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Regular Article

Attachment expectations moderate links between social support and maternal adjustment from 6 to 18 months postpartum

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Abstract

Significant links exist between one's perception of available social support and mental health outcomes, including during the transition to motherhood. Yet, attachment theory posits that individuals do not benefit equally from social support. As such, we examined the influence of attachment representations (i.e., secure base script knowledge) as they potentially moderate links between social support and psychological distress in a 1-year longitudinal study of an ethnically diverse (56% White) sample of infant-mother dyads. We hypothesized that higher social support would predict lower maternal psychological distress and this relation would be strongest in those with higher secure base script knowledge. Results indicated that maternal perceptions of social support were significantly negatively correlated with psychological distress. Analyses revealed that secure base script scores significantly moderated these associations. Interestingly, for those high in script knowledge, low social support predicted greater psychological distress. For those low in script knowledge, social support was unrelated to psychological distress. This pattern suggested that those who expect care (i.e., high secure base script knowledge) but receive minimal support (i.e., low perceived social support) find motherhood uniquely dysregulating. Practitioners may do well to examine individuals' attachment expectations in relation to their current social support.

Keywords: Attachment; secure base script knowledge; maternal adjustment; social support

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Introduction

The arrival of a new child can be a challenging time that heightens postpartum mothers' risk of mental health problems, including depression, anxiety, and emotion dysregulation (e.g., Brockington, 2004; Wenzel et al., 2005). These aspects of maternal psychological adjustment have significant implications for child adaptation into maturity (e.g., Goodman et al., 2011). In recognition of the potential negative impact of postpartum stress (Caparros-Gonzalez et al., 2017), researchers have emphasized the role of social support in alleviating stress and improving maternal adjustment during infancy and beyond (e.g., Cutrona, 1984; Priel & Besser, 2002). Social support from different sources, including family and romantic partnership, serves as a protective factor against emotion dysregulation, postpartum depressive symptoms, and psychological distress (e.g., Dennis & Ross, 2006; Kuscu et al., 2008). However, there are significant individual differences in how social support is sought and the effectiveness with which it is utilized.

Attachment research has long emphasized the origins and implications of individual differences in attachment security – the ability to seek out, accept, and benefit from support – which could lead to differential impacts of social support on maternal adjustment (Crowell et al., 2002; Rapoza et al., 2016; Roisman et al., 2007). Individuals' early interactions with their caregivers shape their expectations of the availability and effectiveness of support in their relationships with others across the lifespan (Bowlby, 1973, 1980, 1988; Sroufe et al., 2009). Securely attached individuals tend to experience sensitive and responsive caregiving during infancy and form expectations of support from their attachment figures. As a result, they actively seek support in times of distress and are more easily comforted. In contrast, insecurely attached individuals experience less consistent support, or even outright rejection, during childhood. They come to expect the same in the future, thus refraining from seeking and receiving support when distressed (Evans et al., 2013; Nivison et al., 2021). Given its association with one's ability to utilize support, attachment security may serve as an important moderator of the association between the availability of social support and maternal adjustment at critical junctures in family life, including the arrival of a new child (see Dujardin et al., 2016 for a similar discussion in the context of middle childhood).

Perceived social support and postpartum adjustment

Social support plays an important role in buffering life stress, enhancing resistance and coping ability, thus yielding better

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physical and mental health outcomes (e.g., Cohen et al., 2000; House et al., 1988). Research on the transition to motherhood highlights the predictive value of perceived social support as it relates to postpartum adjustment and psychological well-being among mothers. Castle et al. (2008) examined the impact of prenatal perceived social support on postnatal stress among first-time parents, and results indicated that higher levels of perceived social support during pregnancy were significantly associated with lower levels of postpartum distress. A similar pattern was observed in a recent study conducted in China, where in a large sample of mothers ($n = 2546$), lower levels of perceived social support during pregnancy were associated with an elevated risk of postpartum depression (Gan et al., 2019).

Emotion regulation refers to individuals' ability to adapt the types and expressions of emotions they experience depending on circumstance (Gross et al., 2006). According to previous research, emotion regulation serves as a preventative factor for postpartum depression, and psychopathology in general (Aldao & Nolen-Hoeksema, 2010; Haga et al., 2012). Apart from its predictive power for maternal adjustment, perceived social support facilitates emotion regulation, thereby improving psychological well-being during the postpartum period. In a systematic review of interpersonal emotion regulation as it mediates the association between social support and depression, Marroquín (2011) highlighted the importance of social responses in the development of emotion regulation and argued that social support might introduce interpersonal influences on emotion regulation. This notion aligns with research on emotion regulation among postpartum women, which suggests that mothers' emotion regulatory ability reflects the level of stress, anxiety, and depression they experience (Grande et al., 2021; Marques et al., 2018). Thus, it is imperative to consider emotion regulation as a maternal adjustment outcome and to understand how attachment security moderates the link between perceived social support and emotion regulation among postpartum mothers.

Attachment theory and support seeking and receiving

Researchers have long emphasized the need to understand social support from a cognitive perspective, including mental representations of relationship dynamics and attachment. Sarason et al. (1991) proposed a link between perceived social support and the appraisal of interpersonal relationships. They suggested that individual differences in the interpretation and expectation of interpersonal support could account for the differences in how people utilize and benefit from that social support. According to attachment theory, individuals' "internal working model" of attachment is constructed based on their early interactions with their caregivers (Bowlby, 1973, 1980, 1988). Such mental representations act as a guide for how to organize support seeking behaviors in the context of distress and exploration, how to provide support to others, and what to expect from intimate relationships in the future.

