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Active Emotion Regulation Mediates Links between Shyness and Social Adjustment in  
Preschool

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**Conflict of Interest**

The authors declare that they have no competing interests.

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## Abstract

Shyness is characterized by the experience of heightened fear, anxiety, and social-evaluative concerns in social situations and is associated with increased risk for social adjustment difficulties. Previous research suggests that shy children have difficulty regulating negative emotions, such as anger and disappointment, which contributes to problems interacting with others. However, it remains unclear precisely which strategies are involved among these associations. Accordingly, the goal of this study was to explore the mediating role of emotion regulation strategies in the links between young children's shyness and social adjustment at preschool. Participants were 248 preschool children aged 2.5 to 5 years. Parents rated children's shyness and emotion regulation strategies in the context of anger and fear. Early childhood educators assessed indices of social adjustment four months later. Among the results, active regulation mediated associations between shyness and subsequent prosocial and socially withdrawn behaviors. Child gender further moderated these linkages, such that the model predicting socially withdrawn behavior was stronger among boys. These results expand on our understanding of emotion regulation strategies in shy children's early socio-emotional development.

Keywords: *Shyness, emotion regulation, preschool, emotion regulation strategies, social adjustment*

Preschool is a period of early social exploration in which children acquire and develop social and emotional competencies. However, for shy children, early educational contexts can be particularly challenging and stressful (Coplan & Arbeau, 2008). Shyness is a temperamental trait characterized by wariness and unease in the face of social novelty (e.g., encountering a stranger), as well as self-consciousness and embarrassment in situations of perceived social evaluation (Asendorpf, 1990; Crozier, 1995). Shyness shares some conceptual overlap with constructs such as behavioral inhibition (e.g., Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984), but pertains specifically to wariness in social situations. Shyness is also associated with deficits in social competence as well as adjustment difficulties throughout childhood, particularly along the internalizing dimension (Rubin, Coplan, & Bowker, 2009). These social adjustment difficulties are evident in early childhood (e.g., Sette, Baumgartner, & Schneider, 2014), yet comparatively little is known about the mechanisms underlying young shy children's adjustment.

Early childhood is also a time of prodigious development of emotion-related competencies. Emotion regulation is the process of modulating emotion expression and emotion-related physiological and cognitive processes (Gross, 2014). For preschoolers, learning to use strategies that reduce the expression of negative emotions is a critical component in their social interactions and relations with peers (Blair et al., 2015; Halberstadt, Denham, & Dunsmore, 2001). For instance, emotionally regulated preschoolers engage in more prosocial behavior because they are more able to dispel their own feelings of distress and engage in empathy (Song, Colasante, & Malti, 2018). However, shy children are prone to difficulties regulating emotions because they often react more intensely in emotional situations (Rubin et al., 2009). Thus, emotion regulation may help to explain why shyness contributes to social adjustment difficulties throughout childhood.

## Shyness in Early Childhood

Early education environments expose young children to previously unparalleled opportunities for social interaction. Sudden exposure to a new environment with new peers and educators poses challenges for all children, yet shy children have particular difficulty adjusting in these settings (Coplan & Arbeau, 2008). For example, shy children tend to experience elevated physiological reactivity in social situations, which leads to feelings of anxiety and impedes their ability to engage in peer interactions and group play (Fox et al., 2005). Thus, despite a desire for social interaction, shy children may be inundated by feelings of fear and anxiety that trigger social avoidance (Asendorpf, 1990). Indeed, young shy children can often be observed hovering on the outskirts of peer group activities instead of joining in (Coplan, Arbeau, & Armer, 2008).

Shyness is associated with a range of socio-emotional difficulties throughout childhood, but many of these adjustment issues take root in early childhood. For instance, research in North America found that shy preschoolers frequently opt to play alone in the presence of peers and, consequently, may be more excluded by peers (Coplan, Ooi, Rose-Krasnor, & Nocita, 2014; Ooi, Baldwin, Coplan, & Rose-Krasnor, 2018). Shy preschoolers also tend to display more internalizing problems, such as anxious-withdrawn behaviors and depressive symptoms (Coplan, Ooi, Xiao, & Rose-Krasnor, 2018; Kopala-Sibley & Klein, 2017; Sette, Zava, Baumgartner, Baiocco, & Coplan, 2017). Furthermore, shyness (behavioral inhibition) is a risk factor for later social anxiety disorder (Clauss & Blackford, 2012), and stable, increasing levels of shyness in a longitudinal study of Norwegian children were found to predict symptoms of anxiety and depression in adolescence (Karevold, Ystrøm, Coplan, Sanson, & Mathiesen, 2012).

