Schutte et al., 2009). For alexithymia and the TAS-20, participants showed to score in range of the figures that prior research estimated with comparable samples (Hamaideh, 2018; Taylor et al., 2003; Zhu et al., 2007). Applying the TAS-20's cut-off scores shows: 21 participants (11.52%) of the sample can be considered alexithymic according to the TAS-20's criteria (i.e. a score equal to or above 61). In contrast, 169 (69.83%) participants scored in the non-alexithymic range (i.e. scoring equal to or below 51). The rest fall in-between. Such numbers fall into the range of established prevalence for alexithymia across different populations (Brosig et al., 2004; Honkalampi et al., 2000; Khan & Fatima, 2017; Kokkonen et al., 2001; Lumley & Roby, 1995; Mason et al., 2005). Scores on the COPE show that the participants scored lowest on avoidance-focused and highest on problem-focused coping. Comparing the results, scores fall into the range of prior research with one exception – emotion-focused coping. Scores on emotion-focused coping vary between different researches. From scoring slightly above (Muhonen & Torkelson, 2001) up to scoring about 17 points higher (Kallasmaa & Pulver, 2000), the scores on emotion-focused coping in this research fall above those in comparable samples. *Appendix A* gives an overview over all of

the 15 COPE subscales' descriptive statistics from which the scores on the three broader coping styles derive.

Table 1

Descriptive Statistics of the SEIS and its subscales, TAS-20 and the COPE's three underlying broader coping styles

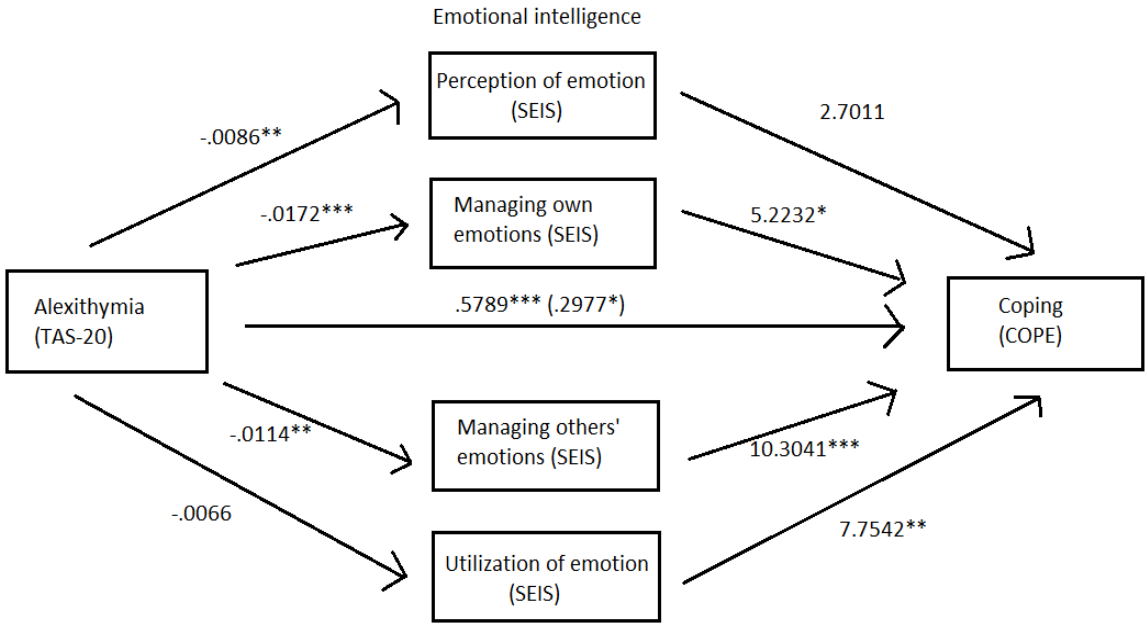
	N	Minimum	Maximum	Mean	Std. Deviation
SEIS total	242	92.00	146.00	118.03	10.45
SEIS POE	242	1.90	4.20	3.45	0.39
SEIS MOWE	242	2.11	4.56	3.43	0.46
SEIS MOTE	242	2.50	4.88	3.73	0.44
SEIS UOE	242	2.17	5.00	3.81	0.49
TAS-20 total	242	40.00	86.00	46.24	10.12
COPE total	242	94.00	205.00	139.02	16.95
COPE problem	242	26.00	70.00	51.69	8.06
COPE emotion	242	29.00	69.00	45.52	7.15
COPE avoidance	242	23.00	69.00	41.82	8.12

