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Factors impacting the experience of empathic distress in social anxiety: a path analysis approach

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ABSTRACT

Personal distress is a manifestation of empathy characterized by a tendency to respond to others' difficulties by increasing one's distress. Previous work on socially anxious individuals has shown mixed results, consistent with a model of social anxiety symptomatology characterized by increased personal distress in empathy eliciting situations, which is driven by emotional dysregulation. The current study aimed to test a serial mediation model to uncover the role of emotional dysregulation in the relationship between social anxiety and empathic distress. 330 young adults were included in the sample. Social anxiety symptomatology, difficulty identifying one's feelings, expressive suppression, and empathic distress were analyzed through Structural Equation Modeling. Measurement and structural models were supported by data, with social anxiety exhibiting direct and indirect effects on empathic distress. Results also suggest that expressive suppression exhibits a negative effect on the distress exhibited in empathy eliciting situations, which brings forth relevant theoretical and clinical implications.

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The body of literature concerned with empathy is mired with controversies regarding its definition and conceptualizations. One of the main difficulties stems from a tendency to broaden the definition of empathy as to include various disjunct, albeit interrelated concepts and processes (Coplan, 2011; Håkansson Eklund & Summer Meranius, 2021; Hall & Schwartz, 2019). While such an approach does, in theory, allow for an exhaustive exploration of empathy, it bears the risk of leading to inconsistent results when, across different studies, empathy is used as a blanket term for examining all of these different processes (Coplan, 2011; Hall & Schwartz, 2019).

While empathy is a theoretical concept with various operational definitions, recent advances have led toward conceptualizing empathy as entailing at least four different, but interrelated facets of cognitive-emotional processing, namely cognitively understanding the other, feeling what the other feels, sharing the other's world (i.e., experiencing what the other experiences, both representationally and emotionally), while maintaining self-other differentiation (Håkansson Eklund & Summer Meranius, 2021). Stronger versions of the argument suggest that the latter ability is what is truly indispensable for empathy; while emotional resonance represents a prerequisite, empathy cannot be defined as such until the source of the emotion is identified as not coming from the other (Coplan, 2011; Cuff et al., 2016; Decety & Meyer, 2008). Indeed, Coplan (2011) engages in this line of thinking in order to distinguish between empathy and what they call "self-oriented perspective-taking" or "pseudo-empathy." In this theoretical framework, empathy fundamentally relies on the ability to inhibit one's self-perspective and to allow taking the perspective of the other (Decety & Jackson, 2004; Decety & Lamm, 2006; Decety & Meyer, 2008). In turn, self-oriented perspective-taking consists solely of imagining oneself in the position of the individual to be empathized with. While some authors argue

that this might be the default mode of mentalizing (i.e., thinking about others' mental states; Gallese et al., 2004), it is additionally argued to be qualitatively different from empathy, as it may result in inaccuracies and, even when it does not, it still may result in overarousal, difficulties in downregulating or modulating emotional responses, and increased personal distress as a response to others' distress (Coplan, 2011; Decety & Lamm, 2006; Eisenberg & Eggum, 2009).

The lack of consensus upon a single conceptualization of empathy has, of course, led to mixed empirical results and conceptual inconsistencies that extend beyond fundamental research and into other domains, such as those probing clinical disorders and psychopathology. One striking example is that of social anxiety, where results concerning mental state understanding and empathizing range from portraying socially anxious individuals as showing a decreased ability to understand others' mental states (Alvi et al., 2020; Lenton-Brym et al., 2018), including some tendencies to overattribute mental and emotional states to others (Hezel & McNally, 2014; Washburn et al., 2016) to showing increased self-reported empathy (Tibi-Elhanany & Shamay-Tsoory, 2011) and increased empathic accuracy, which seems to be specific to negative emotions (K. Auyeung & Alden, 2020; K. W. Auyeung & Alden, 2016; Tei et al., 2020). It should, however, be noted that these studies define empathic accuracy as the congruency between emotion ratings as reported by targets and perceived by participants, while not examining whether participants correctly infer the emotional states and associated thoughts of the targets, as per the traditional definition of empathic accuracy (Ickes, 1993).

