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The impact of social participation and attachment styles on mentalizing and emotion regulation in adults living in the United States

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THE IMPACT OF SOCIAL PARTICIPATION AND ATTACHMENT STYLE ON

MENTALIZING AND EMOTION REGULATION IN ADULTS LIVING IN THE

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Abstract

Prior studies have shown that attachment styles interact with social inclusion to impact belonging, self-esteem, control, sense of meaning, and positive mood. No studies have investigated how the interaction of attachment and social participation impacts self-regulatory mechanisms. The main goal of this study was to address this gap and investigate how the interaction of different social participation conditions (ostracism, overinclusion, inclusion) and attachment styles impact two regulatory mechanisms, specifically, mentalizing capacities and emotion regulation. Adult participants were recruited through Amazon Mechanical Turk. This was the first study to demonstrate that ostracism and inclusion influence the relationship between attachment style and regulatory mechanisms. Specifically, in the ostracism condition, anxious attachment was associated with greater state emotion regulation difficulties, namely, limited ability to modulate emotional/behavioral responses and lack of emotional clarity. In the inclusion condition, avoidant attachment was associated with lower online mentalizing. The exploratory study demonstrated how different aspects of dispositional mentalizing mediate the relationship between attachment and emotion regulation. Specifically, avoidant and anxious attachment were negatively related to state emotion regulation difficulties, and this was mediated by dispositional uncertainty of mental states. Avoidant attachment was positively related to state emotion regulation difficulties, and this was mediated by a disposition for adequate mentalizing. Finally, results emphasize the importance of improving construct validity in the self-report measure of dispositional mentalizing.

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CHAPTER I

Introduction

Humans depend on social bonds for survival and psychological well-being. According to developmental theorists, humans are pre-wired with a motivational, or attachment behavioral system, designed to regulate proximity to an attachment figure in times of separation, threat, or distress (Bowlby, 1969). The experience of ostracism threatens attachment needs and social bonding and can contribute to distress and psychological disturbances, suggesting that it affects regulatory mechanisms that play a role in psychological well-being. Two important regulatory mechanisms of interest to this study were mentalizing and emotion regulation. Both are important for overriding reflexive and maladaptive reactions to exclusion experiences in an effortful and controlled manner so that we can give expression to more socially appropriate responses. Moreover, these regulatory capacities enable effective problem solving, increase self-awareness and empathy for others, aid in re-establishing social connection, improve mood, and enhance long term well-being.

Studies have demonstrated that ostracism can impact mentalizing and emotion regulation. It has been shown that individuals can increase their attentiveness to mental states following ostracism (Hess & Pickett, 2010; Knowles, 2014; Pickett & Gardner, 2005; White et al., 2016). It has also been found that following ostracism, individuals can experience decreased mentalizing (Nordgren, Banas, & MacDonald, 2011; White et al., 2016). Furthermore, studies have demonstrated that ostracism has been associated with adaptive emotion regulation, such as reappraisal (Poon & Chen, 2016; Sethi, Moulds, & Richardson, 2013), but it has also been associated with emotion dysregulation

(Davidson et al., 2019) in the form of emotional disengagement (Blackhart, Nelson, Knowles, & Baumeister, 2009; Fabiansson & Denson, 2012) and emotional reactivity (Joorman, 2006; Twenge, Baumeister, Tice, & Stucke, 2001).

The mixed results in the studies above suggest that ostracism may be differentially interacting with individual differences in certain internal, psychological dispositions. Of particular interest to this study were attachment dispositions, or styles. Studies have established the relationship between attachment style and mentalizing and the relationship between attachment and emotion regulation (Cassidy, 1994). Specifically, individuals with secure attachment tend to exhibit higher mentalizing levels than those with insecure or disorganized attachment (Fonagy & Target, 1997; Meins, 1997; Nazarro et al, 2017). In addition, individuals with anxious attachment are prone to emotional reactivity, or hyperactivating emotion regulation responses, while those with avoidant attachment engage in emotional detachment, or deactivating emotion regulation behaviors. While ostracism literature has shown that individual differences in attachment have interacted with ostracism, studies have mostly focused on the impact of the interaction of attachment and ostracism on fundamental needs satisfaction and distress (Arriaga, Capeza, Reed, Wesselman, & Williams, 2014; Shaver & Mikulincer, 2013). Therefore, this study aimed at addressing the existing gap with respect to the differential impact of ostracism on the relationship between attachment styles and two regulatory mechanisms, mentalizing and emotion regulation. More specifically, this study examined the impact on state and online mentalizing and state emotion regulation.

While the experience of ostracism threatens the need for attachment and social bonding, overinclusion can contribute to a sense of social value and satisfy relational

needs. Studies have demonstrated that, compared to inclusion, overinclusion is associated with a greater sense of belonging, meaningful existence, control, and self-esteem (Niedeggen et al., 2014; Simard & Dandeneau, 2018). Additionally, it has been shown that inclusion is insufficient for decreasing negative mood, particularly for insecurely attached individuals who are prone to emotion dysregulation and mentalizing impairment (De Panfilis, Riva, Preti, & Marchesi, 2015; Weinbrecht, Niedeggen, Roepke, & Renneberg, 2018). Rather, it has been shown that overinclusion is associated with reduced negative emotions, suggesting a change in the ability to reflect on emotions and regulate them. These studies, however, have focused on the effect of the interaction between overinclusion and specific psychological disorders on mood and fundamental needs satisfaction. In contrast to those studies, this study aimed to contribute to the gap in the literature by examining the impact of the interaction between overinclusion and attachment style on state emotion regulation and state and online mentalizing.

Finally, a subordinate goal of this study was to explore whether dispositional mentalizing mediated the relationship between attachment and state emotion regulation in the context of an aversive social condition. Mentalizing and emotion regulation capacities both develop in the context of attachment relationships. In terms of construct and function, they overlap yet remain distinct. Emotion regulation involves monitoring, managing, and altering the intensity and duration of emotional experiences while mentalizing involves contextualizing and attributing meaning to those emotions and requires the process of reflecting on one's thoughts and feelings. Studies have demonstrated the correlation between the two variables with some results suggesting that mentalizing serves as a prerequisite for adaptive emotion regulation in non-clinical

samples (Schwarzer, Nolte, Fonagy, & Gingelmaier, 2021). Although correlations between attachment and mentalizing and attachment and emotion regulation have been found, there is, surprisingly, scarce research examining the three variables together, and in particular, the mediating role of dispositional mentalizing between attachment and state emotion regulation. This study, therefore, aimed to fill that gap. Lastly, this study explored whether distinct mentalizing impairments mediated the relationship between different attachment styles and distinct emotion regulation strategies.

CHAPTER II

Literature Review

This chapter reviews the research and theory on ostracism, overinclusion, attachment, mentalizing, and emotion regulation. Each construct is defined, and their relationship to each other is described, with a primary focus given to the relationship between attachment styles and two regulatory mechanisms, mentalizing and emotion regulation, and the moderating role of ostracism and overinclusion on the relationship between the attachment and mentalizing and emotion regulation. Current methods for assessing mentalizing and emotion regulation are reviewed and critiqued. In addition, research on the relationship between mentalizing and emotion regulation is reviewed, as it relates to the secondary aim of the study, which explored if mentalizing mediated the relationship between attachment and emotion regulation.

Social Participation

Before beginning the discussion on social participation, brief definitions of attachment style, mentalizing, and emotion regulation are provided here in order to facilitate the bridging of these constructs with the constructs of ostracism and overinclusion within this section. Attachment, mentalizing, and emotion regulation are discussed in greater detail following the social participation section.

Attachment style refers to an individual's psychological representation of self and others expressed in recurring patterns of relational expectations, emotions, and behaviors. Adult attachment research has operationalized attachment style based on two underlying dimensions (Brennan, Clark, & Shaver, 1998) – attachment-related anxiety and attachment-related avoidance.

Mentalization refers to the social-cognitive capacity to imaginatively perceive or interpret the behavior of oneself and others in terms of intentional mental states (i.e., beliefs, reasons, feelings, desires, needs, etc.) or mental processes (Fonagy & Target, 2006; Fonagy et al., 2000).

Emotion regulation refers broadly to the external and internal processes involved in monitoring, evaluating, and managing emotional reactions in order to achieve one's goals (Eisenberg & Spinrad, 2004; Gross, 1988; Gyurak, Gross, & Etkin, 2011; Thompson, 1994).

Ostracism

Humans are pre-wired to form and maintain social attachments (Baumeister & Leary, 1995). Social relationships provide valuable social support in times of stress and confer psychological benefits. Furthermore, social bonds satisfy our fundamental needs, which are a sense of belonging, self-esteem, control, and meaningful existence (Baumeister & Leary, 1995; Ellemers & Haslam, 2012; Leary & Baumeister, 2000; Williams, 2009). Forming and maintaining social bonds have been positively correlated with happiness in life and positive life outcomes (Baumeister & Twenge, 2003). Socially connected people are not only happier, but are also mentally and physically healthier than those who lack stable and meaningful social support (McAdams, 1986).

Experiences of ostracism, rejection, or social exclusion threaten or thwart our fundamental needs and can negatively affect various areas of human functioning (Williams, 2007). Ostracism, in the social psychology literature, has been typically defined as being ignored or excluded (Williams, 2007). Throughout history and across cultures, societies have engaged in the marginalization, derogation, and the exclusion of

certain individuals from social participation and group membership (Goffman, 2014; Williams, 2001). Ostracism may take various forms, including not being acknowledged, not being given relevant social information that others have received (Jones, Carter-Sowell, Kelly, & Williams, 2009), speaking in front of others in a language others do not understand (Dotan-Eliaz, Sommer, & Rubin, 2009), encountering references to unfamiliar pop culture topics (Iannone, Kelly, & Williams, 2016), averting eye contact, and using electronic devices during face-to-face interactions (Kushelv & Heintzelman, 2018).

Being ignored and other subtle forms of exclusion may be experienced as highly aversive because humans have evolved to sensitively detect environmental and social cues signaling danger (Wesselmann, Nairne, & Williams, 2012). Ostracism can threaten physical survival as it leaves one vulnerable to external danger, without the benefits of group living and shared resources, and decreases the chances of attracting partners for reproduction. Thus, natural selection has biased humans towards over-detecting ostracism, which has enabled humans to adjust their behavior and expectations about social inclusion (Kerr & Levine, 2008; Wirth et al., 2017). Furthermore, according to Williams (2009), ostracism may be a uniquely painful type of exclusion. This may be because the experience of one's *social death* (Bauman, 1992) makes death and death anxiety more salient in one's mind (Steele, Kidd, & Castano, 2015). It is, therefore, no surprise that being ignored can result in greater distress and negative effects compared to a more direct, rejection-based exclusion, in which one receives some type of acknowledgement or attention, albeit negative (Rudert et al., 2017; Zadro et al., 2005).

Ostracism remains a ubiquitous experience that everyone will likely encounter,

some more frequently than others. People engage in exclusion in order to provide clear group identity boundaries, correct anti-normative behaviors, influence behavior (Poulsen & Carmon, 2015; Williams, 2001), and protect against those who threaten group longevity and health (Hogg, 2005; Kurzban & Leary, 2001; Oaten, Stevenson, & Case, 2009; Park, Faulkner, & Schaller, 2003; Williams, 2009). Exclusion can also be used by those who belong to a stigmatized group as a way of maintaining unity within that group (Kurzban & Leary, 2001; Smart Richman & Leary, 2009). According to Social Identity Theory, exclusion of others can be motivated by a desire to enhance or maintain a positive self-concept by favoring the in-group, to which one belongs, over the out-group (Tajfel & Turner, 1979). A depersonalization process emerges, whereby in-group differences are minimized while differences with out-groups become more prominent.

Developmental theorists also provide an understanding of the early conditions that can lead to overidentification with the in-group and exclusion or rejection of out-groups. According to Fairbairn (1952), the early phase of an infant's development involves primary identification with and dependence on caregivers, characterize by a lack of psychological differentiation between the infant and the other(s). This process is consistent with findings from social psychology related to depersonalization, in which the boundary between self and others is blurred (Reynolds et al., 2001). If primary identification persists, it can lead into overidentification tendencies in adolescence and adulthood as an adaptive defense against identity confusion and as compensation for feelings of inadequacy (Erikson, 1959). The illusion of security, sense of self, and power is established in the idealization of the in-group, the depersonalization process, and the devaluation of the outgroup (Aviram, 2005, 2007). The degree to which out-groups are

excluded and rejected is closely linked to the strength of in-group identification.

Ostracism has been associated with health problems, such as impaired immune functioning, increased levels of stress hormones, (Gunnar, Sebanc, Tout, Donzella, & van Dulmen, 2003), and even physical discomfort. Studies have shown that excluded individuals experience pain, both at the self-report and neurological level (Eisenberger, Lieberman, & Williams, 2003; Kross, Berman, Mischel, Smith, & Wager, 2011). Both physical pain and ostracism activate the same brain regions (Eisenberger, Lieberman, & Williams, 2003; Ferris, 2019), and agents that numb physical pain also numb pain of ostracism (DeWall et al., 2010; Hales, Williams, & Eckhardt, 2015).

Ostracism has also been associated with psychological difficulties (Gerber & Wheeler, 2009). Studies have shown a high effect size of ostracism-based exclusion on self-report measures of distress (McDonald & Donnellan, 2012). Furthermore, because ostracism negatively impacts fundamental needs, such as perceived belonging, control, self-esteem, and meaningful existence (Williams, 2009; Williams & Nida, 2011), it may also lead to severe psychological problems, such as depression, helplessness, alienation, and existential meaninglessness (Riva, Montali, Wirth, Curioni, & Williams, 2016), particularly when experienced chronically. According to qualitative and correlational research, chronic exclusion may contribute to self-harm and suicidal ideation (van Orden, Witte, Gordon, Bender, & Joiner, 2008; Williams, 2001). In addition to decreased positive mood (Bernstein & Claypool, 2012), other negative effects of ostracism include increased social susceptibility (Carter-Sowell, Chen, & Williams, 2008), including vulnerability to being recruited into extreme groups or extreme causes (Williams, Hales, & Michels, 2019), and increased aggressive behaviors, even towards those who had

nothing to do with the exclusion (Twenge et al., 2001; Wharburton, Kipling, & Cairns, 2006).

These psychological disturbances and behavioral effects suggest ostracism's impact on self-regulatory capacities. Indeed, a series of studies have shown that a single experience of exclusion can result in self-regulation difficulties (Baumeister, DeWall, Ciarocoo, & Twenge, 2005). Specifically, in the studies conducted by Baumeister et al. (2005), rejected or excluded participants performed worse on different self-regulation tasks. Social exclusion came in the form of bogus feedback indicating that the participants would likely end up alone in the future and in the form of telling participants that no one from their group chose them as a partner. Excluded participants were less able to make themselves consume a healthy but bad-tasting drink, were prone to eating greater amounts of unhealthy snacks, were more prone to giving up quickly on a difficult puzzle, and were less able to tune out distracting stimuli in order to focus on identifying target words.

In contrast to the studies conducted by Baumeister et al. (2005), which defined self-regulation broadly as the capacity to change oneself and one's responses and which measured self-regulation in terms of behavioral effects (external processes), the current study investigated two specific self-regulatory capacities, mentalizing and emotion regulation. Mentalizing involves the internal processes which form the basis of interpersonal interactions, which includes understanding one's own and others' behaviors in terms of mental states. Emotion regulation involves both the internal and external processes for responding to, adapting, and navigating the social environment. Thus, both are vital mechanisms for working through social situations, particularly aversive

interactions, and improving chances of social acceptance, and both may be an essential mediator between social exclusion and psychological disturbances/behavioral consequences.

Previous studies have examined the impact of social exclusion on mentalizing (Sato, Fonagy, & Luyten, 2018; White et al., 2016) and emotion regulation (Davidson et al., 2019; Poon & Chen, 2016) using the Cyberball paradigm (Williams, Cheung, & Choi, 2000). The Cyberball paradigm is a computerized ball-tossing game used to manipulate the degree of social exclusion or inclusion. Participants were told that they were playing with two other participants who were actually part of the computer program. In the social exclusion condition, participants would receive the ball either one (Davidson et al., 2019) or two times (Sato, Fonagy, & Luyten, 2018; White et al., 2018) only. In the inclusion conditions, participations would receive an equal number of tosses as the other participants. Total tosses have varied across the studies (i.e., from 9 tosses to 38 tosses). Similar to the studies that investigated the effect of social exclusion on mentalizing (Sato, Fonagy, & Luyten, 2018; White et al., 2016) and emotion regulation (Davidson et al., 2019; Poon & Chen, 2016), the current study used the Cyberball paradigm to create the ostracism condition. The use of Cyberball is unique from other rejection paradigms, such as the future life rejection (Baumeister et al., 2005), in that participants are not explicitly informed that they are excluded nor are they given a reason as to why they are excluded. This aspect of the manipulation carries ecological validity since real world ostracism experiences are not always followed by reasons for their being ignored or excluded. In the current study, participants received the ball only two times near the beginning of the game, and the Cyberball game consisted of 15 ball tosses.

Temporal Framework

According to Williams (2007), response to ostracism begins with immediate or reflexive reactions that are painful and/or distressing and are unmitigated by individual differences or situational factors. Studies have shown that ostracism hurts when it is carried out by both ingroup and outgroup members (Fayant, Muller, Hartgerink, & Lantian, 2014; Gonsalkorale & Williams, 2007). Ostracism elicits similarly negative reactions when done by humans or by a computer (Zadro, Williams, & Richardson, 2004). It has also been shown that ostracism hurts even if participants receive money for being excluded (van Beest & Williams, 2006) or if participants are excluded from an aversive activity, such as receiving a virtual bomb instead of a ball in online games (van Beest, Williams & van Dikj, 2011).   Additionally, individuals who have been assigned to an exclusion condition showed increased activation of brain regions, such as the dorsal anterior cingulate cortex (dACC), that are associated with the experience of physical pain and loss of social connection (Eisenberger, Lieberman, & Williams, 2003). Other distress reactions to ostracism include increased blood pressure and higher self-reported levels of tension (Stroud et al., 2000).

The reflexive phase is followed by a reflective stage, in which people engage in meaning making, attribute causes for the ostracism, and determine the level of threat posed by the exclusion experience. This stage may be impacted by ostracism interacting with individual differences, such as self-esteem, rejection sensitivity, narcissism, and attachment style, and with situational influences, such as source of ostracism and reason for ostracism (Williams, 2007). This suggests that an individual's disposition, background, and capacity to make sense of the context can influence coping methods and

speed of recovery from ostracism (Oaten et al., 2008; Yaakobi & Williams, 2016; Zadro, Boland, & Richardson, 2006).

Of particular interest to this study was the impact of the interaction between individual differences in attachment style and ostracism experiences (including overinclusion) on mentalizing and emotion regulation. Although Williams' most recent version of the temporal need threat model (2009) argues that reflexive reaction to ostracism is unmitigated, and cognitive mediation occurs only during the reflective stage, others have argued that reflexive social pain is not invariably experienced and that the reflective process occurs swiftly with minimum effort in the reflexive phase (Smith & Semin, 2004), which accounts for the pain and hurt because ostracism is construed as violation of the inclusion norm and is viewed as threatening (Greifeneder & Rudert, 2019). In sum, ostracism's strong effect is felt immediately in the reflexive stage, and while it has been theorized that individual differences (e.g., attachment style) mitigate ostracism's effect in the reflective stage that follows, the mitigating processes (i.e., the distinct IWMs and attributional tendencies corresponding to the different attachment styles) may actually be occurring swiftly or concurrently in the reflexive stage.

Overinclusion

While exclusion can be a threatening or painful experience, its opposite, overinclusion, can be enjoyable, satisfying, or meaningful (Williams et al., 2000) because it conveys "social value" (Leary, Cottrell, & Phillips, 2001). Overinclusion happens not only when people are acknowledged and accepted by others, but also when they receive greater attention than others who are also present. In other words, it is an enhanced form of inclusion (Williams et al., 2000), in which you become the center of attention (van

Beest & Williams, 2006) or "stand out" (van Beest et al., 2011). This happens, for

example, when people are recognized during special occasions, such as a birthday or

milestones.

Emerging studies have examined the effect of overinclusion (Niedeggen et al.,

2014; Simard & Dandeneau, 2018) on well-being. The experience of overinclusion has

been shown to decrease negative mood and enhance satisfaction of social needs, namely

social belonging, meaningful existence, and control (Niedeggen et al., 2014). In another

study, overincluded participants reported significantly more belongingness, meaning,

control, and self-esteem than those in Inclusion and non-social participation control

conditions (Simard & Dandeneau, 2018). In the study conducted by Niedeggen and

colleagues (2014), overinclusion participants took part in an online ball tossing activity in

which they received the ball 46% of the throws. In Simard and Dandeneau's study

(2018), overinclusion participants received the ball approximately 33% of the throws but

after 5 throws one of the other players became excluded, indicating a shift from being

perceived as an equally valued participant to a more valued participant.

According to the sociometer theory, individuals monitor their environment for

inclusionary and exclusionary cues using their *sociometer*, which detects fluctuations in

an individual's relational value (Leary, 2005; Leary & Baumeister, 2000). A person's

relational value is "the degree to which others regard their relationship with the

individual as valuable, important or close" (Leary, 1999, p. 33). If a person experiences a

situation in which they are shown preferential or exclusive treatment, that person's

perception of their relational value increases along with the belief or expectation that

others are likely to include, support, or protect them. The increased self-esteem in the

study by Simard and Dandeneau (2018) may not merely be due to social inclusion per se but to perceived increase in their relational value. Given these results, overinclusion has the potential to remediate the adverse effects of exclusion and promote positive social attachment experiences. In particular, overinclusion may potentially challenge and change existing negative internal representations of the self, others, and relationships in those with insecure attachment. This is important because the attachment context is not only where regulatory capacities develop but it also continues to influence regulatory capacities. Thus, overinclusion has the potential to improve social attachment experiences and to facilitate or enhance regulatory capacities, namely, mentalizing and emotion regulation, which are important for buffering the negative effects of ostracism and other negative social encounters and can help individuals re-establish or seek new social connections. Currently, no such studies have yet been undertaken to investigate how overinclusion interacts with attachment experiences to influence mentalizing and emotion regulation.

Attachment

As previously mentioned, attachment style refers to an individual's psychological representation of self and others and is expressed as recurring emotional and behavioral patterns of relating to others in the context of intimate relationships. Attachment styles are shaped through the early childhood relationship with primary caregivers and influence not only subsequent relationships across the lifespan but also the development of adaptive regulatory capacities (Fraley & Shaver, 2000). Although attachment theory (Bowlby, 1969) primarily focused on the influence of these early emotional bonds on personality development and interpersonal functioning rather than on the impact of broad

social processes, such as social inclusion and exclusion, Bowlby also attempted to understand why and how disapproval, rejection, and separation are painful and how they contribute to one's security and insecurity (Shaver & Mikulincer, 2013). Attachment theory can, therefore, be a useful framework for understanding how relationship security and insecurity impact an individual's ability to manage negative emotions and recover from social exclusion (Shaver & Mikulincer, 2013).

According to Bowlby, the evolutionary process of natural selection has equipped humans with a motivational, or attachment behavioral system, designed to regulate proximity to a primary attachment figure. In times of separation, threat, or distress, attachment behaviors, in the form of crying, protest, or searching, are activated to elicit support, protection, and care from the attachment figure. The nature of the caregiver responses to the infant and the ensuing dyadic experiences with the caregiver, repeated over time, shape the development and quality of the infant's internal working model (IWM) – that is, the mental representations about the self, expectations of significant others, and the relationship between the two (Pietromonaco & Barrett, 2000). Thus, IWMs serve to organize the individual's personality and give rise to recurrent patterns of interpersonal behaviors "from the cradle to the grave" (Bowlby, 1977).

Studies have shown that individuals who have experienced consistent supportive, protective, and empathic caregivers develop secure attachment and hold implicit beliefs that the self is sufficiently loved and that others are available and well-intentioned. Those who have experienced a pattern of inconsistency, absence, or rejection from caregivers develop insecure attachment and hold beliefs that the self is unlovable and that others are unreliable and unaccepting. Ainsworth's (1978) systematic study of infant-

parent attachment through the Strange Situation paradigm, a procedure that includes a brief separation of 12-month-old infants from their parent followed by a reunion, yielded empirical taxonomy of individual differences in infant attachment patterns. Specifically, secure infants were those who exhibited distress at separation and actively sought out parents and became amenable to comfort upon parental return. Anxious-resistant children also exhibited distress at separation but demonstrated conflicting behaviors during reunion, indicative of a desire to be comforted by the parent but also anger towards the parent for leaving. Avoidant children did not demonstrate distressed behavior during separation and actively avoided parental contact upon reunion.

Like children, adults continue to rely on attachment figures (e.g., spouses, partners, friends, mentors, therapists) to organize their behavior, particularly, in times of stress or perceived threat. Securely attached adults experience greater levels of satisfaction and commitment in romantic relationships (Frei & Shaver, 2002), less interpersonal conflict (Campbell, Simpson, Boldry, & Kashy, 2005), and lower interpersonal distress (Haggerty, Hilsenroth, & Vala-Stewart, 2009). Insecurely attached adults tend to exhibit aggressive social behaviors (Mikulincer & Shaver, 2016), greater depressive symptoms (Hankin, Kassel, & Abela, 2005), and limited coping abilities (Berant, Mikulincer, & Shaver, 2008).

Current research in adult attachment operationalize attachment orientation based on two underlying dimensions (Brennan, Clark, & Shaver, 1998) – attachment-related anxiety and attachment-related avoidance – which are conceptually similar to Ainsworth's (1978) anxious-resistant and avoidant styles. These dimensions are generally understood through a behavioral-motivational systems framework, which

involves the monitoring of the accessibility of the attachment figure and the regulation of attachment behavior based on attachment-related concerns. More specifically, the anxiety dimension represents the degree of concern that a partner/attachment figure will not be available and responsive in times of need. The avoidance dimension represents the degree of mistrust in the partner/attachment figure's goodwill and therefore the effort to maintain behavioral and emotional distance from others (Mikulincer & Shaver, 2016).

Adults scoring high on the attachment-related anxiety dimension tend to worry about the availability of an attachment figure/partner. As such, they feel a deep need for love and approval, fear rejection, and experience anger at the threat of separation. Adults who score low on this dimension tend to feel more secure in others' responsiveness. High scores on the attachment-related avoidance dimension indicate a tendency for emotional distance and low reliance on others. Avoidant adults over-value independence and experience discomfort with intimacy and trusting partners. Adults scoring low on this dimension are more comfortable with intimacy and are more secure regarding interdependence. In sum, individuals with high levels of attachment anxiety or attachment avoidance are characterized as exhibiting an insecure attachment style while those with low levels of attachment anxiety and avoidance are characterized as having secure attachment (Fraley, Waller, & Brennan, 2000).

Attachment and Social Participation

Attachment orientations are based on perceptions of belonging and support. Any exclusion mechanism, such as ostracism, threatens the need for belonging and activates a social separation anxiety. A number of studies have examined how individual differences in attachment style interact with social participation (i.e., ostracism,

inclusion) and impact psychological functioning. However, these studies have mostly focused on the interaction effect of attachment style and social participation on fundamental needs and mood. Results from those existing studies have been mixed.

While one study (Waldrip, 2007) found that attachment orientation did not moderate effects of ostracism when using combined attachment insecurity (anxiety and avoidance) score, a preliminary study by Shaver and Mikulincer (2013) showed that the ostracism condition resulted in lower scores on an immediate sense of meaning questionnaire in those with high attachment anxiety but not in those with attachment avoidance. In another study examining ostracism involving a romantic partner (Arriaga, Capezza, Reed, Wesselman, & Williams, 2014), attachment anxiety was associated with lower needs for satisfaction regardless of experimental condition (exclusion/inclusion). The lack of difference between the social participation conditions on need satisfaction in those with attachment anxiety is perhaps suggestive of the preoccupation with rejection even in the presence of an inclusive or accepting context. The lack of difference in need satisfaction between excluded and included participants may also indicate that an extreme type of inclusion condition is required in order to improve need satisfaction. Adding an overinclusion condition demonstrating an obvious preference for the participants and not just being shown equal participation may interact with attachment anxiety in such a way that it could decrease preoccupation and yield great effect on needs satisfaction. In contrast to these studies, the current study examined not only whether ostracism interacted with attachment styles but also whether overinclusion interacted with attachment styles to impact two self-regulatory mechanisms, mentalizing and emotion regulation, that influence psychological functioning.

Anxiously attached individuals also experienced lower sense of meaningful existence and self-esteem when excluded by others (regardless of partner involvement), and they experienced lower sense of belonging and self-esteem during partner non-involvement (regardless of ostracism condition). Attachment avoidance was associated with having belonging and control needs met when included, whereas avoidance was not significantly associated with need satisfaction in the excluded condition. Other findings have shown that avoidant attachment moderates social participation effects on needs satisfaction and mood (Carvallo & Gabriel, 2006; Yaakobi & Williams, 2016). Specifically, Yaakobi and Williams (2016) found that in both collectivistic and individualistic cultures, no significant differences in needs satisfaction and mood existed between individuals with higher avoidant attachment and those with lower avoidant attachment in the Cyberball ostracism condition. However, within the Cyberball inclusion condition, those with higher avoidant attachment scored significantly lower in needs satisfaction and mood than those with lower avoidant attachment. Inclusion did not significantly improve mood or needs satisfaction in those with higher attachment avoidance. This may reflect the defensive tendency in those with attachment avoidance to deny/minimize emotions and to remain mistrusting of others' intentions or goodwill represented by inclusion experiences. No moderating effect was found between attachment anxiety and responses to social participation conditions.

The finding that an inclusive condition did not significantly improve mood and needs satisfaction in individuals with an avoidant attachment style is in contrast to Arriaga et al.'s finding (2014) and the results of Carvallo and Gabriel's study (2006) that found that those with high dismissive avoidant attachment, compared to low dismissive

avoidant attachment, experienced significantly higher levels of positive mood and self-esteem after learning that other participants accepted them (i.e., showed a preference for interacting with them over others by ranking them as 1st choice for an activity). Their study also showed that those with higher dismissive avoidant attachment style experienced significantly higher levels of positive affect and self-liking than those with low dismissive avoidant attachment when they received feedback stating they will likely experience future interpersonal success.

Differences in results between these two studies may reflect methodological differences. In the studies conducted by Yaakobi and Williams (2016), ostracism and inclusion were experienced via the Cyberball game, while Arriaga et al. (2014) and Carvallo and Gabriel (2006) used verbal feedback to as a way of making the participants aware of their exclusion or inclusion status. Explicit or verbal feedback about social status may interact differently and be more effective than impersonal avatars in the Cyberball game for those with avoidant attachment, particularly the dismissive type.

Differences in results may also be a function of construct distinctions (i.e., dismissive style is one type of avoidant orientation that holds a positive self-view and negative view of others while a fearful style is another type of avoidant orientation that holds the self and others in a negative way – this way of distinguishing avoidant styles is based on Bartholomew and Horowitz's (1991) four category model, which conceptualizes attachment as an intersection between a person's image of the self and others). It is unclear in the studies using the 2 dimensions of adult attachment which type of avoidant attachment was represented. In sum, these previous studies suggested that inclusive conditions may still be viewed with mistrust and experienced as rejecting in

those with anxious and avoidant attachment. In order to satisfy their fundamental needs, the experience of overinclusion may have been needed for such individuals who are preoccupied with others' availability and hold a cognitive/perceptual bias towards mistrust and negative expectancies.

In sum, little is also known about what impact the interaction between attachment style and ostracism may have on social cognitive capacities and emotion regulation, which are important regulatory mechanisms with potentially intermediary functions that facilitate fundamental needs satisfaction, improved mood, and overall psychological well-being (Esmaeilinasab, Khoshk, & Makhmali, 2016; Hu et al., 2014; Jiang, Moreno, & Ng, 2022). Furthermore, there has been little focus on how preferential, "exclusive" inclusion (i.e., overinclusion) interacts with attachment styles to impact social cognition and emotion regulation. Over-inclusive conditions may briefly provide a sense of felt security and lessen the overreliance on hyperactivating and deactivating strategies in those with attachment anxiety and avoidance, thus, freeing them to engage in reflective thought and emotion regulation. The majority of the existing studies examining attachment and social participation conditions have either focused on the effect of the interaction between exclusion and attachment on fundamental needs (Arriaga, Capeza, Reed, Wesselman, & Williams, 2014; Shaver & Mikulincer, 2013) or on priming secure attachment to buffer effects of exclusion (Liddell & Courtney, 2018). The current study examined the effect of both ostracism and overinclusion on the relationship between attachment styles and mentalizing and on the relationship between attachment styles and emotion regulation.

Mentalization

From a developmental perspective, attachment orientation is intimately connected to mentalizing (Fonagy & Target, 2006). As previously mentioned, mentalizing refers to imaginatively perceiving or interpreting the behavior of oneself and others in terms of intentional mental states (i.e., beliefs, reasons, feelings, desires, needs, etc.) or mental processes (Fonagy & Target, 2006; Fonagy et al., 2002.) This construct has also been referred to in the social cognition literature as theory of mind (Premack & Woodruff, 1978; Sharp, Pane, Ha, Venta, Patel, Sturek, & Fonagy, 2011) and perspective taking (Baron-Cohen, 2001; Frith & Frith, 2005). This selectively advantaged intellectual achievement of understanding and anticipating behaviors permits cooperation, repair of social conflicts, competitive advantage, and continually selects for increasingly higher levels of social interpretive capacity (Fonagy, 2008).

Attachment and Mentalization

According to Fonagy and his colleagues, mentalization is acquired in the context of early attachment relationships through the contingent responses and marked mirroring provided by early caregivers (Fonagy & Target, 2006). These social communicative mechanisms of mutual design provide the transmission or sharing of relevant cultural/situational information. The attachment relationship not only provides the infant with physical protection and a secure base from which he/she can explore the world as Bowlby theorized, but it also serves to "ensure that the brain processes that come to subserve social cognition are appropriately organized and prepared to equip the individual for the collaborative existence with others for which the brain was designed" (Fonagy & Target, 2006). Thus, the attachment relationship is a selectively advantaged system that promotes social intelligence, survival, and capacities central for self-

organization. Furthermore, it serves as an optimal "training ground" for the emergence of mentalization since it is a non-competitive relationship, where an individual can safely practice learning about others' minds.

The development of the ability to mentalize depends upon interactions with mature, benign, reflective, and sufficiently attuned minds (Fonagy & Target, 1997). Such experiences with caregivers decrease the child's need to monitor the others' trustworthiness and allows for a stronger attachment bond to develop. Greater attachment security results in less frequent activation of the attachment system, which means less suppression of brain activity related to cognitive regulation, control, and social judgment. It has been demonstrated that activation of the attachment system inhibits mentalization related brain activity (Bartels & Zeki, 2004). Thus, individuals have greater opportunity and freedom to engage in the exploration of mental states when the attachment system is not triggered frequently. Disturbances in early attachment relationships interfere with the formation of this social-cognitive capacity and create vulnerabilities for future relational difficulties.

Research has shown a link between security of attachment at 12 months and performance on theory of mind tasks at 4 years old (Meins, 1997). Results indicated that 83% of children with secure attachment passed a false-belief task compared to 33% with insecure attachment. Fonagy and colleagues also found that mother-infant and father-infant attachment security predicted successful mentalizing in children. Studies have also demonstrated a concurrent relationship between attachment security in children and successful performance on theory of mind tasks (Fonagy & Target, 1997).

According to adult attachment theory, adult (romantic) relationships share similar features as infant-parent relationships in that in adult relationships the partners provide feelings of security and safety for one another, especially in times of distress. Adult romantic partners engage in close, physical contact, feel insecure when the other is unavailable, function as a secure base from which to explore the world, experience mutual fascination and preoccupation with one another, and engage in "baby talk" (Gillath, Karantzas, & Fraley, 2016). Research investigating the relationship between adult attachment, mentalizing and personality functioning (Nazzaro et al., 2017) found that mentalizing and personality functioning were influenced by attachment. Specifically, individuals classified as secure on the Adult Attachment Interview (AAI) had higher mentalizing levels (measured by the Reflective Functioning Scale) than those classified as insecure/disorganized. These results, which provided evidence of a strong relationship between mentalizing and attachment, are consistent with clinical and empirical literature (Bouchard et al., 2008; Fonagy et al., 1991; Fonagy & Target, 1997; Slade, 2007). Nazzaro and colleagues (2017) also established the role of mentalizing in fully mediating the relationship between adult (secure/insecurity) attachment and adaptive psychological features, and thus accounted for abilities in personality functioning.

Ostracism and Mentalization

Because of the threat to belonging needs, the experience of being ignored or excluded can motivate us to regain connection or seek new bonds with others, and therefore, can prompt us to become more attentive to the mental states of others (Knowles, 2014; White, Klein, von Klitzing, Graneist, Otto, Hill, Over, Fonagy, &

Crowly, 2016). Mentalizing or perspective-taking has adaptive value because it improves

social harmony and fosters social bonding (Galinsky, Ku, & Wang, 2005). Mentalizing

not only enables the excluded individuals to understand the reasons for their exclusion,

but it can also minimize chances of future rejection. Studies have shown that social

exclusion can promote mentalizing (Knowles, 2014; White et al., 2016), but it may also

interact with certain individual differences in attachment style and impact the ability to

accurately mentalize, particularly in those disposed to a preoccupied/anxious attachment

or fearful/avoidant attachment, (Sato, Fonagy, & Luyten, 2018; White et al., 2016).