There is also accumulating evidence to suggest that the consequences associated with shyness are more negative for boys (Doey, Coplan, & Kingsbury, 2014). This is believed to be the result of a societal gender bias, whereby shyness is perceived as less socially acceptable for boys compared to girls (Rubin & Coplan, 2004). Shy behavior in boys violates North American gender norms that characterize boys as stereotypically assertive and dominant. As a result, shy boys are perceived less favorably by peers and, in turn, experience greater degrees of peer victimization compared to shy girls whose behavior aligns with societal expectations (Gazelle & Ladd, 2003). Taken together, shy children (especially boys) appear to be a heightened risk for adjustment difficulties in preschool. Thus, understanding the factors that contribute to these difficulties is of great importance.

### **Emotion Regulation Strategies**

An important part of early childhood is the development of affective social competence, which includes the use of adaptive strategies for dealing with difficult emotions (Halberstadt et al., 2001). Emotion regulation strategies are intentional or automatic behaviors that serve to modulate an emotional response (Eisenberg et al., 2003). Generally, emotion regulation strategies become increasingly intentional (i.e., top-down) and less reactive (i.e., bottom-up) as children's executive functioning develops (Cole, Lougheed, & Ram, 2018; Feldman, 2009; Kopp, 1989). For example, toddlers use more self-soothing and physical comfort seeking strategies, whereas preschoolers use more effortful strategies, such as distraction and problem-solving (Cole et al., 2011). The use of these more intentional strategies becomes increasingly salient during preschool as peers and adults place greater demands on children's affective social competence (Halberstadt et al., 2001).

Researchers have identified two broad categories of emotion regulation strategies in childhood: active and passive strategies (Cole, Zahn-Waxler, & Smith, 1994; Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002; Silk, Shaw, Skuban, Oland, & Kovacs, 2006). Active

strategies are intentional attempts to change or modify the emotion or situation to reduce distress (e.g., problem-solving behaviors). These strategies are more deliberate in their onset and tend to be focused toward removing or changing the stressor itself. In contrast, passive strategies are characterized by disengagement from the situation and resorting to secondary behaviors (e.g., self-soothing). In general, active strategies tend to be more effective compared to passive strategies because passive strategies provide short-term relief to negative emotions but are less effective at regulating emotions in the long-term (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Compas et al., 2017).

### **Shyness and Emotion Regulation**

There is some evidence to suggest that shy children are more likely to employ passive rather than active strategies to regulate emotions. For example, in a sample of North American preschoolers, shyness was associated with the use of passive behaviors, which included physical comfort seeking and passive waiting (Feng, Shaw, & Moilanen, 2011). In another study, shy (behaviorally inhibited) preschoolers more frequently sought maternal comfort and were engaged in fewer constructive strategies in response to fear (Root, Byrne, & Watson, 2015). Shy children may have greater difficulty regulating emotions because they experience heightened emotional reactivity (Hane, Fox, Henderson, & Marshall, 2008). Emotionally charged situations also have a greater tendency to elicit a threat avoidance response in shy children (Morales, Pérez-Edgar, & Buss, 2015). Lastly, there is evidence among older children that shyness is associated with internalizing coping, which includes worrying, ruminating, self-pitying, and self-blaming; all of which portend increased risk of anxious and depressive symptomatology (Kingsbury, Coplan, & Rose-Krasnor, 2013).

Extending this further, researchers have begun to explore whether emotion regulation may explain the link between shyness and social adjustment difficulties. For instance, Penela, Walker, Degnan, Fox, and Henderson (2015) reported that shyness (behavioral inhibition)

predicted less active emotion regulation (reflecting high active and low passive strategy use) in preschool, which subsequently predicted social competence in middle childhood.