A meta-analysis aimed to synthesize these discrepant findings, including both self-report and performance measures of various constructs broadly labeled as empathy (e.g., theory of mind, empathic accuracy, self-reported empathy). The authors found a non-significant negative association with what the authors call cognitive empathy (i.e., the ability to understand others' mental states, primarily focused on theory of mind measures) and a small positive association with affective empathy (i.e., the ability to feel or to share the emotions of others), but only in the case of self-reported empathy (Pittelkow et al., 2021). As this meta-analysis did not attempt to narrow down on specific conceptualizations and measurements of empathy, its results indicate that socially anxious individuals may simply show heightened emotional responses to others' experiences, without it being indicative of increased understanding of their mental states. Indeed, previous meta-analytic work has found a negative association between social anxiety (i.e., or related traits such as neuroticism and shyness) and interpersonal sensitivity (Hall et al., 2009).

Taken together, these findings paint the picture of the socially anxious individual as having difficulties in correctly understanding what others think (e.g., motivation behind their actions, the thoughts that accompany their emotional states) while presumably showing an increased tendency of sharing others' negative emotional states (K. Auyeung & Alden, 2020; K. W. Auyeung & Alden, 2016; Tei et al., 2020) or a heightened self-reported sensitivity to their emotional states (Pittelkow et al., 2021), largely due to their hypervigilance in the social domain and hypersensitivity to social cues, particularly those that indicate potential rejection (Alden & Taylor, 2004). Such findings are paradoxical in nature, as they raise the question of how can one simultaneously be more observant of and reactive toward others' states and yet unable to interpret them. One explanation for this lies with self-oriented empathy. As already noted, work that finds increased empathic accuracy in social anxiety focuses on the degree of correspondence between the intensity of emotions as experienced by a target and as perceived by the empathizer, while not examining whether the empathizer correctly infers the targets' complex states or simply, in increasing the intensity of their own emotions, are congruent with the emotions displayed by the targets. As the observed effect is limited to negative emotions, the latter suggestion becomes particularly relevant for social anxiety.

Indeed, social anxiety provides a unique context of application for the distinction between empathy, defined through the operational definition offered by Coplan (2011), and self-oriented perspective-taking, as it is a form of symptomatology inherently characterized by heightened distress in social situations and exacerbated self-focus (Blair & Blair, 2012; Gaebler et al., 2014; Norton & Abbott, 2016). Both negative emotionality and self-focus have been shown experimentally to lead to increased egocentric focus in empathy-eliciting situations, either expressed as increased personal

distress to the pain of another or through a diminished ability to inhibit self-perspective and adopt an other-oriented perspective (Cao et al., 2017; Todd et al., 2015). Thus, it would be expected that stable, elevated levels of social anxiety symptomatology would lead to more self-oriented perspective-taking in social situations that require taking an empathic stance; as individuals enter a social situation with already heightened levels of distress, they focus on their own social performance and this process is further reinforced. Moreover, social anxiety is primarily characterized by a marked fear of scrutiny from others and subsequent behavioral avoidance. This suggests that, even in situations where socially anxious individuals are able to share the affective states of others, they inhibit their behavioral responses to the situation and are less likely to engage in positive social behavior, such as showing compassion or expressing their own emotions (K. Auyeung & Alden, 2020; Sparrevohn & Rapee, 2009; Stoltenberg et al., 2013). Indeed, this would explain why, regardless of their tendency to share others' negative affect, socially anxious individuals are not perceived by others as empathic and are, in fact, more likely to be rejected, viewed as more undesirable interaction partners and less likely to have close relationships (Gilbert & Trower, 2001; Hur et al., 2020; Voncken et al., 2008; Voncken & Bögels, 2008).

The theoretical framework advanced by Coplan (2011) does not only differentiate between empathy and self-oriented perspective-taking, but does also allow for several predictions to be made with respect to the cognitive-emotional processing involved in each. The mechanisms involved in self-oriented perspective-taking are especially relevant in the context of social anxiety, as, in this framework, self-oriented perspective taking results in increased personal distress as a response to empathy-eliciting situations, which is explained chiefly through emotional dysregulation (Coplan, 2011; Eisenberg & Eggum, 2009). When empathizing, if one is to engage in the act of simulating how they would feel in the situation of the target of empathy (i.e., self-oriented perspective-taking), they may face overarousal and subsequent difficulties in downregulating that arousal. This is all the more relevant in individuals with elevated levels of clinical symptomatology, such as social anxiety, who are characterized by pervasive difficulties regarding emotional awareness and regulation (Dryman & Heimberg, 2018; Farmer & Kashdan, 2012; Jazaieri et al., 2015).