According to social monitoring literature (Pickett & Gardner, 2005), excluded

individuals, particularly those with acute or chronic belonging deficits, might be

motivated to consider others' perspective because understanding others' behaviors may

facilitate repair of the relationship or prevent future exclusion. Many excluded

individuals tend to remember more other-related social information than self-related

social information (Hess & Pickett, 2010). Furthermore, they tend to accurately decode

facial expressions and vocal tones (Pickett, Gardner, & Knowles, 2004), attend to

positive, low-level social cues (DeWall, Maner, & Rouby, 2009), exhibit greater memory

for own-group faces (van Bavel, Swencionis, O'Connor, & Cunningham, 2012),

demonstrate greater gaze-triggered orientation (Wilkowski, Robinson, & Friesen, 2009),

better accurately discriminate real and fake smiles, and happy and angry faces (Bernstein,

Young, Brown, Sacco, & Claypool, 2008; Sacco, Wirth, Hugenberg, Chen, & Williams,

2011). In some cases, social exclusion may increase perspective taking even under

cognitive loading and does not necessarily result in a desire to avoid self-awareness

(Knowles, 2014). It has also been shown that following exclusion non-anxious children

develop more mentalistic stories (i.e., stories using more mental state language, depicting characters as intentional agents) and describe greater affiliation between the characters in their stories (White, Klein, von Klitzing, Graneist, Otto, Hill, Over, Fonagy, & Crowly, 2016).

While ostracism may increase mentalizing when belonging needs are heightened, some factors or personality characteristics may disrupt the process of perspective taking, or mentalizing. Impaired mentalizing may take different forms (Dziobek et al., 2006; Fonagy et al., 2016): 1) excessive attribution or misattribution of mental states (hypermentalizing), 2) uncertainty about mental states, diminished mental state language and intentionality (hypomentalizing), or 3) inability for perspective taking (no mentalizing). Impaired mentalizing has also been described in terms of developmental failures to integrate two prementalizing modes that occur early in psychosocial development: psychic equivalence and pretend mode. In psychic equivalence, mental reality is equated with external reality. It is characterized by cognitive inflexibility, concrete thinking, and intolerance for different perspectives. Pretend mode is characterized by a disconnection between one's actions and their professed thoughts and feelings.

It has been demonstrated that excluded individuals do not engage brain regions associated with mentalizing when exposed to negative social information (Powers, Wagner, Norris, & Heatherton, 2013), which suggests difficulties with considering mental states under these distressing social situations. Furthermore, studies have shown that socially excluded individuals exhibit poorer empathic accuracy and less empathic concern than their accepted counterparts (DeWall & Baumeister, 2006; Nordgren, Banas,

& MacDonald, 2011; Pickett et al., 2004). Empathy is a domain of mentalizing that refers to the awareness of others' mental states and the ability to emotionally respond to others (Baron-Cohen, 2005).

Social monitoring, particularly in those with anxious attachment, may deplete regulatory resources (Tyler, 2008), and could partly explain the self-regulatory (Baumeister, DeWall, Ciarocco, & Twenge, 2005; van Dellen et al., 2012) and mentalizing impairments, social problems, and difficulty with affiliation observed following ostracism. It has been shown that compared to non-anxious children, anxious children experience a decline in attributions of intentionality and mental state language in their stories following ostracism using the Cyberball paradigm (White et al., 2016). This suggests that an anxious disposition, rooted in and maintained by insecure attachment orientations, can interact with ostracism and affect the degree of mentalizing across different conditions.

While it is acknowledged that insecure attachment itself is not equated with anxiety disorders, empirical studies have consistently linked insecure attachment orientation and anxiety in children, adolescents, and adults (Bosquet & Egeland, 2006; Cassidy, Lichtenstein-Phelps, Sibrava, Thomas, & Borkovec, 2009; Colonnesi, Draijer, Stams, van der Bruggen, Bogels, & Noom, 2011; Hankin, Kassle, & Abela, 2005; Laible, Carlo, & Raffaelli, 2000; Marganska, Gallagher, & Miranda, 2013; Muris, Meesters, van Melick, & Zwambag, 2001; Warren, Huston, Egeland, & Sroufe, 1997). Furthermore, the central characteristics of an anxiety disorder overlap with core features of insecure attachment, namely, the interpersonal nature of worry, the cognitive errors leading to unrealistic perceptions of external threat and the view that the self is ineffectual, emotion

regulation difficulties, a pervasive anxiety and lack of confidence in the others'

availability, the strong influence of family social relationships, and the lack of strong

genetic component for anxiety (Cassidy et al., 2009). Anxiety induced by the activation

of the attachment system following exclusion may negatively impact mentalizing skills in

affectively charged social situations. Negative arousal may also induce additional

cognitive loading that could interfere with controlled mentalizing and potentially result in

more automatic modes of mentalizing after exclusion coinciding with reflexive

assumptions about others' internal states. Thus, such individual differences in attachment

can interact with the experience of ostracism to impact mentalizing capacities.

Another study examined the impact of social exclusion (i.e., Cyberball exclusion

vs inclusion) on mentalizing and effortful control in non-clinical adults with borderline

personality features (Sato, Fonagy, & Luyten, 2018). Extant literature has demonstrated

that this population is linked to insecure attachment (Agrawal, Gunderson, Holmes, &

Lyons-Ruth, 2004; Fonagy, Target, Gergely, Allen, & Bateman, 2008). Results indicated

that exposure to the social exclusion condition was associated with more emotional words

to explain others' mental states in participants with higher borderline features. This

tendency to over-analyze or overestimate others' mental states (i.e., hypermentalizing)

after social exclusion suggests that negative social interactions induce distress, activate

the attachment system, and motivates action to manage threatening situations. This

exhaustive strategy to overestimate possible mental states is consistent with previous

findings of excessive mentalizing in those with BPD, a condition characterized by

insecure attachment, particularly, preoccupied/anxious attachment (Sharp et al., 2013).

With regard to effortful control, those with high borderline features responded slower and

less accurate after exclusion compared to inclusion, suggesting that exclusion interfered with self-regulation capacities in those with certain personality dispositions. This further suggests that negative social interactions, such as exclusion, activate the attachment system, which increases emotional arousal and interferes with attentional/control capacities and can lead to poor performance in tasks of control and accuracy (Claypool & Bernstein, 2019; Sato, Fonagy, & Luyten, 2018). Using the Cyberball paradigm, the current study examined how exclusion (and overinclusion) interacted with individual differences in attachment styles (i.e., anxious attachment and avoidant attachment) and affect mentalizing capacities.

Mentalization Measures

Different kinds of measures have been developed to assess mentalizing, or Reflective Functioning (RF), such as an interview-based measure, self-report measure, and performance-based measures. The Reflective Functioning Scale (RFS; Fonagy, Target, Steele, & Steele, 1998) is an interview-based assessment that measures the degree to which an individual can reflect upon the mental states of him/herself and others as well as the degree of complexity one understands others' minds. The scale assesses response to two kinds of questions taken from the Adult Attachment Interview (AAI; George, Main, & Kaplan, 1985) that demand reflection of unobservable mental states and that permit the interviewee to demonstrate his/her reflective capacity. The RFS measures online mentalizing because the task of mentalizing occurs in the here and now, in the context of an interpersonal relationship and high arousal condition (i.e., questions about attachment relationships activate the attachment system).

Although the RFS has been the most widely known measure of mentalizing and

has been considered the gold standard for assessing RF, it has been criticized for its use of a single, global score, which does not capture the complexity and dimensions of the mentalizing process that it aims to measure (Choi-Kain & Gunderson, 2008). Furthermore, its administration and scoring are time and labor intensive and requires highly trained interviewers and raters. Because of these constraints, sample sizes will tend to be smaller. These limitations of the instrument make it unsuitable for larger-scale studies, such as this one, that investigated the relationship between mentalizing and other constructs or conditions associated with insecure attachments (Fonagy et al., 2016).

The Reflective Functioning Questionnaire (RFQ; Fonagy et al., 2016) is a self-report measure that was developed in response to the need for a shorter and more efficient assessment of mentalizing for larger-scale studies. The RFQ is a measure of offline mentalizing since it involves the process of reflecting retrospectively about experiences or about stable tendencies of an individual's functioning (Janczak, 2021; Luyten & Fonagy, 2015). The RFQ measures mentalizing through two scales that reflect two broad impairments in mentalizing: hypomentalizing and hypermentalizing. Hypomentalizing refers to concrete or psychic equivalent thinking and reflects an inability to consider alternative or more complex perspectives in oneself and in others. This impairment can be seen in individuals with depression, eating disorders, and BPD. Hypermentalizing refers to the tendency for inaccurate models of the mind of oneself and others and is characterized by long and excessively detailed accounts that bear little or no relationship to observable reality. This is also characteristic of individuals with BPD.

There is good support for the RFQ as a measure of mentalizing as evidenced by moderate to strong internal consistency, strong test-retest reliability, and support for

discriminant, convergent, and predictive validity (Fonagy et al., 2016). Furthermore, the RFQ taps into other components of mentalizing, such as the cognitive, affective, self, other, internal, and explicit components. Since its development and initial validation, French, Italian, and Korean versions of the RFQ have been validated for French adolescents (Duval et al., 2018) and adults (Badoud et al., 2015), Italian adults (Morandotti et al., 2018), and Korean adolescents (Park & Song, 2018). Additionally, an adolescent version has been developed in English (RFQ-Y; Ha et al., 2013). While the RFQ is more suitable for studies requiring a large sample size, such as this study, it has limitations that warranted the inclusion of additional mentalizing measures in this study. First, the RFQ can be subject to response biases, particularly in those who have limited awareness of their difficulty with mentalizing. Second, the RFQ only partially captures externally-based mentalizing and does not tap into implicit mentalizing. Third, the RFQ measures trait-based mentalizing and therefore, considers the capacity an unchanging feature of an individual's functioning, which expresses itself at the same level across different contexts. While the RFQ is suited to address the secondary aim of this study, it does not capture the potential shift in mentalizing due to situational factors. To address these limitations, other measures of mentalizing were included in the current study.

The Reading the Mind in the Eyes Test (RMET; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001) is a performance-based measure that assesses ability for mental state attribution and complex facial emotion recognition. The RMET consists of 36 black-and-white pictures of the facial eye region of 18 males and 18 females. The development of the measure was based on the assumption that people infer complex mental states of others from information around the facial eye region. Participants are

presented with each picture along with four mental state words and are asked to choose which option best describes what the person in the picture is thinking or feeling. The RMET was designed to be a sensitive measure of adult social intelligence. Participants must distinguish the correct target word from the other close imposter options which can have the same emotional valence as the target word. The RMET has been used in over 250 studies and has been translated into various languages, including French (Prevost et al., 2014), Italian (Vellante et al., 2012), and Spanish (Fernandez-Abascal et al., 2013) to name a few. Responses are coded as correct or incorrect and yields a total maximum score of 36. As a performance-based measure, the RMET has been used as a measure of state mentalizing in studies that include experimental conditions, such as aversive social conditions, to measure any fluctuations in mentalizing following such conditions (Sato, Fonagy, & Luyten, 2018).

In this current study, the RMET pictures were divided into two groups. The first group was administered before the social participation task, and the second group was administered after the social participation to minimize habituation to the pictures. The current study assessed state mentalizing by calculating the difference between the total score on the first and total score on second group. Used in this sense, the RMET can be construed as measuring online mentalizing in this study, given its concern with a task in the here and now. Furthermore, it reflects a state that dynamically changes and is predicated on highly arousing situations (i.e., social participation condition, such as ostracism). One limitation of the RMET, however, is that the stimuli are static and do not reflect the fluidity and contextual nature of eye expressions. Furthermore, the stimuli are not seen in the context of interpersonal interactions, which is the natural context in which

inferences of mental states occurs. Despite this limitation, the RMET was a relatively quick and easy performance measure to use.

The Movie for the Assessment of Social Cognition (MASC; Dziobek et al., 2006) is a naturalistic, performance-based measure of mentalizing, which includes videos depicting social interactions in a fairly accurate manner. Because the MASC assessment uses complex social stimuli by presenting participants with close to real-life situations, it has greater ecological validity than questionnaires and even other performance-based measures, like the RMET. Like the RMET, the MASC has been used as a measure of state mentalizing (Fuchs & Taubner, 2019). Furthermore, it can be construed as measuring online mentalizing to the degree that when participants respond to stimuli close to a natural context, they unconsciously activate their own representations about emotions and relationships (Janczak, 2021). Participants are, therefore, emotionally engaging in the performance of a task and this can be intensified or made more emotionally arousing if in the context of an attachment-related stressor or an experimental condition aimed at activating attachment systems (such as an aversive social experience, like the ostracism condition used in this current study).

The MASC is formatted into a 15-minute movie which is divided into 43 segments that represent the test items, which include questions about different mental state modalities (thoughts, emotions, intentions) with varying valence (positive, negative, neutral). Participants are informed that they will watch a 15-minute film depicting four characters who are getting together for a Saturday evening. Participants are told that the movie will be paused at various points and will be asked questions about the scene they just watched. They are asked to imagine what the characters are thinking and feeling

during those times that the movie is stopped. The film portrays the progression of different dynamics between the characters, which suggest their different motives for meeting and their general personality traits. They also experience different situations that evoke a range of emotions and mental states, which are communicated through various shifts in quality and use of language (e.g., sarcasm), gestures, and facial expressions across scenes.

The MASC uses a dichotomous (right/wrong) response format and yields a total mentalizing score. Three other scores, derived from the incorrect answers, are also calculated and represent impairments in mentalizing: 1) hypomentalizing (or "less theory of mind"), which signifies insufficient or impoverished mental state reasoning; 2) no mentalizing ("no theory of mind"), which indicates a failure to choose items describing mental states to explain character behaviors; and 3) hypermentalizing ("excessive theory of mind"), which refers to overinterpreting mental states (Dziobek et al., 2006). The MASC has adequate internal consistency and high test-retest reliability. Like the RFQ, the MASC appears to capture some complex aspects or dimensions of mentalizing, particularly, the cognitive, affective, internal, external, other, and explicit mentalizing. However, it only partially captures the implicit dimension of mentalizing and does not tap into the self-dimension of the self-other polarity. Despite its limitations, the MASC remains a useful mentalizing measure because it is administered in a standardized way, it is distinct from clinical assessments, it limits measurement error and rater bias due to its computer administration, and it does not require extensive training to administer and score. The current study used the total MASC score, derived from the total correct responses, to measure online mentalizing.

Emotion Regulation

As mentioned earlier, emotion regulation refers to the capacity for monitoring, evaluating, and managing emotional reactions in order to achieve one's goals (Eisenberg & Spinrad, 2004; Gross, 1988; Gyurak, Gross, & Etkin, 2011; Thompson, 1994). It involves both the suppression and heightening of emotions, the regulation of attention and cognition, behavioral responses, and the individual factors that are both intrinsic and extrinsic to an individual. Emotion dysregulation occurs when individuals are unable to use effective coping strategies to modulate negative emotions arising from distressing events. In the multidimensional model of emotion regulation (Gratz & Roemer, 2004), adaptive response to emotional distress involves four features: awareness and understanding of emotions, acceptance of emotions, the ability to control impulsive behaviors during negative emotions, and the ability to use emotion regulation strategies appropriately to meet goals and situational demands.

Ostracism and Emotion Regulation

Ostracism can evoke emotional distress, such as anxiety, hurt, sadness, and anger (Davidson, Willner, van Noordt, Banz, Wu, Kenney, Johannesen, & Crowley, 2019; Leary & Leder, 2009; Vangelisti, Young, Carpenter-Theune, & Alexander, 2005), which then activates cognitive-affective processes and behaviors for managing the intensity and duration of distress (Riva, 2016). Adaptive responses to ostracism can include reappraisal, or reinterpreting the meaning of a negative situation to decrease its emotional impact. In a study that investigated the impact of reappraisal on recovery from ostracism (Sethi, Moulds, & Richardson, 2013), participants were assigned to play the Cyberball game, then were asked to answer a set of questions about their experience. Results

showed that those who engaged in spontaneous reappraisal of the ostracism experience reported less need-threat and recovered more quickly than those who did not reappraise the ostracism experience. Although a limitation of the study was its small sample size, results suggest that spontaneous reinterpretation of an exclusion experience in a more positive way may facilitate faster recovery from it. In another study (Poon & Chen, 2016), participants were assigned to the ostracism or inclusion condition during Cyberball. Following Cyberball, half of the participants were primed with the idea that ostracism was harmful to self-development while the other half was primed with the idea that ostracism can be beneficial to one's growth and development. Results showed that those who were ostracized and primed with negative ideas of ostracism behaved more aggressively than those who were included. Also, those primed with the idea that ostracism could be beneficial did not behave more aggressively than included participants.

Ostracism can also lead to a state of emotion dysregulation. Emotion dysregulation may not only be experienced in the reflexive stage, which occurs immediately after the exclusion experience, but it can remain unmitigated after a month. In a study (Davidson et al., 2019) that examined the one-month stability of ostracism distress and emotion dysregulation, adolescents completed the Cyberball task, the Need Threat Scale, anxiety scales, the Difficulties in Emotional Regulation Scale, and two measures of thought disorders, repeated over one month. Results indicated that at re-test, participants continued to report substantial ostracism distress following social exclusion, even after experiencing the same task one month earlier. Furthermore, the emotion dysregulation scale did not result in a significant decrease from baseline to one-month

follow up. This shows that participants continued to be negatively affected by the experience of ostracism despite familiarity with the task from previous exposure and the opportunity to reflect on the experience one month earlier. A notable limitation of this study was their use of the dispositional emotion dysregulation measure in assessing change over time, which may partly explain the stability of the effect of ostracism. Trait-based measures, such as the Difficulties in Emotional Regulation Scale (DERS; Gratz & Roemer, 2004) are not as sensitive to detecting change over repeated measures as state-based measures, such as the State Difficulties in Emotion Regulation Scale (S-DERS; Lavender et al., 2017). Using the S-DERS could have provided a more accurate picture of the impact of ostracism over time. A critique of the trait-based emotion regulation measure, DERS, and a more detailed discussion of the state-based emotion regulation measure, S-DERS, are included in a later section on emotion regulation measures.

In the ostracism literature, specific maladaptive responses to ostracism signaling dysregulation have included emotional numbing (Blackhart, Nelson, Knowles, & Baumeister, 2009) and the use of distraction (Fabiansson & Denson, 2012) – i.e., deactivating or distancing efforts, which reflect a lack of awareness/understanding of one's emotions and lack of acceptance of one's emotions. Other specific maladaptive responses to ostracism include rumination (Joorman, 2006; Wesslman et al., 2013) and aggressive behaviors (Twenge, Baumeister, Tice, & Stucke, 2001) – i.e., hyperactivating or approach tendencies, which reflect difficulty with controlling compulsive/impulsive behaviors and difficulty with using more appropriate emotion regulation strategies.

Given that ostracism is a threat to attachment needs, differences in emotion regulation may result from ostracism interacting with individual differences in attachment

styles, such that those low on anxious/avoidant attachment may be better able to engage in reappraisals while those higher on anxious attachment may experience prolonged emotion dysregulation because of their tendency to ruminate and their vulnerability to cognitive distortions.

Overinclusion and Regulatory Mechanisms

Overinclusion may have self-regulatory benefits as it has been shown to result in decreased negative emotions, particularly for insecurely attached individuals who tend to have expectations or distorted perceptions that others are rejecting or unreliable even under objectively inclusive interpersonal conditions (De Panfilis, Riva, Preti, Cabrino, & Marchesi, 2015; Weinbrecht, Niedeggen, Roepke, & Renneberg, 2018) or cooperative social exchanges (King-Casas, Sharp, Lomax-Bream, Lohrenz, Fonagy, & Montague, 2008). An example of this tendency can be seen in individuals with Borderline Personality Disorder (or borderline personality features) and Social Anxiety Disorder (SAD), who continue to react to fair or accepting interpersonal situations as if they were ostracized because these inclusive conditions fail to meet their underlying implicit need for "extreme" social inclusion (De Panfilis et al., 2015; Weinbrecht et al., 2018). In other words, in order to decrease emotion distress from painful social interactions and restore a sense of emotional equilibrium in insecurely attached individuals, an extreme condition must be met.

According to Cognitive Theory (Beck et al., 2015), this shift towards a new, elevated norm and need for "extreme" social inclusion can be linked to interpretational deficits or biases in the processing of social information. These biases are most prominent in emotionally laden and/or ambiguous interpersonal situations. In studies on

social participation, Cyberball inclusion (i.e., receiving the ball equal amount of time as others) can be experienced as an ambiguous situation and allows room for biased interpretations. In contrast, Cyberball exclusion (i.e., only getting the ball approximately twice) and overinclusion (i.e., getting the ball almost all of the time), are not experienced as ambiguous.

From a more psychodynamic, object relations perspective (Kernberg et al., 1984), this implicit need for "extreme" social inclusion stems from an unconscious idealized need to belong and reflects a view of the self as rejected or abandoned and a view of others as rejecting and untrustworthy. Moreover, these distorted representations of the self and others emerge from the attempt to protect an idealized, nurtured view of the self and maintain a view of others as benevolent and caring. A common relational pattern and coping strategy for painful affect among those with BPD is the use of projection of one's negative relational attitudes onto others which makes it difficult for them to trust and experience positive emotions in accepting environments or fair, inclusive conditions. While this formulation describes individuals with BPD or borderline personality features, BPD is associated with insecure attachment organization (particularly, preoccupied, unresolved, and fearful in the categorical sense), reflects overlapping characteristics, such as emotion regulation difficulties, trust difficulties, and perceptual bias, and therefore can provide a conceptual link to the understanding of how insecurely attached individuals would benefit from over-inclusion.

In a between-subject design study conducted by De Panfilis and colleagues (2015), 61 BPD patients and 61 healthy control participants were randomly assigned to one of three Cyberball conditions: overinclusion (i.e., participant received the ball 45%

of the time), inclusion (i.e., fair condition in which the participant and online

confederates received the ball 33% of the time), and ostracism (i.e., participant received

the ball a total of only 2 times). The study investigated whether the rejection sensitivity

in BPD is not just a tendency to over-react emotionally but stems from a distorted

perception of social contexts as rejecting. In other words, is it not only an emotion

regulation problem but also a social cognition problem? Participants completed the

Rejection-related Emotions Scale (RES; Buckley et al., 2004), a measure of current

emotional state at 3 different points (prior to Cyberball, immediately after the game, and

20 minutes after completing the experiment). Participants also completed the Inclusion

of Other in Self Scale (IOS; Aron et al., 1992), a single-item measure of social

connection at 2 different points (immediately after Cyberball, and 20 minutes after

completing the experiment). Statistical analysis using factorial MANOVA indicated that

the Cyberball manipulation was successful in conveying different degrees of social

participation. Specifically, the manipulation had a significant effect on participants'

reported throws received and feelings of being ignored. Additionally, feelings of being

ignored or excluded were higher in the ostracism condition than inclusion and over-

inclusion; no significant differences were found between inclusion and over-inclusion.

To determine how rejection related emotions and feelings of social isolation were

influenced by clinical status, experimental condition and time, a 2 mixed-model repeated

measures ANOVA was conducted.

Results of the aforementioned study conducted by De Panfilis and colleagues

(2015) indicated that BPD patients reported greater negative emotions, particularly

anxiety and sadness, than healthy control participants in the ostracism and inclusions

conditions but not in the over-inclusion condition. BPD patients also reported lower rejection-related negative emotions, most notably anxiety, in the over-inclusion condition compared to ostracism. Furthermore, their reported anxiety levels were comparable to healthy control participants in the over-inclusion condition. Within the healthy control participants, differences in rejection-related negative emotions were found only between the ostracism and inclusion condition. Although both BPD patients and healthy control groups experienced happy feelings immediately after the Cyberball game, only the healthy control participants reported continued increase in happy feelings 20 minutes after completion of the game. In terms of social connection, scores for both BPD patients and healthy control participants increased immediately following ostracism but did not change following inclusion or over-inclusion conditions. However, overall BPD patients reported less social connection across the 3 experimental conditions and 2 evaluation times.

In sum, De Panfilis and colleagues' study (2015) suggests that over-inclusion may improve emotion regulation and decrease heightened emotional distress associated with ostracism and even inclusive conditions for BPD patients. Although their study mainly focused on the impact of the 3 experimental social participation conditions on BPD patients compared to healthy control groups, their findings can help shed light in understanding how over-inclusive experiences can aid in emotion regulation in those who perceive over-inclusion as "the norm" that restores emotional equilibrium or to levels comparable to typical/non-clinical subjects.

Another study conducted by Weinbrecht and colleagues (2018) also examined the experience of social perception and biased processing in those with BPD compared to

healthy control participants, but they also included patients with Social Anxiety Disorder as a clinical control group to determine whether the bias is disorder-specific. Using the Cyberball paradigm, the results indicated that both BPD and SAD patients reported greater feelings of ostracism, negative mood, and need threat than healthy control participants in the inclusion condition. Moreover, the two clinical groups did not differ with each other in their feelings of ostracism and negative mood in the inclusion condition. BPD and SAD patients also showed greater expectations of social exclusion in the inclusion compared to the overinclusion condition, and the two clinical groups showed higher social exclusion expectations than healthy control individuals. When overincluded, the BPD and SAD patients reported the same level of negative mood and ostracism as did the healthy control participants. However, the threat to social needs and expectations of social exclusion were generally higher in BPD patients compared to healthy controls. These results align with the findings from De Panfilis et al.'s study (2015), which showed that BPD patients experienced comparable levels of negative mood to healthy control participants when overincluded, although they felt less social connection to the other players irrespective of their social participation conditions. In sum, studies have shown that overinclusion has resulted in decreased negative emotions, particularly for insecurely attached individuals, suggesting that overinclusion can improve regulatory mechanisms.

Like the DePanfilis et al. (2015) and Weinbrecht et al. (2018) studies, the current study examined the impact of different social participation conditions, which included overinclusion, ostracism, and inclusion. However, in contrast to those studies which examined how different social participation conditions affected the relationship between

specific psychological conditions or diagnoses and needs satisfaction/mood, the current study focused on how different social participation affected the relationship between attachment styles and two self-regulatory mechanisms, mentalizing and emotion regulation. Using the Cyberball paradigm, community adult participants from Amazon MTurk were randomly assigned to one of the three conditions. Prior to playing the Cyberball game, participants completed attachment measures, state mentalizing, and state emotion regulation measures. Participants then completed the manipulation checks, state mentalizing, and state emotion regulation measures after playing the Cyberball game.

Attachment and Emotion Regulation

Ostracism threatens one's sense of belonging and other aspects of the self, and threatening situations activate the attachment system. Attachment literature has shown that the two orthogonal attachment dimensions, attachment anxiety and attachment avoidance, are associated with different patterns for regulating emotional distress and managing threatening events (Mikulincer & Shaver, 2019).

Individuals high on attachment anxiety worry about others' availability, love, and support in times of need and, therefore, tend to exhibit hyperactivating behaviors, characterized by proximity-seeking, exaggeration of a sense of helplessness and vulnerability, and intensified efforts to elicit attention, reliable protection, and support from an attachment figure (Mikulincer & Shaver, 2019). Anxiously attached individuals tend towards intensified cognitive engagement that exacerbates distress and a hyperattentiveness to distress-eliciting stimuli (Caldwell & Shaver, 2012). Furthermore, when primed with neutral or distress-eliciting stimuli, those with anxious attachment are more prone to experiencing task interference because of heightened attention to

distressing stimuli (Silva, Soares, & Esteves, 2012). Other hyperactivation behaviors also include hypervigilant attentiveness to internal distress signals, rapid access and heightened bias towards threat-related memories (Mikulincer & Orbach, 1995), rumination of real and potential threats, approaching threatening situations, and engaging in ineffective, self-defeating actions.

Individuals high on attachment avoidance are mistrusting of others' intentions and, therefore, tend to exhibit deactivating behaviors, characterized by inhibition of emotional states associated with vulnerability, such as fear, anxiety, anger, sadness, shame, guilt and distress (Mikulincer & Shaver, 2019), and an emphasis on self-reliance and independence. Studies have shown that those with avoidant attachment tend to rely on cognitive distancing and emotional disengagement as a means of coping with threatening stimuli (Holmberg et al., 2011; Mikulincer & Shaver, 2019; Pascuzzo, Cyr, & Moss, 2013). Studies on thought suppression have examined the defensive tendency to block experiencing negative emotions in those with avoidant attachment (Edelstein & Gillath, 2008; Fraley & Shaver, 1997; Gillath et al., 2005). When participants were instructed to write about their thoughts and feelings and asked to simultaneously suppress their thoughts about their romantic partner leaving them for someone else, those with avoidant attachment had greater ability to suppress separation-related thoughts (Fraley & Shaver, 1997). Such individuals had lower skin conductance during the task and made less frequent references to loss following the suppression task.

However, in a study in which participants were asked to hide their emotional reactions to a film intended to elicit disgust, suppression increased sympathetic activation of the cardiovascular and electrodermal systems (Gross, 1998). This suggests that

avoidantly attached individuals utilize deactivation strategies more readily in threatening or distressing relational contexts. This is consistent with other findings that show individuals with avoidant attachment are less able to access sad and anxious relational memories, as demonstrated by long recall latency and rating of focal and non-focal memories with less intensity than those who are securely attached (Mikulincer & Orbach, 1995). In contrast, anxious attachment was linked to more frequent thoughts of separation-related content following the suppression task and higher skin conductance during the task. These results are consistent with a study that showed attachment-related variations in patterns of brain activation and deactivation as participants thought about breakups and losses and attempted to suppress these separation-related content (Gillath et al., 2005). This ability by avoidant individuals to suppress negative thoughts, however, is disrupted when a high cognitively loaded task is imposed (Kohn, Rholes, & Schmeichel, 2012; Mikulincer, Dolev, & Shaver, 2004). In one study (Chun et al., 2015) avoidant participants' ability for attentional disengagement broke down when instructed to rehearse a 7-digit number during the attentional task. Other deactivating behaviors include masking verbal or non-verbal expression of emotion.

Other studies (Stevens, 2014; Wei et al., 2005) using different self-report measures of emotion regulation converge with previous work that have demonstrated this link between attachment anxiety and more reactive/hyperactivating regulatory responses and between attachment avoidance and distancing/deactivating responses. Specifically, anxious attachment was significantly positively correlated with the Goals and Impulse subscales on the Difficulties in Emotional Regulation Scale (DERS; Gratz & Roemer, 2004), indicating that anxiously attached individuals are more likely to let their emotions

interfere with their goals and are more likely to engage in impulsive behavior (Stevens, 2014). This may be partly due to their struggle with clarifying emotions despite their tendency to have more awareness of their emotions. Avoidant attachment showed stronger positive correlations with the Aware and Clarity subscales on the DERS, suggesting preference for not thinking about feelings, which minimizes emotional interference in functioning and prevents impulsive behaviors (Stevens, 2014).

The aforementioned results above are consistent with other studies that have also demonstrated significant relationship between insecure attachment styles and the different domains of emotion regulation on the DERS (Marganska, Gallagher, & Miranda, 2013; Velotti et al., 2016). Specifically, anxious attachment styles were positively correlated with greater difficulty with controlling impulse and pursuing goals, as well as difficulty with clarifying emotions, accepting negative emotions, and accessing effective regulation strategies (Marganska, Gallagher, & Miranda, 2013). Avoidant attachment (dismissive avoidant) was positively correlated with lack of acceptance of negative emotions (Marganska, Gallagher, & Miranda, 2013). Velotti and colleagues (2016) found that both anxious and avoidant attachment were positively related to nonacceptance of negative emotions. Moreover, only anxious attachment positively correlated with impulse problems and difficulty using effective strategies, while only avoidant attachment positively correlated with lack of awareness of emotions. These results point to tendencies for hyperactivating (i.e., reactivity) and deactivating (i.e., suppression) emotion regulation strategies, and are consistent with the findings from other attachment studies.

As described above, the DERS has been used in studies that have examined the relationship between attachment styles and emotion regulation. The DERS reflects a multifaceted definition of emotion regulation (Gratz & Roemer, 2004). Overall, both anxious and avoidant attachment are associated with difficulty accepting negative emotions and difficulty accessing effective regulation strategies as shown by their significant correlations with the Strategies and Nonacceptance subscales. Furthermore, the DERS subscales, Goals and Impulse, consistently positively correlated with anxious attachment. This indicates that individuals with anxious attachment have difficulties unique to their disposition, particularly, with concentrating and accomplishing tasks and remaining in control of their behavior when experiencing negative emotions. These links are consistent with the description in the attachment literature of hyperactivating responses to distress in those with anxious attachment. The DERS subscales, Aware and Clarity, were shown to correlate positively with avoidant attachment, which indicates that avoidant individuals give little attention to their emotions and therefore lack clarity of their emotional experience. These associations are consistent with the description in attachment literature of deactivating responses to distress in those with avoidant attachment.

Results from another study (Wei et al., 2005) using a different measure to assess emotion regulation showed that individuals with different insecure attachment styles used different and distinct emotion regulation strategies, which then contributed to negative mood and interpersonal problems. Specifically, attachment anxiety contributed to negative mood totally through hyperactivating behaviors, as measured by the emotional reactivity subscale from the Differentiation of Self Inventory-Revised (DSI-R; Skowron

& Friedlander, 1998), instead of deactivation behaviors (measured by the emotional cutoff subscale), whereas attachment avoidance contributed to negative mood totally through deactivating behaviors, as measured by the emotional cutoff subscale from the DSI-R (instead of emotional reactivity). Furthermore, attachment anxiety contributed to interpersonal problems only partially through emotional reactivity (instead of emotional cutoff), whereas attachment avoidance contributed to interpersonal problems only partially through emotional cutoff (instead of emotional reactivity). Studies such as this one established that individuals with different attachment dimensions are biased towards different and distinct affect regulation patterns, and this has important implications for therapeutic interventions. For example, practitioners can help individuals with attachment anxiety to understand how their emotional reactivity leads to worsen mood and interpersonal ineffectiveness.

Emotion Regulation Measures

Emotion regulation measures, such as the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) and the Differentiation of Self Inventory (DSI-R; Skowron & Schmitt, 2003), assess for dispositional tendencies and instruct participants to rate items based on their average or typical experiences. A limitation to these trait-based measures is that they do not capture potential changes over time or the potential impact of contextual variables. In this current study, a state-based measure was needed to assess any momentary emotion regulation difficulties that follow the experimental conditions that are potentially aversive social experiences. While indirect (i.e., physiological indicators, such as skin conductance levels) or task-based methods (i.e., writing, administration of aversive noise levels, social giving) have been applied as state-based

assessments of emotion regulation in the ostracism and attachment literature, they were not the most feasible methods for the current study, which was entirely conducted online through MTurk. Given these limitations, a self-report, state-based measure was better suited for examining the impact of different social conditions on emotion regulation.

The State Difficulties in Emotion Regulation Scale (S-DERS; Lavender, Tull, DioLillo, Moore, & Gratz, 2017) is a 21-item, state-based self-report measure of emotion regulation, modified and adapted from the original DERS. S-DERS items were selected from the six subscales of the original DERS. To shorten the measure for state-based study designs and reduce redundancy, similarly worded items were removed. Items were also reworded to reflect current state.

The S-DERS produces a total score and four subscales: Nonacceptance of Current Emotions (Nonacceptance), Limited Ability to Modulate Current Emotional and Behavioral Responses (Modulate), Lack of Awareness of Current Emotions (Awareness), and Lack of Clarity about Current Emotions (Clarity). These four factors of the S-DERS remain consistent with the multidimensional understanding of emotion dysregulation that forms the basis of the DERS. The Nonacceptance factor on the S-DERS and the Nonacceptance subscale on the DERS overlap conceptually. The Modulate factor on the S-DERS overlaps conceptually with the Impulse, Goals, and Strategies subscales on the DERS. The Awareness and Clarity factors on the S-DERS overlap conceptually with the Awareness and Clarity subscales of the DERS.

The S-DERS has shown to be reliable and valid, with the S-DERS total and subscale scores being significantly positively associated with the DERS total score. In addition, most of the correlations between the S-DERS total and subscales scores and the

DERS subscales were significant. The S-DERS was also found to significantly correlate with other trait-based measures of emotion regulation (The Emotion Amplification and Reduction Scales; Hamilton et al., 2009), emotional intensity and reactivity (Affective Intensity Measure; Larsen & Diener, 1987), mindfulness (Five Facet Mindfulness Questionnaire; Baer et al., 2006), and experiential avoidance (Acceptance and Action Questionnaire; Hayes et al., 2004)). In sum, in contrast to the DERS that measures global tendencies, the S-DERS assessed in-the-moment difficulties in emotion regulation, which made it appropriate to administer after a stress inducing condition.

Mentalization and Emotion Regulation

Mentalizing and emotion regulation are overlapping constructs, and both capacities emerge within the attachment context and depend upon the quality of contingent responses and marked mirroring provided by early caregivers (Fonagy & Target, 2006). Both capacities are fundamental to how people understand, experience, and respond to their emotions. The relationship between mentalizing and emotion regulation is supported by neuroscientific data demonstrating the partial overlap in their neural substrates. Mentalizing, or ToM, tasks activate the dorsolateral and ventromedial regions of the prefrontal cortex (Decety, 2010; Dvash & Shamay-Tsoory, 2014), while emotion regulation is related to the dorsal and ventral prefrontal cortex, as well as the dorsal anterior cingulate cortex (McRae et al., 2012; Oschner, Bunge, Gross, & Gabrieli, 2002). Additionally, the medial prefrontal cortex is considered a nodal structure for a range of socioemotional processes, such as mentalizing and emotion regulation (Bzdok et al., 2013; Heatherton, 2011; Nakao, Takezawa, Miyatani, & Ohira, 2009).

Decety (2010) proposed a neurodevelopmental model that describes the emergence of mentalizing capacities and emotion regulation. According to his model, three components occur sequentially and then continuously interact with each other in a feedback loop. The first component, the ability to engage with affective stimuli, is present at birth. Newborns demonstrate the automatic capacity to discriminate and react to affective social stimuli. This process is automatically activated and involves mimicry and somatic sensorimotor resonance between the self and other, quite similar to Fonagy's description of the attunement and mirroring process between infant and caregiver (Fonagy, Gergely, Jurist, & Target, 2002). The second stage involves the development of emotion understanding and mentalizing capacity. In this stage, information from the affective stimuli is integrated into the accumulating knowledge of emotional experiences and becomes the building blocks for the explicit representational system of internal states. The third component refers to the regulation of emotional responses. The development of this capacity begins with dependence on the caregiver for the modulation of emotional responses. Repeated experiences of flexible, adaptive, and socially appropriate ways of regulating emotions by the caregiver eventually give rise to independent self-regulatory processing. Emotion regulatory capacities are closely tied to aspects of executive functioning, such as inhibitory control and working memory, and metacognition.