Specifically, active emotion regulation mediated the association between shyness and children's ability to initiate positive social interaction and engage in social play. In contrast, Feng et al. (2011) found that distraction mediated the link between shyness in preschoolers and internalizing problems in elementary school, whereas passive strategies (comfort seeking and passive waiting) mediated the association for externalizing problems.

These findings are somewhat difficult to compare due to differences in classifying regulation strategies. For instance, it is not always clear which strategies are best conceptualized as active or passive. On the one hand, support seeking could be lumped within the passive category because the child is not directing their regulatory behaviors to remove or modify the stressor. On the other hand, it entails seeking guidance from a caregiver and is a more effortful strategy compared to self-soothing (Bernzweig, Eisenberg, & Fabes, 1993; Dollar & Stifter, 2012). A similar problem arises regarding distraction, which is construed as ignoring the stressor and engaging in an alternate activity but is sometimes conceptualized as an active strategy in terms of attention shifting (e.g., Feng et al., 2011).

This limitation is compounded by challenges interpreting these findings outside the laboratory, given that shy children are predisposed to behave differently in unfamiliar settings. Moreover, previous research of emotion regulation has assessed a restricted repertoire of strategies in contexts typically limited to externalizing emotions like frustration or anger (Lougheed & Hollenstein, 2012). Anger regulation is indeed implicated in both internalizing and externalizing problems (Zeman et al., 2002), but there is evidence to suggest that fear dysregulation may also contribute to young children's social adjustment difficulties (Buss, 2011). Thus, examining emotion regulation across anger and fear contexts offers a more comprehensive view of its relation to shyness.

## The Current Study

It has been well established that emotion regulation is a pivotal component of optimal social adjustment in early childhood. Research further suggests that emotion regulation may be a mechanism linking shyness to social adjustment (Feng et al., 2011; Penela et al., 2015). However, is it unclear precisely which emotion regulation strategies are involved among these associations, as researchers have conceptualized strategies in different ways and have explored some strategies at the expense of others. Accordingly, the goal of the current study was to investigate a diverse array of emotion regulation strategies and their potential roles as mediators in the links between shyness and indices of social adjustment in preschool. Rather than conceptually grouping strategies *a priori* as active or passive, an empirical approach was used to identify strategy types, which were subsequently labeled in line with previous theory (Gilliom et al., 2002). Strategies in response to anger and fear were chosen in the current study because emotional expressions in these contexts were deemed particularly salient for young children (Derryberry & Rothbart, 1997).

We hypothesized that active emotion regulation strategies would mediate the association between shyness and indices of social adjustment. Specifically, shyness was expected to be associated with fewer active strategies, which would, in turn, be positively associated with prosocial behavior and negatively associated with socially withdrawn and anxious behaviors. Additional strategies typically subsumed under the label of *passive* regulation strategies (e.g., self-soothing, support seeking) were explored, but were not expected to mediate these linkages, as previous studies have suggested that a lack of active regulation is a more salient indicator of social adjustment difficulties (Penela et al., 2015).

On a more exploratory basis, we examined possible gender differences among these associations. For example, in light of evidence suggesting that shyness has more negative implications for boys' social adjustment in North America (Doey et al., 2014; Gazelle &



Ladd, 2003), we explored whether gender would moderate the association between shyness and social adjustment. We also explored whether this pattern might extend to emotion regulation strategies, such that shyness might be associated with fewer active strategies among boys. Finally, there is some evidence to suggest that emotion regulation is also more strongly associated with social adjustment issues among boys than girls (Herndon, Bailey, Shewark, Denham, & Bassett, 2013; Hipson, Gardiner, Coplan, & Ooi, 2017). Consequently, we also explored whether the link between emotion regulation and social adjustment would be moderated by gender.