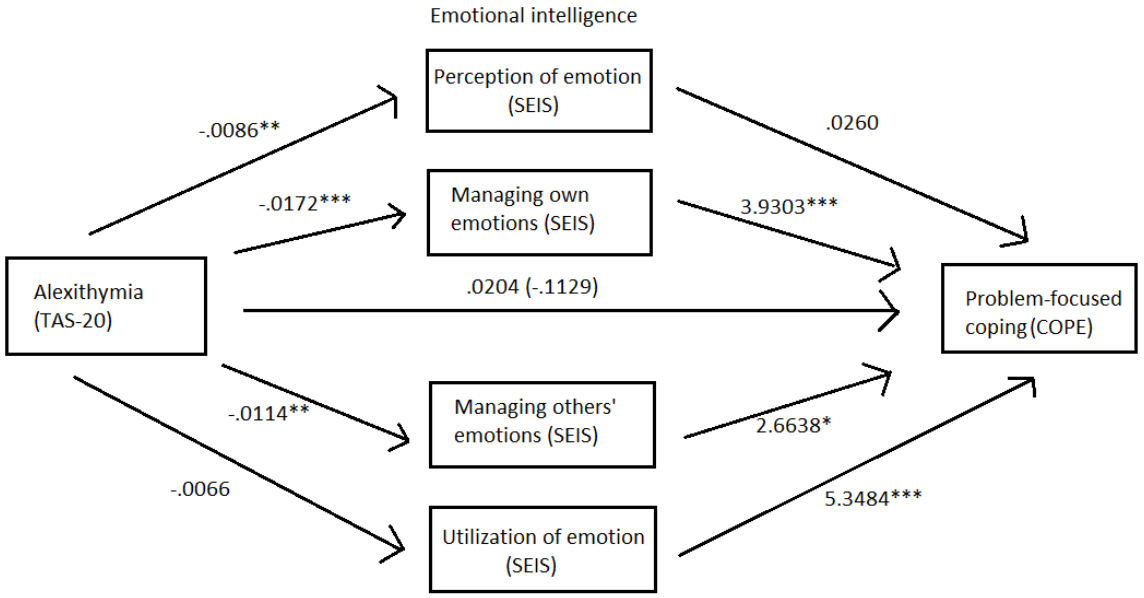
Note: SEIS POE is subscale 'Perception of emotions', SEIS MOWE is subscale 'Managing own emotions', SEIS MOTE is subscale 'Managing others' emotions', and SEIS UOE is subscale 'Utilization of emotion'

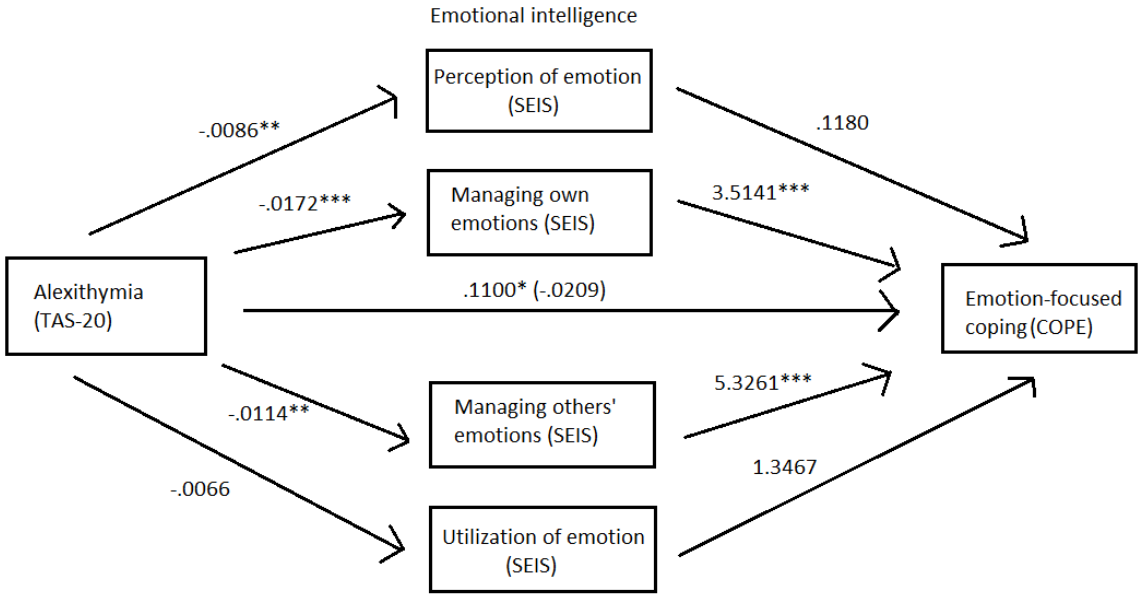
3.1.1 Collinearity analyses. Bivariate and multicollinearity analyses revealed low collinearity coefficients (*VIF* = 1.09).