Mentalizing involves the awareness, understanding, and identification of thoughts and feelings in oneself and others. While mentalizing can occur prior to, during, and after the modulation of emotions as described by Decety (2010), Jurist (2005) emphasizes that the regulatory process of managing, altering, or changing the intensity and duration

of the emotional experience depends on the mentalizing capacity. Emotions are not merely adjusted in the regulatory process. Instead, they are contextualized and given meaning, which requires the ability to reflect on one's thoughts and feelings (Greenberg et al., 2017; Jurist, 2005).   This then guides a person's understanding of their emotions and aids in how they respond to future situations. This is consistent with other views that mentalizing capacities are developmental prerequisites for self organization and adequate emotion regulation (Fonagy & Allison, 2012; Fonagy et al., 2002; Schipper & Peterman, 2013). Deficits in the former leads to impairments in the latter.

Impairments in mentalizing have not only been linked to emotion dysregulation in clinical samples, such as BPD, Aspergers, and Autism Spectrum Disorders (Andreou & Skrimpa, 2020; Baron-Cohen, Leslie, & Frith, 1985; Cai et al., 2018; Kimhi, 2014; Samson, Huber, & Gross, 2012; Sharp, Pane, Ha, Venta, Patel, Sturek, & Fonagy, 2011), but converging results from non-clinical samples also demonstrate the association between mentalizing (perspective taking/ToM) and emotion regulation. Children's performance on ToM tasks significantly predicted their ability to manage their emotional responses to stressors (Hudson & Jacques, 2014), suggesting that the capacity for understanding and reasoning about mental states enhances self-regulation. Adult studies have also found support for the relationship between mentalizing and emotion regulation.

A study with Argentinean adults found a significant inverse relationship between mentalizing and emotion dysregulation (i.e., non-acceptance of emotional responses, difficulties with controlling impulsive behaviors, lack of emotional clarity, and limited effective regulation strategies) (Meyebovsky, Tabullo, & Garcia, 2019). Additionally, those with higher mentalizing scores showed less impulse control and emotional clarity

problems compared to those with lower mentalizing scores. A limitation noted in that study was the small effect size in the relationship between mentalizing and emotion regulation, which may have been impacted by the measure used (i.e., RMET) as it could rely on factors, such as facial recognition skills, that may not have a strong or direct association with emotion regulation. Recommendations were made for broader, more complex, and ecologically valid mentalizing measures, such as the MASC, to provide larger effect size.

Another study (Schwarzer, Nolte, Fonagy, & Gingelmaier, 2021) examined if better mentalizing predicted the amount of adaptive or maladaptive emotion regulation. Results indicated that self-focused mentalizing was positively associated with adaptive emotion regulation of anger, anxiety, and sadness. Other-focused mentalizing was positively associated only with adaptive regulation of anxiety. Additionally, both self and other-focused mentalizing were negatively correlated with maladaptive regulation of anger and anxiety. Only self-focused mentalizing was negatively correlated with maladaptive regulation of sadness. Overall, results suggested that (self-focused) mentalizing is a prerequisite for emotion regulation and predicts adaptive and maladaptive forms of emotion regulation. The study also demonstrated that while self-focused mentalizing led to better adaptive emotion regulation with small effects, it explained a significant amount of variance of maladaptive emotion regulation in their sample with large effects, indicating the buffering impact of mentalizing on emotion dysregulation.

To summarize, mentalizing and emotion regulation develop in the context of attachment relationships. Moreover, they are related, overlapping, and yet distinct

constructs. Mentalizing involves not only identification and understanding of emotions but also the ability to reflect on those emotional experiences in order to contextualize and attribute meaning to those experiences. This then impacts the ability to regulate emotions, which involves accessing appropriate skills or resources to modify the quality of the emotional experience. Studies have demonstrated that mentalizing capacities predict emotion regulation abilities and are consistent with the theoretical position that mentalizing capacities are preconditions to adaptive emotion regulation. Given this relationship, the secondary aim of the current study was to examine whether dispositional mentalizing mediated the relationship between attachment and emotion regulation.

Summary

This chapter discussed the research and theory on ostracism, overinclusion, attachment, mentalizing, and emotion regulation. Each construct was defined and their relationship to each other was demonstrated. Regarding the principal focus of this study, studies have demonstrated the negative impact of ostracism on two important regulatory mechanisms, mentalizing and emotion regulation, and the negative outcomes may be a function of ostracism interacting with an individual's attachment orientation. Studies suggest that its opposite, overinclusion, may yield more positive outcomes in regulatory capacities given the reduction in emotional distress following overinclusion, particularly for those with insecure attachment styles. This could be due to biases in social information processing, such that fair, neutral, or inclusive conditions are still interpreted as rejecting. Furthermore, those with insecure attachment may hold an implicit need for "extreme" social inclusion because of their self-view as rejected and the belief that others are rejecting and untrustworthy. Overinclusion satisfies this implicit need for the extreme

social participation, and therefore, may be associated with better emotion regulation and accurate mentalizing. Methods for assessing mentalizing and emotion regulation were reviewed and critiqued, and reasons were provided for the choice of measures in this study. Lastly, with regards to the secondary/exploratory aim of the study, research on the relationship between mentalizing and emotion regulation were discussed to present the hypothesis that mentalizing mediates the relationship between attachment and emotion regulation.

CHAPTER III

Statement of the Problem

As outlined in the literature review, different social participation conditions can impact two regulatory mechanisms, namely, mentalizing and emotion regulation, which play a role in psychological well-being or distress. Studies on the impact of ostracism on mentalizing capacities have shown mixed results. On the one hand, empirical evidence has shown ostracism can act as a catalyst for increased mentalizing and attentiveness to social information (Hess & Pickett, 2010; Knowles, 2014; Pickett & Gardner, 2005; White et al., 2016). For example, it has been shown that after exclusion, children create stories with more mental state language and portray their characters as more intentional and affiliative (White et al., 2016). Excluded individuals have also demonstrated facility in joint instructional tasks that require them to see from the other's perspective (Knowles, 2014). Lastly, excluded individuals can accurately decode facial expressions and vocal tones (Pickett, Gardner, & Knowles, 2004) and can better accurately discriminate between real and fake smiles and happy and angry faces (Bernstein et al., 2008; Sacco et al., 2011).

On the other hand, ostracism can be so distressing that it impairs mentalizing capacities. It has been shown that excluded individuals do not engage brain regions associated with mentalizing when exposed to negative social information (Powers et al., 2013) and show less empathic accuracy and empathic concern compared to those who are accepted (DeWall & Baumeister, 2006; Nordgren, Banas, & MacDonald, 2011; Pickett et al., 2004). Mentalizing capacities have also shown to be affected following exclusion in those who are more anxious (White et al., 2016) and in non-clinical adults with

borderline personality features. This suggests that individual differences in internal psychological dispositions respond differentially to social participation conditions. An underlying disposition common, for example, to both anxious individuals and those with borderline personality features is insecure attachment (Cassidy et al., 2009; Hankin et al., 2005; Marganska et al., 2013). Insecure attachment is a risk factor for impaired mentalizing and many psychological disturbances. Ostracism is also a psychosocial risk factor contributing to the development and persistence of psychological disturbances characterized by impaired mentalizing, such as anxiety, major depressive disorder, borderline personality disorder, autism spectrum disorder, eating disorders, and schizophrenia.

It was of interest to this study to investigate how the interaction of these two variables, attachment style and ostracism, impacted mentalizing. While the ostracism literature (Williams, 2007) recognizes that individual differences can interact with ostracism and lead to psychological distress and problems with self-regulation, an existing research gap remains with respect to the differential impact of ostracism on the relationship between attachment styles and mentalizing capacity. Therefore, it was hypothesized that ostracism would moderate the relationships between attachment style and mentalizing.

Ostracism elicits emotional distress (Bernstein & Claypool, 2012), which then activates cognitive-affective-behavioral responses for managing the intensity and duration of distress (Riva, 2016). While some individuals respond to ostracism in adaptive ways, by using strategies such as reappraisal, others respond with emotional numbing, distraction, rumination, or aggression. These factors reflect difficulties along

the dimensions of emotion regulation as described by Gratz and Roemer (2004),

specifically, awareness and understanding of emotions, acceptance of emotions, ability to

control impulsive behaviors during negative emotions, and the ability to use appropriate

emotion regulation strategies. These four dimensions also map on to two emotion

dysregulation categories described by the attachment literature, namely, deactivating and

hyperactivating. Furthermore, it has been shown that following ostracism, ostracism

distress and emotion dysregulation can linger beyond the reflexive stage and last up to a

month (Davidson et al., 2019). The interaction of ostracism with individual differences

in attachment styles may account for the differences in emotion regulation. Studies have

established the role of attachment in the development of emotion regulation capacities

(Cassidy, 1994). Adult attachment literature has further established the link between

specific insecure attachment styles (i.e., anxious, avoidant) and deactivating and

hyperactivating emotion regulation responses. Therefore, it was hypothesized that

ostracism would moderate the impact of attachment style on emotion regulation.

While ostracism can be threatening and distressing, its polar opposite,

overinclusion, can have social-emotional benefits. It signals that you occupy a

preferential status above others and that can feel satisfying. Overinclusion is a positive

form of "standing out" (van Beest & Williams, 2006; van Beest et al., 2011). Not only

have studies found that, compared to inclusion experiences, overinclusion is associated

with a greater sense of belonging, meaning, control (Niedeggen et al., 2014), and self-

esteem (Simard & Dandeneau, 2018), but studies have also suggested that fair or

inclusive conditions may not be enough for decreasing negative emotions, particularly for

insecurely attached individuals with a tendency for rejection sensitivity, emotional

reactivity, and a cognitive/perceptual bias for negative expectancy, whereas overinclusion has been associated with a reduction of negative emotions (De Panfilis, Riva, Preti, & Marchesi, 2015). This is because objective social inclusion violates their desire and need for extreme inclusion, but overinclusion satisfies that desire for belonging and need for extreme inclusion. The resulting decrease in negative emotion that occurs after overinclusion is suggestive not only of a change in emotion regulation but perhaps also a change in the ability to reflect on emotions. These findings have mainly been conducted on individuals with BPD and SAD and the outcomes have primarily focused on mood and fundamental needs satisfaction.

In contrast to those studies mentioned above, this study aimed to examine if overinclusion would interact with insecure attachment styles and impact regulatory mechanisms. Insecure attachment styles are underlying risk factors for emotion regulation difficulties and conditions such as BPD, SAD, and other psychological disturbances. Just as ostracism can potentially adversely affect mentalizing and emotion regulation, overinclusion has the potential to result in improved mentalizing and improved emotion regulation, particularly in those that have insecure attachment, by providing a semblance of the preconditions to the development of those regulatory capacities (i.e., a sense of felt security) through a very apparent expression of intentional, preferential recognition. To date, to this investigator's knowledge, no studies have examined these relationships. Thus, this study aimed to add to the existing body of literature by exploring the impact of overinclusion on the relationship between attachment styles and regulatory mechanisms. It was expected that overinclusion would moderate the impact of attachment style on mentalizing and emotion regulation, such that

those with insecure attachment styles in the overinclusion condition would exhibit better mentalizing and improved emotion regulation compared to those in the ostracism and inclusion conditions.

In addition, to investigate the principal research question, the current study used a state-based measure to assess emotion regulation. Previous studies have either used trait-based emotion regulation measures, physiological markers, or in-person task-based methods to examine the relationships between attachment and emotion regulation. A limitation to trait-based measures is that they only provide information about an individual's overall tendency and do not capture variability over time and the potential impact of situational factors. Additionally, indirect/task-based methods, such as physiological indicators or in-person tasks, that were used in previous studies, require special equipment or observation and are, thus, impractical for larger scale online studies. Therefore, unlike previous studies, the current study used a state-based self-report measure to assess momentary changes in emotion regulation difficulties in the context of different social participation conditions.

Lastly, to examine the main research question, the current study also used performance-based measures to assess state mentalizing and online mentalizing. In contrast to measures based on self-rating, such as the RFQ (Fonagy et al., 2016), and in contrast to assessments based on reflection/introspection, as in the RFS (Fonagy et al., 1998), performance-based methods, such as the RMET (Baron-Cohen et al., 2001) and MASC (Dziobek et al., 2006), are less susceptible to manipulation, including self-deception and faking. State mentalizing was measured by calculating the change in performance score on the RMET, a test of mental state attribution and complex facial

emotion recognition. This captures the change in mentalizing over time as a function of social participation conditions. Online mentalizing was measured by calculating the total score on the MASC (i.e., a video-based performance task) after random participation in one of three social participation conditions.

In sum, the primary aim of this study was to investigate the research question: How do different social participation conditions (i.e., ostracism, overinclusion) interact with individual differences in attachment and impact mentalizing and emotion regulation?

A secondary and subordinate aim of this study was to explore the question: Does trait mentalizing mediate the relationship between attachment and emotion regulation in the context of interpersonal stress? As previously mentioned, numerous findings have supported the links between attachment and mentalizing and between attachment and emotion regulation. Mentalizing and emotion regulation are overlapping constructs and processes (Decety, 2010; Dvash & Shamay-Tsoory, 2014; McRae et al. 2012), and empirical studies have established their correlation (Cai et al., 2018; Contardi et al., 2016; Hudson & Jaques, 2014; Meyebovsky et al., 2019; Samson, Huber, & Gross, 2012; Sharp et al., 2011), yet the two remain distinct constructs (Greenberg et al., 2017; Jurist, 2005; Schipper & Peterman, 2013).

Both mentalizing and emotion regulation capacities emerge in the context of attachment relationships and continue to be influenced by attachment style. Mentalizing involves the ability to recognize, contextualize, and attribute meaning to emotions and other mental states, while emotion regulation involves the ability to effectively respond to emotional experiences in order to achieve a determined goal. Despite their inter-

relatedness, there remains a dearth of studies that have examined all three variables together, and in particular, the indirect effect of attachment on emotion regulation via mentalizing. This study aimed to address this gap in the literature. It has been proposed by some researchers that it is mentalizing that is needed in order to have adequate emotion regulation (Greenberg et al., 2017; Jurist, 2005; Meyebovsky et al., 2019; Schipper & Peterman, 2013). Furthermore, studies have shown that mentalizing capacities predict emotion regulation (Meyebovsky et al., 2019; Schwarzer et al., 2021). As previously mentioned, attachment style influenced mentalizing capacity (Fonagy & Target, 1997; Meins, 1997; Nazarro et al., 2017). Therefore, it was hypothesized that trait mentalizing measured by the RFQ (Fonagy et al., 2016) would mediate the relationship between attachment styles and emotion regulation.

Additionally, the study aimed to build on previous research that showed that different insecure attachment styles use distinct affect regulation strategies, which subsequently contribute to negative mood and problems in social functioning (Wei et al., 2005). In this study, it was further hypothesized that distinct impairments in mentalizing would mediate the relationship between different insecure attachment styles and their distinct affect regulation strategies. Furthermore, unlike studies that have typically used trait-based self-report measures to demonstrate the relationship between the attachment and emotion regulation, this study used a state-based self-report measure to assess emotion regulation in the response to an aversive social interaction.

Main Study Variable List

Independent Variable

- Adult attachment style – Operationalized as the level of attachment-related anxiety or attachment related avoidance on the Experiences in Close Relationships-Revised (ECR-R; Fraley, Waller, & Brennan, 2000).

Moderating Variable

- Social participation condition – Operationalized as exclusion (participant receives the ball 13% of the time), over-inclusion (participant receives the ball 40% of the time), and inclusion (participant receives the ball 33% of the time) in the online Cyberball activity (Williams et al., 2000)

Dependent Variable

- State-based emotion regulation – Operationalized as the difference between pre-Cyberball and post-Cyberball total scores on the State Difficulties in Emotion Regulation Scale (S-DERS; Lavender, Tull, DioLillo, Moore, & Gratz, 2017)

- State-based mentalizing – Operationalized as the difference between pre-Cyberball and post-Cyberball total scores on The Reading the Mind in the Eyes Test Revised Version (RMET; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001)

- Online mentalizing was operationalized as the total score on the Movie for the Assessment of Social Cognition (MASC; Dziobek et al., 2006). A description of the mentalizing measures can be found on Table 1.

Table 1

Mentalizing Measures

Method	Performance-Based Method			
Disposition vs state/online	State mentalizing	Online mentalizing		
Tool	**Reading the Mind in the Eyes Test (RMET):** Measures the ability to recognize complex emotions and attribute mental states in others	**Movie for the Assessment of Social Cognition (MASC):** Measures ability to recognize mental states in complex situations close to everyday real context, primarily related to close romantic relationships and friendships		
Scale/ Subscales	Total Score	Accurate Mentalizing (Total Mentalizing)	Hyper-mentalizing	Hypo-mentalizing	No Mentalizing
Interpretation of Results	High score indicates better mentalizing	High total scores indicate overall ability to accurately mentalize	High scores indicate tendency for excessive mental state inferences	High scores indicate tendency for insufficient mental state inferences	High scores indicate tendency for non-mental state inferences

Method	Self-Report Questionnaire		
Disposition vs state/online	Dispositional mentalizing		
Tool	**Reflective Functioning Questionnaire (RFQ):** Measures overall level of mentalizing		
Scale/ Subscales	Uncertainty about mental states (RFQ_U)	Certainty about mental states (RFQ_C)	Overall Mentalizing (RFQTot)
Interpretation of Results	High scores indicate hypomentalizing. Mentalizing impairments: Concrete thinking and psychic equivalence. Inability to perceive the complex mental states of self and others. The subject may be aware of difficulties with mentalizing.	High scores indicate hypermentalizing. Mentalizing impairments: Excessive mentalization, pseudomentalization. Tendency to recognize inadequate mental states of oneself and others. The subject is convinced of the accuracy of their beliefs about mental states.	High scores indicate better overall mentalizing. Lower scores indicate impaired overall mentalizing

Note. Reading the Mind in the Eyes Test (RMET; Baron-Cohen et al., 2001), Movie for the Assessment of Social Cognition (MASC; Dziobek et al., 2006), Reflective Functioning Questionnaire (RFQ; Fonagy et al., 2016).

Manipulation Check

- Perceived social exclusion/overinclusion – Operationalized as scores on 3 items that measured feeling ignored, excluded, and interacting a lot with others. Items were taken from the Need-Threat Scale (NTS; Jamieson, Harkins, & Williams, 2010)

Covariates

- Sex - Categorical variables as "male" and "female"

- Age - Continuous variable measured in years

Main Hypotheses

In an online sample of adults living within the United States, it was hypothesized that the impact of attachment styles on emotion regulation difficulties and state and online mentalizing would vary across the social participation conditions, such that:

1a. Higher anxious attachment would relate to greater emotion regulation difficulties in the ostracism condition compared to the overinclusion and inclusion conditions.

1b. Higher anxious attachment would relate to less emotion regulation difficulties in the overinclusion condition compared to the inclusion condition.

2a. Higher avoidant attachment would relate to greater emotion regulation difficulties in the ostracism condition compared to the overinclusion and inclusion conditions.

2b. Higher avoidant attachment would relate to less emotion regulation difficulties in the overinclusion condition compared to the inclusion condition.

3a. Higher anxious attachment would relate to lower state and online mentalizing in the ostracism condition compared to the overinclusion and inclusion conditions.

3b. Higher anxious attachment would relate better state and online mentalizing in the overinclusion condition compared to the inclusion condition.

4a. Higher avoidant attachment would relate to lower state and online mentalizing in the ostracism condition compared to the overinclusion and inclusion conditions.

4b. Higher avoidant attachment would relate to better state and online mentalizing in the overinclusion condition compared to the inclusion condition.

Exploratory Study Variable List

Independent Variable

- Adult attachment style – Operationalized as the level of attachment-related anxiety or attachment related avoidance on the Experiences in Close Relationships-Revised (ECR-R; Fraley, Waller, & Brennan, 2000).

Mediating Variable

- Dispositional mentalizing – Operationalized as the total score, Certainty subscale score, and Uncertainty subscale score on the Reflective Functioning Questionnaire (RFQ; Fonagy et al., 2016).

Dependent Variable

- State-based emotion regulation – Operationalized as the change in total score and change in the subscale scores (Clarity, Aware, Modulate) on the State Difficulties in Emotion Regulation Scale (S-DERS; Lavender, Tull, DioLillo, Moore, & Gratz, 2017)

Exploratory Hypotheses

In an online sample of adults living within the United States, it was hypothesized that in the context of an aversive social condition:

5a. Dispositional mentalizing would mediate the relationship between attachment insecurities and emotion regulation.

5b. Uncertainty on the RFQ would mediate the relationship between attachment avoidance and deactivating/emotionally distancing responses (clarity and aware scores).

5c. Certainty on the RFQ would mediate the relationship between attachment anxiety and hyperactivating/emotionally reactive responses (modulate score).

CHAPTER IV

Method

Participants

The data for this study were collected from a sample of community adults

recruited through the online website, Amazon Mechanical Turk (MTurk). An initial a

priori power analysis was conducted using G*Power3 (Faul, Erdfelder, Lang, & Buchner,

2007) to test for 5 predictors, a small effect size (f^2 = .02), and an alpha of .05. Results

suggested that 647 participants were needed to achieve a power of .80. Another power

analysis for a small to medium effect size (f^2 = .075) and an alpha of .05 showed that a

total sample of 177 participants was required to achieve a power of .80. The large final

sample size collected for this study fell between the range of the two sample size

estimates suggested by the two power analyses.

Interested participants were presented with a brief description of the study prior to

giving the consent to participate. Participants then completed the study questionnaires

online and were compensated $5.00 upon completion. To meet inclusion criteria for the

present study, participants had to be at least 18 years of age, live in the United States, and

have over 1000 HITs approved on MTurk, including a HIT approval rate for all

Requesters' HITs greater than 98.

Demographics. A total of 636 participants were recruited in the study. Forty-two

participant responses were excluded due to questionable response patterns and

questionable completion times. Another three cases were excluded based on cutoff

values from three outlier indicators (Mahalanobis, Cooks, Leverage). Therefore, only

591 participants' responses were included in the final analyses. Of the 591 participants,

275 were male and 316 were female. The participants' ages ranged from 18 to 78 years, with a mean age of 42.3 years (*SD*=12.6). Approximately 77% of the participants were White, 55.7% were married, and 47.2% received a Bachelor's degree. The complete demographic information is presented in Table 2.

Measures

Demographic Questionnaire

Age (continuous variable), sex (categorical variable), ethnicity (categorical variable), marital status (categorical variable), and education level (categorical variable) were gathered from a self-report demographic questionnaire.

Attachment Style

Experiences in Close Relationship Scale - Revised (ECR-R; Fraley et al., 2000). The ECR-R measures attachment related anxiety and attachment related avoidance in the context of romantic relationships. The Anxiety scale assesses one's predisposition toward anxiety and vigilance regarding rejection and abandonment in relationships. The Avoidance scale measures one's discomfort with intimacy and dependency. Items are scored on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Low mean scores on the Anxiety and Avoidance scales indicate attachment security.

Construction of the ECR-R was based on Brennan, Clark, and Shaver's (1998) Experiences in Close Relationships Scale (ECR), which contained two factors, anxiety and avoidance. Consistent with the original ECR, confirmatory factor analysis found support for a two-factor structure in the ECR-R (Fairchild & Finney, 2006). The ECR-R

Table 2

Demographic Characteristics of the Sample

Variable	*M (SD)*	Range	*n*	(% of Total Sample)
Gender				
Male	-	-	275	(46.5)
Female	-	-	316	(53.5)
Age	42.3 (12.6)	18-78		
Ethnicity/Race				
American Indian/Alaskan Native			3	(0.5)
Asian			43	(7.3)
Black			58	(9.8)
Hispanic/Latino			27	(4.6)
White			452	(76.5)
Other			8	(1.4)
Marital Status				
Married			329	(55.7)
Living together as a couple			47	(8.0)
Divorced			48	(8.1)
Widowed			11	(1.9)
Separated			2	(0.3)
Never Married			154	(26.1)
Education Level				
Did not graduate from High School/receive High School diploma or equivalent (GED)			5	(0.8)
Graduated from HS, HS diploma/equivalent (GED)			55	(9.3)
Technical school/trade apprenticeship			15	(2.5)
Some college, but no degree			70	(11.8)
Associate degree			51	(8.6)
Bachelor's degree			279	(47.2)
Master's degree			106	(17.9)
Doctorate			10	(1.7)

N=591

Note. M = Mean, *SD* = Standard Deviation, GED = General Educational Diploma, HS = High School

was validated on a sample of 429 undergraduate students (61% were females and majority were either 18 or 19 years old). The scale demonstrated excellent internal consistency for the Anxiety (α =.92) and Avoidance (α = .93) subscales and were similar to the values obtained by Brennan et al. (1998) on the ECR (Anxiety α = .91 and Avoidance α = .94). The ECR-R has demonstrated convergent validity (Fairchild & Finney, 2006) as demonstrated by their moderate to strong correlations with scales measuring physical touch and affection in close relationships (Brennan, Wu, & Loev, 1998), loneliness (Russell, 1996), perceived social support (Cutrona & Russell, 1987), and worry (Meyer, Miller, Metzeger, & Borkovec, 1990). The ECR-R has also demonstrated good internal consistency with alpha coefficient values of .90 and above for the Anxiety and Avoidant subscales among adults across the lifespan who were recruited through online platforms (Fairchild & Finney, 2006; Goodcase, Nalbone, Hecker, & Latty, 2018; Kisley, Caudle, & Harvey, 2019). In this current study, the ECR-R demonstrated excellent internal consistency for Anxiety (α = .97) and Avoidance (α = .95).

Mentalizing

Reading the Mind in the Eyes Test Revised Version (RMET; Baron-Cohen et al., 2001). The current study used performance-based methods to measure state-based mentalizing and online mentalizing and a self-report questionnaire to measure dispositional mentalizing. For the main research question, state-based mentalizing was measured by the RMET, a performance-based measure that assesses one's ability to recognize complex emotions and to attribute mental state in others. The RMET includes 36 black-and-white cropped photos of the eye region of 18 males and 18 females.

Answer choices were presented in multiple choice format. Responses were coded as correct or incorrect and yielded a maximum total accuracy score of 18 for part 1and part 2. To measure change in mentalizing, the difference between the pre-social participation condition score and the post-social participation score was calculated.

The developers of the original and revised versions (Baron-Cohen et al., 2001) have suggested that all items on the RMET reflect a single factor model, and some validation studies in other languages (Vellant et al., 2013) have provided evidence of a unidimensional model. However, other studies have challenged this conclusion and have suggested either a five-factor solution or a brief version in order to demonstrate goodness of fit (Olderbak et al., 2015). Internal consistency has, therefore, ranged from poor to acceptable range (Olderbak et al., 2015; Villante et al., 2013) across different samples including non-clinical adult participants in the community (Fossati, Borroni, Dziobek, Fonagy, & Somma, 2018) and adults recruited from online platforms, such as Amazon MTurk (Olderbak et al., 2015). The measure has demonstrated both convergent and discriminant validity (Baron-Cohen et al., 2001; Bora et al., 2009; Feguson & Austin, 2010; Kirkland et al., 2012; Maurage et al., 2011; Torralva et al., 2012). Participants included in the construction of the revised version consisted of adults with Asperger's Syndrome or High Functioning Autism, a broad range of normal adults with varying education and professional experiences, normal adult students, and randomly selected individuals from the general population. In the current study, the RMET had good internal consistency ($\alpha = .86$). The Spearman Brown coefficient in current study also demonstrated good split-half reliability ($\rho = .84$).

Movie for the Assessment of Social Cognition (MASC; Dziobek et al., 2006).

Also, for the main research question, online (or in-vivo) mentalizing was measured by the

MASC, a task-based assessment of accurate mentalizing and impairments in mentalizing,

including no mentalizing, hypermentalizing, and hypomentalizing. The movie includes

social situations involving peer and romantic relationships, which approximates real-life

social interactions, lending ecological validity to the measure. Participants were

presented with 46 video clips and then asked to imagine what the characters think or feel

in the scene. Answer choices were presented in multiple choice format. A total

mentalizing score was derived by summing the total correct responses. Subscale scores

were computed for hypermentalizing, hypomentalizing, and no mentalizing.

Dimensional analyses supported a unidimensional structure of the MASC in

nonclinical samples of adults and adolescents (Fossati, Borroni, Dziobek, Fonagy, &

Somma, 2018). The measure has demonstrated convergent validity (Fossati et al., 2018).

Specifically, in a sample of 373 non-clinical Italian adolescents, the number of correct

answers on the MASC significantly correlated with the total Reading the Mind in the

Eyes Test (RMET) score ($r = .30$). After correcting for measurement error, the r value

became .41. Furthermore, in a sample of 193 non-clinical Italian adults, the number of

correct answers on the MASC significantly correlated with the RMET total score ($r = .45$). After the correcting for measurement error, the r value became .60. The MASC has

also demonstrated discriminant validity as adults with Asperger Syndrome have

performed significantly and substantially lower than non-clinical controls on the MASC

total score (Dziobek et al., 2006). Total MASC scores for women with BPD have also

been significantly lower than non-clinical controls (Preissler et al., 2010). The MASC

has shown adequate internal consistency, indicated by Cronbach alpha values greater than .80 among adult clinical and non-clinical samples across the lifespan (Dziobek et al., 2006; Fossati et al., 2018; Preisseler et al., 2010). In the current study, MASC demonstrated adequate internal consistency (α = .87).

Reflective Functioning Questionnaire (RFQ; Fonagy et al., 2016). For the exploratory question, dispositional mentalizing was assessed by the RFQ, an 8-item self-report measure of mentalizing abilities. It is believed that individuals with good mentalizing abilities are able to balance between an awareness of the opaqueness of mental states and being certain of their attributions (Fonagy et al., 2016). Confirmatory factor analysis supported a two-factor model that was invariant across adult clinical and non-clinical samples.

The RFQ subscales are Uncertainty (i.e., hypomentalizing) scale (RFQ_U) and Certainty (i.e., hypermentalizing) scale (RFQ_C). Items are scored on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Each subscale consists of 6 items. Items that assess Certainty include those such as, "I always know what I feel." Items that assess Uncertainty include those such as, "People's thoughts are a mystery to me." Four items are included in calculating scores on both subscales and are reverse scored for the RFQ_C and RFQ_U, while the other four are specific to each subscale. Items are rescored to either 3, 2, 1, 0, 0, 0, 0 to reflect degree of Certainty or 0, 0, 0, 0, 1, 2, 3 to reflect degree of Uncertainty. Means scores are calculated for each subscale. In addition to calculating Uncertainty and Certainty subscales, a total RFQ score can be calculated (Badoud et al., 2018; Gambin, Wozniak-Prus, Konecka, & Sharp, 2020; Penner, Gambin, & Sharp, 2019). This is done by calculating the difference between the

two scales (i.e., RFQ_C minus RFQ_U), which yields a score between -3 and +3. This

scoring method transforms the 2 subscales into one dimension. High difference scores

(above zero) signify good mentalizing abilities, while scores below zero signify

decreased mentalizing abilities.

The RFQ has demonstrated convergent validity with emotion regulation and

alexithymia scales, and it has demonstrated discriminant validity with scales assessing for

borderline personality traits, internalizing, and externalizing symptoms (Badoud et al.,

2015, 2018; Fonagy et al., 2016; Penner et al., 2019). Uncertainty and Certainty

subscales have been shown to have moderate to strong internal consistency (.77 and .65

for the clinical sample and .63 and .67 for the non-clinical sample), and strong test-retest

reliability over a three-week period (.84 for Uncertainty and .75 for Certainty). In the

current study, internal consistency was .90 for Certainty and .82 for Uncertainty.

Emotion regulation

State Difficulties in Emotion Regulation Scale (S-DERS; Lavender et al.,

2017). Emotion regulation was assessed via the S-DERS, a 21-item self-report measure

based on the original DERS (Gratz & Roemer, 2004). The S-DERS consists of four

subscales: Nonacceptance of Current Emotions (Nonacceptance), Limited Ability to

Modulate Current Emotional and Behavioral Responses (Modulate), Lack of Awareness

of Current Emotions (Awareness), and Lack of Clarity about Current Emotions (Clarity).

Items are scored on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*completely*).

An example of an item states, "I am having difficulty controlling my behaviors." A

higher total score indicates greater problems with regulating emotions, and higher

subscale scores represent problems in specific domains. Results of the exploratory factor

analysis at the time of the development and validation of the S-DERS supported a four-factor model. In contrast, the original Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), had six factors.

The S-DERS was validated on a community sample of 490 young adult women from the southern and Midwestern United States. Construct validity was demonstrated by significant positive association between the S-DERS total score and the original DERS total score and between the S-DERS subscale scores and original DERS subscale scores. Furthermore, the association between the S-DERS total score and the original DERS total score was strong in size, while the association between the S-DERS subscale scores and original DERS subscale scores were moderate in size. The moderate correlation between the S-DERS subscales and the corresponding original DERS subscales provide evidence for the S-DERS being distinct from the original trait-oriented DERS. These findings appear consistent with previous studies demonstrating moderate correlations between state-based and trait-based measures of the same construct (Tomko et al., 2014). Research has also supported convergent validity, as shown by moderate to strong correlations with measures of emotional intensity and reactivity (Larsen & Diener, 1987), measures of emotional reduction and amplification (Hamilton et al., 2009), and measures of experiential avoidance (Hayes et al., 2004). The S-DERS has also been shown to predict emotional reactivity to traumatic events on a measure of risk perception, thus, demonstrating predictive validity (Messman-Moor & Brown, 2006). The S-DERS has demonstrated good overall internal consistency ($\alpha = .86$); however, this finding is limited to a community sample of young adult women. The Nonacceptance ($\alpha = .92$), Modulate ($\alpha = .85$), and Awareness ($\alpha = .79$) have adequate to excellent internal

consistency, while Clarity (α = .65) demonstrates marginal consistency. However, Lavender et al. (2017) point out that the α value of Clarity is not unusual for a factor with few items. In the current study, the S-DERS showed overall excellent internal consistency (α = .94). Additionally, Nonacceptance (α = .96), Modulate (α = .93), Awareness (α = .81), and Clarity (α = .87) had adequate to excellent internal consistency. A Pearson correlation was computed to assess the test-retest reliability of the S-DERS scores, $r(591)$ = .89. This demonstrated good reliability. For the main research question, the difference between pre- and post-total S-DERS scores was used as a measure of change in emotion regulation difficulties.

Experimental Design

Social Conditions

Participants were assigned to 1 of 3 Cyberball conditions: 1) Overinclusion condition, in which participants received approximately 40% of throws; 2) Exclusion condition, in which the participants received the ball two times (13% of throws) near the beginning of the game and none thereafter; and 3) Inclusion control condition, in which participants received approximately 33% of throws. The number of total throws was set to 15 to keep the game short, given the overall lengthiness of the study. The total number of throws was still consistent with range of total throws in the Cyberball literature (Hartgerink et al., 2015). However, the number of throws for each of the conditions was determined by the Cyberball software and not customized by the current investigator to a specific number to achieve a target percentage, and therefore, the percentage in this study's Overinclusion condition was lower than the typical range found in the Cyberball literature (De Panfilis et al., 2015; Gilboa-Schechtman et al., 2014; Izaki et al., 2022;

Kawamoto et al., 2012; Simard & Dandenaeu, 2018). Participants were informed that they were going to play an internet game designed to practice mental visualization with other randomly chosen participants.

Manipulation Check

Three items assessing participants' perception of their participation during the Cyberball game were taken from Williams' (2009) 20-item Need Threat Scale (NTS). The items were administered to confirm whether Cyberball successfully induced experiences of exclusion/overinclusion and to determine participant view of the game. The items "I was ignored" and "I was excluded" were used to measure if the ignored and excluded conditions induced these experiences. "I felt like the others interacted with me a lot" was used as a proxy measure of overinclusion, given there was no item that stated, "I felt overincluded." The items were scored on a 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*Extremely*). Scores were computed by summing scores of items. The measure has demonstrated acceptable levels of internal consistency ranging from $\alpha = .66$ (Zadro, Williams, & Richardson, 2004) to $\alpha = .93$ (Davidson et al., 2019; Wesselmann, Bagg, & Williams, 2009) in previous studies with similar samples. For the current study, the three items demonstrated good internal consistency ($\alpha = .87$).

Procedures

Participants were recruited online through the website, Amazon MTurk. After signing up through MTurk, reading a description of the study, and providing an electronic signature for informed consent, participants were randomly assigned to one of the three social participation groups: overinclusion group, ostracism group, or inclusion (control) group. Participants were asked to complete a demographic questionnaire, the ECR-R,

and the RFQ in fixed order. Participants then completed the S-DERS (pre-Cyberball) and

RMET (part 1) in randomized order.

For the RMET, the pictures were divided into two groups of 18. The first group

of pictures was administered before the social participation task, and the second group

was administered after the social participation task to minimize habituation to the

pictures. Participants were presented with each photo and were instructed to choose

which word best describes what the person in the picture is thinking or feeling from a list

of words. The instructions read, "For each set of eyes, choose which word best describes

what the person in the picture is thinking or feeling. You may feel that more than one

word is applicable but please choose just one word, the word which you consider to be

most suitable. Before making your choice, make sure that you have read all 4 words.

You should try to do the task as quickly as possible but you will not be timed."

The participants were then randomly assigned to participate in one of the three

Cyberball conditions (i.e., overinclusion, ostracism, or inclusion). Participants then

completed the three manipulation check items from the Need Threat Scale, S-DERS

(post-Cyberball), RMET (part 2) and MASC in fixed order. Participants were

compensated $5.00 after completing the study. Participants' responses were excluded if

their completion time and response patterns suggested hastiness, random responding, or

insufficient attention to the items.

Data Analytic Plan

Before testing the hypotheses, normality of variables was evaluated. Correlation

analyses were used to test for multicollinearity and assess the relationships among

predictor variables. To determine whether the demographic variables, sex and age, were

possible covariates for the dependent variables (i.e., changes in emotion regulation, change in mentalizing, online mentalizing), Pearson correlation analyses were used to determine the correlation between age and the DVs, and an independent samples t-test was used to determine if there was a difference between the sexes in the DVs.