As emotional awareness and emotional regulation are multidimensional processes, disruptions and difficulties might arise at various stages. Social anxiety, as well as other types of symptomatology such as depression, lead to increased alexithymia, defined as a marked dysfunction in emotional awareness, which entails an inability to accurately identify and describe one's emotions, as well as tendency to engage in externally-oriented thinking (Bagby et al., 1994; Cox et al., 1995; Fukunishi et al., 1997). Indeed, it has been shown that alexithymia changes in response to changes in symptomatology (Karukivi, 2014) and it has been previously been argued that the study of alexithymia would benefit from examining its facets in isolation, rather than as a global construct, as, for example, facets such as the difficulty of identifying one's feelings are more likely to result in tendencies to over-respond to both emotional and neutral stimuli (Luminet et al., 2021). As a corollary to that idea, social anxiety and difficulty in identifying one's emotions could also be related to difficulties in identifying between the sources of those emotions, namely between self and other, as, particularly in social contexts, socially anxious individuals tend to divert their attention away from both their internal states and from external cues, rather focusing on their representations of others' perceptions of them, as a way to improve their perceived social performance (Gaebler et al., 2014).

One way through which socially anxious individuals attempt to modulate their social performance is by voluntarily inhibiting outward expressions of their emotional responses (K. Auyeung & Alden, 2020). Reliance on expressive suppression as a regulatory strategy has not only been found to be associated with both psychopathology and alexithymia (Chen et al., 2011; Laloyaux et al., 2015), but has additionally been shown to result in negative social consequences, such as being perceived as less emotionally available or less engaged in social interactions (Butler et al., 2003). Firstly, it is theoretically plausible to assume that a diminished ability to identify one's emotions is associated with a tendency to rely on expressive suppression for regulatory purposes, as strategies based on a more fine-grained understanding of one's emotional repertoire remain unavailable (Luminet & Zamariola, 2018). Secondly, theoretical conceptualizations of empathy additionally propose that emotion

regulation plays a role in empathic responding (Eisenberg & Eggum, 2009). Within this framework, at least some components of empathy can be seen as a function of emotional arousal, motivating responses meant to reduce the distress elicited by witnessing others' distress. According to this line of thinking, individuals showing elevated dispositional tendencies toward negative emotionality, who are unsuccessful in regulating their emotions, are expected to respond with personal distress rather than other responses such as empathic concern (Powell, 2018). Finally, meta-analytic evidence suggests that the usage of expressive suppression, as opposed to suppression of the experience, is to some limited extent effective in reducing momentary distress (Webb et al., 2012), particularly for socially anxious individuals (Kivity & Huppert, 2018).

Functionally, the arguments outlined so far imply that, faced with social situations in which the others exhibit distress and empathizing is prompted, the socially anxious individual becomes overwhelmed by distress, stemming from both the social interactions *per se* and the accurate readings of others' distress which elicit the simulation of that distress within the self (K. Auyeung & Alden, 2020; Coplan, 2011). This, in turn, promotes emotional suppression as an overgeneralized behavioral response meant to potentially avoid further scrutiny from other social actors. However, the effect elicited in the other is, in fact, the opposing one, and the socially anxious individual is perceived as not exhibiting a prosocial response or as not showing compassion and concern. This leads to less satisfactory social interactions and maintains the cycle of anxiety.

The current study thus proposes a strong association between social anxiety symptomatology and personal distress in empathy-eliciting situations, and it aims to examine emotional dysregulation, namely difficulties in identifying one's own feelings and an increased reliance on expressive suppression (i.e., the voluntary inhibition of outward expressions of emotion Gross and Jazaieri, 2014), as potential explanatory mechanisms for this relationship, in a model of serial mediation. While testing such a fully causal model would inherently require at least a longitudinal design, cross-sectional data is a first step in providing an empirical base as an impetus for such an endeavor. Based on the previously outlined theoretical considerations, the current study aimed to test a latent variable structural equation model shaped by the following predictions: social anxiety symptomatology will have positive associations with (H1a) difficulty identifying feelings (i.e., a component of alexithymia), (H1b) expressive suppression, (H1c) personal distress. (H2) The relationship between social anxiety symptomatology and expressive suppression will be mediated by difficulty identifying feelings. (H3) The relationship between difficulty identifying feelings and personal distress will be mediated by expressive suppression. (H4) The relationship between social anxiety symptomatology and personal distress will be mediated by expressive suppression. All these build toward the hypothesis that (H5) the relationship between social anxiety symptomatology and increased personal distress in empathy eliciting contexts will be explained by difficulty identifying feelings and reliance on expressive suppression of emotional responses, in a serial mediation model.