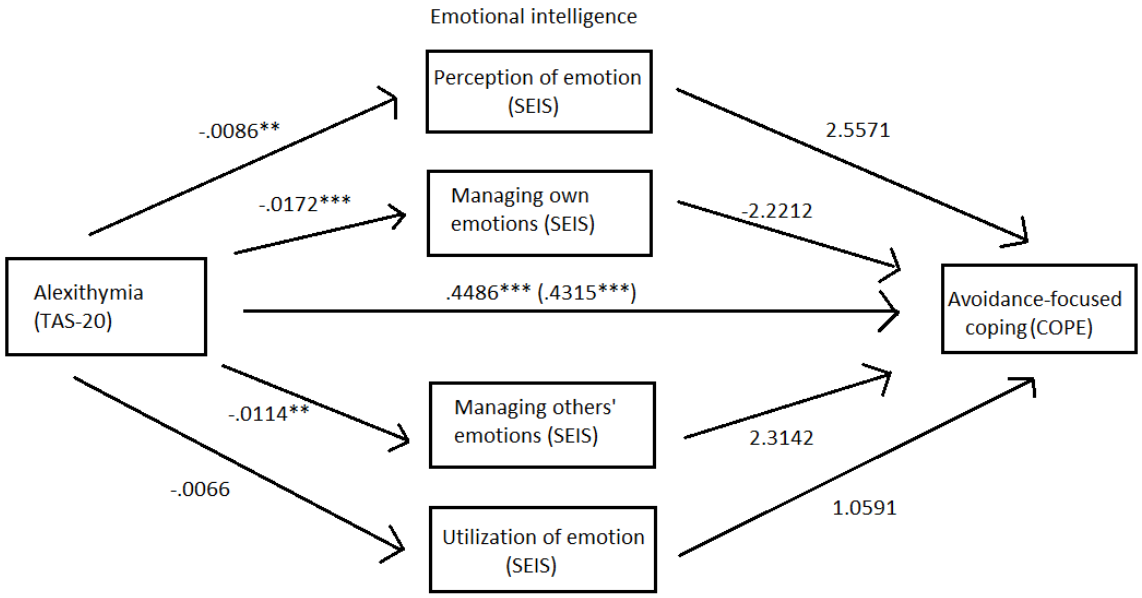
3.2 Mediation analyses

Bootstrapping revealed that in the first model (*Figure 3*) 'managing others' emotions' was a mediator in the relationship between alexithymia and coping in general, 95-% CI [-0.2215, -0.0350]. In the second model (*Figure 4*), despite no significant relationship between alexithymia and problem-focused coping, 'managing own emotions', 95-% CI [-0.1261, -0.0243] and 'managing others' emotions', 95-% CI [-0.0755, -0.0024] were mediators in the relationship between alexithymia and problem-focused coping. In the third model (*Figure 5*), despite no significant relationship between alexithymia and emotion-focused coping, again, 'managing own emotions', 95-% CI [-0.1049, -0.0219] and 'managing others' emotions', 95-% CI [-0.1119, -0.0185] were mediators in the relationship between alexithymia and emotion-focused coping. No EI subscale was a mediator in the relationship between alexithymia and avoidance-focused coping (*Figure 6*). The figures below show all mediation models visualized, the betas indicate the strengths of relationships.