## Method

### Participants

Participants were  $N = 248$  children (128 boys, 120 girls) ranging from 2.5-5 years of age ( $M = 38.62$  months,  $SD = 6.12$ ). Consent rate was approximately 30% and age distribution was consistent for boys and girls. Children were attending 32 preschools and childcare centres in two urban/suburban regions located in southeastern Ontario ( $n = 149$ ) and central Nova Scotia ( $n = 99$ ), Canada. The predominant ethnicity was White (76.8%) followed by Asian (8.9%), Black (5.2%), Aboriginal (.8%), Hispanic (.4%) and Other (7.7%). The majority of primary caregivers reported being married or common law (86.6%), with the remaining being single (7.7%), divorced or separated (4.5%), or other (1.2%). Childcare centres did not permit the collection of data concerning parental income or employment status, thus education was used as a proxy for socioeconomic status. Approximately 1% of mothers and 2% of fathers had not completed high school, 5% of mothers and 11% of fathers had completed high school only, 19% of mothers and 18% of fathers had completed community college, 42% of mothers and 40% of fathers had received a university degree, and 33% of mothers and 26% of fathers had obtained graduate degrees.

## Procedure

Data were collected from parents during the Fall and from early childhood educators during Winter/Spring. We implemented this time-lag to reduce educator's overreporting of anxious behaviors due to unfamiliarity with the preschool environment. During the Fall, parents received packages containing study information, consent forms, and debriefing during end-of-day pick-up. We requested that only one parent (primary caregiver) complete the questionnaires. No information was collected on the primary caregiver's gender or relationship to the child. Parents completed questionnaires regarding demographic information (child age, gender, parent education, marital status, ethnicity), and ratings of children's shyness and emotion regulation strategies. In the Spring, researchers returned to the childcare centre and provided educators with packages containing study information, consent forms, and debriefing. Information from early childhood educators regarding children's social adjustment was obtained for 223 children (21 children had withdrawn from their childcare centre prior to later data collection, and 4 questionnaires were not returned by educators). Missing data analysis revealed that Little's MCAR test was not significant:  $\chi^2 = 42.208$  ( $df = 38$ ,  $p = .294$ ) suggesting that the data are missing at random. All procedures were approved by the University Ethics Review Board.

## Measures

### Emotion regulation

Parents completed an adapted version of the *Emotion Regulation Skills Questionnaire* (ERSQ; Mirabile, 2014) to assess distinct emotion regulation strategies. Each strategy was assessed with one item pertaining to anger regulation and another pertaining to fear regulation, resulting in two items per strategy. The eight strategies included were: *self-directed speech* (e.g., "S/he calms him/herself by talking through the problem"), *constructive/instrumental coping* (e.g., "S/he tries to face the situation and deal with it"),

*information gathering* (e.g., “S/he asks questions about the event or object”), *verbal distraction* (e.g., “S/he ignores whatever makes him/her afraid and talks to me about something else”), *object distraction* (e.g., “S/he ignores whatever makes him/her afraid and finds a toy to play with, sings, dances, runs around, or finds something else to do”), *self-comforting* (e.g., “S/he comforts him/herself by thumb sucking, playing with his/her hair, looking at or playing with parts of his/her body or clothes, or uses a teddy or blanket”), *comfort seeking* (e.g., “S/he comes to me for comforts”), and *support seeking* (e.g., “S/he asks me for help in fixing the problem”). Items were rated using a 5-point Likert-type scale (ranging from 0 = “never” to 4 = “almost always”).

Mirabile (2014) originally classified items from the ERSQ (on a conceptual basis) as adaptive or maladaptive. We conducted a principal components analysis (using a Varimax rotation) to empirically examine the factor structure of these items for the first time. After removing one item (constructive coping for anger) due to cross-loadings, results indicated a four-factor solution (i.e., four components with Eigenvalues  $> 1$ ), accounting for 58.49% of the variance (see Table 1). KMO reached .694 ( $\geq .6$  is required for a good FA) and Bartlett’s test of sphericity was significant,  $\chi^2 = 1033.065$ ,  $df = 105$ ,  $p < .001$ , suggesting that the data are adequate for principal components analysis (Tabachnick & Fidell, 2007).

The first component was labeled *Active Regulation* ( $\alpha = .73$ ) and consisted of three strategies across both emotions: self-directed speech (anger and fear), information gathering (anger and fear), and constructive coping (fear). The second component was labeled *Self-comforting* ( $\alpha = .88$ ) and was comprised of this item for both anger and fear. The third component was labeled *Support Seeking* ( $\alpha = .67$ ) and consisted of two strategies across both emotions: comfort seeking (anger and fear) and support seeking (anger and fear). Finally, the fourth component was labeled *Distraction* ( $\alpha = .75$ ), which included verbal distraction and object distraction for fear and anger.