Methods

Participants and procedure

The final sample included in the current study consisted of 330 young adults, aged 18 to 35 ($M = 20.41$, $SD = 2.20$), 10.6% men. Out of 347 students that expressed interest for volunteering, 17 individuals scored higher than the cutoff score on the autistic traits screening measure and were deemed ineligible. Sample size was estimated based on a seminal article addressing the problem of statistical power in SEM (Wolf et al., 2013), which states that sample sizes ranging from 30 to 460 can be deemed sufficient and that the required number of cases decreases as the number of indicators per measurement model increases.

Participation was entirely voluntary, and participants, recruited from a university population, were rewarded with course credit for their participation. Following the invitation to participate, which was disseminated to students via social media (i.e., Facebook groups), all interested volunteers received

informed consents and the Autism Quotient – Short Form (Allison et al., 2012) for screening purposes. The battery consisting of subsequent instruments was administered online within a single completion session. Instruments' order was counterbalanced across participants to counteract order effects.

Measures

Autism quotient – short form (AQ-SF)

As autistic traits show robust associations with SA, empathic responding, and alexithymia, we decided to employ the AQ-SF as a screening tool, excluding participants with scores higher than the recommended cutoff of 6, which places the individual at risk for an ASD diagnosis (Allison et al., 2012).

The AQ-SF (Allison et al., 2012) is a short version of the autism screening questionnaire, which assesses autistic traits, ranging from sensory (e.g., “*I often notice small sounds when others do not.*”) to social-cognitive (e.g., “*I find it difficult to work out people’s intentions.*”) difficulties. As per recommended procedures (Allison et al., 2012), the items were scored on a 4-point scale ranging from “definitely agree” to “definitely disagree” and were consequently dichotomized.

Liebowitz social anxiety scale – self-report (LSAS-SR)

To assess SA symptomatology, the LSAS-SR (Fresco et al., 2001) was employed. The LSAS-SR consists of 24 scenarios that represent commonly encountered triggers of SA (e.g., speaking in front of groups of people) and it assesses fear and avoidance of those situations, scored on a 4-point scale, ranging from “no fear” and “never avoid,” respectively, to “high fear” and “always avoid.” As such, the LSAS-SR consists of two subscales for both major symptoms, fear and avoidance respectively. It additionally showed an excellent reliability index of .95, with .92 for the fear subscale and .90 for the avoidance subscale.

Toronto alexithymia scale (TAS-20) – difficulty identifying feelings (DIF) scale

The TAS-20 (Bagby et al., 1994) is one of the most commonly employed measures that assess the cognitive facets of alexithymia. Its DIF subscale consists of 7 items, scored on a 5-point Likert scale ranging from “strongly disagree” to “strongly agree,” which assess general difficulties in identifying specific emotions (e.g., “*When I am upset, I don’t know if I’m sad, frightened or angry.*”). The decision to specifically focus on the DIF scale of the TAS-20 was informed by calls in the literature to focus on specific facets of alexithymia, rather than the broad construct, literature that shows the most robust associations between this subscale and anxiety, sensitivity to social rejection (Chester et al., 2015; Grabe et al., 2004), as well as empathic responding (Valdespino et al., 2017) and ES (Chen et al., 2011). In the current sample, this subscale showed an adequate Cronbach’s Alpha of .85.

Emotion regulation questionnaire (ERQ) – expressive suppression scale

One of the most robust measures of trait-like tendencies of reliance on expressive suppression is found in the Emotional Regulation Questionnaire developed by Gross and John (2003). This subscale consists of 4 items, scored on a Likert scale ranging from 1 (“strongly agree”) to 7 (“strongly disagree”), which assess the general tendency to rely on ES (e.g., “*I keep my emotions to myself.*”). In the current sample, the suppression scale of the ERQ showed a suitable Cronbach’s Alpha of .80.

Brief interpersonal reactivity index (B-IRI) – personal distress scale

To assess personal distress the Personal Distress subscale of the B-IRI (Ingoglia et al., 2016) was employed. The B-IRI is a short version of the original Interpersonal Reactivity Index (Davis, 1983), developed to surpass some of its fundamental measurement issues, such as low reliability and overlap in factor structure. This subscale evaluates feelings of distress and inadequacy when experiencing others’ distress, consisting of items (“*Being in a tense emotional situation scares me*”) scored on a Likert scale, ranging from 1 (“Does not describe me well”) to 5 (“Describes me very well”). For the current

study, this subscale showed an acceptable Cronbach’s Alpha of .79. It should be hereby noted that, in order to attest to the claim that social anxiety shows associations with personal distress, but not with other facets of empathy, the others subscales of the B-IRI (i.e., Perspective-Taking, Fantasy, and Empathic Concern) were also employed. All of them showed acceptable Cronbach’s Alphas, ranging from .54 to .77.