Emotional intelligence
Perception of emotion (SEIS)
Managing own emotions (SEIS)
Managing others' emotions (SEIS)
Utilization of emotion (SEIS)
Alexithymia (TAS-20)
Coping (COPE)
-.0086**
-.0172***
-.0114**
-.0066
2.7011
5.2232*
.5789*** (.2977*)
10.3041***
7.7542**


Emotional intelligence
Perception of emotion (SEIS)
Managing own emotions (SEIS)
Managing others' emotions (SEIS)
Utilization of emotion (SEIS)
Alexithymia (TAS-20)
Problem-focused coping (COPE)
-.0086**
-.0172***
-.0114**
-.0066
.0260
3.9303***
.0204 (-.1129)
2.6638*
5.3484***





Figures 3-6. Mediating roles of the EI subscales in the relationship of alexithymia and coping in general, alexithymia and problem-focused coping, alexithymia and emotion-focused coping, and alexithymia and avoidance-focused coping.

Note: *$p < .05$, **$p < .01$, ***$p < .001$

3.3 Single linear prediction analyses

Simple single linear regression analyses gave insight into interrelationships of interest between the concepts. EI in general was a significant negative predictor of alexithymia, b = -0.218, $t(240)$ = -4.601, $p < 0.001$, R^2 = 0.081. Next, EI was a significant positive predictor of

coping, $b = 0.682$, $t(240) = 7.177$, $p < 0.001$, $R^2 = 0.177$, of problem-focused coping $b = 0.376$, $t(240) = 8.643$, $p < 0.001$, $R^2 = 0.237$, and of emotion-focused coping $b = 0.306$, $t(240) = 7.755$, $p < 0.001$, $R^2 = 0.200$. EI was however no significant predictor of avoidance-focused coping, $b = -9.680E\text{-}5$, $t(240) = -0.002$, $p = 0.998$ ($p > 0.05$), $R^2 = 0.000$. Alexithymia was a significant negative predictor of EI in general, $b = -0.371$, $t(240) = -4.601$, $p < 0.001$, $R^2 = 0.081$. Next, alexithymia was a significant positive predictor of coping in general, $b = 0.298$, $t(240) = 2.201$, $p < 0.05$, $R^2 = 0.02$. Alexithymia however was no significant predictor of problem-focused coping, $b = -0.113$, $t(240) = -1.75$, $p = 0.081$ ($p > 0.05$), $R^2 = 0.013$, and emotion-focused coping, $b = -0.021$, $t(240) = -0.362$, $p = 0.717$ ($p > 0.05$), $R^2 = 0.001$. Lastly, alexithymia was a significant positive predictor of avoidance-focused coping, $b = 0.431$, $t(240) = 7.286$, $p < 0.001$, $R^2 = 0.181$.

4. Discussion

The aim of this study was to identify mediating roles of EI in the relationship between alexithymia and coping. Literature and prior research established relationships between all three concepts separately and suggested underlying mediating roles of EI. Despite a considerable to high overlap between EI and alexithymia, a characteristic that is theorized to manifest in both concepts' relation to coping, no study until today brought all three concepts together. It was proposed that EI is a mediator in the alexithymia-coping relationship. We will first discuss the found mediation effects alongside the relevant paths of the model. A discussion of the relationship between EI and alexithymia follows after which we conclude and answer the research question. We will finish with giving outlining limitations and recommendations, and final remarks.

4.1 The role of EI as a mediator in the alexithymia-coping relationship

The results of the study show that higher alexithymia goes hand in hand with both lower management (or regulation) of own emotions (path *a2*) and of others' emotions (path *a3*). The management of own and others' emotions refers to Mayer and Salovey's (1990) second branch of EI – the regulation of emotion in the self and in others. 'Managing own emotions' refers to adaptive regulative capacities in the self regarding own distressing emotions (Ciarrochi, Chan, & Bajgar, 2001; Salovey & Mayer, 1990). Since alexithymia is characterized by a lack in emotional awareness (Lane et al., 1997; Tominaga et al., 2014) which is crucial for adaptive emotional regulation (or own managing emotions) to be effective (Gross & Jazaieri, 2014), and alexithymic individuals are impaired in their ability to regulate emotions (Panaite & Bylsma,

2012), this might explain why higher alexithymia goes hand in hand with lower management of own emotions.