To test if the Cyberball experimental conditions were successful, a one-way ANOVA was conducted to compare differences in the mean scores on three items taken from the Need Threat Scale that measured feeling ignored/excluded and overinclusion between the Ostracism, Overinclusion, and Inclusion conditions. Because significant differences were found in the mean scores on the 3 NTS items, a post hoc Tukey test was conducted to determine where the differences lie and how the means of the items compared to each other.

To test if there were significant differences between means of the pre and post-condition S-DERS scores and pre and post-condition RMET scores, a paired samples t-test was conducted. To test the main hypotheses, variables were first standardized, then a moderation analysis using PROCESS, model 1, was used to determine if the different social participation conditions moderated the relationship between attachment style and changes in emotion regulation and mentalizing. To test the exploratory hypotheses, a mediation analysis using PROCESS, model 4, was used to determine the indirect effect of attachment style on emotion regulation through mentalizing.

CHAPTER V

Results

This chapter begins with a discussion of the preliminary analyses. The results of the main hypotheses are then presented. Lastly, the results of the exploratory hypotheses are presented.

Preliminary Analyses

Missing Data and Outliers

To avoid missing data, the forced answering option was used, such that the participants had to answer each item in order to proceed through the questionnaires. Therefore, no missing values were found in the final dataset for the current study.

Descriptive Statistics

Descriptive statistics are displayed in Table 3. Normality was assessed by visual inspection of the distribution of the dependent variables. Histograms showed that the distributions of the change in emotion regulation difficulties and change in mentalizing were both centered at zero and did not appear skewed. Given the sample size of greater than 300, an absolute value larger than 2 for skewness and an absolute value larger than 7 for kurtosis was used as reference for determining substantial non-normality (Kim, 2013). The absolute value for skewness for change in emotion regulation was less than 2, suggesting normality; however, the kurtosis value was 11.07, revealing a leptokurtotic distribution. According to Kline (2011) kurtosis values over 20 indicate a more significant issue, and Tabachnick and Fidell (2013) maintain that sample sizes over 200 often do not affect kurtosis deviations from normality. Therefore, no further procedures were conducted to correct for kurtosis aside from the removal of identified outliers, as

Table 3

Descriptive Statistics of Measures

Measure	Range	*M*	*SD*	*Skewness (SE)*	*Kurtosis (SE)*
ECR-R Anxiety	1 - 6.50	2.77	1.56	0.63 (0.10)	-0.89 (0.20)
ECR-R Avoidance	1 - 6.89	2.72	1.30	0.64 (0.10)	-0.16 (0.20)
RFQ_c	0 - 3	1.38	1.01	0.04 (0.10)	-1.37 (0.20)
RFQ_u	0 - 3	0.44	0.60	1.58 (0.10)	2.01 (0.20)
RFQ Total	-3 - 3	0.94	1.50	-0.46 (0.10)	-0.88 (0.20)
S-DERS Total (pre)	21 - 96	38.42	15.61	1.33 (0.10)	0.86 (0.20)
S-DERS Modulate (pre)	7 - 35	12.78	6.98	1.36 (0.10)	0.81 (0.20)
S-DERS Aware (pre)	5 - 25	11.27	4.32	0.63 (0.10)	-0.01 (0.20)
S-DERS Clarity (pre)	2 - 10	3.24	2.00	1.71 (0.10)	2.04 (0.20)
S-DERS (post)	21 - 96	37.76	16.12	1.34 (0.10)	0.81 (0.20)
S-DERS Modulate (post)	7 - 34	12.36	7.01	1.50 (0.10)	1.17 (0.20)
S-DERS Aware (post)	5 - 25	10.91	4.20	0.72 (0.10)	0.38 (0.20)
S-DERS Clarity (post)	2 - 10	3.17	2.03	1.74 (0.10)	1.93 (0.20)
Change in S-DERS	-52 - 46	-0.66	7.11	0.60 (0.10)	11.07 (0.20)
Change in Aware	-11 - 10	-0.36	2.88	0.25 (0.10)	2.06 (0.20)
Change in Clarity	-8 - 8	-0.07	1.18	0.04 (0.10)	9.80 (0.20)
Change in Modulate	-24 - 19	-0.42	3.37	-0.10 (0.10)	9.39 (0.20)
RMET (part 1)	2 - 17	12.32	3.16	-0.85 (0.10)	0.21 (0.20)
RMET (part 2)	2 - 19	12.99	3.81	-0.74 (0.10)	-0.19 (0.20)
Change in RMET	-8 - 10	0.67	2.57	-0.11 (0.10)	0.54 (0.20)
MASC Total	4 - 43	28.95	9.64	-0.84 (0.10)	-0.52 (0.20)
MASC (hypermentalize)	1 - 18	5.67	3.18	0.84 (0.10)	0.49 (0.20)
MASC (hypomentalize)	1 - 27	7.04	4.63	0.98 (0.10)	0.48 (0.20)
MASC (no mentalize)	1 - 19	4.29	3.91	1.35 (0.11)	0.88 (0.22)

Note. N = 591. *M* = Mean, *SD* = Standard Deviation. ECR-R Anxiety = Anxious Attachment, ECR-R Avoidance = Avoidant Attachment, Experiences in Close Relationships Scale – Revised (Fraley, Waller, & Brennan, 2000); RFQ_c = Dispositional certainty, RFQ_u = Dispositional uncertainty, RFQ Total = Overall dispositional mentalizing, Reflective Functioning Questionnaire (Fonagy et al., 2016), S-DERS = State Difficulties in Emotion Regulation Scale (Lavender et al., 2017), RMET = Reading the Mind in the Eyes Test (Baron-Cohen et al., 2001), MASC = Movie for the Assessment of Social Cognition (Dziobek et al., 2006).

previously described. Absolute values for skewness and kurtosis for state mentalizing, online mentalizing, and dispositional mentalizing were less than 2 and less than 7, respectively, indicating normality. The P-P plots of the cumulative probability of the change in emotion regulation difficulties and change in mentalizing showed that the data fell along the straight diagonal line indicating linearity, and scatterplots for both dependent variables were centered largely around zero on the x and y-axis.

Inter-variable Correlations

Correlation analyses evaluated the relationship between the predictor variables and tested for multicollinearity. Anxious attachment was significantly positively correlated with avoidant attachment, $r(589) = .49$, $p < .001$, considered a medium effect size (Cohen, 1988). Anxious avoidant was negatively correlated with overall dispositional mentalizing (TotRFQ), $r(589) = -.70$, $p < .001$, with a large effect size; negatively correlated with dispositional Certainty on the RFQ, $r(589) = -.66$, $p < .001$, with a large effect size; negatively correlated with state mentalizing (DiffRMET), $r(589) = -.15$, $p < .001$, with a small effect size; and negatively correlated with online mentalizing (MASC), $r(589) = -.35$, $p < .001$, with a medium effect size. Avoidant attachment was also negatively correlated with overall dispositional mentalizing, $r(589) = -.39$, $p < .001$, with a moderate effect size; negatively correlated with dispositional Certainty on the RFQ, $r(589) = -.40$, $p < .001$, with a moderate effect size; negatively correlated with state mentalizing, $r(589) = -.09$, $p < .05$; and negatively correlated with online mentalizing, $r(589) = -.09$, $p < .05$. These latter two correlations are considered negligible effect sizes. Anxious attachment was positively correlated with dispositional Uncertainty, $r(589) = .62$, $p < .001$, with a large effect size. Avoidant attachment was

also positively correlated with the dispositional Uncertainty, $r(589) = .30$, $p < .001$ but with a medium effect size. Dispositional mentalizing dimension of Certainty was significantly negatively correlated with dispositional mentalizing dimension of Uncertainty, $r(589) = -.71$, $p < .001$, a large effect size. Total dispositional mentalizing (TotRFQ) was significantly positively correlated with dispositional dimension of Certainty, $r(589) = .96$, $p < .001$, a large effect size, and negatively correlated with dispositional dimension of Uncertainty, $r(589) = .88$, $p < .001$, a large effect size. No correlations, aside from those between total dispositional mentalizing (TotRFQ) and dispositional dimension of Certainty and between total dispositional mentalizing and dispositional dimension of Uncertainty were above .80. Results of these analyses are displayed in Table 4.

Covariates

Age and sex were analyzed as possible covariates for change in emotion regulation and mentalizing.

Age. Pearson correlation analyses found that age was not significantly correlated with change in emotion regulation difficulties, $r(589) = -.01$, $p = .79$, and not significantly correlated with change in accurate mentalizing on the RMET, $r(589) = .03$, $p = .51$. Age was significantly positively correlated with accurate online mentalizing on the MASC, $r(589) = .17$, $p < .001$, such that older age predicted better online mentalizing, although this is considered a small effect size. Therefore, age was included in the analyses examining online mentalizing on the MASC.

Sex. An independent samples *t*-test was not significant for the covariate of sex on change in emotion regulation difficulties, $t(589) = 0.49$, $p = .52$, $d = 0.04$, and change in

Table 4

Intercorrelations of Variables

	1	2	3	4	5	6	7	8	9	10
1. ECR_Ax										
2. ECR_Av	.49**									
3. RFQ_c	-.66**	-.40**								
4. RFQ_u	.62**	.30**	-.71**							
5. TotRFQ	-.70**	-.39**	.96**	-.88**						
6. Diff RMET	-.15**	-.09*	.09*	-.13*	.11*					
7. MASC Tot	-.35**	-.09*	.38**	-.40**	.42**	.21**				
8. Diff SDERS	.11*	.13**	-.09*	.004	-.06	-.11*	-.14**			
9. Diff Aware	.10*	.17**	-.12*	.07	-.11*	-.003	-.15**	.38**		
10. Diff Clarity	.06	.01	-.03	-.05	.004	-.08	-.14**	.48**	.10*	
11. Diff Mod	.06	.05	-.05	-.004	-.03	.10*	-.11*	.77**	-.07	.28**

*Note. Listwise N = 591. ** p <.001, * p <.05.* ECR_Ax = Anxious attachment, ECR_Av = Avoidant attachment, TotRFQ = Overall dispositional mentalizing, RFQ_c = Dispositional mentalizing dimension of certainty (hypermentalizing), RFQ_u = Dispositional mentalizing dimension of uncertainty (hypomentalizing), MASCTot = Online mentalizing, Diff SDERS = State emotion regulation difficulties (change in emotion regulation difficulties), Diff Aware = Change in lack of awareness of current emotion, Diff Clarity = Change in lack of clarity about current emotions, Diff Mod = Change in limited ability to modulate current emotional and behavioral responses.

mentalizing using the RMET, $t(589) = 0.78$, $p = .87$, $d = 0.06$. However, the independent samples t-test showed a significant difference between sexes in accurate online mentalizing using the MASC, $t(589) = -3.94$, $p < .001$, $d = 0.33$, where females scored higher than males, indicating that females tend to exhibit better online mentalizing, even though this reflected a small effect size. Therefore, sex was included in the analyses that examined online mentalizing on the MASC.

Cyberball Manipulation

To check the Cyberball manipulation, a one-way ANOVA was used to compare differences in the mean scores on items that measured feeling ignored/excluded and overinclusion between the Ostracism, Overinclusion, and Inclusion conditions. Dependent variables were three items taken from the Need Threat Scale.

The one-way ANOVA revealed that there were statistically significant differences in mean scores between the three conditions on the items, "I was ignored," $F(2,588) = 199.34$, $p < .001$, $\eta^2 = .40$, "I was excluded," $F(2,588) = 164.67$, $p < .001$, $\eta^2 = .36$, and "I felt the other players interacted with me a lot," $F(2,588) = 147.50$, $p < .001$, $\eta^2 = .33$. Tukey's HSD test for multiple comparisons found that the mean value of the item, "I was ignored" was greater for Ostracism ($M = 3.76$, $SD = 1.24$), $p < .001$, 95% C.I. $= [-2.55, -2.00]$ than Overinclusion ($M = 1.48$, $SD = 1.02$); greater for Inclusion ($M = 2.18$, $SD = 1.21$), $p < .001$, 95% C.I. $= [-0.97, -0.42]$ than Overinclusion; and greater for Ostracism than Inclusion, $p<.001$, 95% C.I. $= [1.30, 1.86]$. Tukey's HSD test for multiple comparisons found that the mean value of the item, "I was excluded" was greater for Ostracism ($M = 3.70$, $SD = 1.21$), $p < .001$, 95% C.I. $= [-2.47, -1.90]$ than Overinclusion ($M = 1.51$, $SD = 1.08$); greater for Inclusion ($M = 2.37$, $SD = 1.31$), $p < .001$, 95% C.I. $=$

[-1.14, -0.58] than Overinclusion; and greater for Ostracism than Inclusion, $p < .001$,

95% C.I. = [1.04, 1.61]. Tukey's HSD test for multiple comparisons found that the mean

value of the item, "I felt the other players interacted with me a lot" was greater for

Overinclusion ($M = 4.09$, $SD = 1.13$) than Ostracism ($M = 2.12$, $SD = 1.20$), $p < .001$,

95% C.I. = [1.69, 2.23], greater for Overinclusion than Inclusion ($M = 3.31$, $SD = 1.08$),

$p < .001$, 95% C.I. = [0.50, 1.04], and greater for Inclusion than Ostracism, $p < .001$, 95%

C.I. = [-1.46, -0.92]. These results suggest that the participants correctly perceived being

ostracized or overincluded, and the manipulations were successful. A summary of the

descriptive statistics of the three NTS items for the three conditions can be found in

Table 5.

Emotion Dysregulation and Mentalizing Mean Differences Within Conditions

Paired-samples t-tests were conducted to compare state emotion regulation

difficulties scores and state mentalizing scores (using the RMET) pre- and post-ostracism

condition. There was no significant difference in the state emotion regulation difficulties

scores for the pre- ($M = 38.58$, $SD = 15.85$) and post- ($M = 39.64$, $SD = 17.34$) ostracism

condition; $t(193) = -1.77$, $p = .078$, $d = 0.13$. There was significantly greater state

mentalizing scores from pre- ($M = 12.45$, $SD = 3.11$) to post- ($M = 12.95$ $SD = 3.66$)

ostracism condition; $t(193) = -2.76$, $p = .006$, $d = 0.20$. Paired samples t-tests comparing

state emotion regulation difficulties scores and state mentalizing scores pre- and post-

overinclusion showed there was a significant decrease in the state emotion regulation

difficulties scores from pre- ($M = 37.19$, $SD = 14.62$) to post- ($M = 35.66$, $SD = 14.90$)

overinclusion; $t(199) = 3.22$, $p = .001$, $d = 0.23$. There was a significant increase in the

Table 5

Descriptive Statistics for Need Threat Scale Items for 3 Conditions

Item	Condition	N	*M (SD)*	Min	Max
"I was ignored."	Overinclusion	200	1.48 (1.02)	1	5
	Ostracism	194	3.76 (1.24)	1	5
	Inclusion	197	2.18 (1.21)	1	5
	Total	591	2.46 (1.50)	1	5
"I was excluded."	Overinclusion	200	1.51 (1.08)	1	5
	Ostracism	194	3.70 (1.21)	1	5
	Inclusion	197	2.37 (1.31)	1	5
	Total	591	2.51 (1.50)	1	5
"I felt the other players interacted with me a lot."	Overinclusion	200	4.09 (1.13)	1	5
	Ostracism	194	2.12 (1.20)	1	5
	Inclusion	197	3.31 (1.08)	1	5
	Total	591	3.18 (1.40)	1	5

Note. N = 591, M = Mean; *SD =* Standard Deviation

state mentalizing scores from pre- ($M = 12.43$, $SD = 3.12$) to post- ($M = 13.25$, $SD = 3.66$) overinclusion; $t(199) = -4.67$, $p < .001$, $d = 0.34$. Lastly, paired samples t-tests compared emotion regulation difficulties scores and mentalizing scores pre- and post-inclusion. There was a significant decrease in the emotion regulation difficulties scores from pre- ($M = 39.50$, $SD = 16.33$) to post- ($M = 38.03$, $SD = 15.91$) inclusion; $t(196) = 3.54$, $p < .001$, $d = 0.25$. There was a significant increase in the mentalizing scores from pre- ($M = 12.09$, $SD = 3.26$) to post- ($M = 12.77$, $SD = 4.10$) inclusion; $t(196) = -3.60$, $p < .001$, $d = 0.26$. Although results indicated statistically significant changes in state emotion regulation difficulties and state mentalizing within the different social participation conditions, the magnitude of these effects are, nevertheless, considered small. The statistically significant results may have been a result of the study's large sample size and it is, therefore, more meaningful to interpret the effect sizes of these relationships.

Main Hypotheses Testing

Hypothesis 1a. Anxious attachment would relate to greater emotion regulation difficulties in the ostracism condition compared to the overinclusion and inclusion conditions.

Hypothesis 1b. Anxious attachment would relate to less emotion regulation difficulties in the overinclusion condition compared to the inclusion condition.

To test hypotheses 1a and 1b, a simple bootstrapping moderation analysis was conducted (Preacher & Hayes, 2022, PROCESS v4.0 Model 1). The dependent variable for this analysis was state emotion regulation as measured by the change in difficulties in emotion regulation on the S-DERS. The independent variable was anxious attachment,

and the moderating variables were the social participation conditions (i.e., ostracism, overinclusion, inclusion). Moderation was shown if there was a significant interaction effect. The measure of effect size used for the moderation analyses was f^2 and was based on Cohen's (1988) suggested values of .02, .15, and .35 to indicate *small*, *medium*, and *large* effect sizes, respectively. Results showed that the overall model, which included anxious attachment, the social participation conditions, and the interaction between anxious attachment and social participation conditions, was significant, $R^2 = .055$, $F(5, 585) = 6.75$, $p < .001$, with a small effect size ($f^2 = .06$). The R^2 indicates that 5.5% of the variance was accounted for by the model. The interaction between anxious attachment and the social participation conditions explained an additional 1.6% of the variability (R^2 change $= .016$, *Fchange* [2, 585] $= 4.99$, $p = .007$), with a small effect size ($f^2 = .02$).

The relationship between the predictor variables and the dependent variable was first examined. Effect size classifications for standardized beta coefficients were based on Cohen's (1988) guidelines, which categorized effect sizes from .10 to .29 as small, effect sizes from .30 to .49 as medium, and effect sizes .50 or greater as large. Anxious attachment significantly positively predicted emotion regulation difficulties, $b = 0.27$, 95% C.I. [0.14, 0.40], $t(585) = 3.90$, $p < .001$, considered a small effect size. Comparisons between the social participation conditions revealed that ostracism was a significant predictor of emotion regulation difficulties. The difference in emotion regulation difficulties between ostracism and overinclusion was significant, $b = 0.34$, 95% C.I. [0.15, 0.54], $t(585) = 3.47$, $p < .001$, also a medium effect size. The difference in emotion regulation difficulties between ostracism and inclusion was also significant, $b = 0.34$, 95% C.I. [0.15, 0.53], $t(585) = 3.43$, $p < .001$, with a medium effect size.

However, the difference in emotion regulation difficulties between the inclusion and overinclusion condition was not significant, $b = 0.003$, 95% C.I. [-0.19, 0.20], $t(585) = 0.032$, $p = .97$, a negligible effect size.

Next, the differential influence of the social participation conditions on anxious attachment predicting emotion regulation was examined. Statistical analyses revealed an interaction effect between anxious attachment and condition. More specifically, when compared to overinclusion, the impact of ostracism on anxious attachment predicting emotion regulation was significant, $b = 0.21$, 95% C.I. [0.01, 0.40], $t(585) = 2.10$, $p < .05$. The effect size was based on the difference in the slopes between overinclusion and ostracism and was .21, a small effect size (see below for description of simple slope analysis). Additionally, when compared to inclusion, the impact of ostracism on anxious attachment predicting emotion regulation was also significant, $b = 0.30$, 95% C.I. [0.11, 0.49], $t(585) = 3.08$, $p < .01$. The difference in slopes between ostracism and inclusion was .30, a medium effect size. When compared to overinclusion, the impact of inclusion on anxious attachment predicting emotion regulation was not significant, $b = -0.09$, 95% C.I. [-0.29, 0.11], $t(585) = -0.90$, $p = .37$, a small effect size.

Simple slope analysis showed the following: In the ostracism condition, anxious attachment was associated with increased emotion regulation difficulty, and this relationship was statistically significant, $b = 0.27$, 95% C.I. [0.13, 0.40], $t(585) = 3.90$, $p < .001$. Furthermore, the interaction effect size was small and indicated that for every increase of one standard deviation in anxious attachment, there was a .27 standard deviation increase in emotion regulation difficulties in the ostracism condition. In the overinclusion condition, anxious attachment was associated with an increase in emotion

regulation difficulty, but this relationship was not significant, $b = 0.06$, 95% C.I. [-0.09, 0.20], $t(585) = 0.78$, $p = .43$, and the effect size was small. In the inclusion condition, anxious attachment was associated with a decrease in emotion regulation difficulty, but this relationship was not significant, $b = -0.03$, 95% C.I. [-0.17, 0.10], $t(585) = -0.48$, $p = .63$, and the effect size was small. Results are summarized in Figure 1.

Post hoc analyses within the ostracism condition, using simple linear regression models to determine the relationship between anxious attachment and the emotion regulation difficulties subscales, were conducted. Results showed that the overall model, which included anxious attachment and limited ability to modulate current emotional and behavioral responses (Modulate subscale), was significant, $R^2 = .046$, $F(1, 192) = 9.32$, $p < .01$, with a small effect size ($f^2 = .05$). Anxious attachment significantly positively predicted limited ability to modulate current emotional and behavioral responses, $b = 0.22$, 95%. C.I. [0.09, 0.39], $t(192) = 3.05$, $p < .01$, with a small effect size ($f^2 = .05$). Next, the overall model, which included anxious attachment and lack of clarity about current emotions (Clarity subscale), was significant, $R^2 = .022$, $F(1, 192) = 4.25$, $p < .05$, with a small effect size ($f^2 = .02$). Anxious attachment significantly positively predicted lack of clarity about current emotions, $b = 0.15$, 95%. C.I. [0.01, 0.32], $t(192) = 3.05$, $p < .05$, considered a small effect size ($f^2 = .02$). Lastly, the overall model, which included anxious attachment and lack of awareness of current emotions (Aware subscale), was not significant, $R^2 = .005$, $F(1, 192) = 0.95$, $p = .33$, with a small effect size ($f^2 = .01$). Anxious attachment did not significantly predict lack of awareness of current emotions, $b = 0.07$, 95%. C.I. [-0.07, 0.20], $t(192) = 0.97$, $p = .33$, a small effect size ($f^2 = .01$).

Figure 1

Effect of Social Participation Conditions on Anxious Attachment and State Emotion

Regulation Difficulty
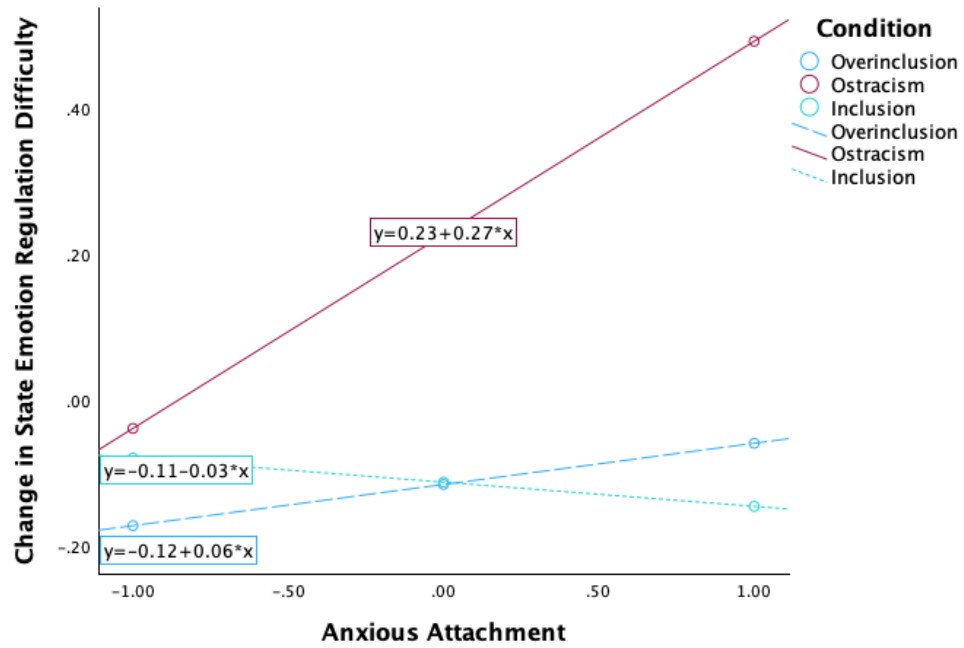
Overall, these results supported hypothesis 1a, which stated that anxious attachment

would relate to greater emotion regulation difficulties in the ostracism condition

compared to the overinclusion and inclusion conditions. However, the magnitude of the

effect of ostracism on the relationship between anxious attachment and

emotion regulation difficulties, when compared to overinclusion, was small. In contrast,

when compared to inclusion, ostracism had a medium effect size on the relationship

between anxious attachment and emotion regulation difficulties. Lastly, the results did

not support hypothesis 1b, which stated that anxious attachment would relate to less

emotion regulation difficulties in the overinclusion condition compared to the inclusion

condition. Furthermore, the magnitude of the effect of overinclusion on the relationship

between anxious attachment and emotion regulation difficulties, when compared to

inclusion, was small. The non-significant finding (despite a large sample size providing

adequate power) and the small effect size indicate overinclusion's minimal influence on

decreasing emotion regulation difficulties in those with anxious attachment.

Hypothesis 2a. Avoidant attachment would relate to greater emotion regulation difficulties in the ostracism condition compared to the overinclusion and inclusion conditions.

Hypothesis 2b. Avoidant attachment would relate to less emotion regulation difficulties in the overinclusion condition compared to the inclusion condition.

To test these hypotheses 2a and 2b, a simple bootstrapping moderation analysis

was conducted (Preacher & Hayes, 2022, PROCESS v4.0 Model 1). The dependent

variable for this analysis state emotion regulation as measured by the change in

difficulties in emotion regulation on the S-DERS. The independent variable was

avoidant attachment, and the moderating variables were the social participation conditions. Moderation is shown if there is a significant interaction effect. Results showed that the overall model was significant, $R^2 = .045$, $F(5, 585) = 5.52$, $p < .001$, with a small effect size ($f^2 = .05$). The R^2 indicates that 4.5% of the variance was accounted for by the model. The interaction between avoidant attachment and the social participation conditions explained an additional .03% of the variability (R^2 change = .0003, *Fchange* [2, 585] = .093, $p = .91$), considered a negligible effect size ($f^2 = .00$).

The relationship between the predictor variables and the dependent variable was examined. Avoidant attachment significantly positively predicted emotion regulation difficulties, $b = 0.14$, 95% C.I. [0.01, 0.27], $t(585) = 2.10$, $p < .05$, a small effect size. Comparisons between the social participation conditions revealed that ostracism was a significant predictor of emotion regulation. More specifically, when compared to overinclusion, ostracism significantly predicted emotion regulation difficulties, $b = 0.36$, 95% C.I. [0.16, 0.55], $t(585) = 3.60$, $p < .001$, considered a medium effect size. Ostracism, compared to inclusion, significantly predicted emotion regulation difficulties, $b = 0.35$, 95% C.I. [0.15, 0.54], $t(585) = 3.51$, $p < .001$, also a medium effect size. The difference in emotion regulation difficulties between inclusion and overinclusion was not significant, $b = 0.008$, 95% C.I. [-0.19, 0.20], $t(585) = 0.078$, $p = .94$, and was very small effect size.

Next, the differential influence of the social participation conditions on avoidant attachment predicting emotion regulation was examined. Statistical analyses revealed no significant interaction effect between avoidant attachment and condition and indicated very small effect sizes (see Table 6). Thus, the results did not support the hypothesis 2a,

Table 6

Differential Impact of Conditions on Avoidant Attachment Predicting State Emotion

Regulation Difficulties

	β	*SE*	*t*	*p*	LLCI	ULCI
Ostracism vs. Overinclusion	-0.01	0.10	-.059	.95	-0.20	0.18
Inclusion vs. Overinclusion	-0.04	0.10	-0.40	.69	-0.24	0.16
Ostracism vs. Inclusion	0.04	0.10	0.34	.73	-0.16	0.24

which stated that avoidant attachment would relate to greater emotion regulation difficulties in the ostracism condition compared to the overinclusion and inclusion conditions, nor did they support hypothesis 2b, which stated that avoidant attachment would relate to less emotion regulation difficulties in the overinclusion condition compared to the inclusion condition. See Figure 2.

Hypothesis 3a. Anxious attachment would relate to lower state and online mentalizing in the ostracism condition compared to the overinclusion and inclusion conditions.

Hypothesis 3b. Anxious attachment would relate to better state and online mentalizing in the overinclusion condition compared to the inclusion condition.

To test hypotheses 3a and 3b, two different bootstrapping moderation analyses were conducted (Preacher & Hayes, 2022, PROCESS v4.0 Model 1). In the first analysis, the dependent variable was state mentalizing as measured by the change in mentalizing on the RMET. The independent variable was anxious attachment, and the moderating variables were the social participation conditions. Results showed that the overall model was significant, R^2 = .024, $F(5, 585)$ = 2.81, $p < .05$, with a small effect size (f^2 = .02). The R^2 indicates that 2.4% of the variance was accounted for by the model. The interaction between anxious attachment and the social participation conditions explained an additional .05% of the variability (R^2 change = .0005, *Fchange* [2, 585] = .15, p = .86), a negligible effect size (f^2 = .00). An examination of the relationship between the predictor variables and the dependent variables showed there was a significant inverse relationship between anxious attachment and state mentalizing, b = -0.14, 95% C.I. [-0.28, -0.01], $t(585)$ = -2.08, $p < .05$, considered a small effect size.

Figure 2

Effect of Social Participation Conditions on Avoidant Attachment and State Emotion Regulation Difficulty
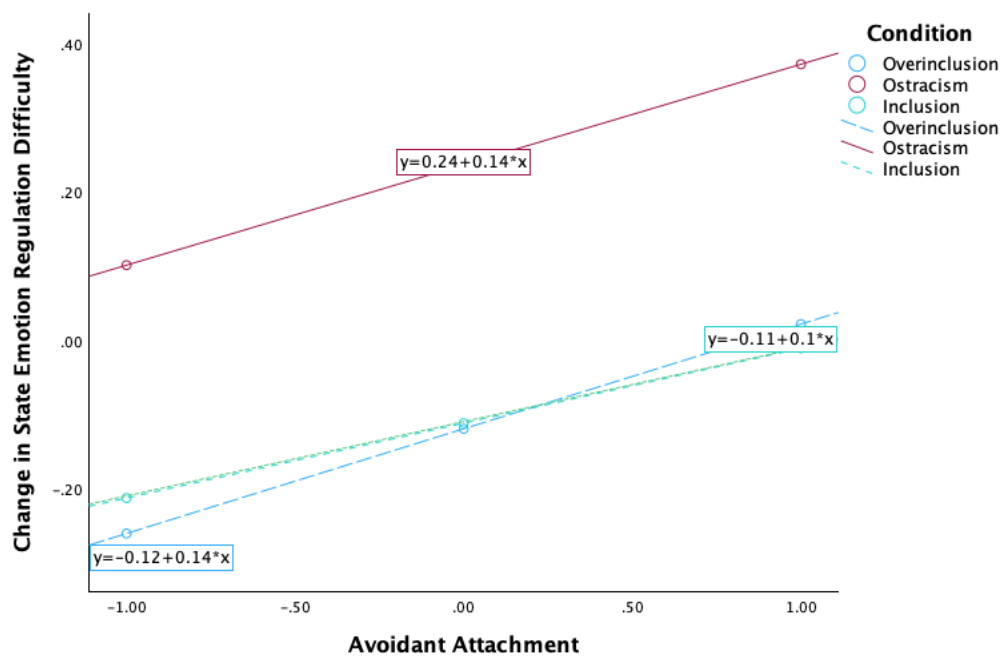
Comparisons between the social participation conditions revealed that none of the conditions were significant predictors of mentalizing and indicated small effect sizes (see Table 7).

Next, the differential influence of the social participation conditions on anxious attachment predicting change in state mentalizing (RMET) was examined. Statistical analyses revealed no significant interaction effect between avoidant attachment and social participation conditions and indicated very small effect sizes (see Table 8). The results did not support hypothesis 3a, which stated that anxious attachment would relate to decreased state mentalizing (as measured by RMET) in the ostracism condition, nor did they support hypothesis 3b, which stated that anxious attachment would relate to better state mentalizing (as measured by RMET) in the overinclusion condition (see Figure 3).

In the second analysis, the dependent variable was online (in-vivo) mentalizing, as measured by the total score on the MASC. The independent variable was anxious attachment, and the moderating variables were the social participation conditions (i.e., ostracism, overinclusion, inclusion). The covariates, age and sex, were included. Results showed that the overall model was significant, $R^2 = .15$, $F(7, 583) = 14.38$, $p < .001$, considered a medium effect size ($f^2 = .17$). The R^2 indicates that 15% of the variance was accounted for by the model. The interaction between anxious attachment and the social participation conditions explained an additional .06% of the variability (R^2 change = .0006, *Fchange* [2, 583] = .21, $p = .81$), which was a negligible effect size ($f^2 = .00$).

A look at the relationship between the predictor variables and the dependent variable revealed a significant inverse relationship between anxious attachment and

Table 7

Conditions Predicting Change in State Mentalizing (RMET)

	B	*SE*	*t*	*p*	LLCI	ULCI
Ostracism vs. Overinclusion	-0.10	0.10	-1.02	.31	-0.30	0.10
Inclusion vs. Overinclusion	-0.03	0.10	-0.31	.75	-0.23	0.17
Ostracism vs. Inclusion	0.07	0.10	0.71	.48	-0.13	0.27

Table 8

Differential Impact of Conditions on Anxious Attachment Predicting Change in State

Mentalizing (RMET)

	β	*SE*	*t*	*p*	LLCI	ULCI
Ostracism vs. Overinclusion	-0.03	0.10	-0.30	.77	-0.23	0.17
Inclusion vs. Overinclusion	-0.06	0.10	-0.54	.59	-0.25	0.15
Ostracism vs. Inclusion	0.03	0.10	0.25	.80	-0.17	0.22

Figure 3

Effect of Social Participation Conditions on Anxious Attachment and State Mentalizing

(RMET)
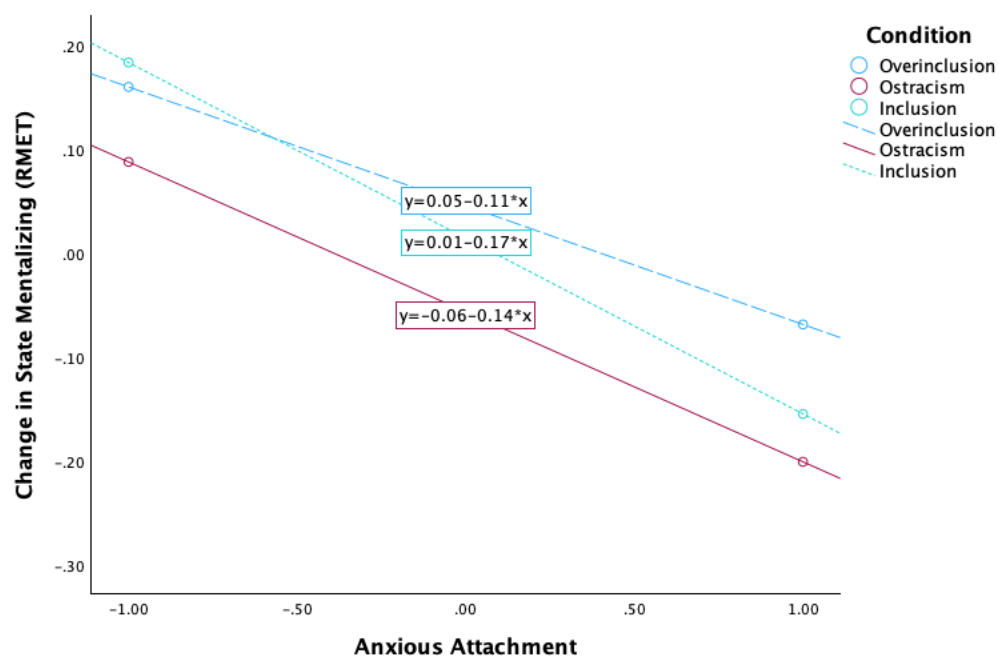
online mentalizing, $b = -0.28$, 95% C.I. [-0.42, -0.15], $t(583) = -4.12$, $p < .001$, with a small effect size, such that higher anxious attachment was associated with lower online mentalizing. Results also showed a significant relationship between sex and mentalizing, specifically, females showed better online mentalizing than males, $b = 0.26$, 95% C.I. [0.10, 0.41], $t(583) = 3.31$, $p < .01$.

Next, comparisons between the social participation conditions revealed there was no significant difference in online mentalizing between the ostracism condition ($M = 28.95$, $SD = 9.53$) and overinclusion condition ($M = 29.59$, $SD = 9.54$), $b = 0.002$, 95% C.I. [-0.18, 0.19], $t(583) = 0.023$, $p = .98$, and only a small effect size. There was no significant difference in online mentalizing between the inclusion condition ($M = 28.30$, $SD = 9.84$) and overinclusion condition, $b = -0.06$, 95% C.I. [-0.24, 0.12], $t(583) = -0.64$, $p = .52$, and effect size was small. There was no significant difference in online mentalizing between the ostracism and inclusion condition, $b = 0.06$, 95% C.I. [-0.12, 0.25], $t(583) = 0.66$, $p = .51$, and only a small effect size. This means that, of the three social participation conditions, none was supported as a significant predictor of online mentalizing in this sample, and the magnitude of their effects was considered to be small.