Data analytic procedure

For data analysis, Structural Equation Modeling (SEM) with latent variables was employed. As such: a) social anxiety was represented as a latent variable comprising of the fear and avoidance subscales of the LSAS-SR; b) difficulty identifying feelings was represented as a latent variable consisting of the Difficulty Identifying Feelings subscale of the TAS-20; c) usage of expressive suppression was conceptualized as a latent variable consisting in the ERQ Suppression scale and, d) the personal distress latent variable consisted in the Personal Distress scale from the B-IRI.

Prior to undergoing data analysis, assumptions of univariate and multivariate normality as well as multicollinearity were assessed. Due to violations of the multivariate normality assumption, the Satorra-Bentler correction was employed, as per recommendations (Kline, 2012). Data analysis was undergone in RStudio (RStudio Team, 2015) using the lavaan (Rosseel, 2012), mvn (Korkmaz et al., 2014) and semPlot (Epskamp, 2015) packages.

Results

Descriptive statistics

Prior to testing the latent variable structural model, data was inspected. Table 1 renders descriptive data, as well as Pearson correlation coefficients between study variables, alongside Bayes factors in support of those correlations. It should be noted that social anxiety symptomatology showed small to medium, but significant (all $p_s < .001$), correlations with all outcome variables, thus offering support for hypotheses H1a, H1b and H1c. This is further supported by the corresponding Bayes Factors (BF), with a minimum value of 64 (i.e., for the relationship between social anxiety and expressive suppression), indicating strong support for the research hypothesis, as a BF value over 10 is considered to indicate extreme support (Wagenmakers et al., 2018).

Table 1. Descriptive statistics. Pearson correlation quotients and corresponding Bayes factors for the correlations between study variables.

		SA	DIF	ES	ED
SA	Pearson’s r	–			
	BF ₁₀	–			
DIF	Pearson’s r	0.46***	–		
	BF ₁₀	3.25e +15	–		
ES	Pearson’s r	0.20***	0.32***	–	
	BF ₁₀	64.01	2.15e+6	–	
ED	Pearson’s r	0.40***	0.46***	– 0.17 **	–
	BF ₁₀	7.02e +10	2.46e +15	7.06	–
Mean		40.36	16.42	12.61	12.63
Std. Deviation		21.78	6.19	5.07	3.514
Range		0–99	7–32	4–26	4–20

SA = Social Anxiety; DIF = Difficulty Identifying Feelings; ES = Expressive Suppression; ED = Empathic Distress. ** $p < .01$, *** $p < .001$. BF₁₀ represents the degree to which data support the hypothesis of association between the variables over the null hypothesis of no correlation. BF₁₀ > 3 indicates moderate evidence, BF₁₀ > 100 indicates extreme evidence.

It should additionally be remarked that, while not the direct scope of the current paper, correlations between social anxiety and the other three facets of empathy as assessed by the B-IRI were performed. None of these correlations were statistically significant, with a correlation between social anxiety and (a) perspective-taking, of $-.02$ ($p = .700$), (b) fantasy, of $.08$ ($p = .135$), and (c) empathic concern, of $.02$ ($p = .661$).

Model testing

Figure 1 depicts the tested structural model with latent variables, which is posited by H5 of the current study. The model, tested with 1000 bootstrapped samples, initially showed inadequate fit: $\chi^2(98) = 163.745$, $p < .001$, root mean square error of approximation (RMSEA) = 0.045 [0.033, 0.056], comparative fit index (CFI) = 0.964, standardized root mean square residual (SRMR) = 0.052.