## **Shyness**

Maternal ratings of shyness were obtained using the *Child Social Preference Scale* (Coplan, Prakash, O'Neil, & Armer, 2004). Of particular interest for the present study was the subscale assessing children's shyness (7 items, e.g., "My child seems to want to play with other children, but is sometimes nervous to"). Items are rated using a Likert-type scale ranging from 1 (not at all) to 5 (a lot). In the current sample, these items demonstrated strong internal consistency ( $\alpha = .87$ ), which is consistent with previous studies (e.g., Coplan et al., 2008). This measure has previously demonstrated excellent convergent and discriminant validity (e.g., Dyson, Klein, Olino, Dougherty, & Durbin, 2011).

## **Educator Ratings**

Educators provided information on children's social adjustment in preschool using the *Child Behavior Scale* (Ladd & Profilet, 1996). Of particular interest were indicators of social behaviors, which includes subscales assessing anxiety with peers (4 items, e.g., "tends to be fearful or afraid of new things or new situations";  $\alpha = .72$ ), (socially withdrawn) asocial with peers (6 items, e.g., "likes to be alone, withdraws from peer activities;  $\alpha = .87$ ), and prosocial with peers (7 items, e.g., "seems concerned when other children are distressed";  $\alpha = .90$ ). Items are rated using a Likert-type scale ranging from 1 (doesn't apply) to 3 (certainly applies). This scale has demonstrated excellent convergent and predictive validity across multiple samples (Ladd, Herald-Brown, & Andrews, 2009).

## **Analytic Plan**

To explore the hypothesis that emotion regulation strategies would mediate links between shyness and indices of social adjustment, we computed a series of mediation models with shyness as the independent variable, active regulation as the mediator, and social adjustment indices as outcomes. We used contemporary mediation analysis to estimate the indirect effect of shyness on indices of social adjustment via emotion regulation using

bootstrapping (Zhao, Lynch, & Chen, 2010). We only tested strategies as mediators that were significantly associated with shyness. Where mediations were significant, we then explored moderated mediations to estimate change in the strength of the indirect effect as a function of child gender (Preacher, Rucker, & Hayes, 2007). We tested child gender on an exploratory basis as a moderator at the pathways linking (1) shyness to active regulation, (2) active regulation to social adjustment, and (3) shyness to social adjustment. We used the PROCESS macro for SPSS (version 2.16.3; Hayes, 2016) to run the mediation and moderated mediation analyses, using models 4 and 59 respectively, with 5000 bootstrapped samples.

## Results

### Preliminary Analyses

Descriptive statistics and correlations for all study variables are displayed in Table 2. Of note, shyness was significantly and positively associated with asocial behavior and negatively associated with active regulation. Active regulation was also significantly and negatively associated with asocial behavior and positively associated with prosocial behavior.

Child age was positively correlated with active regulation and was thus included as a covariate in later analyses. A composite parental education variable was not correlated with any of the variables of interest. To examine child gender differences, we conducted a series of MANOVAs with parent-rated variables (shyness, emotion regulation strategies) and educator-rated variables (anxious, prosocial, asocial) serving as dependent variables. There were no significant multivariate gender differences in shyness and emotion regulation, however, girls were rated as more socially adjusted than boys,  $F(3, 219) = 7.191, p < .001$ .

### Mediation and Moderated-Mediation Analyses

There was a significant mediation effect found in the prediction of prosocial behavior,  $\beta = -.021, SE = .013, p < .05, 95\% CI [-.054, -.002]$ , whereby shyness was negatively associated with active regulation, which in turn was positively associated with prosocial

behavior four months later (see Figure 1). Similarly, a significant mediation effect was found in the prediction of asocial behavior,  $\beta = .014$ ,  $SE = .010$ ,  $p < .05$ , 95% CI [.001, .040], whereby shyness was negatively related to active regulation, which in turn was negatively associated with subsequent asocial behavior. Active regulation did not significantly mediate the relation between shyness and anxious behavior,  $\beta = .002$ ,  $SE = .040$ ,  $p > .05$ , 95% CI [-.014, .022].