Lastly, the differential influence of the participation conditions on anxious attachment predicting online mentalizing was examined. Figure 4 illustrates that as anxious attachment increased, online mentalizing scores on the MASC were lower in all three conditions, with inclusion showing the lowest mentalizing score, followed by ostracism, then overinclusion. Statistical analyses revealed no significant interaction effect between anxious attachment and social participation condition and also indicated small effect sizes (see Table 9). These results did not support hypothesis 3a that anxious

Figure 4

Effect of Social Participation Conditions on Anxious Attachment and Online Mentalizing
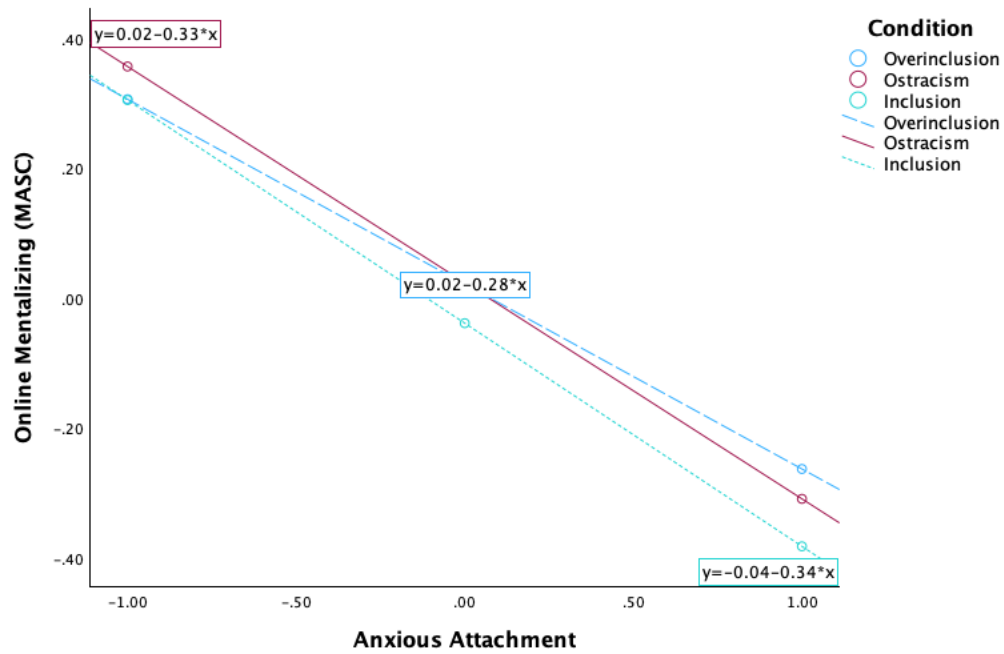
(MASC)

Table 9

Differential Impact of Conditions on Anxious Attachment Predicting Online Mentalizing

(MASC)

	β	*SE*	*t*	*p*	LLCI	ULCI
Ostracism vs. Overinclusion	-0.05	0.10	-0.51	.61	-0.23	0.14
Inclusion vs. Overinclusion	-0.06	0.10	-0.62	.54	-0.25	0.13
Ostracism vs. Inclusion	0.01	0.10	0.12	.91	-0.17	0.19

attachment would relate to lower online mentalizing (as measured by the MASC) in the ostracism condition compared to overinclusion and inclusion, nor did they support hypothesis 3b that anxious attachment would relate to better online mentalizing (as measured by the MASC) in the overinclusion condition compared to inclusion.

Hypothesis 4a. Avoidant attachment would relate to lower state and online mentalizing in the ostracism condition compared to the overinclusion and inclusion conditions.

Hypothesis 4b. Avoidant attachment would relate to better state and online mentalizing in the overinclusion condition compared to the inclusion condition.

To test hypotheses 4a and 4b, two different bootstrapping moderation analyses were conducted (Preacher & Hayes, 2022, PROCESS v4.0 Model 1). In the first analysis, the dependent variable was state mentalizing as measured by the change in mentalizing on the RMET. The independent variable was avoidant attachment and the moderating variables were the social participation conditions. Results showed that the overall model was not significant, $R^2 = .014$, $F(5, 585) = 1.62$, $p = .15$, with a small effect size ($f^2 = .01$). The R^2 indicates that 1.4% of the variance was accounted for by the model. The interaction between avoidant attachment and the social participation conditions explained an additional .37% of that variability (R^2 change = .0037, *Fchange* [2, 585] = 1.08, $p = .34$), a negligible effect size ($f^2 = .00$).

When the relationship between the predictor variables and the dependent variable was examined, it was found that higher avoidant attachment was associated with lower state mentalizing, and this inverse relationship was significant, $b = -0.16$, 95% C.I. [-0.30, -0.03], $t(585) = -2.37$ $p < .05$, considered a small effect size. Next, comparisons between

the social participations indicated there was no significant difference in state mentalizing between the ostracism condition and overinclusion condition, b = -0.12, 95% C.I. [-0.32, 0.08] t(583) = -1.19, p =. 24, also a small effect size. There was no significant difference in state mentalizing between the inclusion condition and overinclusion condition, b = -0.05, 95% C.I. [-.25, .14], t(583) = -0.52, p = .61, with a small effect size. There was no significant difference in state mentalizing between the ostracism and inclusion condition, b = 0.07, 95% C.I. [-0.13, 0.27], t(583) = -0.67, p = .50, with a small effect size. This means that, of the three social participation conditions, none significantly predicted state mentalizing in this model.

Lastly, the differential influence of the social participation conditions on avoidant attachment predicting mentalizing was examined. Statistical analyses revealed no significant interaction effect between avoidant attachment and social participation conditions, and results indicated small effect sizes (see Table 10). The results did not support hypothesis 4a that avoidant attachment would relate to lower state mentalizing (as measured by RMET) in the ostracism condition, nor did they support hypothesis 4b that avoidant attachment would relate to better state mentalizing (as measured by RMET) in the overinclusion condition (see Figure 5).

In the second analysis, the dependent variable for this analysis was online mentalizing as measured by the total mentalizing score on the MASC. The independent variable was avoidant attachment, and the moderating variables were the social participation conditions (i.e., ostracism, overinclusion, inclusion). Age and sex were included as covariates. Results showed that the overall model was significant, R^2 = .062, F(7, 583) = 5.54, p < .001, with a small effect size (f^2 = .07). The R^2 indicates that 6.2%

Table 10

Differential Impact of Conditions on Avoidant Attachment Predicting Change in State

Mentalizing (RMET)

	β	*SE*	*t*	*p*	LLCI	ULCI
Ostracism vs. Overinclusion	0.14	0.10	1.45	.15	-0.05	0.34
Inclusion vs. Overinclusion	0.09	0.10	0.89	.37	-0.11	0.29
Ostracism vs. Inclusion	0.05	0.10	0.51	.61	-0.15	0.26

Figure 5

Effect of Social Participation Condition on Avoidant Attachment and State Mentalizing

(RMET)
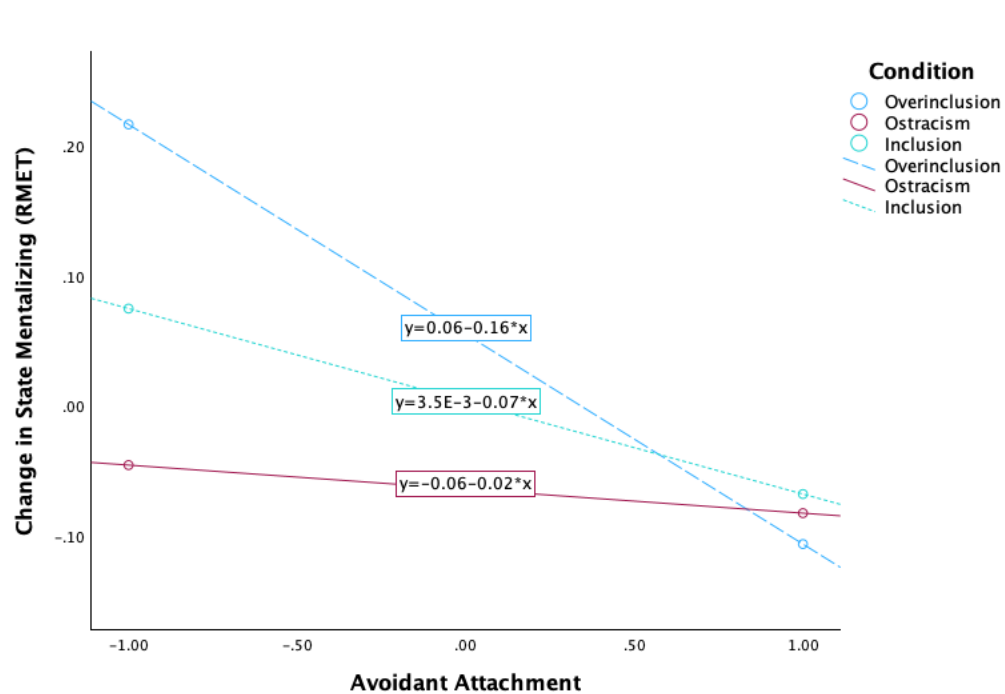
of the variance was accounted for by the model. The interaction between avoidant attachment and the social participation conditions explained an additional .84% of that variability (R^2 change = .0084, $Fchange$ [2, 583] = 2.62, p = .07), with a small effect size (f^2 = .01).

The relationship between the predictor variables and the dependent variable was examined. Results showed a significant inverse relationship between avoidant attachment and online mentalizing, b = -0.16, 95% C.I. [-0.31, -0.02], t(583) = -2.24, p < .05, with a small effect. Age was positively related to online mentalizing, b = 0.011, 95% C.I. [0.01, 0.02], t(585) = 3.46, p < .001. There was also a significant relationship between sex and online mentalizing, b = 0.27, 95% C.I. [0.11, 0.43], t(585) = 3.32, p < .01. Specifically, females exhibited better online mentalizing than males. Next, comparisons between the social participations indicated there was no significant difference in online mentalizing between the ostracism condition (M = 28.95, SD = 9.53) and overinclusion condition (M = 29.59, SD = 9.54), b = -0.04, 95% C.I. [-0.23, 0.15], t(583) = -0.38, p = .71, with a small effect size. There was no significant difference in mentalizing between the inclusion condition (M = 28.30, SD = 9.84) and overinclusion condition, b = -0.11, 95% C.I. [-0.30, 0.09], t(583) = -1.08, p = .28, with a small effect size. There was no significant difference in mentalizing between the ostracism and inclusion condition, b = 0.07, 95% C.I. [-0.13, 0.26], t(583) = 0.70, p = .49, with a small effect size. This means that, of the three social participation conditions, none was supported as a significant predictor of online mentalizing in this model.

Next, the differential influence of the participation conditions on avoidant attachment predicting mentalizing was examined. Figure 6 illustrates that as avoidant

Figure 6

Effect of Social Participation Condition on Avoidant Attachment and Online Mentalizing
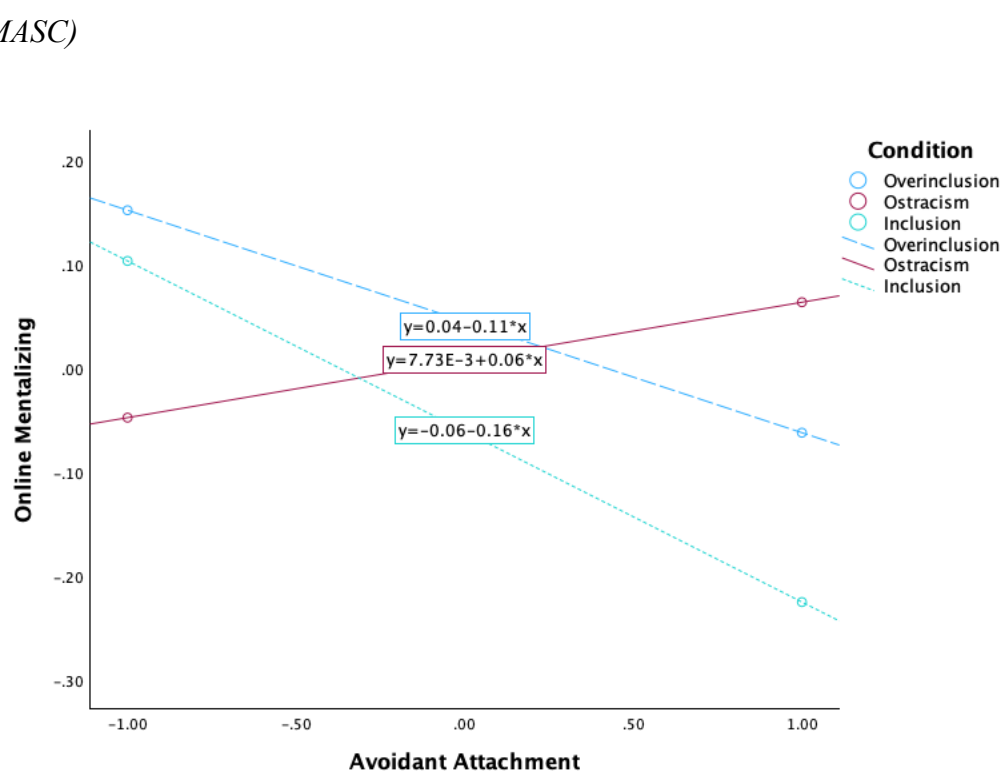
(MASC)

attachment increased, online mentalizing scores on the MASC were lower in the overinclusion and inclusion conditions, with inclusion showing lower scores than overinclusion. In contrast, as avoidant attachment increased, online mentalizing was higher in the ostracism condition.

Statistical analyses revealed an interaction effect between avoidant attachment and condition. More specifically, compared to ostracism, the impact of inclusion on avoidant attachment predicting online mentalizing was significant, $b = -0.22$, 95% C.I. [-0.42, -0.02], $t(583) = -2.18$, $p < .05$. The effect size was based on the difference in slopes between ostracism and inclusion and was -.22, a small effect size. However, compared to overinclusion, the impact of inclusion on avoidant attachment predicting online mentalizing was not significant, $b = -0.06$, 95%C.I. [-0.25, 0.14], $t(583) = -0.58$, $p = .56$, with a small effect size. Lastly, compared to overinclusion, the impact of ostracism on avoidant attachment predicting online mentalizing was not significant, $b = 0.16$, 95% C.I. [-0.03, 0.35], $t(583) = 1.69$, $p = .09$, with a small effect size.

Simple slope analysis showed the following results: In the inclusion group, avoidant attachment was associated with lower online mentalizing, and this finding was statistically significant, $b = -0.16$, 95% C.I. [-0.31, -0.02] $t(583) = -2.24$, $p < .05$. Furthermore, the interaction effect size was small and indicated that for every increase of one standard deviation in avoidant attachment, mentalizing decreased by .16 standard deviations in the inclusion condition. In the overinclusion condition, avoidant attachment was associated with lower mentalizing, but this finding was not statistically significant, $b = -0.11$, 95% C.I. [-0.24, 0.02], $t(583) = -1.61$, $p = .11$, with a small effect size. In the ostracism group, avoidant attachment was associated with better mentalizing, but this

finding was not statistically significant, $b = 0.06$, 95% C.I. [-0.08, 0.19], $t(583) = 0.80$, p = .43, with a small effect size. These results did not support hypothesis 4a, which stated that avoidant attachment would relate to lower online mentalizing (as measured by the MASC) in the ostracism condition compared to overinclusion and inclusion, nor did they support hypothesis 4b, which stated that avoidant attachment would relate to better online mentalizing (as measured by the MASC) in the overinclusion condition compared to inclusion.

Summary of Results of Main Study

Main Effects of Attachment Styles and Social Participation Conditions on Emotion Regulation

As expected, anxious and avoidant attachment were positively associated with emotion regulation difficulties, such that individuals with anxious and avoidant attachment reported greater problems with regulating emotions. However, while reaching statistical significance the effect sizes of both anxious and avoidant attachment on emotion regulation difficulties were small. Ostracism, compared to overinclusion and inclusion, was also associated with greater emotion regulation difficulties, as hypothesized. Furthermore, the medium-sized effect of ostracism on emotion regulation difficulties indicated that ostracism had a stronger impact on emotion regulation problems than the other two conditions.

Attachment Style by Social Participation Interaction Effect on Emotion Regulation

Anxious attachment was associated with greater emotion regulation difficulties in the ostracism condition. Though statistically significant, the effect of ostracism on the relationship between anxious attachment and emotion regulation difficulties was small.

Post-hoc analyses further indicated that for those who experienced ostracism, anxious attachment was associated with difficulties in the specific domains of modulating emotional and behavioral responses and clarity about current emotions. This indicates that rejecting experiences can disrupt the ability of individuals with anxious attachment to manage their emotional responses, control their impulses, and identify and carry out effective strategies in order to achieve a goal. In addition, aversive social conditions can adversely affect their ability to have a clear understanding of their current emotional state. The effect size of ostracism on the relationship between anxious attachment and these specific emotion regulation domains remained small. Lastly, the differential effects of the social participation conditions on the relationship between avoidant attachment and emotion regulation difficulties were small and not statistically significant.

Main Effects of Attachment Styles, Age, Sex, and Social Participation Conditions on State and Online Mentalizing

Anxious and avoidant attachment were inversely associated with state mentalizing (as measured by change in RMET) and online mentalizing (as measured by the total score on MASC), such that individuals with anxious and avoidant attachment exhibited impaired recognition of emotions (RMET) and impaired recognition of mental states in more complex and dynamic contexts, such as close romantic relationships and friendship (MASC). Although this finding was statistically significant, the effect sizes of anxious and avoidant attachment on state and online mentalizing were small. Age and sex were covariates for online mentalizing (MASC). Age was positively related to online mentalizing, suggesting that as individuals get older and become more experienced, they get better at recognizing and understanding mental states in more complex, relational

contexts. Females also exhibited better online mentalizing than males. The effects of the three social participation conditions on state and online mentalizing were all small and not statistically significant.

Attachment Style by Social Participation Interaction Effect on State and Online Mentalizing

The differential effects of the social participation conditions on the relationship between anxious attachment and state and online mentalizing were small and not statistically significant. Also, the differential effects of the social participation conditions on the relationship between avoidant attachment and state mentalizing were small and statistically not significant. However, avoidant attachment was associated with lower online mentalizing in the inclusion group, indicating that individuals with avoidant attachment may be less able or willing to engage in understanding mental states in social contexts even after experiencing social environments that are typically inviting or interested in the avoidant individual. Although this finding was significant, the effect size of inclusion on the relationship between avoidant attachment and online mentalizing was small. Further explanations of all of these findings are explored in the following discussion section.

Exploratory Hypotheses Testing

Hypothesis 5a. Mentalizing capacities would mediate the relationship between attachment styles and emotion regulation in the context of an aversive social condition.

To test hypothesis 5, two bootstrapping mediation analyses were conducted (Preacher & Hayes, 2022, PROCESS v4.0 Model 4). In the first analysis, the independent variable was anxious attachment, the mediator was dispositional mentalizing

as measured by the total RFQ score, and the dependent variable was change in difficulties with emotion regulation, as measured by the difference between pre-Cyberball and post-Cyberball total scores on the S-DERS. In the second analysis, the independent variable was avoidant attachment. The analyses used 5,000 bootstrap samples to test effects as determined by bias-corrected 95% confidence intervals. Effects are considered statistically significant if the confidence interval does not contain 0. Mediation is present if the indirect effect (product of a and b) of attachment style (independent variable) through mentalizing (mediator) on emotion regulation (dependent variable) is significant (i.e., the confidence interval does not contain 0), and the direct effect of attachment style on emotion regulation, while accounting for the mediator, (c') is smaller than the total effect (c).
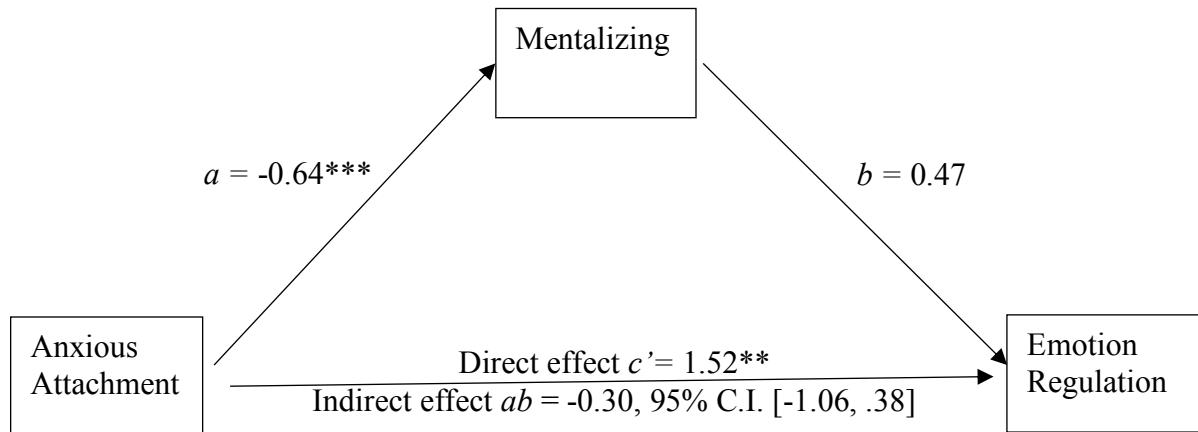
The results of the first analysis are as follows: The direct effect from anxious attachment to dispositional mentalizing was negative and significant (b = -0.64, p < .001), indicating that higher anxious attachment was associated with lower dispositional mentalizing. The direct effect of dispositional mentalizing on difficulty with emotion regulation was positive and not significant (b = 0.47, p = .36). The direct effect of anxious attachment on difficulty with emotion regulation after controlling for mentalizing was positive and significant (b = 1.52, p < .01). The indirect effect of anxious attachment via mentalizing on emotion regulation was not significant since the confidence interval included zero, ab = -0.30, 95% C.I. [-1.06, 0.38]. The effect size, based on the completely standardized indirect effect was -.058. This means that for every one standard deviation increase in anxious attachment there was a decrease by .058 standard deviation in emotion regulation difficulties accounted for by dispositional mentalizing, a

small effect size. In sum, dispositional mentalizing, as measured by total RFQ score, did

not mediate the relationship between anxious attachment and emotion regulation

difficulties (see Figure 7).

A post-hoc analysis was conducted to examine whether the two dispositional

mentalizing dimensions, Certainty and Uncertainty on the RFQ, were significant

mediators in the relationship between anxious attachment and emotion regulation. This

time, a parallel mediation analysis was conducted to test the indirect effect of anxious

attachment on emotion regulation via certainty and uncertainty. The direct effect from

anxious attachment to Certainty was negative and significant (b = -0.42, p < .001),

indicating that higher anxious attachment was associated with lower certainty. The direct

effect from anxious attachment to Uncertainty was positive and significant (b = 0.22, p <

.001), which suggests that higher anxious attachment was associated with higher

uncertainty. The direct effect of Certainty on difficulty with emotion regulation was

negative and significant, (b = -1.82, p < .05), which means that as certainty increases,

emotion regulation difficulty decreases. The direct effect of Uncertainty on difficulty

with emotion regulation was negative and significant (b = -3.94, p < .01) and suggests

that as uncertainty increases, emotion regulation difficulty decreases. The direct effect of

anxious attachment on emotion regulation difficulty after controlling for Certainty and

Uncertainty was positive and significant, (b = 1.32, p < .01). The indirect effect of

anxious attachment on emotion regulation via uncertainty was negative and significant,

de = -0.87, 95% C.I. [-1.66, -0.18]. The effect size, based on the completely standardized

indirect effect, was -.17. This means that for every one standard deviation increase in

Figure 7

Simple Mediation Model: Unstandardized Coefficients in the Indirect Effect of Anxious

Attachment on Emotion Regulation Through Mentalizing

Note. Completely standardized indirect effect *ab* = -0.0579, *SE* = .0689, 95% CI [-.1910,

.0789]

**p < .01, ***p < .001

anxious attachment, there was a .17 standard deviation decrease in emotion regulation difficulty accounted for by uncertainty, a small effect. There was no significant indirect effect via certainty $ab = 0.77$, 95% C.I. [-0.04, 1.62]. The completely standardized indirect effect was .15, with a small effect (see Figure 8).

The results for the second analysis were as follows: The direct effect of avoidant attachment on dispositional mentalizing was negative and significant ($b = -0.46$, $p < .001$), indicating that higher avoidant attachment was associated with lower dispositional mentalizing. The direct effect of dispositional mentalizing on difficulty with emotion regulation was negative and not significant ($b = -0.39$, $p = .35$). The direct effect of avoidant attachment on emotion regulation after controlling for mentalizing was positive and non-significant ($b = 0.56$, $p = .26$). The indirect effect of avoidant attachment via mentalizing on emotion regulation was also non-significant since the confidence interval included zero, $ab = -0.18$, 95% C.I. [-0.19, 0.56]. The effect size, measured by the completely standardized indirect effect was .029, with a small effect. In sum, dispositional mentalizing, as measured by the total RFQ score, did not mediate the relationship between avoidant attachment and emotion regulation difficulties (see Figure 9).

A post-hoc analysis using parallel mediation analysis was again conducted to examine whether the 2 dispositional mentalizing dimensions, Certainty and Uncertainty, were significant mediators in the relationship between avoidant attachment and emotion regulation. The direct effect of avoidant attachment on Certainty was negative and significant ($b = -0.32$, $p < .001$), indicating that as avoidant attachment increased, certainty

Figure 8

Parallel Mediation Model: Unstandardized Coefficients in the Indirect Effect of Anxious

Attachment on Emotion Regulation Through Certainty and Uncertainty
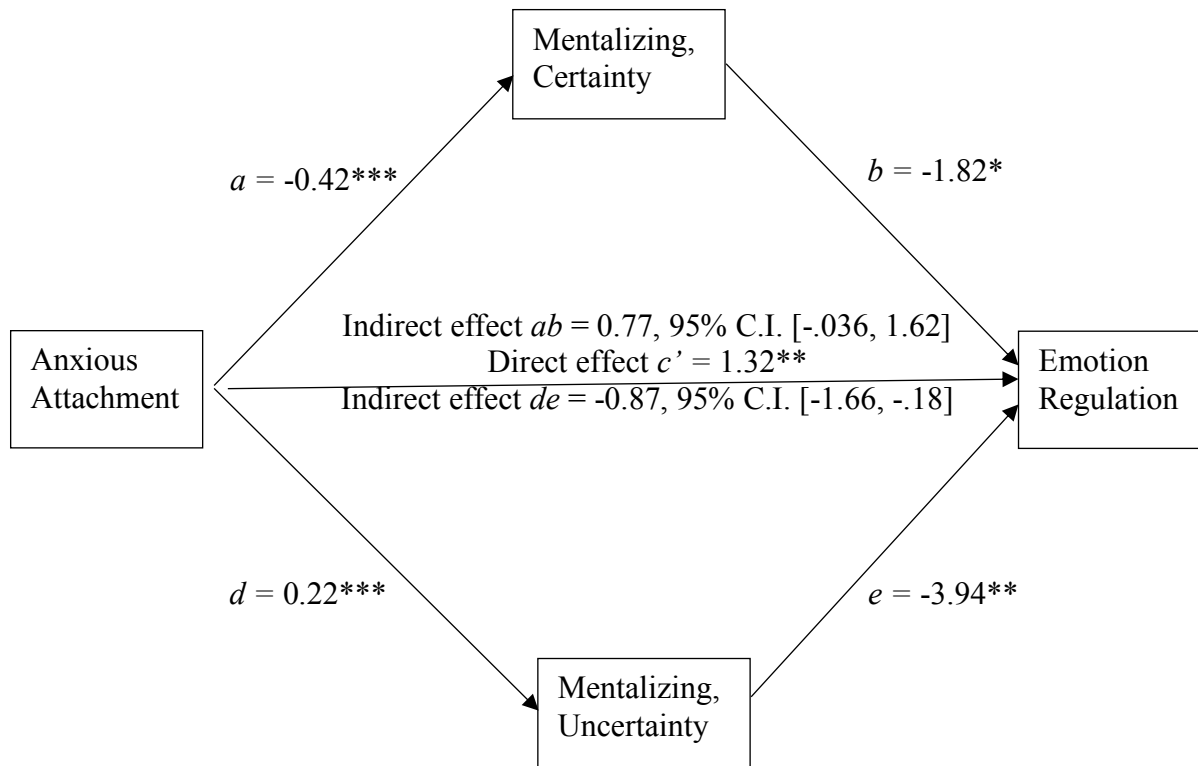
Note. Completely standardized indirect effect *ab* = 0.1473, *SE* = .0780, 95% CI[-.0056,

.2996]. Completely standardized indirect effect *de* = -0.1673, *SE* =.0670, 95% CI[-.3020,

-.0382]

p < .05, **p* < .01, ***p* < .001

Figure 9

Simple Mediation Model: Unstandardized Coefficients in the Indirect Effect of Avoidant

Attachment on Emotion Regulation Through Mentalizing

Note. Completely standardized indirect effect *ab* = 0.0285, *SE* = .0299, 95% CI [-.0298,

.0909]

***p < .001

decreased. The direct effect of avoidant attachment on uncertainty was positive and significant ($b = 0.14$, $p < .001$), indicating that as avoidant attachment increased, uncertainty increased. The direct effect of Certainty on difficulty with emotion regulation was negative and significant ($b = -2.81$, p $< .001$), suggesting that higher certainty was associated with lower emotion regulation difficulty. The direct effect of Uncertainty on difficulty with emotion regulation was negative and significant ($b = -3.42$, $p < .01$). The direct effect of avoidant attachment on emotion regulation difficulty after controlling for both Certainty and Uncertainty was positive but non-significant ($b = 0.31$, $p = .53$). The indirect effect of avoidant attachment on emotion regulation difficulty via Certainty was positive and significant, $ab = 0.91$, 95% C.I. [0.25, 1.84]. The effect size, based on the completely standardized indirect effect, was .14, considered a small effect. This meant that for every one standard deviation increase in avoidant attachment, there was a .14 standard deviation increase in emotion regulation difficulty accounted for by certainty. The indirect effect of avoidant attachment on emotion regulation difficulty via Uncertainty was negative and significant, $de = -0.47$, 95% C.I. [-1.08, -0.04]. The completely standardized indirect effect was -.074, with a small effect. This meant that for every one standard deviation increase in avoidant attachment, there was a .074 standard deviation decrease in emotion regulation difficulty accounted for by uncertainty (see Figure 10).

Overall, the results did not support the hypothesis that dispositional mentalizing capacities, as measured by the total RFQ, would mediate the relationship between attachment styles and emotion regulation. However, post hoc analyses showed that uncertainty mediated the relationship between both attachment styles and emotion

Figure 10

Parallel Mediation Model: Unstandardized Coefficients in the Indirect Effect of Avoidant

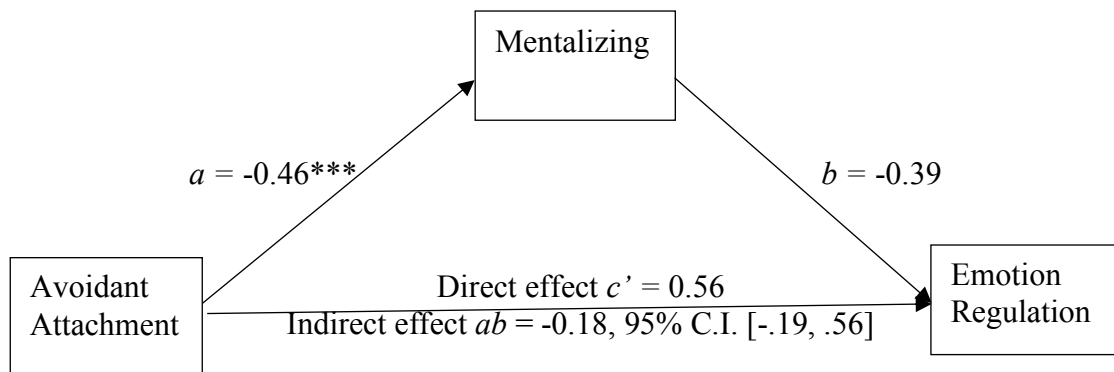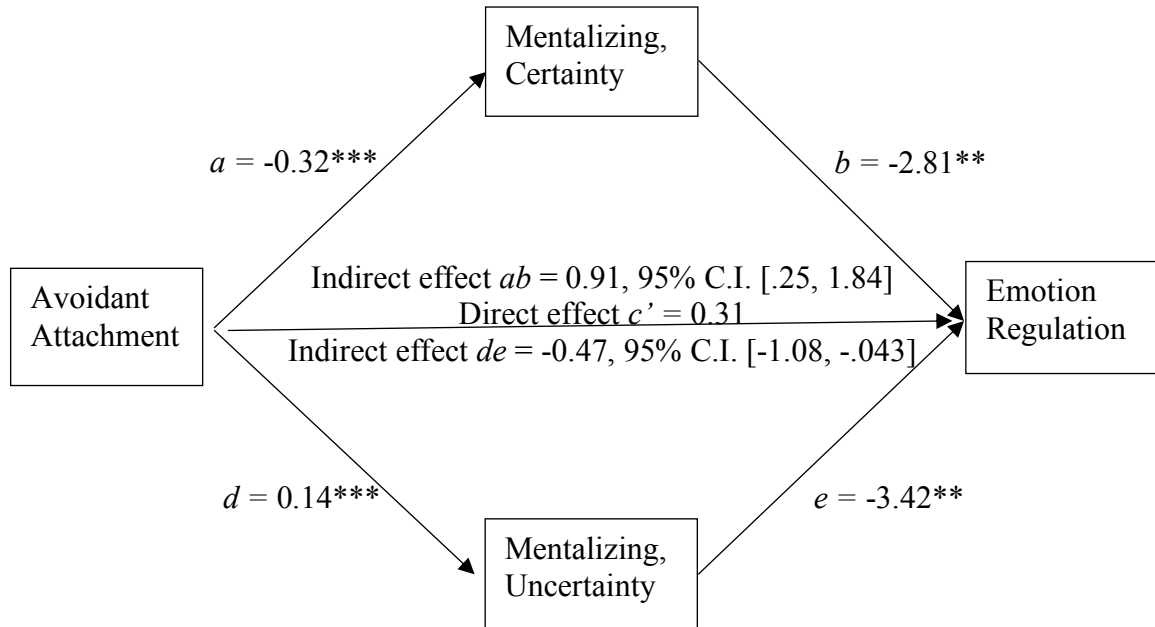*Attachment on Emotion Regulation Through Certainty and Uncertainty*

Note. Completely standardized indirect effect *ab* = 0.1428, *SE* = .0550, 95% CI [.0434,

.2569]. Completely standardized indirect effect *de* = -0.0743, *SE* = .0380, 95% CI [-

.1545, -.0065]

***p* < .01, ****p* < .001

regulation difficulties with small effects. Certainty also mediated the relationship between avoidant attachment and emotion regulation difficulty with small effect.

Hypothesis 5a. Uncertainty on the RFQ would mediate the relationship between attachment avoidance and deactivating/emotionally disengaging responses (change in Clarity and Aware scores).

To test this hypothesis 5a, two bootstrapping mediation analyses were conducted (Preacher & Hayes, 2022, PROCESS v4.0 Model 4). In the first analysis, the independent variable was avoidant attachment, the mediator was Uncertainty, and the dependent variable was the change in Clarity subscale scores from the S-DERS, as measured by the difference between the pre and post-Cyberball Clarity scores. The direct effect of avoidant attachment on uncertainty was positive and significant ($b = 0.14$, $p = .001$). The direct effect of uncertainty on lack of clarity was negative and non-significant ($b = -0.19$, $p = .23$). The direct effect of avoidant attachment on lack of clarity while controlling for uncertainty was positive and non-significant ($b = 0.0008$, $p = .99$). The indirect effect of avoidant attachment on lack of clarity via uncertainty was non-significant since the confidence interval included zero, $ab = -0.026$, 95% C.I. [-0.09, 0.02]. The effect size, measured by the completely standardized indirect effect was .025, with a small effect (see Figure 11).

In the second mediation analysis, the independent variable was avoidant attachment, the mediator was Uncertainty, and the dependent variable was change in lack of awareness subscale scores from the S-DERS, as measured by the difference between the pre and post-Cyberball Aware scores. As previously seen, the direct effect of avoidant attachment on uncertainty was positive and significant ($b = 0.14$, $p < .001$). The

Figure 11

Simple Mediation Model: Unstandardized Coefficients in the Indirect Effect of Avoidant

Attachment on Lack of Clarity Through Uncertainty
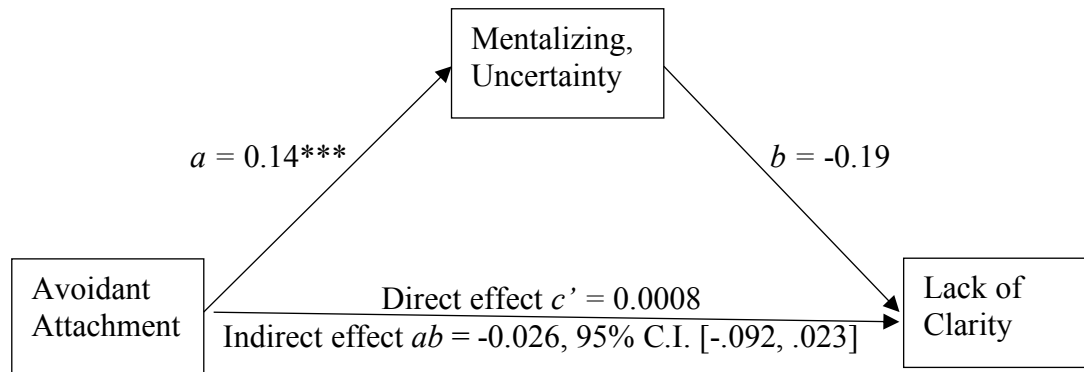
Note. Completely standardized indirect effect *ab* = -0.0250, *SE* = .0277, 95% CI [-.0856,

.0213]

***$p < .001$

direct effect of uncertainty on lack of awareness was positive and non-significant (b = 0.43, p = .19). The direct effect of avoidant attachment on lack of awareness was negative and non-significant (b = -0.055, p = .74). The indirect effect of avoidant attachment on lack of awareness of current emotions via uncertainty was non-significant since the confidence interval included zero, ab = 0.06, 95% C.I. [-0.02, 0.16]. The completely standardized indirect effect was .027, with a small effect size (see Figure 12). The results did not support hypothesis 5a, which stated that uncertainty on the RFQ would mediate the relationship between attachment avoidance and deactivating/emotionally disengaging responses (as measured by the change in Clarity and Aware scores).