After inspecting modification indices and the patterns of correlations, we decided to remove two items from the initial measurement models, as follows: “*I have physical sensations that even doctors don’t understand.*” for DIF, and “*When I am feeling positive emotions, I am careful not to express them.*” for ES. In both cases, this decision was supported by empirical observations (i.e., non-significant or low correlations between these items and other items on their respective scales, thus leading to suboptimal fits in the measurement model of SEM) and by a semantic-level analysis of the items. These items, assessing the somatic component of alexithymia and, respectively, expressive suppression

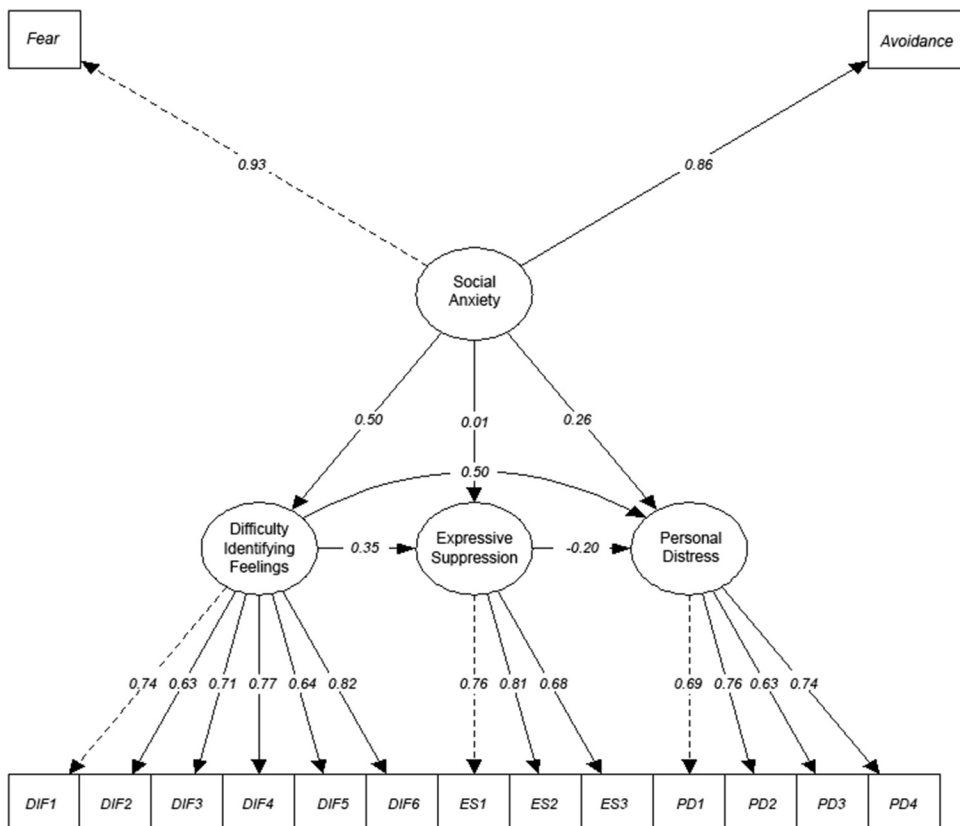


Figure 1. The multiple mediation model with manifest and latent variables. DIF1, DIF2, DIF3, DIF4, DIF5, DIF6 = items from the TAS-20 difficulty identifying feelings subscale; ES1, ES2, ES3 = items from the ERQ expressive suppression subscale; PD1, PD2, PD3, PD4 = items from the B-IRI personal distress subscale; Fear = the fear subscale of the LSAS-SR; Avoidance = the avoidance subscale of the LSAS-SR.

Table 2. Indirect and total effects for the tested mediation model.

Pathways	Standardized Coefficient	95% Confidence Interval	
		Upper	Lower
Indirect effects			
SA -> DIF -> ES	0.17***	0.15	0.19
SA -> ES -> PD	0.25***	0.19	0.31
DIF -> ES -> PD	-0.07*	-0.02	-0.12
Total effects			
(SA -> DIF -> ES) + SA -> ES	0.19**	0.14	0.24
(SA -> ES -> PD) + SA -> PD	0.50***	0.44	0.57
(DIF -> ES -> PD) + DIF -> PD	0.43***	0.39	0.47

Standardized beta coefficients are based on 1000 bootstrapped samples. SA = Social Anxiety; DIF = Difficulty Identifying Feelings; ES = Expressive Suppression; ED = Empathic Distress ** $p < .05$, ** $p < .01$, *** $p < .001$

of positive emotionality, are not expected to be meaningfully related to the latent constructs envisioned within the current model, specifically focused on the cognitive experience and regulation of negative emotionality.

Subsequent fit of the model after the elimination of these two items was adequate: $\chi^2(84) = 97.725$, $p = .113$, RMSEA = 0.032 [0.012, 0.047], CFI = 0.992, SRMR = 0.039.