Building on attachment theory, Collins and Feeney (2000) proposed an interpersonal model of support seeking and caregiving interactions in romantic relationships. When encountering a stressful situation, individuals' working models of attachment become activated and will guide them to express the distress. After receiving the signal for support, their partners will respond and provide support or care based on their own attachment working model. The support seeker will then interpret such support or care based on their attachment model and their distress will be relieved in the case of securely attached individuals or potentially exacerbated in insecure individuals. According to this model, individual differences in attachment representations play an essential role in how and whether a person seeks support, and how that support is perceived and utilized. Furthermore, the model proposes that attachment representations moderate the link between support seeking and psychological adjustment, in terms of individuals' willingness to acknowledge and express their needs for support, their tendency to accept others' support, and their emotional outcomes after the support seeking and caregiving interaction.

Research has supported this model with several studies indicating that variations in support seeking and acceptance map onto individual differences in romantic attachment. Using a self-reported measure of attachment style, Davila and Kashy (2009) examined the relations between relationship-specific attachment styles and daily social support experiences, including support seeking, provision, and reception, among heterosexual dating couples. Results indicated individuals with high comfort with intimacy and low anxiety about abandonment felt more comfortable seeking support from their partners and reported higher felt support and security on a daily basis. Crowell et al. (2002) reported similar results in a sample of engaged couples, using the Adult Attachment Interview (AAI; George et al., 1996). They found a significant positive association between attachment, support seeking, and acceptance during conflict discussions. Furthermore, Ditzen et al. (2008) explored the interaction effect of attachment styles and social support on psychological responses to stress using a self-reported measure. Results indicated that individuals with low attachment anxiety and avoidance exhibited a stronger decline in stress levels after exposure to a stressful situation when social support was available.

Attachment also plays a role in how parents cope with the stress associated with child-rearing. Rholes et al. (2006) assessed attachment anxiety and avoidance using a self-reported questionnaire and found that mothers with lower avoidance prenatally were more likely to report lower levels of parenting stress and perceive parenting as more satisfying. When adjusting to the arrival of a newborn, the data suggest that mothers may be more likely to reach out for, and benefit from, support when attachment anxiety and avoidance are low, and expectations for support are high. Thus, it is reasonable to predict that attachment may serve as a moderator of the associations between perceived social support and psychological adjustment to distress during the postpartum period and beyond.

While self-reported attachment styles questionnaires focus on individuals' attachment-related feelings and thoughts in romantic relationships (Cassidy & Shaver, 1999), assessments of secure base script knowledge focus on knowledge of a cognitive script which specifies the sequence of steps involved in support seeking interactions and what to expect from those around (see Steele et al., 2014). Given this, secure base script knowledge may play a critical role in the way mothers navigate the difficult transition following the birth of a child. Unfortunately, there is limited research on the role of secure base script knowledge in psychological adjustment. Previous studies have shown the associations between secure base script knowledge and mental health outcomes, including psychopathological symptoms in middle childhood (Ruiz et al., 2020; Waters et al., 2015), and depressive symptoms in adulthood (Dagan et al., 2021). However, the impact of secure base script knowledge has not been examined during the postpartum period where greater stress might be present and the need for support

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likely increases. Thus, it is imperative to examine the role of secure base script knowledge in moderating the associations between perceived social support and maternal adjustment during infancy.

The present study

Despite the abundant research on the influence of perceived social support on maternal adjustment, the moderators of this relation remain largely unknown. While attachment theory could account for the individual differences in how perceived social support impacts adjustment outcomes, no prior studies have examined the moderating effect of attachment on the associations between perceived social support and maternal psychological and emotional well-being. To address the gap in existing literature, the present study aims to assess the associations between perceived social support and maternal adjustment in the postpartum period and to examine the moderating role of attachment representation (i.e., secure base script knowledge) on these associations in a longitudinal study. Waters and Waters (2006) argued that one component of attachment representations that shapes support-seeking and caretaking behaviors takes the form of a cognitive script. Previous studies have shown that secure base script knowledge is associated with early caregiving quality, healthy romantic relationship functioning, and caregiving for one's own children (for review, see Waters & Roisman, 2019). As such, we chose to operationalize attachment security as one's level of knowledge of the secure base script using the Attachment Script Assessment (ASA; Waters et al., 2021).

We operationalized maternal adjustment in several ways. Specifically, we focused on postpartum depressive symptoms, emotion dysregulation, and externalizing and internalizing problems to yield a more comprehensive understanding of maternal distress following the arrival of a new child and the mechanisms by which perceived social support buffers distress during child-rearing. Based on attachment theory, we hypothesized that: (1) perceived social support will associate negatively with psychological distress and emotion dysregulation during the postpartum period; (2) mothers with lower secure base script knowledge will report more maternal maladjustment during the postpartum period, compared with mothers with higher secure base script knowledge; and (3) the association between perceived social support and maternal adjustment will be moderated by secure base script knowledge such that people with higher secure base script knowledge will benefit more from perceived social support.