'Managing others' emotions' refers to a combination of competencies that allow one to, for example, organize events that make others feel better and motivate them as well as, on the downside, manipulate others' according to own interests (Ciarrochi, Chan, & Bajgar, 2001; Salovey & Mayer, 1990). That higher alexithymic individuals appear worse at managing others' emotions might be explained by looking at alexithymia's relationship to recognizing emotions in others. Studies (Lane et al., 1996; Prkachin, Casey, & Prkachin, 2009) show that alexithymic individuals are impaired in their ability to accurately recognize and process emotions in others. Since accurate recognition of emotions is seen as a key process in effectively regulating (or managing) others' emotions (Mayer & Geher, 1996), it might explain why higher alexithymia is related to lower management of others' emotions (path *a3*). It is harder for alexithymic individuals to recognize emotions in others, for example through facial expressions (Prkachin et al., 2009), which might be why they are worse at managing others' emotions – they fail at detecting them in the first place.

That higher management of own and others' emotions goes hand in hand with more use of both problem -and emotion-focused coping (paths *b2* and *b3*) contrasts with previous findings on EI and coping (Noorbakhsh et al., 2010; Por et al., 2011; Saklofske et al., 2007). An explanation for why higher management of own and others' emotions led to more problem-focused coping might lie in the nature of the stressing situation. Situations that are interpreted by the individual as more 'controllable' are more likely to elicit problem-focused coping responses (Cosway, Endler, Sadler, & Deary, 2000; Matthews et al., 2004). The competencies to manage one's own and others' emotions might lead one to feel better equipped against the stressors and the emotions it evokes so that one is more likely to interpret a stressing situation as more 'controllable' and consequently response with more problem-focused coping.

Next, that emotion-focused coping was positively related to both managing own and others' emotions is incongruent with prior research and also contradicts our findings on problem-focused coping. In literature, problem-focused and emotion-focused coping oppose each other with both being characterized by different approaches to deal with stress. Emotion-focused coping puts the emotions that surround the stress into focus in an attempt to deal with the, mostly distressing, emotions a certain stressor elicits in the individual (Carroll, 2013; Matthews et al., 2004). In contrast, problem-focused coping is about finding a solution to the problem itself. That managing own and others' emotions is positively related to both emotion-focused coping and problem-focused coping might be explained by the use of multiple coping

strategies consecutively. For example, an individual with the ability to manage his own and others' emotions that encounters stress can deal with the emotions the stress evokes by using emotion-focused coping first, after which he/she can initiate a problem-focused coping response to solve the problem at hand.

4.2 Conclusions

We can answer the research question in two ways: Technically, we have found mediation effects of components of EI that reflect in the subscales 'managing own emotions' and 'managing others' emotions'. Both subscales appeared as mediators in the relationship between alexithymia and problem-focused coping and alexithymia and emotion-focused coping. Additionally, 'managing others' emotions' was a mediator in the relationship between alexithymia and coping in general. Practically however, in the models the mediation effects are very weak with different levels of alexithymia seeming to have nearly no effect on EI. Since EI and alexithymia have been pictured as highly overlapping but independent in prior research (Parker et al., 2011), this finding is unexpected. One explanation for this finding might come from looking at similarities between the two concepts and research from Parker et al. (2001) that suggests a high overlap between EI and alexithymia. It can thus be that multicollinearity might be present and influence the relationships in the model.

Collinearity was tested to ensure that the two concepts are indeed independent constructs as concluded by Parker et al. (2001). Bivariate and multicollinearity analyses revealed low collinearity coefficients so that we conclude that the constructs are independent from each other. From the data, it can be confirmed that EI and alexithymia are inversely related, with each being a significant negative predictor of the other which means that higher alexithymia is associated with lower EI and vice versa. Both concepts only explain eight percent of variation in the other. Such a low figure lets us conclude that there is no overlap, as found in previous research by Parker et al. (2001), between EI and alexithymia.