Hypothesis 5b. Certainty on the RFQ would mediate the relationship between attachment anxiety and hyperactivating/emotionally reactive responses (change in Modulate score).

To test hypothesis 5b, a simple bootstrapping mediation analysis was conducted. The independent variable was anxious attachment, the mediator was Certainty, and the dependent variable was the change in modulate subscale score from the S-DERS, as measured by the difference between the pre and post-Cyberball Modulate scores. The direct effect of anxious attachment on Certainty was negative and significant (b = -0.42, p<.001). The direct effect of Certainty on limited ability to modulate was negative and non-significant (b = -0.38, p = .30). The direct effect of anxious attachment on limited ability to modulate after controlling for Certainty was positive and non-significant (b = 0.36, p = .11). The indirect effect of anxious attachment on limited ability to modulate current emotional and behavioral responses via certainty was not significant since the

Figure 12

Simple Mediation Model: Unstandardized Coefficients in the Indirect Effect of Avoidant

Attachment on Lack of Awareness through Uncertainty
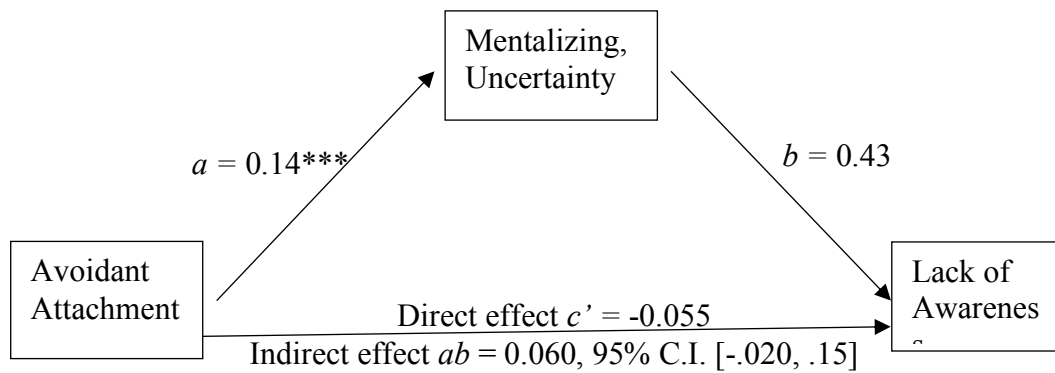
Note. Completely standardized indirect effect *ab* = 0.0270, *SE* = .0204, 95% CI [-.0090, .0719]

***$p < .001$

95% confidence interval included zero, $ab = 0.16$, 95% C.I. [-0.13, 0.46]. The completely standardized indirect effect was .065, with a small effect size. See Figure 13. Thus, the results did not support hypothesis 5b, which stated that certainty would mediate the relationship between anxious attachment and hyperactivating/emotionally reactive responses (as measured by the change in the Modulate score).

Summary of Exploratory Testing Results

In summary, results revealed that dispositional mentalizing, as measured by the total score on the RFQ, did not mediate the relationship between both attachment styles (anxious and avoidant) and emotion regulation difficulties and resulted in small effect sizes. Post-hoc analyses using instead the two dimensions of dispositional mentalizing (Certainty and Uncertainty) as mediators revealed that Uncertainty significantly mediated the relationship between both attachment styles and emotion regulation difficulties, such that high anxious and avoidant attachment were associated with decreased emotion regulation difficulties via uncertainty about mental states. Certainty significantly mediated the relationship between avoidant attachment and emotion regulation difficulties, such that high avoidant attachment was associated with low certainty, which in turn was associated with higher emotion regulation difficulties. Though these findings were significant, the effect sizes remained small. Certainty was not a significant mediator of anxious attachment and emotion regulation difficulty.

Results also showed that uncertainty did not significantly mediate the relationships between avoidant attachment and problems with clarity and awareness. Certainty did not significantly mediate the relationship between anxious avoidant and problems with modulating emotions/behaviors.

Figure 13

Simple Mediation Model: Unstandardized Coefficients in the Indirect Effect of Anxious

Attachment on Limited Ability to Modulate Through Certainty
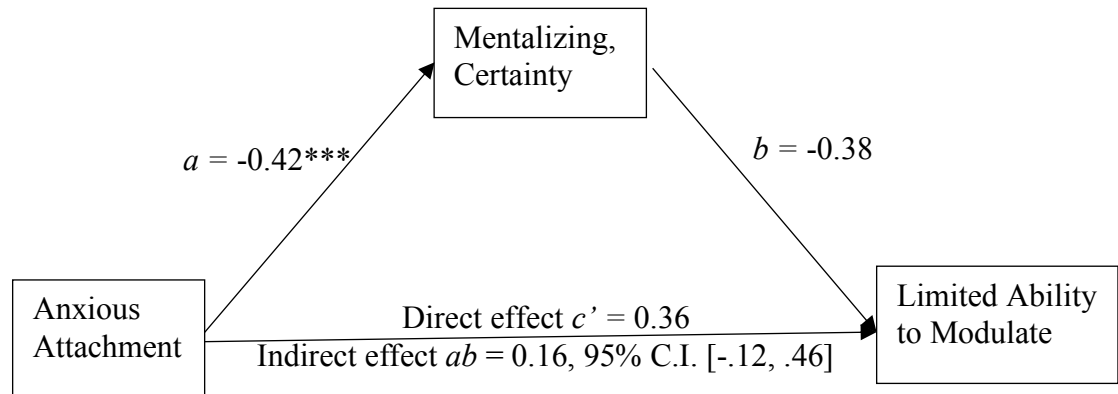
Note. Completely standardized indirect effect *ab* = 0.0654, *SE* = .0624, 95% CI [-.0493,

.1953]

***$p < .001$

CHAPTER VI

Discussion

This section begins with a review of the purpose of the study and is followed by an explanation of the findings from the main and exploratory studies. Limitations of the study are discussed along with possible future directions for research.

Purpose of the Study

The main goal of the study was to investigate how the interaction of different social participation conditions (ostracism, overinclusion) and attachment styles impact two regulatory mechanisms, specifically, mentalizing capacities and emotion regulation. Prior research on social participation and attachment have mostly focused on the impact of their interaction on a sense of belonging, self-esteem, control, meaningful existence, and distress (Arriaga et al., 2014; Carvallo & Gabriel, 2006; Yaakobi & Williams, 2016) and not on the specific regulatory mechanisms that have to do with reflecting on mental states or with managing emotions. This study, therefore aimed at addressing this existing gap, first as it relates to the differential impact of ostracism on the relationship between attachment styles and two regulatory mechanisms, namely, 1) state and online mentalizing, and 2) state emotion regulation. Thus, it was expected that both anxious and avoidant attachment would relate to lower state and online mentalizing in the ostracism condition. It was also expected that both anxious and avoidant attachment would relate to greater state emotion regulation difficulties in the ostracism condition.

Since a preferential status can provide a sense of social value and satisfy relational needs, this study also examined the impact of overinclusion on attachment and regulatory mechanisms. Not only has overinclusion been associated with a greater

satisfaction of fundamental needs (Niedeggen et al., 2014; Simard & Dandeneau, 2018), it has also been associated with decreased negative mood (De Panfilis et al., 2015), particularly in insecurely attached individuals with emotion regulation problems and mentalizing difficulties. This suggests overinclusion may contribute to a change in the ability to reflect on emotions and regulate them. Whereas previous studies (De Panfilis et al., 2015; Weinbrecht et al., 2018) have examined the effect of the interaction between overinclusion and specific psychological disorders on mood and fundamental needs, the current study investigated the impact of the interaction between overinclusion and attachment style on state emotion regulation and state and online mentalizing. Thus, it was expected that both anxious and avoidant attachment would relate to better state and online mentalizing in the overinclusion condition. It was also expected that both attachment styles would related to less state emotion regulation difficulties in the overinclusion condition.

Since regulatory capacities are not merely stable traits that remain unchanged across time, but instead, can fluctuate depending on the situation and the level of emotional arousal occasioned by the context, state-based measures were used. Previous studies (Baumeister et al., 2005; Davidson et al., 2019; Gross, 1998) have either used trait-based emotion regulation measures, physiological markers, or in-person behavior-based measures to examine the relationships between attachment and emotion regulation and between ostracism and emotion regulation. Trait-based measures provide information only about an individual's overall tendency and do not capture variability over time and the potential impact of situational factors. Since physiological indicators and in-person behavior-based methods require special equipment or observation, they are

impractical for larger scale online studies. Furthermore, behavior or task-based measures do not capture the internal psychological processes involved in emotion regulation. Therefore, unlike previous studies, the current study used a state-based self-report measure, the State Difficulties in Emotion Regulation Scale (S-DERS; Lavender et al., 2017) to assess momentary changes in emotion regulation difficulties in the context of different social participation conditions.

To further address the main research question, the current study used performance-based measures, such as the Reading the Mind in the Eyes Test (RMET; Baron-Cohen, et al., 2001) to assess state mentalizing, and the Movie for the Assessment of Social Cognition (MASC; Dziobek et al., 2006) to assess online (in-vivo) mentalizing. Performance-based measures tend to be less susceptible to manipulation in the form of self-deception and faking, unlike self-reporting measures, such as the Reflective Functioning Questionnaire (RFQ; Fonagy et al., 2016) and introspective assessments, such as the Reflective Functioning Scale (RFQ; Fonagy et al., 1998). State mentalizing was measured by calculating the change in performance on the RMET, a test of mental state attribution and complex facial recognition. Online mentalizing was measured by calculating the total score on the MASC, a video-based test of mental state recognition in complex situations close to everyday real context, primarily related to friendships and close romantic relationships.

Finally, a secondary goal of this study was to explore whether dispositional mentalizing mediated the relationship between attachment and state emotion regulation in the context of an aversive social condition. Mentalizing involves the ability to reflect on, contextualize and attribute meaning to mental states, while emotion regulation involves

the ability to effectively respond to emotional experiences in order to achieve an end. Studies (Hudson & Jacques, 2014; Meyebovsky et al., 2019; Schwarzer et al., 2021) indicate mentalizing capacities predict emotion regulation, and this is consistent with the neurodevelopmental model (Decety, 2010) and theoretical position that mentalizing capacities are preconditions to adaptive emotion regulation (Fonagy & Allison, 2012; Fonagy et al., 2002; Schipper & Peterman, 2013). As previously discussed, attachment is associated with mentalizing capacity (Fonagy & Target, 1997; Meins, 1997; Nazarro et al., 2017). Given these relationships, it was expected that dispositional mentalizing would mediate the relationship between attachment and state emotion regulation. It was also expected that distinct impairments in dispositional mentalizing would mediate the relationship between different insecure attachment styles and distinct emotion regulation difficulties.

Explanation of the Findings from the Main Study

This was the first study to explore how attachment and social participation impacted self-regulatory mechanisms, namely, emotion regulation and mentalizing. As expected, this study found that anxious attachment was associated with greater state emotion regulation difficulties in the ostracism condition. This is not only consistent with previous studies that have found positive associations between ostracism and self-regulation difficulties (Baumeister et al., 2005; Davidson et al., 2019) and positive associations between anxious attachment and emotion regulation difficulties (Gillath et al., 2005; Marganska et al., 2013; Stevens, 2014), it is also consistent with research that demonstrated anxious attachment was associated with difficulty in effectively solving problems when given a rejection prime (Miller, 1996). In other words, aversive social

interactions interfere with using effective strategies for completing a goal and regulating oneself. Furthermore, the current results are consistent with the negative outcomes (e.g., lower sense of meaningful existence, lower self-esteem, lower positive mood) in studies that examined the impact of the interaction of attachment and social participation on fundamental needs satisfaction and mood (Carvallo & Gabriel, 2006; Shaver & Mikulincer, 2013; Yaakobi & Williams, 2016). At the same time, this study was the first to demonstrate that when ostracized, anxious attachment predicted greater state emotion dysregulation. Additionally, unique to this current study was the use of a self-report measure to assess the change in internal psychological processes involved in emotion regulation (S-DERS). How emotion regulation capacities adjust or are changed in aversive contexts is important for recovery from such conditions and should be considered as a mechanism that is impacting fundamental needs satisfaction, mood, and overall psychological well-being. This is suggested by studies that have demonstrated that effective emotion regulation is related to a global sense of well-being and life satisfaction (Jiang et al., 2022).

To further explore what specific state emotion regulation domains that ostracism affected in those with anxious attachment, post hoc analyses were conducted and identified two dimensions, namely, limited ability to modulate current emotional and behavioral responses (Modulate subscale) and lack of clarity about current emotions (Clarity subscale). This indicates that individuals with anxious attachment tend to not only have difficulty engaging in goal-directed behaviors when emotionally distressed, but they also experience difficulty with accessing flexible use of adaptive strategies to modulate the intensity and temporal features of their emotional responses. Furthermore,

their lack of emotional clarity (i.e., their ability to understand and clearly distinguish between the different emotions they are experiencing) may contribute to their dysregulation. The lack of awareness dimension did not appear to be significantly affected by the ostracism condition for those with anxious attachment. This is consistent with their tendency towards hypervigilance (Fraley et al., 2006; Mikulincer & Shaver, 2016) and rejection sensitivity (Downey & Feldman, 1996). This outcome is consistent with previous studies that have demonstrated anxious attachment was positively correlated with difficulty with controlling impulse, pursuing goals, clarifying emotions, accepting negative emotions, and accessing effective regulation strategies (Marganska, Gallagher, & Miranda, 2013). In sum, these results not only support the association between anxious attachment and the disposition for emotion dysregulation, but they also demonstrate the specific dimensions of emotion regulation that change and become even more problematic when in the context of attachment-related stressors, such as ostracism or social rejection.

In contrast to what was hypothesized, avoidant attachment was not associated with increased emotion regulation difficulties in the ostracism condition compared to overinclusion and inclusion. This outcome appears more aligned with the studies conducted by Yaakobi and Williams (2016a, 2016b) which found that avoidant individuals, in both individualistic and collectivistic cultures, reported less ostracism distress than more securely attached individuals. This may be because avoidant individuals typically implement denial and suppression mechanisms to protect against interpersonal distress and therefore have a higher threshold for aversive social experiences (Yaakobi & Williams, 2016a). This appears to be consistent with the

findings by Izaki, Wang, and Kawamoto (2022), which demonstrated that individuals with high avoidant attachment felt less distress, as measured by self-esteem threat, than those with low avoidant attachment in the ostracism condition.

Reports of being less affected by ostracism distress, however, may not represent the avoidant individual's inner experience, since avoidant individuals still have the general attachment needs of all human beings, albeit denied or suppressed in order to protect against social pain (Mikulincer & Shaver, 2016). Thus, those with avoidant attachment do not trust others. Instead, they tend to value their own independence and self-reliance. They are reluctant to get close in relationships and can even be dismissive of interpersonal relationships. Those who are of the dismissive avoidant type can hold themselves in a more positive light through an adaptive disengagement (Leitner et al., 2014) and defensive self-enhancement (Arriaga & Kumisharo, 2019; Mikulincer & Shaver, 2016) and view others negatively (Collins et al., 2006; Pereg & Mikulincer, 2004), and this can result in less anxiety in social situations. (The current study did not differentiate between individuals with dismissive and fearful avoidant styles.) So, compared to individuals with anxious attachment, those with avoidant attachment would appear to be less sensitive to social rejection. In this study, individuals with avoidant attachment may have also approached the Cyberball game in an already defensive manner with the expectation that others are rejecting. The ostracism condition may have reinforced their expectations of others, and in doing so, added to their sense of control and self-importance in being correct. This can further reinforce the view that they are unaffected by ostracism, therefore, the ostracism condition was not associated with an increased rate of difficulty in emotion regulation. The interaction between ostracism and

avoidant attachment carried a negligible effect size, and therefore, indicates that the lack of significant findings was likely not related to inadequate power but rather to minimal impact that ostracism has on increasing emotion dysregulation in those with avoidant attachment.

The third finding of the study was that anxious attachment and avoidant attachment did not significantly relate to less state emotion regulation difficulties in the overinclusion condition compared to inclusion, and this was in contrast to what was hypothesized. The finding that overinclusion did not moderate the relationship between both attachment styles and state emotion regulation may, in part, have been a function of the way the Cyberball parameters were set in the current study. In the current study, the number of throws to the participant in each Cyberball condition was determined by the Cyberball software and was not modified by the current investigator to a specific number or percentage. Participants in the Overinclusion condition received the ball six times (40% of the throws). The Ostracism condition received the ball only twice early in the game (13% of the throws), and the Inclusion condition received the ball five times (33% of the throws). While the number of throws or percentage in the Ostracism and Inclusion conditions were consistent with the way that the Ostracism and Inclusion conditions were defined in the Cyberball literature, the Overinclusion condition varied from the defined range of 45% to 80% received throws in the literature (De Panfilis et al., 2015; Gilboa-Schechtman et al., 2014; Izaki et al., 2022; Kawamoto et al., 2012; Simard & Dandenaeu, 2018).

Although participants reported in the manipulation check feeling overincluded during the Cyberball game, the lower percentage (40%) of throws in the overinclusion

condition may not have been sufficient enough to make an impact on state emotion regulation. A possible explanation for this discrepancy may be that individuals with anxious attachment can perceive and report subtle changes in their environmental conditions, given their tendency towards hypervigilance. So, they can detect the slight increase in the number of throws that made them stand out, even if it was not a drastic difference compared to the other players. However, this difference may not have been an "extreme" enough form of inclusion to satisfy their adjusted threshold and expectation of preferential inclusion and therefore, lacked the strength to improve emotion regulation. Similarly, individuals with avoidant attachment were still able to attend to/perceive cues of a slightly higher level of social inclusion, but the cues may not have been large enough for the avoidant individuals to register it as a change in their social value, so they may have been responding to it as if they were in the Cyberball inclusion condition. Even so, previous studies (Yaakobi & Williams, 2016) have indicated that Cyberball inclusion has not been significantly associated with improved outcomes (i.e., mood, need satisfaction) for individuals with avoidant attachment, whereas, explicit, verbal feedback that has made participants aware of their inclusion status has been related to improved outcomes (Arriaga et al., 2014; Carvalo & Gabriel, 2006). This suggests that impersonal, online Cyberball avatars are less effective agents of change for avoidant individuals given their inability to verbally communicate and convince avoidant individuals they are socially valued.

Additionally, this study's outcome appears to be in contrast to the findings suggested by De Panfilis and colleagues (2015) and Weinbrecht and colleagues (2018), which demonstrated decreased negative mood by individuals with anxious or avoidant

tendencies who were assigned to the overinclusion condition compared to those in the inclusion condition. The results of the current study were also in contrast to another study (Izaki et al., 2022) which found that individuals high on avoidant attachment reported greater maladaptive subjective responses to overincluded experiences (50% of throws) compared to inclusion experiences (33% of throws). More specifically, high avoidant individuals felt more threats to belonging and self-esteem than low avoidant individuals in the overincluded group. Izaki et al. (2022) offer possible explanations for why avoidantly attached individuals may experience overinclusion as threatening and dysregulating and why inclusion may be a sufficient condition for decreasing needs threat and regulatory problems.

As established in the attachment literature, avoidant individuals are not convinced of others' availability for emotional support, so they tend to keep away from others to maintain their self-esteem (Mikulincer & Shaver, 2016). Brain research has demonstrated that greater activity in brain regions involved in social exclusion was associated with lower self-esteem (Eisenberger et al., 2011). However, these regions for excluded conditions were negatively correlated with avoidant attachment (DeWall et al., 2012), which suggests that avoidant individuals only suppress the threat to the need related to the belief in oneself (i.e., self-esteem) by reducing activity of exclusion-related brain regions during exclusion experiences. However, avoidant individuals still have relational and belonging needs like secure individuals, so some inclusion experiences are still necessary (Carvallo & Gabriel, 2006). Receiving the ball more often in the overinclusion condition may have drawn the avoidant individuals' attention to positive characteristics, intentions, and related behaviors of other players, which then activated

awareness of attachment-related themes, including the awareness of suppressed threats, whereas inclusion or fair play was still an unobtrusive condition to the mind and its defenses. Therefore, overinclusion can be more dysregulating for individuals with avoidant attachment because they are not able to distance themselves from others' attention and engagement and are forced to confront their fear that others may become unavailable. In addition to these findings, Izaki et al. (2022) found that anxious attachment did not result in decreased distress or need threat in the inclusion (33% percent of throws) or overinclusion (50% of throws) conditions.

Finally, in contrast to what was hypothesized, the current the study found that anxious and avoidant attachment did not relate to lower state mentalizing (as measured by the RMET) and online mentalizing (as measured by the MASC) in the ostracism condition compared to overinclusion and inclusion. Interestingly instead, avoidant attachment was associated with lower online mentalizing (as measured by the MASC) in the inclusion condition. This finding is important because to this author's knowledge, this is the first to empirically demonstrate that fair play, or inclusive experiences, can negatively impact the capacity to reflect in an interpersonal context, particularly, for those with avoidant attachment.

As previously mentioned, avoidantly attached individuals mistrust others and aim to assert their own autonomy. They deny attachment needs, and therefore, hold a generally low interest in close social connections. Inclusion conditions can be perceived as an invitation to social connection. A meta-analytic review found that avoidant attachment was negatively related to connectedness with others and negatively related to constructive interaction (Li & Chan, 2012), which includes behaviors that enhance

mutual understanding and help resolve conflicts through constructive communication, cooperation, acceptance, and compromise. These are conditions or interactions that promote the exchange/sharing of mental states between individuals. However, for people with avoidant attachment, epistemic mistrust disrupts their ability to discern trustworthy information that can be helpful, productive, promote social learning, connection, and change (Choi-Kain, Simonsen, & Euler, 2022). This epistemic disregard has been reinforced by a pattern of attachment deactivation that values the protection of self-esteem and dismissal of others, which leaves them stuck in a self-focused isolated "me-mode" to cope with emotional distress rather than seek proximity and empathic support from others.

Since individuals with avoidant attachment rely on deactivation or distancing strategies, they tend to experience decreased general support, and therefore, receive limited feedback and support from others. Choi-Kain et al. (2022) has further added that the repeated presentation of a cool, unaffected exterior gives the impression of self-sufficiency and influences others to mostly reflect back an understanding and overemphasis of abilities or strengths rather than an empathic mirroring that acknowledges and expresses the patient's most vulnerable emotions. This perpetuates the cycle of self-protection via attachment deactivation, unmetabolized subjective emotional experiences, non-contingent mirroring, and underdeveloped empathic skills. This limits their opportunity to learn about multiple perspectives and expand their social cognition. As such, they are prone to make more errors in understanding and interpreting others' mental states and what motivates behavior. This is consistent with the finding that attachment-related avoidance was associated with decreased empathy (Mikulincer et al.,

2001). This has implications for their relationship satisfaction. Avoidantly attached individuals can suffer more dissatisfaction in their relationships because of their deactivating and distancing responses, whereas individuals with anxious attachment can feel joy in their relationship when they are sure of others' availability despite their sensitivity to rejection cues.

Explanation of the Findings from the Exploratory Study

In contrast to what was hypothesized, dispositional mentalizing capacity, as measured by total RFQ score, did not mediate the relationship between attachment styles and state emotion regulation difficulties. Interestingly, however, post-hoc analyses using the two dimensions of mentalizing found that both Certainty and Uncertainty mediated the relationship between avoidant attachment and emotion regulation difficulties in different directions. To review, avoidant attachment was positively associated with Uncertainty, which in turn was associated with lower state emotion regulation difficulties. In addition, avoidant attachment was negatively associated with Certainty, which in turn was associated with high state emotion regulation difficulties. These two significant paths may suggest that different forms of adult avoidance (i.e., dismissive-avoidance and fearful avoidance) related to two distinct mentalizing dimensions which impacted emotion regulation. Furthermore, these two paths and the associations within the path models suggest a need to revisit the validity of the RFQ, clarify the underlying constructs measured by the two RFQ subscales, and reconsider the position that the RFQ is a unidimensional measure of dispositional mentalizing.

In the first path, avoidant attachment was positively associated with dispositional Uncertainty, which then was associated with lower state emotion regulation difficulties.

One possible explanation may be that in reaction to rejection, separation, or loss, dismissive avoidant individuals suppressed the covert activation of their attachment system by focusing their attention away from thoughts and feelings that activate attachment-related concerns. That can involve limiting attentiveness or exploration of mental states of others. Therefore, this mentalizing uncertainty may not necessarily indicate a lack of ability, per se, to understand mental states of others but rather is a pragmatic, or functional uncertainty – an adequate level of not knowing or purposely suppressing that then results in less emotion regulation problems and therefore, low distress. This would likely occur in response specifically to negative stimuli, but not positive. Thus, this tendency towards undermentalizing can be construed as form of adaptive disengagement (Leitner, Hehman, Deegan, & Jones, 2014), a process used by individuals, such as those with dismissive-avoidant attachment, who are motivated to maintain self-esteem, particularly in the face of negative feedback.

A series of studies (Leitner et al., 2014) have not only shown that this tendency for adaptive disengagement correlated with increased positive mental states and decreased negative mental states, but they also found that the tendency for adaptive disengagement was related to greater ability to regulate emotions. Additionally, in those studies, the negative effect of an aversive social experience in the form of Cyberball ostracism was attenuated and self-esteem was higher in those participants with greater proclivity for adaptive disengagement. Lastly, those studies indicated that the processes underlying adaptive disengagement are implicit, such that an individual may be aware of this tendency but may not be cognizant of when the disengagement is occurring. This might influence other unconscious process that mitigate perceived threat. In support of

this view, it has been shown that individuals who report self-protective strategies respond to stress with decreased physiological response to stress, including decreased blood pressure activity (Taylor, Lerner, Sherman, Sage, & McDowell, 2003). This appears consistent with the study (Fraley & Shaver, 1997) that found that dismissive-avoidant participants, who were instructed to avoid thinking about and discussing what it would be like if their partners were to leave them for someone else, experienced low distress as indicated by their decrease in physiological arousal compared to the control condition. This indicates that the defensive strategy of suppression and decreased exploration of mental states may have emotion regulation benefits for those with dismissive avoidant attachment. Furthermore, this regulatory mechanism may be relatively easy for those whose view of others is negative but whose internalized sense of self-worth is high and therefore they would want to defend against any negative information that would threaten that.

A possible explanation for the second path (i.e., avoidant attachment was negatively associated with Certainty, which then was associated with high state emotion regulation difficulties) is that it may be representative of what happens with individuals with fearful avoidance. The current study, however, did not distinguish between dismissive and fearful avoidance. Although fearfully avoidant individuals are motivated to inhibit attachment related distress, they lack the regulatory mechanisms to do so successfully. This parallels those observations in research on avoidant infants showing that avoidant infants exhibited increased heart rate even though they did not overtly express distress (Ainsworth et al., 1978). Unlike those with a dismissive avoidant style, those with fearful avoidance may be unable to limit or inhibit their internal preoccupation

or attentiveness to mental states. Because of high anxiety, like those with anxious attachment, fearful avoidant individuals would experience greater social cognitive distortions and less accuracy in mentalizing (less adaptive certainty), which would result in greater emotion regulation difficulties and would further the cycle of emotional distress. This explanation, however, remains hypothetical, as the current study did not examine fearful avoidance.

Alternatively, the second path may just broadly represent both dismissive and fearful individuals subsumed under the category of avoidant attachment. In either case, avoidant attachment was associated with greater emotion regulation difficulties, and this relationship was mediated by the Certainty dimension of dispositional mentalizing (more specifically, it was mediated by low mentalizing Certainty). This relationship appears consistent if, as recent studies are suggesting (Wozniak-Prus, Gambin, Cudo, & Sharp, 2022), the Certainty scale is more representative of adaptive or optimal mentalizing and not hypermentalizing, as originally conceptualized by Fonagy et al. (2016).

Furthermore, it has been observed even in studies that have confirmed the original two-factor structure (Badoud et al., 2015; Bizzi et al., 2021; Morandotti et al., 2018) that the Certainty scale was negatively associated with various negative outcomes that are in contradiction to the theoretical assumptions that form the basis of a hypermentalizing scale. This trend was observed in a recent study (Wozniak-Prus et al., 2022) in which the Certainty scale was negatively correlated with Borderline Personality traits, mental health problems, emotion regulation difficulties and attachment related anxiety with mother, father, partner, and friend. In contrast to Fonagy's conceptualization of the Certainty scale, correlation analyses conducted in this current study support the view that Certainty

represents adequate or optimal mentalizing (refer back to Table 3). For example, Certainty was negatively correlated with state emotion regulation difficulties and lack of emotional awareness.

Post-hoc analyses of the exploratory hypothesis also showed that Uncertainty mediated the relationship between anxious attachment and state emotion regulation difficulties. More specifically, anxious attachment was positively associated with uncertainty, which in turn was negatively associated with emotion regulation difficulties. This was an interesting finding. This suggests that the mechanism for experiencing less emotion dysregulation in this sample in those with anxious attachment was not necessarily by doing more accurate mentalizing but rather by an adaptive degree of not knowing or limiting deep exploration of mental states. Individuals with attachment anxiety already tend towards hypervigilance, a sensitivity to interpersonal cues of rejection, and tend to have strong emotional and behavioral reactions to rejection or separation. These hyperactivating strategies result in dysregulation, but adopting a deactivating strategy, in terms of mentalizing, could be more self-regulating.

Overall, the exploratory study demonstrated how different aspects of dispositional mentalizing mediate the relationship between attachment and state emotion regulation in adults. These findings are important as they are the first to empirically demonstrate in what ways the different dimensions act as underlying mechanisms between attachment and state emotion regulation in the context of interpersonal stress. For example, the findings that dispositional Uncertainty was an underlying mechanism in the relationship between the insecure attachment styles and less emotion regulation difficulties may indicate that the Uncertainty scale on the RFQ may be tapping into an adaptive defensive

mechanism, although this scale has generally been construed as an impairment in mentalizing characterized by concrete thinking, "psychic equivalence," and an inability to perceive the complex mental states of self and others. Interpreting the Uncertainty scale as an adaptive defense does not necessarily stand in contradiction to the general consensus in the mentalizing literature that Uncertainty captures hypomentalizing and has been associated with negative outcomes, including personality dysfunction, emotion regulation difficulties, and insecure attachment (Wozniak-Prus et al., 2022).

Relatedly, the finding that low dispositional Certainty was an underlying mechanism in the relationship between avoidant attachment and emotion regulation difficulties was in contradiction to the conceptualization that Certainty assessed hypermentalizing, characterized by the excessive conviction in the accuracy of their beliefs about mental states. As highlighted by studies that have evaluated the RFQ (Muller et al., 2021; Wozniak-Prus et al., 2022), the Certainty scale was often positively related to mental health, and therefore, better represents adaptive characteristics. Muller et al. (2021) also pointed out that item content development and scoring procedures of the Certainty scale have likely added to this outcome. Specifically, most of the items on which the Certainty scale was based were formulated on uncertainty statements. So, calculation and interpretation of the scale was based on a denial of Uncertainty rather than statements that reflected an excessive belief in their attribution about mental states. As previously mentioned, the inverse correlations between dispositional Certainty and personality dysfunction (i.e., anxious and avoidant attachment) and state emotion regulation difficulties support the view that the Certainty scale measures adaptive, accurate mentalizing rather than hypermentalizing.

Clarification about what the two dimensions on the RFQ actually measure has simultaneously generated suggestions to use a unidimensional scoring of the RFQ because it assesses a unidimensional construct. Critics of the factor structure of the RFQ-8 (Muller et al., 2021; Wozniak-Prus et al., 2022) suggest that the measure captures hypomentalizing (i.e., having too little certainty about mental states). Wozniak-Prus et al. (2022) has demonstrated that the unidimensional RFQ has nearly identical patterns of correlations that the Uncertainty scale has with personality traits, mental health problems, emotion regulation difficulties and attachment styles. While the correlations in the current study lend support for the view that the RFQ is unidimensional, the interpretation of what construct the unidimensional RFQ measures differs from Muller et al. (2021) and Woznkiak-Prus et al. (2022). In the current study, the unidimensional RFQ (i.e., total RFQ score) appears to capture adequate or optimal mentalizing instead of an uncertainty about mental states. Both the total RFQ and Certainty scale were correlated with online mentalizing (total score on MASC) and the strength of those relationships were moderately strong. Additionally, both the total RFQ and Certainty scale were positively correlated with state mentalizing (RMET), although the strength of those relationships was small (see Table 3). Lastly, both the total RFQ and the Uncertainty scale had inverse relationships to emotion regulation difficulties and attachment insecurities. The interpretation of the unidimensional RFQ as representing adequate or optimal mentalizing may be a function of the scoring suggestion which was taken from Badoud et al. (2018) and Gambin et al., (2020) and which appears to be different from that suggested by Muller et al. (2021).

Finally, other the exploratory hypotheses that a) uncertainty on the RFQ would mediate the relationship between attachment avoidance and deactivating/distancing responses and b) certainty on the RFQ would mediate the relationship between attachment anxiety and hyperactivating/emotionally reactive responses were not supported. Specifically, uncertainty did not mediate the relationships between avoidant attachment and problems with clarity and awareness; Certainty did not mediate the relationship between anxious avoidant and problems with modulating emotions/behaviors.

Limitations

The current study had several limitations unique to conducting research on MTurk. First, although MTurk enables the collection of a more diverse sample, the current sample still lacked wider ethnic/racial representation and consisted mostly of White, highly educated participants, which could warrant concerns about generalizability of the findings. Other ethnicities/races and people of varied education levels may have different norms, expectations, or assumptions regarding different types of social participation experiences and ways of viewing the self and others; this could impact their reflective processes and how they regulate emotions. As a consequence of this selection bias, the responses to the social participation conditions, scores and measured means in the current study (e.g., anxious attachment or avoidant attachment) mostly reflect those from White, highly educated participants.

Second, the context in which participants completed the present study was not controlled and may have impacted the results. Environmental influences (e.g., distractions, other people helping the participant complete the surveys) that are unknown

or beyond the control of the researcher can add systematic measurement error and potentially impact reliability and validity. These uncontrolled variables have been cited by researchers as potential limitations/concerns over MTurk participants (Chandler et al., 2014; Clifford & Jerit, 2016; Necka et al., 2016). Although experimental studies on MTurk similar to the current study using online confederates/avatars and knowledge tasks have shown similar results as controlled studies in the lab (Horton et al., 2011; Rand et al., 2012; Summerville & Chartier, 2012), researchers still recommend using novel screeners to control for attention and comprehension, and monitoring MTurk forums to control for possible sharing of information regarding studies (Peer et al., 2017; Thomas & Clifford, 2017). While the current study implemented the former, the investigator did not monitor MTurk forums for any study leaks.

Third, MTurk participants, or workers, who have completed a large number of human-intelligence tasks ("HITs") may no longer be "naive" respondents but instead have become professional test-takers. As they may be familiar with the same measures from other tasks, they may become bored, pay less attention to completing the surveys, answer the way they believe the researcher wants them to, and may have become skilled at by-passing criteria. Therefore, their responses may not accurately reflect their thinking, feelings, and experiences, and this threatens the validity of the results. Indeed, some studies have shown that MTurk participants with previous exposure to the same tests perform better than naive workers (Bialek & Pennycook, 2017) and even obtain the maximum scores possible on measures (Haigh, 2016). Previous MTurk exposure to the current study's measures may have impacted the non-significant results; however, there is no way of knowing whether that was a contributor since the current researcher did not

ask if participants had previously encountered the measures. To mitigate this in future research, setting up the new naivete feature on MTurk allows researchers to exclude the most active "superworkers" so they can recruit less experienced workers who are less likely to have participated in similar research.

A fourth limitation to the current study was the operationalization of the Cyberball overinclusion condition, which was defined as a condition in which the participants received 40% of the throws. Operationalizing overinclusion outside of the typical range of 45% to 80% of throws found in the Cyberball literature presents a threat to construct validity, and therefore, may have impacted its effect on regulatory mechanisms. An overinclusion condition of 40% throws may only be a mild form of preferential inclusion status, whereas 45% and above more clearly conveys "extreme" inclusion. In contrast to the current study, other studies (De Panfilis et al., 2015; Weinbrecht et al., 2018) demonstrated improved outcomes in individuals with insecure attachment tendencies who were assigned to the Cyberball overinclusion condition (45% of throws).

With regards to measures, a limitation of the main study was its reliance on a self-report measure to assess change in state-based emotion regulation difficulties. Self-report measures are susceptible to social desirability bias, particularly for individuals who are less willing to report or acknowledge negative emotional reactions due to an interest in maintaining a positive self-image, such as avoidantly attached individuals with a dismissive tendency. Future studies could include an online, implicit task-based emotion regulation measure, such as the Emotional Conflict Adaptation task that combines the Stroop paradigm and a variant of the congruency sequence effects originally reported in a

study on non-emotional conflict tasks (Gratton, Coles, & Donchin, 1992). This task

assesses the participants' ability to manage emotional conflict by measuring their ability

to exert control in order to make adjustment to variations between trials. Implicit

emotion regulation is measured by comparing their response times across different trials

as a result of to those variations.

Another limitation of the main study was the failure of the mentalizing measures

to fully capture the multidimensional nature of the construct of mentalizing, including the

polarities within those dimensions. The two measures used to assess state-based

mentalizing (RMET) and online mentalizing (MASC) primarily captured other-focused

mentalizing and not self-focused mentalizing. Although the format of the MASC is

better suited to capture more dimensions and their polarities (i.e., cognitive-affective,

implicit-explicit, external-internal), it does not calculate scores for those polarities but

still only calculates a global/total score and three impairment scores. Future studies

should consider developing state-based mentalizing measures that specifically assess for

the components of the four dimensions. Such a measure may aid in better understanding

to what degree the specific components within the different dimensions are affected by

different social participation conditions. This can have practical implications and can

inform therapeutic interventions and lead to more nuanced approaches for how to

improve specific aspects or impairments in mentalizing.