Method

Participants

Data were drawn from a longitudinal study on mothers of young infants conducted in the Greater Toronto Area. During 2018–2021, 144 mother-infant dyads were recruited through Internet platforms (e.g., Kijiji), parenting programs (e.g., prenatal classes), infant-related events (e.g., baby shows), and flyer postings across the city. The inclusion criteria for participation were (a) the mother was proficient in English; (b) the mother was at least 18 years of age; (c) the dyad had no major medical conditions; (d) the infant weighed more than 2,500 g at birth; and (e) the infant was roughly six months old. Power analysis based on a larger, four-visit study indicated the need for 193 participants, but recruitment was interrupted by the outbreak of COVID-19.

Both observational and questionnaire data were collected at three time points: early infancy (Time 1; $M = 6.64$ months, $SD = 1.35$), late infancy (Time 2; $M = 12.49$ months, $SD = 1.56$), and toddlerhood (Time 3; $M = 19.57$ months, $SD = 2.17$). Demographic information on maternal education level, family income, and ethnicity was reported at the initial assessment and included as covariates in all regression analyses. Among the 144 mother-child dyads, 55% of the children were male, and 68% of the mothers were first-time mothers. Due to the outbreak of the COVID-19 pandemic midway through data collection, of the 144 dyads who were recruited and seen at Time 1, 27 dyads (18.6%) dropped out at the time of transition in data collection from home visits to an online format. Prior to the pandemic, participants discontinued because they were unresponsive or expressed a loss of interest ($n = 5$, 3.4%), or moved away from the Greater Toronto Area ($n = 7$, 4.8%). Therefore, 106 mother-child dyads completed all three waves. No significant differences were found in maternal education level or family income between the initial sample and those who completed all three waves, yet there was a significant difference ($t = 2.04$; $p = .04$) in ethnicity, with a higher attrition rate for ethnically diverse dyads. In the current sample, Little's MCAR test was not statistically significant, providing no evidence of systematic missingness, $\chi^2(92) = 93.50$, $p = .44$. Thus, we concluded that our data were missing at random.

At the initial assessment, maternal age ranged from 18.50 to 49.75 years ($M = 33.95$, $SD = 4.36$). Mothers reported the racial/ethnic status of their biological parents and were classified into the following groups: White (55.6%), Asian (27.1%), Black (4.9%), Latinx (5.6%), Middle Eastern (5.6%), and other (1.2%). Most mothers were university-educated or above (79.2%) and either married or in a common-law relationship (92.4%). Annual family income before tax ranged from under 5,000 to over 250,000 CAD (median 100,001–150,000 CAD). When data were collected, the median family income in Toronto was 106,900 CAD per year (Statistics Canada, 2019). Taken together, our sample is demographically normative-risk, and broadly represents the mother-infant population in the Toronto area.

Procedure

Data were collected between June 2018, and August 2021. All procedures were approved by the University Research Ethics Board at Toronto Metropolitan University. Written informed consent was obtained from mothers before participation. At Time 1 (before the outbreak of COVID-19), 128 dyads completed the first home visit, where mothers completed questionnaires and participated in the Attachment Script Assessment (ASA). A small proportion of mothers ($n = 16$, 11%) completed the ASA remotely over the phone after the pandemic onset. At Time 2, 80 dyads completed the second home visit where mothers completed questionnaires pre-pandemic, and 39 mothers completed questionnaires remotely using Qualtrics, an online survey platform during COVID-19. At Time 3, 41 mothers completed questionnaires in the home visit, and 63 mothers completed questionnaires remotely, again, due to the ongoing pandemic. For the current study, we utilized demographic information, the ASA, and the Multidimensional Scale of Perceived Social Support collected at Time 1, the Edinburgh Postnatal Depression Scale collected at Time 2, and Difficulties in Emotion Regulation Scale and Adult Self-Report collected at Time 3 (see Figure 1 for illustration). Dyads received monetary compensation for their participation at each time of the study.

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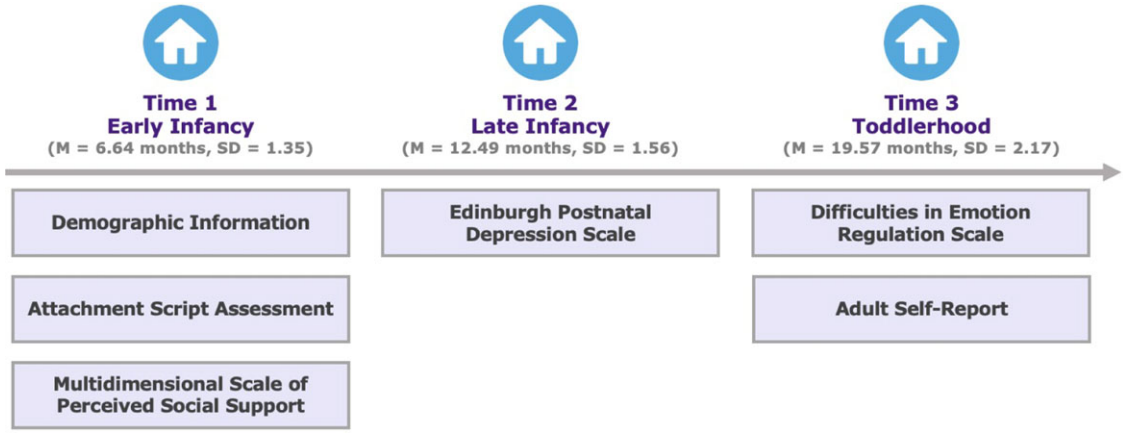


Figure 1. Timeline of data collection.