An alternative, theoretically plausible model introducing difficulty identifying feelings and expressive suppression as parallel mediators in the relationship between social anxiety and personal distress was tested and showed suboptimal fit: $\chi^2(85) = 117.492$, $p = .008$, RMSEA = 0.035 [0.020, 0.049], CFI = 0.982, SRMR = 0.068.

Regarding path analysis, a serial mediational model was tested, as illustrated in [Figure 1](#). In this model, social anxiety symptomatology directly predicted difficulty identifying feelings ($\beta = 0.50$, $p < .001$) and empathic distress ($\beta = 0.26$, $p < .001$). However, the direct effect of social anxiety symptomatology on expressive suppression was not significant ($\beta = 0.01$, $p = .87$), suggesting that the relationship between social anxiety symptomatology and expressive suppression is fully explained by difficulty identifying feelings. Indeed, difficulty identifying feelings had a significant effect on suppression ($\beta = 0.35$, $p < .001$), as well. Personal distress was directly predicted by all three independent variables, as follows: a) a significant effect of social anxiety, b) a significant effect of difficulty identifying feelings ($\beta = 0.495$, $p < .001$), and c) a significant negative effect of expressive suppression ($\beta = -0.197$, $p = .002$). Indirect and total effects in support of hypotheses H2 to H4 are depicted in [Table 2](#).

Discussion

The current study tested a serial multiple mediation model explaining the relationship between social anxiety symptomatology and personal distress experienced in empathy-eliciting contexts, focusing on the explanatory role of difficulty identifying feelings (i.e., as a component of alexithymia) and expressive suppression, advanced as serial mediators in this relationship. This hypothesis of serial mediation was indeed supported by the data, with the model advancing a serial mediation model showing better fit indices than other, competing models (e.g., advancing difficulty identifying one's feelings and expressive suppression as parallel mediators). More specifically, the model states that social anxiety symptomatology would lead to increased personal distress in situations eliciting empathy, as socially anxious individuals are more likely to engage in a self-oriented form of perspective-taking. This arises as social anxiety is associated with elevated distress in social contexts, which, in turn, leads to emotional dysregulation, a diminished ability to identify or regulate one's own feelings.

From a theoretical standpoint, the current study contributes to the literature on empathy in social anxiety, which currently yields mixed and apparently contradictory results (Pitteltkow et al., 2021) by advancing the idea that social anxiety results in increased personal distress in contexts where empathy is elicited. This idea primarily stems from the conceptualization of empathy advanced by Coplan

(2011) and supported by more recent, scoping reviews (Håkansson Eklund & Summer Meranius, 2021) that empathy is specifically characterized by an ability to understand, feel, and share others' representational and emotional states, while maintaining a clear self-other differentiation. Within the framework it is argued that, without the latter, any emotional response to others' distress cannot be characterized as empathy, but rather as self-oriented perspective-taking. On the basis of this observation, we predicted that social anxiety, a type of symptomatology that is characterized by increased self-focus in social situations is more likely to be associated with increased personal distress, rather than other abilities that fall under the blanket term and measurement models of self-reported empathy (i.e., perspective-taking, fantasy, and empathic concern). Indeed, within the current sample, we only found a significant association between social anxiety and personal distress, as well as strong empirical support for this association (i.e., as indexed by Bayes Factors). All of the other associations were not supported by the data, which offered more support for the null hypothesis.

The theoretical framework advanced in the current study makes one additional prediction, in that self-oriented perspective-taking, as that exhibited in social anxiety, would lead to increased personal distress through emotional dysregulation. As already argued (Coplan, 2011; Decety & Jackson, 2004; Eisenberg & Eggum, 2009; Pittelkow et al., 2021), increased focus on one's own states when witnessing others' distress would lead to overarousal, overwhelming negative emotionality and difficulties in downregulating and modulating this arousal. As such, we predicted that emotion regulation difficulties would mediate the relationship between social anxiety and personal distress experienced in social contexts. Here, we decided to conceptualize difficulties in emotion regulation as pertaining to both difficulties regarding emotional awareness (i.e., difficulties in identifying one's own feelings) and regulatory strategies (i.e., usage of expressive suppression). Indeed, the current study found support for the mediational role of both these processes, in a serial mediation model.

Interestingly, and not among the predictions of the model, was that when difficulty identifying feelings was accounted for in the model, the direct effect of social anxiety symptomatology on expressive suppression was no longer significant, suggesting that difficulty identifying feelings fully mediates this effect. This joins a wide body of literature that attests that, across various clinical disorders, alexithymic features may represent explanatory mechanisms for the relationship between symptomatology and idiosyncrasies in empathic processing and responding (Banzhaf et al., 2018; Bird & Cook, 2013). This also suggests that increasing the ability to identify one's own feelings might represent a particularly fruitful avenue for treatment in social anxiety, that may result in both reductions of distress and in a widening of the repertoire of emotional regulation strategies that those suffering from social anxiety habitually engage in.