A related limitation regarding the mentalizing measures was the reliance on the

RMET to capture state based mentalizing. Some have argued that the RMET relates to a

different aspect of social cognition, namely, the cognitive-perceptual aspect, and

therefore, mainly deals with cognitive functioning, particularly emotion recognition and

reasoning about cognitive and/or affective mental states (Davidsen & Fosgerau, 2015).

As such, it can be considered more of a theory of mind (ToM) task. Furthermore, some

studies have indicated a limited relationship between ToM and attachment (Fossati et al.,

2018; Laranjo, Bernier, Meins, & Carlson, 2014; Meins et al., 2002), so this may have

accounted for the non-significant and small effect findings. In contrast, the MASC

relates to the relational emotional aspect of social cognition and appears to be more

consistent with the theoretical model of Fonagy and his team (Fossati et al., 2018) since it

is intended to measure the ability to recognize mental states in complex situations close to

everyday real context, particularly those related to close romantic relationships and

friendships. Furthermore, because the measure (along with an attachment-related

stressor, such as ostracism) unconsciously activates the participants' IWM and

emotionally engages them in the performance of the task, the results more closely

resemble those obtained by using interview-based methods (Janczak, 2018). The MASC

may potentially be a better measure of state-based mentalizing compared to the RMET,

as indicated by emerging studies (Fuchs & Taubner, 2019) that have explored the

interaction of attachment style and attachment-related mood on short term change in

mentalizing by splitting the MASC in two parts and measuring the difference between

MASC scores from pre and post experimental condition.

Lastly, although the current study found two significant findings related to the

principal research question and three significant findings related to the exploratory study,

their effect sizes remained small. This phenomenon may be an artifact of the large

sample size that was collected and it is, therefore, more meaningful to interpret the effect

sizes of these relationships.

Future Directions

The main study's aim was to examine whether interaction effects between attachment styles and participation conditions impacted regulatory mechanisms. This study showed that the interaction between anxious attachment and ostracism resulted in greater difficulties in emotion regulation. Future studies can bridge this current finding with previous studies that have found that the interaction between anxious attachment and ostracism resulted in decreased needs satisfaction and increased negative mood. Emotion regulation may be a potential underlying mechanism in the relationship between these variables, given regulatory capacities contribute to psychological well-being. The direction of the relationship between needs satisfaction and emotion regulation may also be in reverse, such that threats to basic psychological needs would predict emotion regulation difficulties. In a study examining the impact of family functioning, satisfaction of basic psychological needs, and emotion regulation on depression, emotion regulation was inversely related to satisfaction of basic psychological needs (Shalchi & Shahna, 2018). However, the direction of the path indicated that positive needs satisfaction predicted negative emotion regulation difficulties, which then predicted lower depression. Hence, future research can examine whether emotion regulation mediates the relationship between anxious attachment and needs satisfaction/psychological distress (or whether needs satisfaction mediates the relationship between anxious attachment emotion regulation), and whether that mediating effect depends on ostracism, a moderated mediation model.

Similarly, future studies can also build on the other significant finding of this study that showed the interaction between avoidant attachment and inclusion resulted in

decreased online mentalizing. Future research can investigate whether mentalizing mediates the relationship between avoidant attachment and needs satisfaction/psychological distress, and whether a mediating effect depends on inclusion. A more modest future study could also simply be the addition of a categorical attachment measure (Bartholomew & Horowitz, 1991) or the categorical assignment of participants to groups based on Fraley's scoring recommendations (Fraley, 2012) to explore whether dismissive avoidant and fearful avoidant interact differently with inclusion and impact mentalizing.

In addition, future studies examining the impact of overinclusion using the Cyberball paradigm should not only clearly define what overinclusion means to improve construct validity, but they should also investigate if there are different overinclusion conditions that yield optimal outcomes for different attachment styles. For example, when defining overinclusion, 40% of throws may be defined as the mildest form of overinclusion, whereas 45% may be sufficient to be considered an "extreme" form of inclusion, given it appears to be the minimum percentage of throws associated with improved outcomes with participants who have insecure attachment tendencies (De Panfilis et al., 2015; Weinbrecht et al., 2018). Furthermore, overinclusion studies can investigate if there is a significant difference in improved outcomes between 45%, 50%, and 80% throws. For investigating if different overinclusion conditions differentially impact attachment and outcome variables, such as regulatory mechanisms, those with more anxious tendencies may need blatant signs of overinclusion to yield positive self-regulatory outcomes, given their mistrust of others' availability. In contrast, those with more avoidant tendencies may benefit from a mild form of Cyberball overinclusion

which still feels like an inclusion condition and which is followed by clear feedback of their mild overinclusive status. This is because those with avoidant attachment, particularly the dismissive type, appear to respond positively to explicit feedback indicating their inclusive status and social value among other participants (Arriaga et al., 2014; Carvallo & Gabriel, 2006). However, very drastic overinclusive conditions may be experienced as more threatening and dysregulating for those with avoidant attachment, as demonstrated by the study conducted by Izaki et al. (2002; 50% throws). Future studies could, therefore, compare the impact of different degrees of overinclusion on avoidant attachment and regulatory mechanisms.

The aim of the exploratory study was to examine if dispositional mentalizing mediated the relationship between attachment styles and state emotion regulation in the context of an aversive social condition.   Future studies could also replicate the exploratory study and instead measure state mentalizing as the mediating variable. This can be done by administering a state-based mentalizing measure and state-based emotion regulation in a counterbalanced way before and after the experimental. This would allow us to measure how the variability in mentalizing then impacts variability in emotion regulation in the context of an emotionally arousing interpersonal context.

Lastly, future studies on mentalizing should extend beyond its relation to human attachment systems and explore its functioning within a broader social environment, including other "thinking" systems that appear to simulate an understanding of mental states (i.e., artificial intelligence, algorithms). Researchers can examine how increasing interaction with and reliance on machine and deep learning alter our mentalizing capacities, given that these non-human systems are increasingly organizing and

anticipating our behaviors, tendencies, and desires. In investigating those ideas, researchers can also explore mentalizing from three perspectives: mentalizing others from the perspective of the self, mentalizing the self from the perspective of the self, and mentalizing the self from the perspective of the others (Wu, Fung, & Mobbs, 2022).

Conclusions and Clinical Recommendations

In conclusion, the current study made several important contributions to the literature. First, this was the first study to examine how social participation conditions differentially interacted with attachment styles and impacted two self-regulatory mechanisms that are important for recovery from psychological distress and the maintenance of psychological well-being: state emotion regulation and state/online mentalizing.

As hypothesized, anxious attachment was related to greater state emotion regulation difficulties in the ostracism condition. This was consistent with previous studies that have shown a positive association between anxious attachment and dispositional emotion dysregulation (Marganska et al., 2013), and has also added to the literature by demonstrating that in the context of momentary attachment related stressors (i.e., ostracism/social exclusion), emotional modulation, behavioral control, and clarity about current emotional experience were the specific dimensions of emotion regulation that were momentarily and most negatively affected. This has important clinical implications when working with individuals with anxious attachment who struggle with social acceptance and rejection. Such individuals would benefit from interventions that not only decrease their momentary confusion about their current emotions but also increase understanding and clarity about the emotions they are experiencing.

Furthermore, they would benefit from skills that modulate the intensity of their emotions in the moment and also benefit from effective coping strategies that enable them to accomplish their goals despite negative emotions.

Second, the finding that avoidant attachment related to lower online mentalizing in the inclusion condition contributes to the existing literature. Just as previous studies have shown that inclusive experiences for individuals with avoidant attachment negatively impact states related to psychological well-being (i.e., positive mood and satisfactory levels of fundamental needs), the current study demonstrated that inclusion negatively affects a key regulatory mechanism - i.e., online mentalizing - that also plays a crucial role in psychological well-being. In clinical work, therefore, it is important to keep in mind that not all inclusive or collaborative experiences enhance reflective capacities, particularly, the capacity to reflect on others' mental states (as demonstrated by performance on the MASC). In the case of the current study, participating in an online ball tossing game does not necessarily entail an understanding of complex mental states and, therefore, is different from mentalizing. Joint attention that focuses primarily on skills, behavior (as in Cyberball), resilience, or even prematurely on trying to understand others' perspectives before exploring the most vulnerable aspects of a patient's experience can hinder emotional self-awareness and empathy for others. This can perpetuate the cycle of attachment deactivation, unrecognized mental states, non-contingent mirroring, epistemic disregard, and impaired perspective taking. Treatment with individuals with avoidant attachment should, therefore, prioritize the exploration of the individual's perspective ("I-mode" or "me-mode") before initiating efforts to change

the patient's perspective, introduce them to others' point of view, or engage them in social collaboration and learning ("we-mode").

The exploratory study contributed to our understanding of the intermediary role of aspects of dispositional mentalizing in the relationship between insecure attachment and state emotion regulation in the context of social stress. The finding that avoidant and anxious attachment were negatively related to state emotion regulation difficulties via dispositional Uncertainty has important theoretical and clinical implications. While the Uncertainty scale was originally conceptualized as an impairment in mentalizing, the current study suggested an adaptive aspect and less pathologized view of hypomentalizing. As an underlying mechanism that accounts for the relationship between insecure attachment and less emotion regulation difficulties, it functions as an adaptive strategy that facilitates self-regulation. This may be particularly applicable to individuals with insecure attachment who do not experience severe emotional or personality dysfunction. For individuals with avoidant attachment, this tendency can be reconceptualized as a strength or advantageous defense that maintains survival and functioning within a threatening or stressful context. Overreliance on this tendency in less threatening situations is when it becomes maladaptive. Clinical work should not only help avoidant individuals to appreciate the benefits and function of the uncertain (hypomentalizing) tendency but it should also help them to become aware of its disadvantages and develop a curious disposition that eventually promotes an optimal level of certainty (adequate mentalizing). For individuals with anxious attachment, the mechanism for improving emotion regulation is not necessarily to try mentalizing more accurately via more certainty because that continues an overreliance on a strategy they

already engage in excessively. Rather, clinical work should promote an openness to a tentative knowing, not knowing, and the possibility of being mistaken when it comes to understanding others and their own mental states.

Lastly, the current study has implications for using the RFQ in future research. The current study found that both dispositional Certainty and the unidimensional RFQ represented adaptive or optimal mentalizing. The latter finding, however, was in contrast to previous reviews (Muller et al., 2021; Wozniak -Prus et al., 2022) which suggested that the unidimensional RFQ represented uncertainty. When using the unidimensional approach in future studies, researchers need to state which scoring system the total score is based on (Badoud et al., 2018; Gambin et al., 2020; Muller et al., 2021) as that will determine if the total score represents uncertainty about mental states or adequate mentalizing. Alternatively, if Fonagy and colleagues (2016) want to maintain a two-factor measure of mentalizing, they should consider revising aspects of the RFQ, particularly the items on the Certainty scale. To improve construct validity, they should reword the items so that they represent more closely the construct of hypermentalizing.

References

Agrawal, H.R., Gunderson, J., Holmes, B.M., & Lyons-Ruth, K. (2004). Attachment
    Studies with Borderline Patients: A review, *Harvard Review of*
    Psychiatry, 12(2), 94-104, DOI: 10.1080/10673220490447218.

Ainsworth, M., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment: A*
    psychological study of the strange situation. Lawrence Erlbaum.

Andreou, M., Skrimpa, V. (2020). Theory of Mind Deficits and Neurophysiological
    Operations in Autism Spectrum Disorders: A Review. *Brain Sciences, 10*, 393-
    405, https://doi.org/10.3390/brainsci10060393.

Aron, A., Aron, E.N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the
    structure of interpersonal closeness. *Journal of Personality and Social*
    Psychology, 63, 596-612. http://dx.doi.org/10.1037/0022-3514.63.4.596.

Arriaga, X.B., Capezza, N.M., Reed, J.T., Wesselman, E.D., & Williams, K.D. (2014).
    With partners like you, who needs strangers? Ostracism involving a romantic
    partner. *Personal Relationships, 21,* 557-569. Doi: 10.1111.pere.12048.

Arriaga, X.B., & Kumashiro, M. (2019). Walking a security tightrope: Relationship
    induced changes in attachment security. *Current Opinion in Psychology, 25*, 121-
    126.

Aviram, R.B. (2005). The social object and the pathology of prejudice. In
    J.S. Scharff, & D.E. Scharff, (Eds.), *The Legacy of Fairbairn and Sutherland*
    (pp. 227-236). Routledge.

Aviram, R.B. (2007). Object relations and prejudice: From in-group favoritism to out
    group hatred. *International Journal of Applied Psychoanalytic Studies, 4*(1), 4-14.

Badoud, D., Luyten, P., Fonseca-Pedrero, E., Eliez, S., Fonagy, P., & Debbané, M. (2015). The French Version of the Reflective Functioning Questionnaire: Validity Data for Adolescents and Adults and Its Association with Non-Suicidal Self-Injury. *PLOS ONE, 10*(12): e0145892. https://doi.org/10.1371/journal.pone.0145892.

Badoud, D., Prada, P., Nicastro, R., Germond, C., Luyten, P., Perroud, N., & Debbane, M. (2018). Attachment and reflective functioning in women with personality disorder. *Journal of Personality Disorders, 32*(1), 17-30.

Ballespi, S., Vives, J., Sharp, C., Tobar, A., & Barrantes-Vidal, N. (2019). Hypermentalizing in social anxiety: Evidence for a context-dependent relationship. *Frontiers in Psychology, 10*: 1501-1512. doi: 10.3389/fpsyg.2019.01501.

Baron-Cohen, S. (2001). Theory of mind in normal development and autism. *Prisme, 34,* 174-183.

Baron-Cohen, S. (2005). The empathizing system: a revision on the 1994 model of the mindreading system. In B.J. Ellis & D.F. Bjorklund (Eds.), *Origins of the Social Mind: Evolutionary Psychology and Child Development.* (pp. 468-492). Guilford.

Baron-Cohen, S., Leslie, A.M., & Frith, U. (1985). Does the autistic child have a "theory of mind"? *Cognition, 21*(1), 37-46.

Baron-Cohen, S., Wheelwright, S., Hill, J., Raste, Y., & Plumb, I. (2001). The "Reading the Mind in the Eyes" test revised version: A study with normal adults, and adults with Asperger syndrome or high-functioning autism. *The Journal of Child*

Psychology and Psychiatry and Allied Disciplines, 42(2), 241-251. doi:
10.1017/S002196001006643.

Bartels, A., & Zeki, S. (2004). The neural correlates of maternal and romantic love.
NeuroImage, 21 (3), 1155-1166.

Bartholomew, K., & Horowitz, L.M. (1991). Attachment styles among young adults: A
test of the four-category model. *Journal of Personality and Social Psychology,
61*(2), 226-244.

Bauman, Z. (1992). *Mortality, immortality, and other life strategies.* Stanford University
Press.

Baumeister, R.F., Brewer, L.E., Tice, D.M., & Twenge, J.M. (2007). Thwarting the need
to belong: Understanding the interpersonal and inner effects of social exclusion.
Social and Personality Psychology Compass, 1(1), 506-520.

Baumeister, R.F., DeWall, C.N., Ciarocco, N.L., & Twenge, J.M. (2005). Social
exclusion impairs self-regulation. *Journal of Personality and Social Psychology,
88*(4), 589-604.

Baumeister, R.F., & Leary, M.R. (1995). The need to belong: desire for interpersonal
attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3),
497-529.

Baumeister, R. F., & Twenge, J. M. (2003). The social self. In T. Millon & M. J. Lerner
(Eds.), *Handbook of psychology: Personality and social psychology* (Vol. 5, pp.
327-352). John Wiley.

Beck, A.T., Davis, D.D., Freeman, A. (2015). *Cognitive therapy of personality
disorder* (3rd ed.). Guilford Press.

Berant, E., Mikulincer, M., & Shaver, P. R. (2008). Mothers' attachment style, their mental health, and their children's emotional vulnerabilities: A 7-year study of children with congenital heart disease. *Journal of Personality*, *76*(1), 31-66.

Bernstein, M.J., & Claypool, H.M. (2012). Not all social exclusions are created equal: Emotional distress following social exclusion is moderated by exclusion paradigm. *Social Influence, 7*(2), 113-130.

Bernstein, M. J., Young, S. G., Brown, C. M., Sacco, D. F., & Claypool, H. M. (2008). Adaptive responses to social exclusion: Social rejection improves detection of real and fake smiles. *Psychological Science*, *19*(10), 981–983. https://doi.org/10.1111/j.1467-9280.2008.02187.x

Bialek, M., & Pennycook, G. (2017). The cognition reflection test is robust to multiple exposures. *Behavior Research Methods, 50,* 1953-1959.

Bizzi, F., Riva, A., Borelli, J.L, Charpentier-Mora, S., Bomba, M., Cavanna, D., & Nacinovich, R. (2021). The Italian version of the Reflective Functioning Questionnaire: Validity within a sample of adolescents and associations with psychological problems and alexithymia. *Journal of Clinical Psychology, 78*(4), 503-516.

Blackhart, G.C., Nelson, B.C., Knowles, M.L., & Baumeister, R.F. (2009). Rejection elicits emotional reactions but neither causes immediate distress nor lowers self-esteem: A meta-analytic review of 192 studies on social exclusion. *Personality and Social Psychology Review, 13*(4), 269-309.

Bosquet, M., & Egeland, B. (2006). The development and maintenance of anxiety

symptoms from infancy through adolescence in a longitudinal sample. *Development and Psychopathology, 18*, 517-550.

Bouchard, M.A., Target, M., Lecours, S., Fonagy, P., Trembly, L.M., Schachter, A., & Stein, H. (2008). Mentalization in adult attachment narratives: Reflective functioning, mental states, and affect elaboration compared. *Psychoanalytic Psychology, 25*(1), 47-66.

Bowlby, J. (1969) *Attachment and loss.* Basic Books.

Bowlby, J. (1977). The making and breaking of affectional bonds: Aetiology and psychopathology in the light of attachment theory. *British Journal of Psychiatry*, *130,* 201-210. doi:10.1192/bjp.130.3.201.

Brennan, K., Clark, C., Shaver, P. (1988). Self-report measures of adult romantic attachment. In J. Simpson and W. Rholes (Eds.), *Attachment theory and close relationships.* Guilford Press.

Brennan, K.A., Wu, S., & Loev, J. (1998). Adult romantic attachment and individual differences in attitudes towards physical contact in the context of adult romantic relationships. In J. Cassidy & P.R. Shaver (Eds.) *Handbook of attachment: Theory, research and clinical applications* (pp. 394-428). Guilford Press.

Buckley, K.E., Winkel, R.E., & Leary, M.R. (2004). Reactions to acceptance and rejection: Effects of levels and sequence of relational evaluation. *Journal of Experimental Social Psychology, 40,* 14-28. http://dx.doi.org/10.1016/S0022-1031(03)00064-7.

Bzdok, D., Langner, R., Schilbach, L., Engemann, D. A., Laird, A. R., Fox, P. T., &

Eickhoff, S. (2013). Segregation of the human medial prefrontal cortex in social cognition. *Frontiers in Human Neuroscience, 7,* 1-17. https://doi.org/10.3389/fnhum.2013.00232.

Cacioppo, J.T., & Patrick, W. (2008). *Loneliness: Human nature and the need for social connection.* W.W. Norton & Company.

Cai, R. Y., Richdale, A. L., Uljarević,M., Dissanayake, C.,& Samson, A.C. (2018). Emotion regulation in autism spectrum disorder: Where we are and where we need to go. *Autism Research, 11*(7), 962–978. https://doi.org/10.1002/aur.1968.

Caldwell, J.G., & Shaver, P.R. (2012). Exploring the cognitive-emotional pathways between adult attachment and ego-resiliency. *Individual Differences Research, 10,* 141-152.

Campbell, L., Simpson, J. A., Boldry, J., & Kashy, D. A. (2005). Perceptions of conflict and support in romantic relationships: The role of attachment anxiety. *Journal of Personality and Social Psychology, 88,* 510–531. doi:10.1037/0022-3514.88.3.510.

Carter-Sowell, A.R., Chen, Z., & Williams, K.D. (2008). Ostracism increases social susceptibility. *Social Influence, 3*(3), 143-153.

Carvallo, M., & Gabriel, S. (2006). No man is an island: The need to belong and dismissing avoidant attachment style. *Personality and Social Psychology Bulletin, 32*(5), 697–709. https://doi.org/10.1177/0146167205285451.

Cassidy, J. (1994) Emotion regulation: Influences of attachment relationships. *Monographs of the Society for Research in Child Development, 59*(2), 228-249.

Cassidy, J., Lichtenstein-Phelps, J., Sibrava, N.J., Thomas Jr., C.L, Borkovec, T.D.

(2009). Generalized anxiety disorder: Connections with self-reported attachment. *Behavior Therapy, 40*(1), 23-38.

Chandler, J., Mueller, P., & Paolacci, G. (2014). Nonnaivete among Amazon Mechanical Turk workers: Consequences and solutions for behavioral researchers. *Behavior Research Methods, 46*(1), 112-130.

Choi-Kain, L.W., & Gunderson, J.G. (2008). Mentalization: Ontogeny, assessment, and application in the treatment of borderline personality disorder. *American Journal of Psychiatry, 165*(9), 1127-1135.

Choi-Kain, L.W., Simonsen, S., & Euler, S. (2022). A mentalizing approach for narcissistic personality disorder: Moving from "Me-mode" to "We-mode." *American Journal of Psychotherapy, 75*(1), 38-43.

Chun, D.S., Shaver, P.R., Gillath, O., Mathews, A., & Jorgensen, T.D. (2015). Testing a dual process model of avoidant responses. *Journal of Research in Personality, 55*, 75-83.

Claypool, H.M., & Bernstein, M.J. (2019). Exclusion and its impact on social information processing. In S.C. Rudert, R. Greifeneder, & K.D. Williams, (Eds.) *Current directions in ostracism, social exclusion, and rejection research.* Routledge.

Clifford, S., & Jerit, J. (2016). Cheating on political knowledge questions in online surveys: An assessment of the problem and solutions. *Public Opinion Quarterly, 80*(4), 858-887.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*, (2nd ed.). Erlbaum.

Collins, N.L., Ford, M.B., Guichard, A.C., & Allard, L.M. (2006). Working models of

attachment and attribution processes in intimate relationships. *Personality and Social Psychology Bulletin, 32*(2), 201-219.

Colonnesi, C., Draijer, E.M., Stams, G.J.J.M., van der Bruggen, C.O., Bögels, S.M., & Noom, M.J. (2011) The relation between insecure attachment and child anxiety: A meta-analytic review, *Journal of Clinical Child & Adolescent Psychology, 40*(4), 630-645, DOI: 10.1080/15374416.2011.581623.

Contardi, A., Imperatori, C., Penzo, I., Del Gatto, C.,& Farina, B. (2016). The association among difficulties in emotion regulation, hostility, and empathy in a sample of young Italian adults. *Frontiers in Psychology, 7*, 1068-1077. https://doi.org/10.3389/fpsyg.2016.01068.

Cutrona, C.E., & Russell, D.W. (1987). The provisions of social relationships and adaptation to stress. *Advances in Personal Relationships, 1,* 37-67.

Davidsen, A.S., & Fosgerau, C.F. (2015). Grasping the process of implicit mentalization. *Theory & Psychology, 25*(4), 434-454.

Davidson, C.A., Willner, C.J., van Noordt, S.J.R., Banz, B.C., Wu, J., Kenney, J.G., Johannesen, J.K., & Crowley, M.J. (2019). One-month stability of cyberball post exclusion ostracism distress in adolescents. *Journal of Psychopathology and Behavioral Assessment*, *41*(3), 400–408. https://doi.org/10.1007/s10862-019-09723-4.

Decety, J. (2010). The neurodevelopment of empathy in humans. *Developmental Neuroscience,32*, 257–267. https://doi.org/10.1159/000317771.

De Panfilis, C., Riva, P., Preti, E., Cabrino, C., & Marchesi, C. (2015). When social

inclusion is not enough: Implicit expectations of extreme inclusion in borderline

personality disorder. *Personality Disorders: Theory, Research, and Treatment,*

6(4), 301-309.

DeWall, C. N., & Baumeister, R. F. (2006). Alone but feeling no pain: Effects of social

exclusion on physical pain tolerance and pain threshold, affective forecasting, and

interpersonal empathy. *Journal of Personality and Social Psychology, 91*(1), 1-

15. https://doi.org/10.1037/0022-3514.91.1.1.

DeWall, C. N., MacDonald, G., Webster, G. D., Masten, C., Baumeister, R. F., Powell,

C., …Eisenberger, N. I. (2010). Acetaminophen reduces social pain: Behavioral

and neural evidence. *Psychological Science, 21*, 931–937.

DeWall, C. N., Maner, J. K., & Rouby, D. A. (2009). Social exclusion and early-stage

interpersonal perception: Selective attention to signs of acceptance. *Journal of

Personality and Social Psychology, 96*(4), 729–

741. https://doi.org/10.1037/a0014634

DeWall, C. N., Twenge, J. M., Gitter, S. A., & Baumeister, R. F. (2009). It's the thought

that counts: The role of hostile cognition in shaping aggressive responses to social

exclusion. *Journal of Personality and Social Psychology, 96*, 45–59.

DeWall, C.N., Twenge, J.M., Koole, S.L., Baumeister, R.F., Marquez, A., & Reid, M.W.

(2011). Automatic emotion regulation after social exclusion: Tuning to positivity.

Emotion, 11, 623–636.

Dotan-Eliaz, O., Sommer, K.L., & Rubin, Y.S. (2009). Multilingual groups: Effects of

linguistic ostracism on felt rejection and anger, coworker attraction, perceived team potency, and creative performance. *Basic and Applied Social Psychology, 31*, 363-375.

Downey, G., & Feldman, S.I. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology, 70*(6), 1327-1343. doi: 10.1037/0022-3514.70.6.1327.

Duval, J., Ensink, K., Normandin, L., Sharp, C., & Fonagy, P. (2018). Measuring reflective functioning in adolescents: Relations to personality disorders and psychological difficulties. *Adolescent Psychiatry, 8*(1), 5-20.

Dvash, J., & Shamay-Tsoory, S. (2014). Theory of mind and empathy as multidimensional constructs: Neurological foundations. *Topics in Language Disorders, 34*(4), 282–295. https://doi.org/10.1097/TLD.0000000000000040.

Dziobek, I., Fleck, S., Kalbe, E., Rogers, K, Hassenstab, J., Brand, M., Kessler, J, Woike, J.K, Oliver, W., & Convit, A. (2006). Introducing MASC: A movie for the assessment of social cognition. *Journal of Autism and Developmental Disorders*, *36*, 623-636. https://doi.org/10.1007/s10803-006-0107-0

Edelstein, R. S., & Gillath, O. (2008). Avoiding interference: Adult attachment and emotional processing biases. *Personality and Social Psychology Bulletin*, *34*(2), 171-181. https://doi.org/10.1177/0146167207310024.

Eisenberger, N.I., Lieberman, M.D., & Williams, K.D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science, 302,* 290-292.

Eisenberger, N.I, Inagaki, T.K., Muscatell, K.A., Byrne Halton, K.E., & Leary, M.R.

(2011). The neural sociometer: Brain mechanisms underlying state self-esteem. *Journal of Cognitive Neuroscience, 23*, 3448-3455.

Eisenberg, NI., & Spinrad, T.L. (2004). Emotion-related regulation: Sharpening the definition. *Child Development, 75*(2), 334-339.

Ellmers, N., & Haslam, S.A. (2012). Social identity theory. In P.A.M. van Lange, A.W. Kruglanski, & E.T. Higgins (Eds.) *Handbook of theories of social psychology* (pp. 379-399). Sage.

Erikson, E.H. (1959). *Identity and the life cycle*. Norton.

Fabiansson, E.C., & Denson, T.F. (2012). The effects of intrapersonal anger and its regulation in economic bargaining. *PLOS ONE, 7*, Article e51595.

Fairbairn, W.R.D. (1952). *Psychoanalytic Studies of the Personality*. Routledge.

Fairchild, A.J., & Finney, S.J. (2006). Investigating validity evidence for the Experiences in Close Relationships-Revised Questionnaire. *Educational and Psychological Measurement, 66,* 116-135.

Fayant, M.P., Muller, D., Hartgerink, C.H.J., & Lantian, A. (2014). Is ostracism by a despised outgroup really hurtful? *Social Psychology, 45,* 489-494.

Fernández-Abascal, E.G., Cabello, R., Fernández-Berrocal, P. *et al.* (2013). Test-retest reliability of the 'Reading the Mind in the Eyes' test: A one-year follow-up study. *Molecular Autism 4,* 33. https://doi.org/10.1186/2040-2392-4-33.

Ferris, L.J. (2019). Hurt feelings: Physical pain, social exclusion, and the psychology of pain overlap In S.C. Rudert, R. Greifeneder, & K.D. Williams (Eds.). *Current directions in ostracism, social exclusion, and rejection research* (pp. 100-119). Routledge.

Fonagy, P. (2008). The mentalization-focused approach to social development. In F.N. Busch (Ed.), *Mentalization* (pp. 3-56). Analytic Press.

Fonagy, P., Gergely, G., Jurist, E.L., & Target, M. (2002). *Affect regulation, mentalization, and the development of the self.* Other Press.

Fonagy, P., Luyten, P., Moulten-Perkins, A., Lee, Y., Warren, F., Howard, S., Ghinai, R., Fearon, P., & Lowyck, B. (2016). Development and validation of a self-report measure of mentalizing: The reflective functioning questionnaire. *PLOS ONE, 11(7),* 1-28. doi:10.1371/journal.pone.0158678.

Fonagy, P., Steele, M., Steele, H., Moran, G.S., Higgit, A.C. (1991). The capacity for understanding mental states: The reflective self in parent and child and its significance for security of attachment. *Infant Mental Health Journal, 12*(3), 2-7.

Fonagy, P., & Target, M. (1997). Attachment and reflective function: Their role in self organization. *Developmental Psychopathology, 9*(4), 679-700

Fonagy, P., & Target, M. (2006). The mentalization-focused approach to self pathology. *Journal of Personality Disorders, 20*(6), 544-576.

Fonagy, P., Target, M., Gergely, G., Allen, J.G., & Bateman, A.W. (2008). The developmental roots of borderline personality disorder in early attachment relationships: A theory and some evidence. *Psychoanalytic Inquiry, 23*(3), 412-459.

Fonagy, P., Target, M., Steele, H., & Steele, M. (1998). *Reflective functioning manual version 5 for application to adult attachment interviews.*

Fossati, A., Borroni, S., Dziobek, I., Fonagy, P., & Somma, A. (2018). Thinking about assessment: Further evidence of the validity of the Movie for the Assessment of

Social Cognition as a measure of mentalistic abilities. *Psychoanalytic Psychology*, *35*(1), 127-141.

Fraley, R.C. (2012, November). *Information on the Experiences in Close Relationships Revised (ECR-R) Adult Attachment Questionnaire.* http://labs.psychology.illinois.edu/~rcfraley/measures/ecrr.htm.

Chris Fraley, R., Niedenthal, P. M., Marks, M., Brumbaugh, C., & Vicary, A. (2006). Adult attachment and the perception of emotional expressions: Probing the hyperactivating strategies underlying anxious attachment. *Journal of personality*, *74*(4), 1163-1190.

Fraley, R.C., & Shaver, P.R. (1997). Adult attachment and the suppression of unwanted thoughts. *Journal of Personality and Social Psychology, 73,* 1080-1091.

Fraley, R. C., & Shaver, P. R. (2000). Adult romantic Attachment: Theoretical developments, emerging controversies, and unanswered questions. *Review of General Psychology*, *4*(2), 132–154. https://doi.org/10.1037/1089-2680.4.2.132.

Fraley, R.C., Waller, N.G., Brennan, K.A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78*(2), 350-365.

Frei, J.R., & Shaver, P.R. (2002). Respect in close relationships: Prototype definition, self-report assessment, and initial correlates. *Personal Relationships, 9*(2), 121-139.

Frith, C., & Frith, U. (2005). Theory of mind. *Current Biology, 15*(17), 44-45.

Fuchs, N.F., & Taubner, S. (2019). Exploring the interplay of attachment style and

attachment-related mood on short term change in mentalization: A pilot study. *Personality and Individual Difference, 144*, 94-99.

Galinsky, A. D., Ku, G., & Wang, C. S. (2005). Perspective-taking and self-other overlap: Fostering social bonds and facilitating social coordination. *Group Processes & Intergroup Relations*, *8*(2), 109–124. https://doi.org/10.1177/1368430205051060

Gambin, M., Woźniak-Prus, M., Konecka, A., & Sharp, S. (2020). Relations between attachment to mother and father, mentalizing abilities and emotion regulation in adolescents, *European Journal of Developmental Psychology*, *18*(1), 18-37. DOI: 10.1080/17405629.2020.1736030.

George, C., Kaplan, N., & Main, M. (1985). *Adult Attachment Interview* [Unpublished manuscript]. Department of Psychology, University of California.

Gerber, J., &Wheeler, I. (2009). On being rejected: A meta-analysis of experimental research on rejection. *Perspectives on Psychological Science, 4*, 469-488.

Gilboa-Schechtman, E., Galili, L., Sahar, Y., & Amir, O. (2014). Being "in" or "out" of the game: Subjective and acoustic reactions to exclusion and popularity in social anxiety. *Frontiers in Human Neuroscience, 8,* 147. https://doi.org/10.3389/fnhum.2014.00147.

Gillath, O., Bunge, S.A., Shaver, P.R., Wendelken, C., Mikulincer, M. (2005). Attachment-style differences in the ability to suppress negative thoughts: Exploring the neural correlates. *NeuroImage, 28*(4), 835-847.

Gillath, O., Karantzas, G.C., & Fraley, R.C. (2016). *Adult attachment: A concise introduction to theory and research.* Elsevier.

Goffman, E. (2014). Stigma and social identity. In *Understanding deviance* (pp. 256-265). Routledge.

Gonsalkorale, K., & Williams, K.D. (2007). The KKK won't let me play: Ostracism even by a despised outgroup hurts. *European Journal of Social Psychology, 37,* 1176-1186.

Goodman, J.K., Cryder, C.E., & Cheema, A. (2013). Data collection in a flat world: The strengths and weaknesses of Mechanical Turk samples. *Journal of Behavioral Decision Making, 26,* 213-224.

Goodcase, E.T., Nalbone, D.P., Hecker, L.L., & Latty, C. (2018). The role of attachment anxiety and avoidance in communication modality and relationship quality of romantic relationships initiated online. *The American Journal of Family Therapy, 46*(2), 168-183.

Gratton, G., Coles, M.G., Donchin, E. (1992). Optimizing the use of information: Strategic control of activation of responses. *Journal of Experimental Psychology, 121*(4), 480-506.

Gratz, K.L., Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, *26*, 41–54.

Greenberg, D.M., Kolasi, J., Hegsted, C.P., Berkowitz, Y., & Jurist, E.L. (2017). Mentalized affectivity: A new model and assessment of emotion regulation. *PLOS ONE, 12*(10): Article e0185264. https://doi.org/10.1371/journal.pone.0185264.

Greifeneder, R., & Rudert, S.C. (2019). About flames and boogeymen. In S.C. Rudert, R.

Greifeneder, & K.D. Williams (Eds.), *Current direction in ostracism, social exclusion, and rejection research* (pp. 32-48). Taylor & Francis.

Gross, J.J. (1988). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271-299.

Gunnar, M.R., Sebanc, A.M., Tout, K., Donzella, B., & van Dulmen, M.M.H. (2003). Peer rejection, temperament, and cortisol activity in preschoolers. *Developmental Psychology, 43*, 346-368.

Gyurak, A., Gross, J.J., & Etkin, A. (2011). Explicit and implicit emotion regulation: A dual-process framework. *Cognition and Emotion, 25*(3), 400-412.

Ha, C., Sharp, C., Ensink, K., Fonagy, P., Cirino, P. (2013). The measurement of reflective function in adolescents with and without borderline traits. *Journal of Adolescence, 36,*1215-1223. Doi: 10.1016/j.adolescence.2013.09.008.

Haggerty, G., Hilsenroth, M. J., & Vala-Stewart, R. (2009). Attachment and interpersonal distress: Examining the relationship between attachment styles and interpersonal problems in a clinical population. *Clinical Psychology & Psychotherapy, 16*(1), 1-9.

Haigh, M. (2016). Has the standard cognition reflection test become a victim of its own success? *Advances in Cognitive Psychology, 12*(3), 145-149.

Hales, A. H., Williams, K. D., & Eckhardt, C. I. (2015). A participant walks into a bar… Subjective intoxication buffers ostracism's negative effects. *Social Psychology*, *46*, 157-166.

Hamilton, N.A., Karoly, P., Gallagher, M., Stevens, N., Karlson, C., McCurdy, D.

(2009). The assessment of emotion regulation in cognitive context: The Emotion Amplification and Reduction Scales. *Cognitive Therapy and Research, 33*, 225-263.

Hankin, B. L., Kassel, J. D., & Abela, J. R. Z. (2005). Adult attachment styles and specificity of emotional distress: Prospective investigations of cognitive risk and interpersonal stress generation as mediating mechanisms. *Personality and Social Psychology Bulletin, 31,* 136–151. doi: 10.1177/0146167204271324

Hartgerink, C.H.J., van Beest, I., Wicherts, J.M., & Williams, K.D. (2015). The ordinal effects of ostracism: A meta-analysis of 120 cyberball studies. *PLOS ONE, 10(5)*: Article e0127002. doi: 10.1371/journal.pone.0127002.

Hayes, S.C., Strosahl, K.D., Wilson, K.G., Bissett, R.T., Pistorello, J., Toarmino, D., McCurry, S.M. (2004). Measuring experiential avoidance: A preliminary test of a working model. *The Psychological Record, 54*, 553-578.