Measures

Perceived social support

Perceived social support was assessed using the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) at 6 months postpartum (Time 1). The MSPSS is a 12-item self-report questionnaire measuring the perception of social support from family, friends, and significant other. The MSPSS has been adapted and validated in high- and normative-risk samples in both Western and non-Western settings (Canty-Mitchell & Zimet, 2000; Dambi et al., 2018; Kazarian & McCabe, 1991). Using a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree), mothers were instructed to rate the extent to which they agree or disagree with statements on social support (e.g., I get the emotional help and support I need from my family). The extant literature has identified an association between higher levels of perceived social support and lower levels of mental health problems, including postpartum depression, anxiety, emotion regulation, and psychopathology (Eker & Arkar, 1995; Gökdağ, 2021; Haga et al., 2012; Stewart & Suldo, 2011; Yağmur & Ulukoca, 2010). The total score of MSPSS was calculated for each mother by averaging the item ratings, with higher scores indicating higher level of perceived social support. Cronbach's alpha for perceived social support was 0.92 at 6 months postpartum.

Secure base script knowledge

The ASA is a narrative-based measure of secure base script knowledge among adults (Waters & Waters, 2006). By providing a list of prompt words indicating the beginning, middle, and end of an attachment-relevant story (e.g., a baby in need of comfort after losing its teddy bear), the ASA encourages participants to describe fictional third-person accounts of seeking and providing secure base support when distressed. If participants possess a well-developed secure base script, such knowledge should be activated by the prompt words and the detail and elaborations in their story should match with the temporal-causal structure of the secure base script (Waters & Waters, 2006).

At 6 months postpartum, mothers were instructed to tell six stories (four secure base stories and two neutral stories) in third-person narration. Sets of prompt-word outlines were provided to the participants, indicating the beginning, interruption, distress, and resolution contained in the secure base script. The four secure base stories include two stories involving mother-child interactions (Baby's Morning, Doctor's Office) and two stories involving adult-partner interactions (Jane and Bob's Camping Trip, Sue's Accident). The two neutral, non-secure base stories (Trip to the Park, Afternoon Shopping) were administered as control stories to minimize hypothesis guessing. Mothers were told that they did not have to use every word in the outline and did not have to follow the words in the order they were presented, but they were encouraged to use the word-prompt outlines as a guide and to tell the story with as many details as possible to make the best possible story.

Using the Waters and Waters' (2006) seven-point secure base script scale for ASA, the ratings of the stories told by participants were based on how well they expressed secure base script knowledge through their constructed stories. Scores of 7 were given to stories with rich secure base content (e.g., child or adult signaling their distress, parents or partners responding promptly and properly, problems being resolved successfully, etc.). Scores of 3 were given to event-focused narratives with minimal secure base content. Scores of 1 were given to stories that contained atypical content inconsistent with a secure base script (e.g., parents or partners causing the distress or making the problem even worse). Two independent coders (ICCs = .89–.94) coded each story by storyline rather than individual participants so that coders were blind to the same participant's scores on other stories. All discrepancies were resolved through discussion. Cronbach's alpha for these four stories was .65, and the average of the stories was used as the final score for ASA.

Postpartum depressive symptoms

Postpartum depressive symptoms were measured with the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) at 12 months postpartum (Time 2). The EPDS is a 10-item self-report questionnaire assessing depression and anxiety symptoms among mothers in the year following childbirth, and has been validated in both clinical and community samples among mothers with diverse racial/ethnic backgrounds (Beck & Gable, 2001; Chiu et al., 2017; Di Florio et al., 2017; McCabe-Beane et al., 2016). Each item was rated on a 4-point Likert scale, with 0 indicating low frequency of experiencing emotional symptoms of depression (e.g., sadness, hopelessness), and 3 indicating high frequency of depressive symptoms. Mothers' scores for each item were summed to generate the final scores, with higher scores indicating more postpartum depressive symptoms over the past week. Cronbach's alpha for maternal depressive symptoms was .87 at 12 months postpartum. Overall, mothers reported low to moderate levels of postpartum depressive symptoms ($M = 6.76$, $SD = 4.67$).

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Emotion regulation problems

Emotion regulation problems were assessed using the Difficulties in Emotion Regulation Scale (DERS – 16; Victor & Klonsky, 2016) at 18 months postpartum (Time 3). The DERS utilizes an integrative conceptualization of emotion regulation by assessing the modulation of emotional arousal, the awareness, understanding, and acceptance of emotions, and the capability to prevent one's action from fluctuations in emotional state (Hallion et al., 2018). The DERS consists of 16 items, comprising six subscales: (1) nonacceptance of emotional responses; (2) difficulty engaging in goal-directed behavior; (3) impulse control difficulties; (4) lack of emotional awareness; (5) limited access to emotion regulation strategies; (6) lack of emotional clarity. Mothers were asked to rate the frequency of emotion regulation problems listed in each item using a 5-point Likert scale (1 = almost never, 5 = almost always). Research on emotion regulation among postpartum women shows that mothers' perceived stress, anxiety, and depression are reflected in their emotion regulatory ability (Grande et al., 2021; Haga et al., 2012; Marques et al., 2018). A total score was calculated for each mother, with higher scores suggesting greater problems with emotion regulation. Cronbach's alpha for difficulties in emotion regulation was 0.93 at 18 months postpartum. Overall, mothers reported low to moderate levels of emotion regulation problems ($M = 28.73$, $SD = 10.28$).