Another noteworthy finding was that, within the current sample, both the direct relationship between expressive suppression and personal distress, as well as the indirect relationship between difficulty identifying feelings and personal distress through expressive suppression were negative. This, of course, suggests that as one engages in more expressive suppression, their personal distress in a social situation decreases. This is not a unique finding in the literature, as others have shown that the voluntary inhibition of emotional expression is marginally effective in reducing distress in socially anxious individuals (Kivity & Huppert, 2018; Webb et al., 2012). In the context of the current study, we have additionally shown that this extends to the distress experienced as a response to others' distress and could speculatively be explained by the fact that no outward emotional expression is interpreted by socially anxious individuals as eliciting less scrutiny from others. This hypothesis, however, remains to be tested. If replicated, such a finding contributes toward a more nuanced discussion of personal distress. Other work has also shown that, despite showing an increased tendency to share others' emotional (i.e., particularly negative) states, socially anxious individuals are less likely to respond in an adaptive manner to their distress, as they engage in less self-disclosure or outward expressions of compassion (K. Auyeung & Alden, 2020; Sparrevohn & Rapee, 2009; Stoltenberg et al., 2013). This suggests that while expressive suppression may marginally reduce one's distress, it does not lead to expressing empathic concern or to engaging in prosocial behaviors and as such contributes to the image of the socially anxious individual as an undesirable interaction partner.

From a practical perspective, this latter finding also highlights potential targets for intervention. While others have previously argued that socially anxious individuals would benefit from a reduction in their empathic accuracy (K. Auyeung & Alden, 2020), the current findings suggest that it is not increased empathic accuracy that primarily affects the socially anxious person, but rather, the fact that socially anxious individuals respond with personal distress to others' emotions. By fostering greater emotional clarity (Morrison et al., 2016), as well as an orientation toward the other in distressing situations, personal distress might be reduced, as more prosocial behaviors would be encouraged. Thus, our work highlights emotional awareness as a potential treatment focus in SA. Responding with distress to others' negative affect does not only contribute toward enhancing and maintaining individuals' distress, but also impacts social functioning (Kahn et al., 2017; Smith, 2015). Therefore, the current study provides a direction for addressing social functioning in social anxiety by aiming to increase the ability to identify one's own emotions (e.g., Cameron et al., 2014) and to promote contextually-sensitive, adaptive emotional regulation strategies in interpersonal situations, including interpersonal, co-regulatory processes (Renna et al., 2017; Thompson et al., 2019).

The current results should be viewed in light of certain limitations. Firstly, the initially tested model showed suboptimal fit to the data. An inspection of modification indices revealed that the measurement models of two of the variables were not supported by the data collected in the current study, as detailed in the Results section. As such, the decision was made to remove those items, which significantly increased the fit of the model. While this decision can be supported by solid arguments, as those items were not directly related to the model under scrutiny here, as they either related to physiological dimensions of emotional identification or they did not relate to the regulation of distress specifically, such an approach is inherently data-driven, and, as such, these findings warrant replication. Secondly, the theoretical framework under which the current study operates assumes causal relationships between the studied variables. However, the cross-sectional nature of the data cannot substantiate this assertion. Future work should follow the interplay between these processes developmentally, throughout the lifespan. Thirdly, we only collected data online, using self-report measures. Although the measures have considerable support in the literature and data collected online shows no significant distortions (Gnambs & Kaspar, 2017; Muehlhausen et al., 2015), accompanying clinical evaluations would augment the robustness of the findings.

To conclude, the current study sheds light on the relationship between social anxiety symptomatology and empathy, as we show that social anxiety is associated with increased personal distress experienced in situations eliciting empathy, but not with other facets of empathy. We also advance a putative explanatory model of this relationship, that advances emotional dysregulation as an explanatory mechanism. This model and the current findings are theoretically consistent with models that clearly delimitate empathy from other self-oriented processes that are apparent in social anxiety. The current work also highlights implications for clinical practice, further substantiating the role of social-cognitive processes in the maintenance of social anxiety, as well as advancing potential avenues for the assessment of empathy in individuals exhibiting social anxiety symptomatology and for the treatment of that symptomatology.

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Data availability statement

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