Further analysis revealed a significant moderated mediation in the pathway linking active regulation to asocial behavior,  $\beta = -.036$ ,  $SE = .020$ ,  $p < .05$ , 95% CI [-.086, -.006] (see Figure 2). Among boys, the mediation predicting asocial behavior was significant,  $\beta = .032$ ,  $SE = .017$ ,  $p < .05$ , 95% CI [.008, .076], such that active regulation was more strongly negatively associated with asocial behavior for boys compared to girls,  $\beta = -.004$ ,  $SE = .010$ ,  $p > .05$ , 95% CI [-.027, .014].

## Discussion

The present study examined the role of emotion regulation strategies in shy preschoolers' social adjustment. We used an empirical approach to categorize preschool children's emotion regulation strategies rather than grouping strategies *a priori*. Strategies were reported in both fear and anger contexts; however, the pattern of results suggested that strategies in these contexts share considerable variance and, thus, is indicative of general emotion regulatory processes across contexts. Of these strategies, active regulation was the only one that was implicated in preschoolers' social adjustment. Active emotion regulation in this study comprised problem-solving, self-directed speech, and information-seeking behaviors. These are more sophisticated means of regulating negative emotions because they reflect intentional, self-directed processes (Silk et al., 2006). Consistent with this supposition, active emotion regulation was positively associated with child age. Older preschoolers may be better able to call upon active strategies in appropriate contexts because they have had

more opportunities to practice these skills in the preschool social context (Son & Chang, 2018). Active strategies may also demand more sophisticated cognitive and linguistic abilities that surpass young preschoolers' competencies.

The primary goal of this research was to explore emotion regulation strategies as mechanisms linking shyness to social adjustment difficulties. Largely consistent with the hypothesis, active regulation mediated the link between shyness and indices of social adjustment. Specifically, shyness was negatively associated with active regulation, and active regulation was subsequently positively associated with prosocial behavior and negatively associated with socially withdrawn behavior. These findings are consistent with research by Penela et al. (2015), who found that preschoolers' active regulation links shyness (behavioral inhibition) with later social competence. Shy children may become over-aroused in emotional situations, causing them to experience deficits in strategy selection (i.e., choosing the appropriate strategy for the situation) or strategy implementation. For instance, in response to a distressed peer, shy children may experience overwhelming feelings of sympathy, thus making it difficult to engage in prosocial behaviors (Findlay, Girardi, & Coplan, 2006; Song et al., 2018). This also explains the link between active regulation and withdrawn behavior, as shy children may retreat from social situations that elicit strong emotions, rather than confronting the situation in an appropriate manner. However, in contrast with previous research among Italian children (Sette et al., 2014), shyness was not associated with anxious behaviors, and active emotion regulation did not mediate this association. This may be due to difficulties in educators' observing and reporting of preschoolers' anxiety, or that shy children are receiving additional support from educators (Fanger, Frankel, & Hazen, 2012).

One interpretation of these results is that it is the absence of active regulation that matters for shy preschoolers' adjustment and not the strategy they use in place of it. In contrast to previous research (Feng et al., 2011; Root et al., 2015), shyness was not associated

with distraction or other strategies such as support seeking, and these strategies did not predict social adjustment. One possible reason for this discrepancy is that previous research used observations of preschoolers' distraction and support seeking, whereas the current study relied on parent reports of these strategies. Moreover, previous conceptualizations of distraction were limited to attention shifting, whereas the current study defined distraction more so in terms of engaging in a different or unrelated activity. Thus, the distinction between attention distraction and behavioral distraction may be particularly meaningful in the case of shy children. Indeed, evidence indicates that early behavioral inhibition is associated with a threat perception bias that may undermine the ability to shift attention away from a stressor (Henderson, Pine, & Fox, 2015). However, in line with our results, there is considerably less evidence to suggest that shyness is associated with behavioral distraction (e.g., Root et al., 2015).