Internalizing and externalizing problems

The Adult Self Report (ASR) was used at Time 3 to measure mother's internalizing and externalizing psychopathology symptoms. The ASR is a component of the Achenbach System of Empirically Based Assessment taxonomy and consists of 120 items that assess adaptive functioning and behavior problems among adults (Achenbach & Rescorla, 2003). The ASR consists of eight syndrome scales, comprising two broadband scales: internalizing and externalizing problems. The internalizing problems scale is a sum of the syndrome scales of anxious/depressed (18 items), withdrawn (9 items), and somatic complaints (18 items), while the externalizing problems scale comprises the syndrome scales of aggressive behavior (15 items), rule-breaking behavior (14 items), and intrusive behavior (6 items). Using a 3-point Likert scale (0 = not true, 2 = very true or often true), mothers rated how well the descriptions of emotional, behavioral, and social problems apply to themselves. Total raw scores for maternal internalizing problems and externalizing problems were calculated separately for each mother, with higher scores indicating higher levels of psychopathology. In the current sample, on average, mothers reported low to moderate levels of internalizing ($M = 10.92$, $SD = 8.77$) and externalizing problems ($M = 6.28$, $SD = 6.21$). None of the mothers endorsed behavioral problems at a clinically significant level. Cronbach's alphas for internalizing and externalizing subscales were .90 and .87, respectively.

Maternal maladjustment

An overall maternal maladjustment variable was created by averaging the *z*-scores of postpartum depression, emotion dysregulation, and internalizing and externalizing behaviors, with higher scores indicating higher levels of maladjustment. Cronbach's alpha for this composite variable was 0.83.

Covariates

A composite for socioeconomic status (SES) was created by averaging the *z*-scores for maternal highest education and annual family income. SES and ethnicity (0 = non-White, 1 = White) were included as potential covariates in the regression analyses.

Results

Perceived social support and relations with maternal maladjustment

Descriptive statistics and measure intercorrelations are presented in Table 1. Maternal perceptions of social support at 6 months postpartum were significantly negatively correlated with overall maternal maladjustment, as well as postpartum depressiven symptoms, emotion regulation problems, and internalizing and externalizing problems specifically. Furthermore, secure base script knowledge was significantly positively correlated to perceived social support, and overall maternal maladjustment, while no significant correlations were observed between secure base script knowledge and the outcome variables including postpartum depressive symptoms, emotion regulation problems, internalizing and externalizing problems.

Regarding demographic variables, consistent with previous research on the economic and social determinants of perceived social support (McConnell et al., 2011; Shields & Price, 2005), socioeconomic status was significantly positively correlated with perceived social support, and perceived social support was higher for mothers who identified as White, compared with those identified as non-White. Socioeconomic status was also significantly negatively correlated with overall maternal maladjustment, as well as postpartum depression, emotion regulation problems, and internalizing problems. No significant correlations were found between ethnic groups and psychological outcomes (Table 1).

Moderation effect of secure base script knowledge on the associations between perceived social support and maternal maladjustment

We examined associations between perceived social support and postpartum maternal adjustment (assessed as a composite of maternal adjustment outcomes), as moderated by secure base script knowledge. To address missing data, we performed multiple hierarchical regression analysis with Full Information Maximum Likelihood estimation (FIML) using the Lavaan package in R (Rosseel, 2012). We first ran a moderation test with perceived social support at Time 1 as the predictor, overall maternal maladjustment as the outcome, and secure base script knowledge as the moderator. Demographic covariates (i.e., socioeconomic status and ethnicity) were also included in the models. In Step 1, perceived social support and secure base script knowledge were included to predict maternal maladjustment. In Step 2, the interaction term of perceived social support and secure base script knowledge was entered. In Step 3, socioeconomic status and ethnicity were added to the model, and in Step 4, we included the interaction terms of perceived social support and socioeconomic status, and of perceived social support and ethnicity. Results are summarized in Table 2.

Results from Step 1 showed significant main effects between perceived social support and maternal maladjustment. After adding the interaction term between perceived social support and secure base script knowledge in Step 2, results indicated that both perceived social support and secure base script knowledge predicted maternal maladjustment during infancy, and there was a perceived social support and secure base script knowledge interaction effect on maternal maladjustment. After including the demographic covariates (i.e., socioeconomic status and ethnicity) in the model in Steps 3 and 4, the interaction effect of perceived social support and secure base script knowledge on maternal maladjustment remained significant, and results also indicated a main effect of socioeconomic status on maternal maladjustment.

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Table 1. Summary of correlations and descriptive statistics

Measures	1	2	3	4	5	6	7	8	9
1. Perceived Social Support (PSS)	–								
2. Secure Base Script Knowledge (SBSK)	.25**	–							
3. Maternal Maladjustment	−.35**	.22*	–						
4. Postpartum Depression	−.31**	.13	.80**	–					
5. Emotion Dysregulation	−.23*	.17	.81**	.52**	–				
6. Internalizing Problems	−.36**	.07	.89**	.63**	.65**	–			
7. Externalizing Problems	−.24*	.09	.83**	.52**	.54**	.71**	–		
8. SocioEconomic Status (SES)	.36**	.24**	−.35**	−.27**	−.22*	−.36**	−.21*	–	
9. Ethnicity	.19*	.22*	−.02	−.01	−.04	.09	−.01	.12	–
M	6.15	3.40	.03	6.76	28.73	10.92	6.28	.01	.56
SD	.86	.93	.87	4.67	10.28	8.77	6.21	.78	.50

Note. *$p < .05$. **$p < .01$. Ethnicity: 0 = non-White, 1 = White; Maternal Maladjustment is a *z*-score composite of postpartum depression, emotion dysregulation, internalizing problems and externalizing problems; SocioEconomic Status (SES) is a *z*-score composite of education level and family income; Analyses were conducted with listwise deletion. *N*s range from 97 to 144.