Heatherton, T. F. (2011). Neuroscience of self and self-regulation. *Annual Review of Psychology,62*, 363–390. https://doi.org/10.1146/annurev.psych.121208.131616.

Hess, Y.D., & Pickett, C.L. (2010). Social rejection and self-versus other-awareness. *Journal of Experimental Social Psychology, 46*(2), 453-456.

Hogg, M.A. (2005). All animals are equal but some animals are more equal than others: Social identity and marginal membership. In K.D. Williams, J.P. Forgas, & W. Von Hippel (Eds.). *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 243-262). Psychology Press.

Holmberg, D., Lomore, C.D., Takacs, T.A., & Price, E.L. (2011). Adult attachment styles

and stressor severity as moderators of the coping sequence. *Personal Relationships, 18,* 502-517.

Holt-Lunstad, J., Smith, T.B., & Layton, J.B. (2010) Social Relationships and Mortality Risk: A Meta-analytic Review. *PLOS Med 7*(7): Article e1000316. https://doi.org/10.1371/journal.pmed.1000316.

Horton, J.J., Rand, D.G., & Zeckhauser, R.J. (2011). The online laboratory: Conducting experiments in a real labor market. *Experimental Economics, 14*(3), 399-425. http://dx.doi.org/10.10007/s10683-011-9273-9.

Hudson, A., & Jacques, S. (2014). Put on a happy face! Inhibitory control and socioemotional knowledge predict emotion regulation in 5 to 7-year-olds. *Journal of Experimental Child Psychology, 123*, 36–52. https://doi.org/10.1016/j.jecp.2014.01.012.

Iannone, N.E., Kelly, J.R., & Williams, K.D. (2016). "Who's that?": The negative consequences of being out of the loop on pop culture. *Psychology of Popular Media Culture, 7*, 113-129.

Izaki, T., Wang, W., & Kawamoto, T. (2022). Avoidant attachment attenuates the need threat for social exclusion but induces the threat for over-inclusion. *Frontiers in Psychology, 13*: Article 881863. doi: 10.3389/fpsyg.2022.881863.

Jamieson, J.P., Harkins, S.G., & Williams, K.D. (2010). Need threat can motivate performance after ostracism. *Personality and Social Psychology Bulletin, 36*(5), 690-702.

Janczak, M.O. (2021). *What's on your mind? A guide for mentalization assessment in adults*. Wydawnictwo Rys.

Jiang, X., Moreno, J., Ng, Z. (2022). Examining the interplay of emotion regulation strategies, social stress and gender in predicting life satisfaction of emerging adults. *Personality and Individual Differences, 185*, Article 111255.

Jones, E.E., Carter-Sowell, A.R., Kelly, J.R., & Williams, K.D. (2009). "I'm out of the loop: Ostracism through information exclusion. *Group Processes and Intergroup Relations, 12*, 157-174.

Joormann, J. (2006). Differential effects of rumination and dysphoria on the inhibition of irrelevant emotional material: Evidence from a negative priming task. *Cognitive Therapy and Research, 30*, 149–160.

Jurist E. L. (2005). Mentalized affectivity. *Psychoanalytic Psychology, 22*(3), 426.

Kahya, Y., & Munguldar, K. (2022). Difficulties in emotion regulation mediated the relationship between reflective functioning in borderline personality symptoms among non-clinical adolescents. *Psychological Reports, 0*(0), 1-20.

Kawamoto, T., Onoda, K., Nakashima, K.I., Nittono, H., Yamaguchi, S., & Ura, M. (2012). Is dorsal anterior cingulate cortex activation in response to social exclusion due to expectancy violation? An fMRI study. *Frontiers in Evolutionary Neuroscience, 4*, 11. https://doi.rog/10.3389/fnevo.2012.00011.

Kernberg, O.F. (1984). *Severe personality disorders.* Yale University Press.

Kerr, N.L., Levine, J.M. (2008). The detection of social exclusion: Evolution and beyond. *Group Dynamics: Theory, Research, and Practice, 12,* 39-52.

Kline, R.B. (2011). *Principles and practice of structural equation modeling.* (3rd ed.) Guildford Press.

Kimhi, Y. (2014). Theory of mind abilities and deficits in autism spectrum disorders.

Topics in Language Disorders, *34*(4), 329-343. doi: 10.1097/TLD.0000000000000033.

King-Casas, B., Sharp, C., Lomax-Bream, L., Lohrenz, T., Fonagy, P., & Montague, P.R. (2008). The rupture and repair of cooperation in borderline personality disorder. *Science, 321*, 806-810.

Kisley, M.A., Caudle, C.S., & Harvey, A.M. (2019). Affect intolerance is associated with insecure attachment and reduced self-esteem in adults. *Archives of Psychology, 3*(8), 1-21.

Knowles, M.L. (2014). Social rejection increases perspective taking. *Journal of Experimental Social Psychology, 55*, 126-132.

Kohn, J.L., Rholes, W.S., & Schmeichel, B.J. (2012). Self-regulatory depletion and attachment avoidance: Increasing the accessibility of negative attachment-related memories. *Journal of Experimental Social Psychology, 48*(1), 375-378.

Kross, E., Berman, M.G., Mischel, W., Smith, E.E., & Wager, T.D. (2011). Social rejection shares somatosensory representations with physical pain. *Proceedings of the National Academy of Sciences, 108*, 6270-6275.

Kurzban, R., & Leary, M.R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin, 127,* 187-208.

Kushlev, K. & Heintzelman, S.J. (2018). Put the phone down: Testing a complement interfere model of computer-mediated communication in the context of face to face interactions. *Social Psychological and Personality Science, 9,* 702-710.

Laible, D.J., Carlo, G. & Raffaelli, M. (2000). The differential relations of parent and

peer attachment to adolescent adjustment. *Journal of Youth and Adolescence 29*, 45–59. https://doi.org/10.1023/A:1005169004882.

Laranjo, J., Bernier, A., Meins, E., & Carlson, S.M. (2014). The roles of maternal mind mindedness and infant security of attachment in predicting preschoolers' understanding of visual perspective taking and false belief. *Journal of Experimental Child Psychology, 125,* 48-62.

Larsen, R.J., & Diener, E. (1987). Affect intensity as an individual difference characteristic: A review. *Journal of Research in Personality, 21,* 1-39.

Lavender, J. M., Tull, M. T., DiLillo, D., Messman-Moore, T., & Gratz, K. L. (2017). Development and validation of a state-based measure of emotion dysregulation: The State Difficulties in Emotion Regulation Scale (S-DERS). *Assessment*, *24*(2), 197–209. https://doi.org/10.1177/1073191115601218.

Leary, M.R. (2005). Sociometer theory and the pursuit of relational value: Getting to the root of self-esteem. *European Review of Social Psychology, 16,* 75-111.

Leary, M.R. (2021). The need to belong, the sociometer, and the pursuit of relational value: Unfinished business. *Self and Identity, 20*(1), 126-143. https://doi.org/10.1080/15298868.2020.1779120.

Leary, M.R., & Baumeister, R.F. (2000). The nature and function of self-esteem: Sociometer theory. In M.P Zanna (Ed.), *Advances in experimental social psychology,* (Vol. 32, pp. 1-62). Academic Press.

Leary, M. R., Cottrell, C. A., & Phillips, M. (2001). Deconfounding the effects of dominance and social acceptance on self-esteem. *Journal of Personality and Social Psychology, 81*(5), 898–909. https://doi.org/10.1037/0022-3514.81.5.898.

Leary, M.R., & Leder, S. (2009). The Nature of hurt feelings: Emotional experience and cognitive appraisals. In A.L Vangelisti (Ed.) *Feeling hurt in close relationships,* (pp. 15-33). Cambridge University Press.

Leitner, J.B., Hehman, E., Deegan, M.P., & Jones, J.M. (2014). Adaptive disengagement buffers self-esteem from negative social feedback. *Personality and Social Psychology Bulletin, 40*(11), 1435-1450.

Liddell, B.J., & Courtney, B.S. (2018). Attachment buffers the physiological impact of social exclusion. *PLOS ONE, 13(9):* Article e0203287. *https://doi.org/10.1371/journal.pone.0203287.*

Luyten, P., & Fonagy, P. (2015). The neurobiology of mentalizing. *Personality Disorders: Theory, Research, and Treatment, 6*(4), 366-379.

Marganska, A., Gallagher, M., & Miranda, R. (2013). Adult attachment, emotion dysregulation, and symptoms of depression and generalized anxiety disorder. *American Journal of Orthopsychiatry, 83*(1), 131-141.

McAdams, D. P. (1986). Motivation and friendship. In S. Duck & D. Perlman (Eds.), *Understanding personal relationships: An interdisciplinary approach* (pp. 85-105). Sage.

McDonald, M.M., & Donnellan, M.B. (2012). Is ostracism a strong situation? The influence of personality in reactions to rejection. *Journal of Research in Personality, 46,* 614-618.

McRae, K., Gross, J., Weber, J., Robertson, E., Sokol-Hessner, P., Ray, R., Gabrieli, J.

D., & Ochsner, K. (2012). Development of emotion regulation: An fMRI study of cognitive reappraisal in children, adolescents and young adults. *Social Cognitive and Affective Neuroscience, 7*(1), 11–22. https://doi.org/10.1093/scan/nsr093.

Mead, N. L., Baumeister, R. F., Stillman, T. F., Rawn, C. D., & Vohs, K. D. (2011). Social exclusion causes people to spend and consume strategically in the service of affiliation. *Journal of Consumer Research, 37*, 902–919.

Meins, E. (1997). *Essays in developmental psychology. Security of attachment and the social development of cognition.* Psychology Press/Erlbaum (UK) Taylor & Francis.

Meins, E., Fernyhough, C., Wainwright, R., Das Gupta, M., Fradley, E., & Tuckey, M. (2002). Maternal mind-mindedness and attachment security as predictors of theory of mind understanding. *Child Development, 73*(6), 1715-1726.

Messman-Moore, T.L., & Brown, A.L. (2006). Risk perception, rape, and sexual revictimization: A prospective study of college women. *Psychology Women Quarterly, 30,* 159-172.

Meyebovsky, M.M., Tabullo, A.J., & Garcia, C.S. (2019). Associations between theory of mind and emotion regulation in Argentinian adults. *Current Psychology, 40*(12), 6118-6131. https://doi.org/10.1007/s12144-019-00539-9.

Meyer, T.J., Miller, M.L., Metzeger, R.L., & Borkovec, T.D. (1990). Development and validation of the Penn State worry questionnaire. *Behavior Research and Therapy, 28,* 487-495.

Mikulincer, M., Dolev, T., & Shaver, P. R. (2004). Attachment-related strategies during

thought suppression: Ironic rebounds and vulnerable self-representations. *Journal of Personality and Social Psychology, 87*(6), 940–956. https://doi.org/10.1037/0022-3514.87.6.940.

Mikulincer, M., Gillath, O., Halevy, V., Avihou, N., Avidan, S., & Eshkoli, N. (2001). Attachment theory and reaction to others' needs: Evidence that activation of the sense of attachment security promotes empathic responses. *Journal of Personality and Social Psychology,81*(6), 1205-1224.

Mikulincer, M., & Orbach, I. (1995). Attachment styles and repressive defensiveness: The accessibility and architecture of affective memories. *Journal of Personality and Social Psychology, 68,* 917-925.

Mikulincer, M., & Shaver, P. R. (2016). *Attachment in adulthood: Structure, dynamics, and change* (2nd ed). Guilford Press.

Mikulincer, M., & Shaver, P.R. (2019). Attachment orientation and emotion regulation. *Current Opinion in Psychology, 25*, 6-10.

Miller, J.B. (1996). Social flexibility and anxious attachment. *Personal Relationships, 3,* 241-256.

Morandotti, N., Brondino, N., Merelli, A., Boldrini, A., De Vidovich, G.Z., Ricciardo, S., et al. (2018). The Italian version of the Reflective Functioning Questionnaire: Validity data for adults and its association with severity of borderline personality disorder. *PLOS ONE, 13*(11): Article e0206433. https://doi.org/10.1371/journal.pone.0206433.

Muris, P., Meesters, C., van Melick, M., Zwambag, L. (2001). Self-reported attachment

style, attachment quality, and symptoms of anxiety and depression in young adults. *Personality and Individual Differences, 30*(5), 809-818.

Nakao, T., Takezawa, T., Miyatani, M., & Ohira, H. (2009). Medial prefrontal cortex and cognitive regulation. *Psychologia, 52*(2), 93–109. https://doi.org/10.2117/psysoc.2009.93.

Nazzaro, M.P., Boldrini, T., Tanzilli, A., Muzi, L., Giovanardi, G., & Lingiardi, V. (2017). Does reflective functioning mediate the relationship between attachment and personality? *Psychiatry Research, 256,* 169-175.

Necka, E.A., Cacioppo, S., Norman, G.J., & Cacioppo, J.T. (2016). Measuring the prevalence of problematic respondent behaviors among MTurk, campus, and community participants. *PLOS ONE, 11*(6), e0157732.

Niedeggen, M., Sarauli, N., Cacciola, S., & Weschke, S. (2014). Are there benefits of social overinclusion? Behavioral and ERP effects in the Cyberball paradigm. *Frontiers in Human Neuroscience, 8*(935), 1-8. doi: 10.3389/fnhum.2014.00935.

Nordgren, L. F., Banas, K., & MacDonald, G. (2011). Empathy gaps for social pain: Why people underestimate the pain of social suffering. *Journal of Personality and Social Psychology,100*(1), 120–128. https://doi.org/10.1037/a0020938

Oaten, M., Stevenson, R.J., & Case, T.I. (2009). Disgust as a disease-avoidance mechanism. *Psychological Bulletin, 135*, 303-321.

Oaten, M., Williams, K.D., Jones, A., & Zadro. L. (2008). The effects of ostracism on self-regulation in the socially anxious. *Journal of Social and Clinical Psychology, 27*, 471-504.

Olderbak, S., Wilhelm, O., Olaru, G., Geiger, M., Brenneman, M.W., & Roberts, R.D.

(2015). A psychometric analysis of the Reading of the Mind in the Eyes test: Toward a brief form for research and applied settings. *Frontiers in Psychology, 6:* Article 1503. doi: 10.3389/fpsyg.2015.01503.

Oschner, K.N., Bunge, S.A., Gross, J.J., & Gabrieli, J.D.E. (2002). Rethinking feelings: An fMRI study of the cognitive regulation of emotion. *Journal of Cognitive Neuroscience, 14*(8), 1215-1229.

Paolacci, G., & Chandler, J. (2014). Inside the Turk: Understanding Mechanical Turk as a participant pool. *Current Directions in Psychological Science, 23*(3), 184-188.

Parada-Fernandez, P., Herrero-Fernandez, D., Olivia-Macias, M., & Rohwer, H. (2021). Analysis of the mediating effect of mentalization on the relationship between attachment styles and emotion dysregulation. *Scandinavian Journal of Psychology, 62,* 312-320.

Park, J.H., Faulkner, J., & Schaller, M. (2003). Evolved disease-avoidance processes and contemporary anti-social behavior: Prejudicial attitudes and avoidance of people with disabilities. *Journal of Nonverbal Behavior, 27,* 65-87.

Park, M.K., & Song, H. (2018). Validity of primary screening reflective function questionnaire for youth in Korean adolescents. *Journal of Emotional and Behavioral Disorders, 32*(2), 115-131.

Pascuzzo, K., Cyr, C., & Moss, E. (2013). Longitudinal association between adolescent attachment, adult romantic attachment, and emotion regulation strategies. *Attachment & Human Development, 15*(1), 83-103, DOI: 10.1080/14616734.2013.745713

Penninx, B.W.J.H., van Tilburg, T., Kriegsman, D.M.W., Deeg, D.J.H., Boeke, A.J.P., &

van Eijk, J.T.M. (1997). Effects of social support and personal coping resources on mortality in older age: The longitudinal aging study Amsterdam. *American Journal of Epidemiology*, *146*,(6), 510-519, https://doi.org/10.1093/oxfordjournals.aje.a009305.

Pepping, C.A., Davis, P.J., & O'Donovan, A. (2013). Individual differences in attachment and dispositional mindfulness: The mediating role of emotion regulation. *Personality and Individual Differences, 54*, 453-456.

Pereg, D., & Mikulincer, M. (2004). Attachment style and the regulation of negative affect: Exploring individual differences in mood congruency effects on memory and judgment. *Personality and Social Psychology Bulletin, 30*(1), 67-80.

Pickett, C. L., & Gardner, W. L. (2005). The Social Monitoring System: Enhanced Sensitivity to Social Cues as an Adaptive Response to Social Exclusion. In K. D. Williams, J. P.Forgas, & W. von Hippel (Eds.), *Sydney symposium of social psychology series. The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 213–226). Psychology Press.

Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to belong and enhanced sensitivity to social cues. *Personality and Social Psychology Bulletin*, *30*(9), 1095–1107. https://doi.org/10.1177/0146167203262085

Pietromonaco, P. R., & Barrett, L. F. (2000). The internal working models concept: What do we really know about the self in relation to others? *Review of General Psychology*, *4*(2), 155–175. https://doi.org/10.1037/1089-2680.4.2.155

Poulsen, J.R., & Carmon, A.F. (2015). Who would do that? A theory-based analysis of

narratives of source of family ostracism. *The Journal of Social Psychology, 155*, 452-470.

Powers, K.E., Wagner, D.D., Norris, C.J., & Heatherton, T.F. (2013). Socially excluded individuals fail to recruit medial prefrontal cortex for negative social scenes, *Social Cognitive and Affective Neuroscience, 8*(2), 151-157, https://doi.org/10.1093/scan/nsr079.

Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioral and Brain Sciences, 1*(4), 515-526. doi:10.1017/S0140525X00076512.

Prevost, M., Carrier, M.E., Chowne, G., Zellkowitz, P., Joseph, L., & Gold, I. (2014). The Reading the Mind in the Eyes test: Validation of a French version and exploration of cultural variations in a multi-ethnic city. *Cognitive Neuropsychiatry, 19*, 189-204. doi: 10.1080/13546805.2013.823859.

Rand, D.G., Greene, J.D., & Nowak, M.A. (2012). Spontaneous giving and calculated greed. *Nature, 489,* 427-430. http://dx.doi.org/10.1038/nature11467.

Reynolds, K.J., Turner, J.C., Haslam, A., & Ryan, M.K. (2001). The role of personality and group factors in explaining prejudice. *Journal of Experimental Social Psychology, 37*, 427–434.

Riva, P. (2016). Emotion regulation following social exclusion: Psychological and behavioral strategies In P. Riva & J. Eck (Eds.), *Social exclusion.* (pp. 199-225). Springer International.

Riva, P., Montali, L., Wirth, J. H., Curioni, S., & Williams, K. D. (2016). Chronic social

exclusion and evidence for the resignation stage: An empirical investigation. *Journal of Social and Personal Relationships*, *34*(4), 541-564. doi:10.1177/0265407516644348.

Romero-Canyas, R., Downey, G., Reddy, K.S., Rodriguez, S., Cavanaugh, T.J., & Peleyo, R. (2010). Paying to belong: When does rejection trigger ingratiation? *Journal of Personality and Social Psychology, 99*(5), 802-823.

Rudert, S.C., Hales, A.H., Greifeneder, R., & Williams, K.D. (2017). When silence is not golden: Why acknowledgement matters even when being excluded. *Personality and Social Psychology Bulletin, 43,* 678-692.

Russell, D.W. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment, 66,* 20-40.

Sacco, D.F., Wirth, J.H., Hugenberg, K., Chen, Z., & Williams, K.D. (2011). The world in black and white: Ostracism enhances the categorical perception of social information. *Journal of Experimental Social Psychology, 47*(4), 836-842.

Samson, A. C., Huber, O., & Gross, J. J. (2012). Emotion regulation in Asperger's syndrome and high functioning autism. *Emotion, 12*(4), 659–665. https://doi.org/10.1037/a0027975.

Sato, M., Fonagy, P., & Luyten, P. (2018). Effects of social exclusion on effortful control and mentalizing in relation to borderline personality features. *Scientific Reports, 8:* Article 14400, doi: 10.1038/s41598-018-32775-7.

Schipper, M., & Petermann, F. (2013). Relating empathy and emotion regulation: Do deficits in empathy trigger emotion dysregulation? *Social Neuroscience, 8*(1), 101–107. https://doi.org/10.1080/17470919.2012.761650.

Schwarzer, N., Nolte, T., Fonagy, P., & Gingelmaier, S. (2021). Mentalizing and emotion regulation: Evidence from a nonclinical sample. *International Forum of Psychoanalysis, 30*(1), 34-45. https://doi.org/10.1080/0803706X.2021.1873418.

Sethi, N., Moulds, M.L., & Richardson, R. (2013). The role of focus on attention and reappraisal in prolonging the negative effects of ostracism. *Group Dynamics: Theory, Research, and Practice, 17*, 110-123.

Shalchi, B., & Esmaeili, S.M. (2018). Relationship of family functioning, satisfaction of basic psychological needs and depression considering the mediatory role of emotion regulation difficulty, *Hormozgan Medical Journal, 22*(1), 52-61.

Sharp, C., Pane, H., Ha, C., Venta, A., Patel, A., Sturek, J., & Fonagy, P. (2011). Theory of mind and emotion regulation difficulties in adolescents with borderline traits. *Journal of the American Academy of Child and Adolescent Psychiatry, 50*(6), 563–573. https://doi.org/10.1016/j.jaac.2011.01.017.

Sharp, C., Ha, C., Carbone, C., Kim, S., Perry, K., Williams, L, & Fonagy, P. (2013). Hypermentalizing in adolescent inpatients: Treatment effects and association with borderline traits. *Journal of Personality Disorders*, *27*, 3-18. https://doi.org/10.1521/pedi.2013.27.1.3

Shaver, P.R., & Mikulincer. M. (2013). Attachment orientations and reactions to ostracism in close relationships and groups. In N. DeWall (Ed), *The Oxford handbook of social exclusion,* (pp. 238-247). Oxford University Press.

Sibley, C.G., Fischer, R. & Liu, J.H. (2005). Reliability and validity of the Revised Experiences in Close Relationships (ECR-R) Self-Report Measure of Adult Romantic Attachment. *Personality and Social Psychology Bulletin, 31,* 1524-

1536.

Silva, C., Soares, I., & Esteves, F. (2012). Attachment insecurity and strategies for
regulation: When emotion triggers attention. *Scandinavian Journal of Psychology,
53,* 9-16.

Simard, V., & Dandeneau, S. (2018). Revisiting the Cyberball inclusion condition:
Fortifying fundamental needs by making participants the target of specific
inclusion. *Journal of Experimental Social Psychology, 74*, 38-42.

Skowron, E.A., & Friedlander, M.L. (1998). The differentiation of self-inventory:
Development and initial validation. *Journal of Counseling Psychology, 45*(3),
235-246.

Skowron, E. A., & Schmitt, T. A. (2003). Assessing interpersonal fusion: Reliability and
validity of a new DSI fusion with others subscale. *Journal of Marital and Family
Therapy, 29*(2), 209-222.

Slade, A. (2007). Parental reflective functioning: An introduction. *Attachment and
Human Development, 7*(3), 269-281.

Smart Richman, L., & Leary, M.R. (2009). Reactions to discrimination, stigmatization,
ostracism, and other forms of interpersonal rejection: A multimotive model.
Psychological Review, 116, 365-383.

Smith, E.R., & Semin, G.R. (2004). Socially situated cognition: In its social context.
Advances in Experimental Social Psychology, 36, 53-117.

Spielmann, S. S., Maxwell, J. A., MacDonald, G., & Baratta, P. L. (2013). Don't get your

hopes up: Avoidantly attached individuals perceive lower social reward when there is potential for intimacy. *Personality and Social Psychology Bulletin, 39*, 91–107.

Steele, C., Kidd, D.C., & Castano, E. (2015). On social death: Ostracism and the accessibility of death thoughts. *Death Studies, 39*, 19-23.

Stenseng, F., Belsky, J., Skalicka, V., & Wichstrom, L. (2015). Social exclusion predicts impaired self-regulation: A 2-year longitudinal panel study including the transition from preschool to school. *Journal of Personality, 83*, 212-220.

Stevens, F.L. (2014). Affect regulation styles in avoidant and anxious attachment. *Individual Differences Research, 12*(3), 123-130.

Stroud, L.R., Tanofsky-Kraff, M.,Wilfley, D.E., & Salovey. P. (2000). The Yale Interpersonal Stressor (YIPS): affective, physiological, and behavioral responses to a novel interpersonal rejection paradigm. *Annals of Behavioral Medicine, 22*, 204–13.

Summerville, A., & Chartier, C.R. (2013). Pseudo-dyadic "interaction" on Amazon's Mechanical Turk. *Behavioral Research Methods, 45*(1), 116-124. http://dx.doi.org/10.3758/s13428-012-0250-9.

Tabachnick, B.G., & Fidell, L.S. (2013). *Using multivariate statistics*. (5th ed.). Allyn and Bacon.

Tajfel, H., Turner, J.C. (1979). An integrative theory of intergroup conflict. In W.G. Austin & S. Worchel (Eds.), *The Social psychology of intergroup relations*. (pp. 33-47). Brooks-Cole.

Taylor, S.E., Lerner, J.S., Sherman, D.K., Sage, R.M, & McDowell, N.K. (2003). Are

self-enhancing cognitions associated with healthy or unhealthy biological

profiles? *Journal of Personality and Social Psychology, 85,* 605-615.

Thompson, R.A. (1994). Emotion regulation: A them in search of definition. *Monographs*

of the Society for Research in Child Development, 59(2-3), 25-52.

Tomko, R.L., Solhan, M.B., Carpenter, R. W., Brown, W.C., Jahng, S., & Wood, P.K, &

Trull, T.J. (2014). Measuring impulsivity in daily life: The momentary

impulsivity scale. *Psychological Assessment, 26,* 339-349.

Twenge, J. M., Baumeister, R. F., Tice, D. M., & Stucke, T. S. (2001). If you can't join

them, beat them: Effects of social exclusion on aggressive behavior. *Journal of*

Personality and Social Psychology, 81, 1058–1069.

Tyler, J. M. (2008). In the eyes of others: Monitoring for relational value cues. *Human*

Communication Research, 34, 521–549. http://dx.doi.org/10.1111/j.1468-

2958.2008. 00331.x.

van Bavel, J.J., Swencionis, J.K., O'Connor, R.C., & Cunningham, W.A. (2012).

Motivational social memory: Belonging needs moderate the own-group bias in

face recognition. *Journal of Experimental Social Psychology, 48*(3), 707-713.

van Beest, I., & Williams, K.D. (2006). When inclusion costs and ostracism pays,

ostracism still hurts. *Journal of Personality and Social Psychology, 91*, 918-928.

van Beest, I., Williams, K.D., & van Dijk, E. (2011). Cyberbomb: Effects of being

ostracized from a death game. *Group Processes and Intergroup Relations, 14*,

581-596.

van Dellen, M., Knowles, M. L., Krusemark, E., Sabet, R. F., Campbell, W., McDowell,

J. E., et al. (2012). Trait self-esteem moderates decreases in self-control following rejection: An information-processing account. *European Journal of Personality, 26*, 123–132. http://dx.doi.org/10.1002/per.1845.

Vangelisti, A. L., Young, S. L., Carpenter-Theune, K. E., & Alexander, A. L. (2005). Why does it hurt?: The perceived causes of hurt feelings. *Communication Research*, *32*(4), 443-477. https://doi.org/10.1177/0093650205277319.

van Orden, K. A., Witte, T. K., Gordon, K. H., Bender, T. W., & Joiner, T. E., Jr. (2008). Suicidal desire and the capability for suicide: Tests of the interpersonal psychological theory of suicidal behavior among adults. *Journal of Consulting and Clinical Psychology, 76*(1), 72–83. https://doi.org/10.1037/0022-006X.76.1.72

Vellante, M., Baron-Cohen, S., Melis, M., Marrone, M., Petretto, D.R., Masala, C., & Preti, A. (2013). The "Reading the Mind in the Eyes" test: Systematic review of psychometric properties and a validation study in Italy, *Cognitive Neuropsychiatry, 18*(4), 326-354, DOI: 10.1080/13546805.2012.721728.

Velotti, P., D'Aguanno, M., de Campora, G., Di Francescantonio, S., Garofalo, C., Giromini, L., Petrocchi, C., Terrasi, M., & Zavattini, G. C. (2016). Gender moderates the relationship between attachment insecurities and emotion dysregulation. *South African Journal of Psychology*, *46*(2), 191–202. https://doi.org/10.1177/0081246315604582

Waldrip, A. M. (2007). The power of ostracism: Can personality influence reactions to social exclusion? [Unpublished doctoral dissertation]. University of Texas, Arlington, TX.

Wang, H., Braun, C., & Enck, P. (2017). How the brain reacts to social stress (exclusion) - A scoping review. *Neuroscience and Biobehavioral Reviews, 80,* 80-88.

Warren, S.L., Huston, L., Egeland, B., Sroufe, L.A. (1997). Child and adolescent anxiety disorders and early attachment. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*(5), 637-644.

Wei, M., Vogel, D.L., Ku, T., & Zakalik, R.A. (2005). Adult attachment, affect regulation, negative mood, and interpersonal problems: The mediating roles of emotional reactivity and emotional cutoff. *Journal of Counseling Psychology, 52*(1), 14-24.

Weinbrecht, A., Niedeggen, M., Roepke, S., & Renneberg, B. (2018). Feeling excluded no matter what? Bias in the processing of social participation in borderline personality disorder. *NeuroImage: Clinical, 19,* 343-350.

Wesselmann, E.D., Bagg, D., & Williams, K.D. (2009). "I Feel Your Pain": The effects of observing ostracism on the ostracism detection system. *Journal of Experimental Social Psychology, 45*, 1308-1311.

Wesselmann, E.D., Nairne, J.S. & Williams, K.D. (2012). An evolutionary social psychological approach to studying the effects of ostracism. *Journal of Social, Evolutionary, and Cultural Psychology, 6,* 309-328.

Wesselmann, E.D., Ren, D., Swim, E., & Williams, K.D. (2013). Rumination hinders recovery from ostracism. *International Journal of Developmental Science, 7*, 33–39.

Wharburton, W.A., Williams, K.D., Cairns, D.R. (2006). When ostracism leads to

aggression: The moderating effects of control deprivation. *Journal of Experimental Social Psychology, 42*(2), 213-220.

White, L.O., Klein, A.M., von Klitzing, K., Graneist, A., Otto, Y., Hill, J., Over, H., Fonagy, P., & Crowley, M.J. (2016). Putting ostracism into perspective: Young children tell more mentalistic stories after exclusion, but not when anxious. *Frontiers in Psychology, 7*: Article 1926. doi: 10.3389/fpsyg.2016.01926.

Wilkowski, B. M., Robinson, M. D., & Friesen, C. K. (2009). Gaze-triggered orienting as a tool of the belongingness self-regulation system. *Psychological Science, 20*(4), 495-501. https://doi.org/10.1111/j.1467-9280.2009.02321.x.

Williams, K.D. (2001). *Ostracism: The power of silence*. Guildford Press.

Williams, K.D. (2007). Ostracism. *Annual Review of Psychology, 58*, 425-452.

Williams, K.D. (2009). Ostracism: A temporal need-threat model. *Advances in Experimental Social Psychology, 41*, 275-314.

Williams, K.D., Cheung, C.K.T., Choi, W. (2000). CyberOstracism: Effects of being ignored over the internet. *Journal of Personality and Social Psychology, 79*, 748-762.

Williams, K.D., Hales, A.H., Michels, C. (2019). Social ostracism as a factor motivating interest in extreme groups. In S.C. Rudert, R. Greifeneder, & K.D., Williams (Eds.) *Current directions in ostracism, social exclusion, and rejection research*. (pp. 18-31). Routledge.

Williams, K.D., & Nida, S.A. (2011). Ostracism: Consequences and coping. *Current Directions in Psychological Science, 20*(2), 71-75.

Wirth, J.H., Bernstein, M.J., Wesselman, E.D., & LeRoy, A. (2017). Social cues establish

expectations of rejection and affect the response to being rejected. *Group Processes and Intergroup Relations, 20*, 32-51.

Wozniak-Prus, M., Gambin, M., Cudo, A., & Sharp, C. (2022). Investigation of the factor structure of the Reflective Functioning Questionnaire (RFQ-8): One or two dimensions? *Journal of Personality Assessment, 104*(6), 736-746.

Wu, H., Fung, B.J., & Mobbs, D. (2022). Mentalizing during social interaction: The development and validation of the Interactive Mentalizing Questionnaire. *Frontiers in Psychology,* 12: Article 791835.

Yaakobi, E., &Williams, K.D. (2016a). Ostracism and attachment orientation: avoidants are less affected in both individualistic and collectivistic cultures. *British Journal of Social Psychology, 55*, 162-181.

Yaakobi, E., & Williams, K.D. (2016b). Recalling an attachment event moderates distress after ostracism. *European Journal of Personality, 30*(3), 258-2783.

Zadro, L., Boland, C., & Richardson, R. (2006). How long does it last? The persistence of the effects of ostracism in the socially anxious. *Journal of Experimental Social Psychology, 42,* 692-697.

Zadro, L., Williams, K.D., & Richardson, R. (2004). How long can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology, 40,* 560-567.

Zadro, L., Williams, K.D., & Richardson, R. (2005). Riding the "O" train: Comparing the effects of ostracism and verbal dispute on targets and sources. *Group Processes and Intergroup Relations, 8,* 125-143.

Appendices

Appendix A

Informed Consent Form

LONG ISLAND UNIVERSITY – BROOKLYN

Informed Consent Form for Human Research Subjects

You are being asked to volunteer in a research study called "Social Participation, Relationships, Thoughts and Feelings about the Self and Others," conducted by Maria Poston, M.A. This project will be supervised by Nicholas Papouchis, Ph.D., at Long Island University in the Brooklyn Campus Psychology Department. The purpose of the research is to better understand how different social experiences and close relationships impact our functioning.

As a participant, you will be asked to complete a number of online surveys, participate in a brief computer game, watch a short movie, and provide some demographic information. This should take approximately from one to one and a half hours to complete the study. You are asked to complete this in one sitting. While there are no risks, you may experience a range of feelings, such as interest, curiosity, anxiety, or frustration, while responding to the questions in this study. While there is no direct benefit for your participation in the study, it is reasonable to expect that the results may provide information of value for the field of psychology. Upon completion of the study, you will receive $5.00 as compensation for your participation.

Your identity as a participant will remain confidential. Your name will not be included in any forms, questionnaires, etc. This consent form is the only document identifying you as a participant in this study; it will be stored in a secure database that is available only to the investigators. Data collected will be destroyed five years after completion of the study. Results will be reported only in the aggregate.

Although your IP Address will not be stored in the survey results, there is always the possibility of tampering from an outside source when using the Internet for collecting information. While the confidentiality of your responses will be protected once the data is downloaded from the Internet, there is always the possibility of hacking or other security breaches that could threaten the confidentiality of your responses.

Your participation in this research is voluntary. **You will only be identified by your Amazon Worker ID#.** We will not collect any personally identifiable information. Only Amazon maintains information on your personal identity and does not share that information with us. For this work you will receive $5.00.

You understand that you may stop participation at any time. However, you also understand that consistent with MTurk's policy you only receive payment if you

complete the survey, AND if your participation is deemed adequate (i.e. nonrandom responding in an appropriate time frame).

You can withdraw from the study at any time by navigating away from the online survey.

_____ By entering my age, I am certifying that I am over 18 years old

_____ *MTurk Worker ID#*

If you have questions about the research you may contact the student investigator, Maria Poston, at socparticipationinvestigate@gmail.com, the faculty advisor, Nicholas Papouchis, Ph.D., at 718-488-1164, or the department chair, Elizabeth Kudadjie-Gyamfi, Ph.D., at 718-488-1068. If you have questions concerning your rights as a subject, you may contact the Institutional Review Board Administrator Dr. Lacey Sischo at (516) 299-3591.

Your participation in this research is voluntary. Refusal to participate (or discontinue participation) will involve no penalty or loss of benefits to which you are otherwise entitled.

By clicking the "Agree to Participate" button below, you are indicating that you have fully read the above text and have had the opportunity to print the consent form and ask questions about the purposes and procedures of this study. Clicking this button serves as your electronic signature agreeing to participate in this study. If you choose not to participate, please click the "Decline to Participate" button below or simply close your browser.

☐ I agree to participate   ____ /____/____ Date
☐ I decline to participate

Appendix B

Debriefing Forms

Long Island University - Brooklyn

Social Participation, Relationships, Thoughts and Feelings about the Self and Others

Thank you for taking part in this study. The aim of this project is to better understand how different social experiences and close relationships impact our ability to reflect on ourselves and others and manage our emotions. You were first asked to provide demographic information about yourself. Next, you were asked to complete questionnaires about your understanding of yourself and others, your experiences of close relationships, and how you manage your emotions. You were then asked to participate in a ball tossing game. You were told that you will be playing with other participants who were also logged on at the same time; however, this was not true. Instead, a computer program controlled the other participants. We did not disclose all relevant information to you during the study because we were trying to simulate different kinds of social participation experiences – i.e., exclusion, inclusion, overinclusion. You may have received the ball the least amount of times, an equal amount of times, or a greater amount of times than the other players. You were then asked about your experience of the ball tossing game. Next, you were asked to again complete a questionnaire about how you manage emotions. Finally, you watched a short film and were asked about what the characters in the film were thinking and feeling. This type of research relies on your participation and we thank you for your efforts. To ensure that each participant has the same amount of information about the study when they participate, we ask that you not share details of this study with others. Your cooperation in this matter is necessary for quality results and is greatly appreciated. We hope this experience has helped you to develop an understanding of one way that psychologists conduct research.

Any questions about this study can be addressed to Maria Poston at socparticipationinvestigate@gmail.com. Also, in answering these questions, individuals sometimes have an emotional reaction to the themes discussed, gain a better understanding of themselves, and develop insight into their own behavior, which sometimes prompts people to seek therapy. To find mental health resources and/or crisis services in your area, we suggest the following website: http://www.iasp.info/resources/index.php/Crisis_Centres/

Thank you again for taking part in this study!