Nevertheless, our findings underscore the value of recognizing the breadth of children's emotion regulation repertoires rather than viewing particular strategies as inherently (mal)adaptive (Lougheed & Hollenstein, 2012). Shy children may possess a limited repertoire of strategies – one that includes relatively few active strategies. Perhaps more important than simply using more active strategies, is for children to have regulatory flexibility (i.e., the ability to select and implement strategies that are appropriate for the situation; Bonanno & Burton, 2013; Thompson, 2011). Related research has found that shy preschoolers who are overly constrained in their behavior (high inhibitory control) are more at-risk for adjustment difficulties compared to those who are more flexible (Sette, Hipson, Zava, Baumgartner, & Coplan, 2018). Accordingly, future research should explore children's ability to select and implement strategies that are appropriate in a variety of different situations.



## **Moderating Role of Gender**

On a more exploratory basis, we examined whether the links between shyness, emotion regulation, and social adjustment vary by child gender. Gender moderated the mediation predicting withdrawn behavior, with the negative association between active regulation and withdrawn behavior stronger among boys compared to girls. Previous research has highlighted gender asymmetries in the relations between emotion regulation and social adjustment, suggesting that emotion dysregulation bodes poorly for boys' social adjustment (e.g., Herndon et al., 2013; Hipson et al., 2017). Likewise, shyness appears to be more problematic for boys (Doey et al., 2014), although the current study suggests that these gender differences may act indirectly through active regulation, at least in preschool. It has been suggested that girls' aptitude in forming higher quality relationships with teachers and peers may have a protective effect on their social adjustment (Winer & Phillips, 2012). Educators may also harbor gender-based stereotypes of girls as more acquiescent, polite, and obedient, whereas boys are perceived to be more difficult, thus increasing their likelihood of being evaluated as such (Walker, 2004). Regardless, the current findings suggest that active emotion regulation may be an especially important ingredient for shy boys' social adjustment.

Taken together, findings from this study have potential downstream implications for policy and practice. Specifically, these results bolster the theoretical underpinnings behind early intervention programs for young extremely shy children that target emotion regulation skills to reduce anxiety and increase peer interaction at preschool (e.g., Chronis-Tuscano, Danko, Rubin, Coplan, & Novick, 2018; Chronis-Tuscano et al., 2015; Coplan, Schneider, Matheson, & Graham, 2010). Practitioners should focus on broadening shy children's strategy repertoires to incorporate more active strategies, as well as helping them to identify which situations call for the use of these strategies. Moreover, parents and teachers can assist

shy children in identifying negative emotional states and developing strategies for dealing with their distress (e.g., Havighurst et al., 2013; O'Connor, Cappella, McCormick, & McClowry, 2014).

### **Limitations and Future Directions**

The results from this study add to our understanding of the links between shyness, emotion regulation, and social adjustment in preschool. Specifically, active emotion regulation appears to play a pivotal role in aspects of shy children's social adjustment.

However, the current study is not without limitations. The correlational nature of the data does not enable causal interpretations of these associations. More rigorous longitudinal designs (e.g., cross-lagged longitudinal designs) are required to provide evidence of causal pathways among these variables.

Several limitations concern the ERSQ as a measure of emotion regulation strategies. First, although the assessment of strategies for anger and fear is a strength of this measure, principal components analysis suggested that these items are highly correlated. This may reflect more generalized responses to negative reactivity, which is consistent with dimensional theories of emotion that emphasize variations in valence and arousal, as opposed to discrete emotions (Russell, 2003). In contrast, it may reflect limitations of parent reports, as observational studies have found that infants and toddlers display different responses toward fear- vs anger-related stimuli (Buss & Goldsmith, 1998). Parents may have difficulty reporting children's emotion regulation strategies, particularly those strategies that are more covert in nature (e.g., self-directed speech). Thus, future research should attempt to replicate the current findings using observational measures.

Second, internal consistencies for factors derived from the ERSQ were acceptable overall, but the reliability for the support seeking subscale was only adequate and the self-comforting subscale consisted of only two items and should be interpreted with caution.

Moreover, the item ‘Constructive Coping’ for anger regulation is poorly worded (e.g., “child tries to get what he/she cannot have”) as it is more indicative of poor inhibitory control rather than active regulation. Future iterations of this measure should address these limitations.