Table 2. Results of multiple hierarchical regression models with FIML predicting composite maternal maladjustment

	b	*SE*	*β*	*p*-value	R^2
Step 1					
Perceived Social Support	**−.47**	**.09**	**−.46**	**.00**	**.24**
Secure Base Script Knowledge	**.29**	**.08**	**.31**	**.00**	
Step 2					
Perceived Social Support	**−.50**	**.09**	**−.48**	**.00**	**.31**
Secure Base Script Knowledge	**.32**	**.08**	**.34**	**.00**	
Perceived Social Support × Secure Base Script Knowledge	**−.34**	**.11**	**−.26**	**.00**	
Step 3					
Perceived Social Support	**−.35**	**.09**	**−.35**	**.00**	**.39**
Secure Base Script Knowledge	**.36**	**.08**	**.38**	**.00**	
Perceived Social Support × Secure Base Script Knowledge	**−.36**	**.10**	**−.27**	**.00**	
Socioeconomic Status	**−.40**	**.10**	**−.35**	**.01**	
Ethnicity	.02	.14	.01	.89	
Step 4					
Perceived Social Support	**−.44**	**.14**	**−.43**	**.00**	**.41**
Secure Base Script Knowledge	**.37**	**.08**	**.39**	**.00**	
Perceived Social Support × Secure Base Script Knowledge	**−.33**	**.10**	**−.25**	**.00**	
Socioeconomic Status	**−.39**	**.10**	**−.34**	**.00**	
Ethnicity	.04	.14	.02	.76	
Perceived Social Support × Socioeconomic Status	−.17	.11	−.15	.12	
Perceived Social Support × Ethnicity	.01	.17	.01	.95	

Note. Numbers in bold indicate statistically significant results ($p < .05$). $N = 144$.

Simple Slope Analysis was performed to examine the moderating effect of SBSK at −1SD, the mean, and +1SD on the association between perceived social support and overall maternal maladjustment (see Figure 2). Results revealed that for participants with higher (but not lower) secure base script knowledge, social support was negatively associated with maternal maladjustment during the postpartum period.

Moderation effect of secure base script knowledge on the associations between perceived social support and maternal adjustment outcomes

Having demonstrated the moderating effect of secure base script knowledge on the relation between maternal perceived social support and a composite measure of maternal adjustment, we

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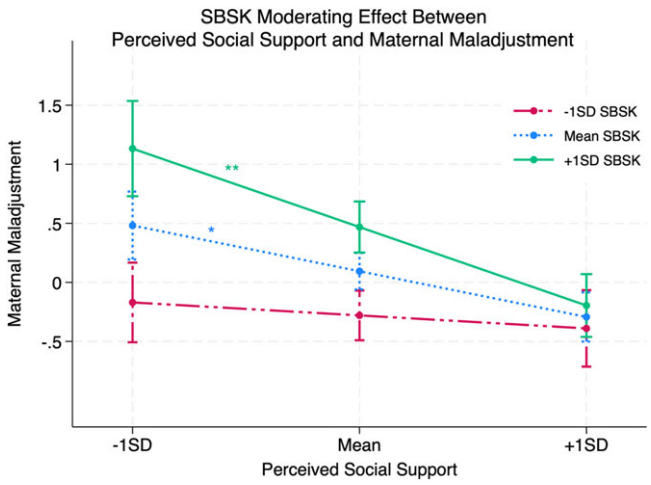


Figure 2. SBSK moderating effect between perceived social support and maternal maladjustment. *Note.* SBSK: Secure Base Script Knowledge; Results based on listwise deletion ($n = 97$); Statistical significance of simple slopes indicated by $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

assessed this same moderation model as it pertains to the component parts of the composite, namely, postpartum depression, emotion regulation problems, and internalizing and externalizing problems. Emotion dysregulation, internalizing problems (including depression), and externalizing problems are well-validated as distinctive constructs that have been used separately in previous research; and meta-analytic evidence suggests that attachment representations are differentially associated with internalizing and externalizing problems (e.g., Madigan et al., 2016).

Significant main effects were found between perceived social support and postpartum depression, emotion regulation problems, and internalizing problems, but not for externalizing problems. Main effects linking secure base script knowledge to postpartum depression, emotion regulation, and internalizing and externalizing problems were positive and statistically significant. The perceived social support-secure base script knowledge interaction was significantly related to internalizing and externalizing problems, and marginally significantly related to level of emotion dysregulation; the interaction was not significantly related to postpartum depression (see Table 3).

Simple Slope Analysis was performed to examine the moderating effect of secure base script knowledge at −1SD, the mean, and +1SD on the association between perceived social support and emotion dysregulation, and internalizing and externalizing problems separately (see Figures 3a–c). Results converged on a similar pattern of results compared to the overall maternal maladjustment analyses. Mothers high in secure base script knowledge benefited more from the increase in perceived social support and reported less emotion dysregulation, internalizing and externalizing problems. The same pattern was observed for those mothers with moderate levels of secure base script knowledge for overall maladjustment, emotion dysregulation, and internalizing problems, but not for externalizing problems. Such results indicated that people with minimal expectations of receiving support from their families and friends showed no increase in distress when social support was not received. Meanwhile, they did not seem to benefit when social support was given. On the other hand, people with higher levels of secure base script knowledge, and thus greater expectations of social support, tended to have worse psychological outcomes when support was not received, yet did benefit when support was given.