The current tested model does not reveal results that convince us to conclude that EI is a mediator in the alexithymia-coping relationship. We thus reject the hypothesis and sub-hypotheses that EI is a mediator in the alexithymia-coping relationship. There are two central arguments for this: First, EI and alexithymia seem to be barely related which represents in negative multicollinearity analyses, low numbers for explained variances and low betas of the *a*-paths. Secondly, as investigation through simple single linear regression analyses reveals, alexithymia and EI alone were stronger predictors of coping in general as well as different coping styles than in the mediation models. Here, EI positively predicted coping in general,

problem-focused coping and emotion-focused coping. Alexithymia was a positive predictor of coping in general and avoidance-focused coping.

Consequently, we conclude a dissatisfying fit of the tested model in predicting coping and that alexithymia and EI share no relation regarding coping and concern different abilities and inabilities in the individual with regards to coping. What might explain such findings that contrast Parker et al.'s (2001) who suggested that the presence of alexithymic characteristics in an individual suggests low emotional intelligence and intolerance of stress, is that different measurements of coping and EI have been used. Parker et al. (2001) used the BarOn Emotional Quotient Inventory that, besides components of EI, measures an individuals' 'stress management'. Still, the findings lead us to conclude that in practical reality, EI is not to be considered a mediator in the alexithymia-coping relationship. Instead, both constructs should be regarded as independent and barely related regarding coping, and as strong predictors of coping in a single prediction model, not in a mediation model.

4.3 Limitations and recommendations

The research faced some limitations which can function as recommendations for future research. First, researching mediation in a cross-sectional survey study faces a major limitation because it creates a picture of one moment in time and cannot establish temporal precedence. Meaning, a cross-sectional study cannot say which variable precedes the other and whether cause comes before the effect happens. This however is key, since in a standard mediation model the independent variable (IV) precedes the mediating variable (MV) which in turn precedes the dependent variable (DV). If one wants to ensure that a mediation effect is present at more than one specific moment in time and one variable actually precedes the other in an order that suggests mediation (i.e. IV –> MV –> DV), a longitudinal research approach with pilot tests gives a more reliable picture and reveals more about how the concepts interrelate (Maxwell & Cole, 2007).

Secondly, the COPE inventory is an instrument that has received criticism. Donoghue (2004) advised a revision of the items to be more fitting to a the three-factor solution applied in this research. While constituting a good fit for measuring coping on multiple distinctive aspects, the COPE has not been extensively used as making a distinction between problem-, emotion- and avoidance-focused coping. Other instruments appear better suited in measuring coping along such a distinction of three broader coping styles such as the Coping Inventory for Stressful Situations (CISS). Unfortunately, the CISS was not available in time to the authors of this study.

4.4 Final remarks

Based on the findings, researchers and practitioners are advised to regard alexithymia and EI as independent constructs that concern different characteristics in their respondents and patients in regard to how those deal with stress. We conclude that different levels of alexithymia and EI can be present in an individual unrelated to the level of presence or absence of the other when looking at how the individual copes with stress. Further, we emphasize that EI and alexithymia on their own carry significant predicting value for different styles of coping and show to be related to how one deals with stress. We further recommend to conduct more research on the topics to clarify interrelationships further as this research has shown that the current body of knowledge about the interrelationships is both limited as well as contradictory to the findings of this study. We advise to use different measurements that for example include better suited instruments (i.e. the CISS) and a longitudinal approach, to see if such reveal confirming or opposing results.

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Appendix

Appendix A

Table 1

Descriptive Statistics of the COPE's subscales

	N	Minimum	Maximum	Mean	Std. Deviation
Planning	242	4.00	16.00	11.50	2.50
Suppression of competing activities	242	4.00	16.00	9.43	2.06
Active coping	242	6.00	16.00	10.88	2.17
Restraint	242	4.00	16.00	8.96	2.12
Instrumental social support	242	4.00	16.00	10.93	2.79
Positive reinterpretation and growth	242	5.00	16.00	11.95	2.34
Acceptance	242	4.00	16.00	10.91	2.36
Denial	242	4.00	14.00	5.93	2.26
Turning to religion	242	4.00	16.00	5.65	2.95
Use of emotional social support	242	4.00	16.00	11.08	3.17
Focus on and venting of emotions	242	4.00	16.00	9.88	2.63
Behavioural disengagement	242	4.00	14.00	6.60	2.27
Mental disengagement	242	4.00	16.00	10.00	2.45
Substance use	242	4.00	16.00	6.13	3.21
Humor	242	4.00	16.00	9.21	3.28