Reliance of parent and educator reports raises some concerns regarding shared-method variance among the observed associations (e.g., shyness and emotion regulation). Also, the sample consisted largely of White, highly educated families in Canada, which does not adequately reflect the diversity of preschool children. This is important to note because in some cases social withdrawal has been found to have different implications for children’s social adjustment in China compared to North America (e.g., Liu et al., 2014). Finally, mediation and moderated mediations produced some statistically significant findings, yet the magnitudes of the indirect pathways were small. Thus, a larger sample size with greater statistical power is needed to replicate these findings.

Moving forward, future research should consider whether shy children’s relative lack of active regulation stems from deficits in their understanding of which strategies are effective (i.e., competence) and/or their implementation of these strategies (i.e., performance). In other words, it is possible that shy children are less knowledgeable about adaptive ways of regulating emotions; or they may fail to properly implement these strategies when emotions are on high. As evidence for the latter, heightened emotional reactivity interrupts emotion regulatory processes among aggressive children (Helmsen, Koglin, & Petermann, 2012), and it is possible that similar processes are involved among shy children but with divergent outcomes (social withdrawal instead of aggression). Nevertheless, the current findings corroborate and extend previous research on the emotional competencies that explain shy children’s early social difficulties.

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Table 1

*Component Loadings for ERSQ Items*

Factor and Item	I	II	III	VI
<b>I: Active regulation (<math>\alpha = .73</math>)</b>				
Self-directed speech (Fear)	.799			
Information gathering (Fear)	.757			
Constructive coping (Fear)	.669			
Self-directed speech (Anger)	.559			
Information gathering (Anger)	.532			
<b>II: Self-comforting (<math>\alpha = .88</math>)</b>				
Self-comforting (Anger)		.929		
Self-comforting (Fear)		.926		
<b>III: Support-seeking (<math>\alpha = .67</math>)</b>				
Comfort seeking (Fear)			.773	
Support seeking (Fear)			.712	
Comfort seeking (Anger)			.648	
Support seeking (Anger)			.637	
<b>VI: Distraction (<math>\alpha = .75</math>)</b>				

Object distraction (Anger)			.756
Verbal distraction (Anger)			.730
Object distraction (Fear)			.719
Verbal distraction (Fear)			.670

Note: only factor loadings > .32 are displayed

Table 2

*Descriptive statistics and zero-order correlations among study variables.*

	AGE	EDU	SHY	ACT	SC	SS	DIS	ANX	PRO	ASC
1: Child age (months)	-	.019	-.023	.214***	.026	-.016	.097	.018	-.045	-.027
2: Parental education	-	-	.105	.085	-.028	-.028	-.098	-.049	.104	-.116†
3: Shyness	-	-	-	-.209**	.101	-.003	-.102	.102	.064	.173**
4: Active regulation	-	-	-	-	-.020	.287***	.398***	-.034	.136*	-.170*
5: Self-comfort	-	-	-	-	-	.164*	.147*	-.031	-.006	-.091
6: Support seeking	-	-	-	-	-	-	.175**	.111	.070	.054
7: Distraction	-	-	-	-	-	-	-	-.052	.003	-.069
8: Anxious	-	-	-	-	-	-	-	-	-.236***	.530***
9: Prosocial	-	-	-	-	-	-	-	-	-	-.446***
10: Asocial	-	-	-	-	-	-	-	-	-	-
<i>N</i>	248	247	248	248	248	248	248	223	223	223
Mean	38.616	3.887	2.262	1.846	1.260	3.024	1.131	1.431	2.394	1.357
SD	6.120	.873	.801	.760	1.192	.645	.718	.465	.519	.430
Range	24 - 60	1 - 5	1 - 5	0 - 4	0 - 4	0 - 4	0 - 4	1 - 3	1 - 3	1 - 3



†  $p < .10$     \* $p < .05$     \*\*  $p < .01$     \*\*\*  $p < .001$  . EDU = Parental education, SHY = Shyness, ACT = Active Regulation, SC = Self-comfort, SS = Support seeking, DIS = Distraction, ANX = Anxious with Peers, PRO = Prosocial, ASC = Asocial