Discussion

The present study examined the potential impact of social support on maternal psychological adjustment during the infant period and explored the potential moderating effect of secure base script knowledge on these associations during this critical transition in family life. Our study provides longitudinal data from 6 months to 18 months postpartum on one potential mechanism by which perceived social support protects mothers from mental health dysfunction and emotion dysregulation. Consistent with previous research suggesting that lack of social support has an adverse impact on maternal well-being (e.g., Castle et al., 2008; Elsenbruch et al., 2007), our findings indicate that perceived social support negatively correlates with postpartum depression, emotion dysregulation, and internalizing and externalizing problems. Furthermore, while no significant correlations between secure base script knowledge and the individual outcome variables were detected, secure base script knowledge was significantly positively correlated to overall maternal adjustment, as well as perceived social support. These results are somewhat inconsistent with the extant literature which indicates that attachment representations are associated with psychological adjustment (see Atkinson et al., 2000; Dagan et al., 2018).

As hypothesized, there was a significant interaction effect between perceived social support and secure base script knowledge, such that secure base script knowledge moderated the effect of perceived social support on overall maternal maladjustment during the postpartum period. More specifically, secure base script knowledge significantly moderated the effect of perceived social support on internalizing and externalizing problems at 18 months postpartum, and the interaction effect between perceived social support and secure base script knowledge on emotion dysregulation at 18 months postpartum was marginally significant ($p = .06$). We did not find a significant interaction effect between perceived social support and secure base script knowledge on postpartum depression measured at 12 months postpartum. However, findings were in the predicted direction. Of course, the fact that one relation is significant and the other not does not mean the findings are statistically different from one another; the failure to find a significant relation in the case of depression may represent a Type II error. Alternatively (or concurrently), the fact that depression was assessed at Time 2, and all other maladjustment indices were assessed at Time 3, may influence findings. It is possible that the manifestation of depression changes with child age. For example, as parenting becomes more complex, involving not only warm and timely responsiveness, as in earlier infancy, but also greater limit-setting, this potentially complex challenge may exert a greater impact on maternal well-being (Maunder et al., 2017; Waters & Cummings, 2000).

Consistent with our predictions, mothers with moderate to high secure base script knowledge increasingly benefited from greater levels of social support, while mothers who scored low on secure base script knowledge showed no significant benefit from increasing levels of social support. Our data indicate that mothers who expect care and support (i.e., higher secure base script knowledge) and receive support consistent with those expectations, are less likely to experience emotional distress during the uniquely stressful infant period of child-rearing relative to those who receive less support. Meanwhile, a mismatch between high maternal expectations of support and lower levels of perceived support led to elevated risk of psychological distress and adjustment problems.

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Table 3. Results of multiple regression models with FIML estimating the influence of interactions between SBSK and perceived social support on depression, emotion regulation, internalizing and externalizing problems

	Postpartum depression				Emotion dysregulation				Internalizing problems				Externalizing problems			
Time 1	*b*	*SE*	β	*p*	*b*	*SE*	β	*p*	*b*	*SE*	β	*p*	*b*	*SE*	β	*p*
1. PSS	**−2.47**	**.79**	**−.45**	**.00**	**−6.03**	**2.50**	**−.47**	**.02**	**−6.01**	**1.92**	**−.54**	**.00**	−2.39	1.49	−.31	.11
2. SBSK	**1.38**	**.47**	**.27**	**.00**	**4.18**	**1.26**	**.35**	**.00**	**2.63**	**1.03**	**.26**	**.01**	**1.95**	**.78**	**.27**	**.01**
3. PSS × SBSK	−.83	.62	−.12	.18	−3.73	1.98	−.23	.06	**−3.45**	**1.65**	**−.24**	**.04**	**−3.37**	**1.26**	**−.34**	**.01**
4. SES	**−1.33**	**.59**	**−.22**	**.02**	**−3.36**	**1.51**	**−.24**	**.03**	**−4.05**	**1.20**	**−.33**	**.00**	−1.92	1.02	−.23	.06
5. Ethnicity	.35	.81	−.04	.66	−1.54	2.17	−.07	.48	1.40	1.70	.07	.41	−.14	1.30	−.01	.92
6. SES × PSS	**−1.48**	**.62**	**−.25**	**.02**	−1.72	1.62	−.12	.29	.22	1.30	.02	.86	.33	1.15	.04	.77
7. Ethnicity × PSS	.05	1.01	.01	.96	1.98	3.22	.10	.54	2.96	2.38	.18	.21	.31	1.86	.03	.87
R^2	.26				.32				.42				.29			

Note. Numbers in bold indicate statistically significant results ($p < .05$). PSS: Perceived Social Support; SBSK: Secure Base Script Knowledge; SES: SocioEconomic Status. $N = 144$.

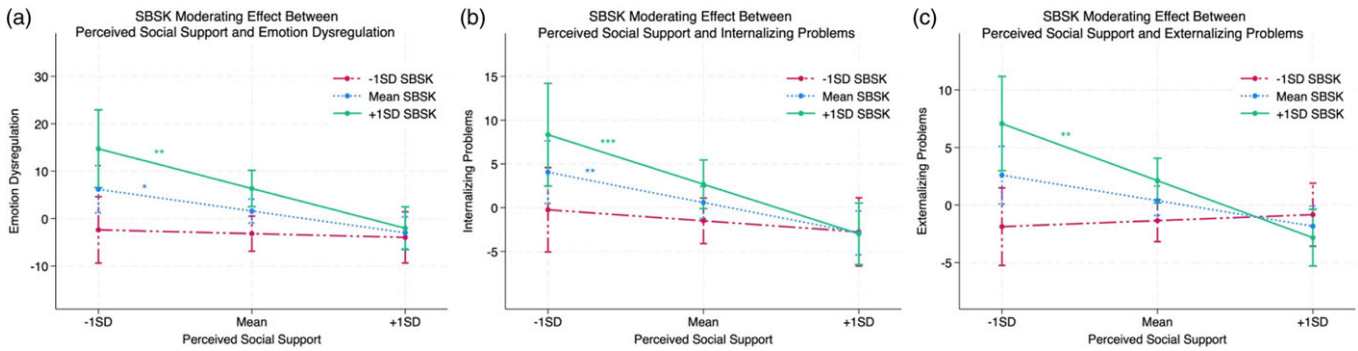


Figure 3. (a) SBSK moderating effect between perceived social support and emotion dysregulation. (b) SBSK moderating effect between perceived social support and internalizing problems. (c) SBSK moderating effect between perceived social support and externalizing problems. *Note.* SBSK: Secure Base Script Knowledge; Results based on listwise deletion ($n = 97$); Statistical significance of simple slopes indicated by $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Surprisingly, our findings suggested that among mothers with low levels of perceived social support, those with lower secure base script knowledge reported lower levels of overall maternal maladjustment, emotion dysregulation, and externalizing problems, compared to those with higher secure base script knowledge. Such findings were inconsistent with previous studies which report negative associations between attachment representations and emotion dysregulation, as well as psychological distress (Mikulincer & Shaver, 2019; Ruiz et al., 2020; Waters et al., 2015).

Crowell et al. (2002) argued that the concordance between one's attachment history (i.e., attachment security to one's primary caregivers) and one's attachment security in their current romantic partnership played a critical role in relationship functioning and adjustment. Those who were securely attached in both relationship domains (high concordance) tended to show higher relationship satisfaction and perceive their partner as less aggressive/hostile during conflict and distress. Interestingly, those with insecure attachments in both relationship domains (high concordance, again) showed increased levels of aggression and conflict-oriented relationship strategies *but* did not report the lowest levels of satisfaction/highest levels of distress. Rather, discordant individuals, those with secure attachment histories who were insecurely attached in their current romantic partnership, showed the highest levels of verbal aggression and distress during conflict, reported lower levels of commitment and felt intimacy, and were the most likely to get divorced (Crowell et al., 2002; see also (Castellano et al., 2014). Crowell and her colleagues (2002) argued that a mismatch between one's more general attachment expectations, which developed in the context of parental care during childhood, and the specific attachment expectations developed with a current romantic partner/co-parent could lead to greater conflict and distress because the expectations of secure base support were not being met. This mismatch between attachment expectations and current reality could lead to greater conflict under stress (e.g., transition to parenthood). In addition, because the specific attachment relationship was characterized by insecurity, the resolution of this conflict was less effective and may not be positive.

The finding that mothers with greater secure base script knowledge increasingly benefited from higher levels of social support, while mothers with lower secure base script knowledge showed no such benefit, is potentially consonant with the evolutionary life history model of development (Del Giudice, 2009; Ellis et al., 2009; Szepsenwol & Simpson, 2019). The model suggests that early experience (pre- and postnatal) prepares the organism for an expected environment, one which is more or less resource-rich, whether psychologically, physically, or both. The most advantageous combination involves high resource availability both early and later in life. Importantly, a mismatch of resource availability across these life stages can be detrimental as the organism may not be well adapted to exploit them, even if the shift is from low to high resources. This model has important physiological, psychological, and relational ramifications as well as transgenerational implications (Atkinson, 2012; Del Giudice, 2009; Ellis et al., 2009; Simpson, 2019). In the present circumstance, a

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mismatch between secure base script knowledge (which is partly derived from early caregiving experience), and perceived social support (reflective of the current environment) produces poor psychological outcomes consistent with the life history perspective. Although secure base script knowledge in late adolescence and adulthood is partially rooted in early caregiving experiences, it is important to acknowledge that the relation between early caregiving experiences and secure base script knowledge is modest (e.g. Steele et al., 2014). Nevertheless, several studies indicated that stability in attachment is consistent with the prototype model of development such that the contributions of early experience on secure base script knowledge endures across development and is not overwritten by later experience (Fraley, 2002; Waters et al., 2022). Thus, even a moderate effect size can be considered meaningful in terms of providing a window into one's early life history.

Although we did not study the concordance of attachment representations in the way Crowell and colleagues did (2002), the current findings map onto the aforementioned frameworks. Mothers with the highest expectations of support in our study, but with the lowest levels of specific support, were in the greatest distress. Our findings highlight the importance of considering both mothers and their current romantic partnership in attachment-based interventions. Enhancement of secure base script knowledge among mothers through intervention has shown significant benefits in caregiving (Raby et al., 2021). When considering attachment intervention development, our results, along with the literature on attachment expectation concordance, suggest that it is essential to extrapolate beyond the context of the mother-infant dyad and intervene with the broader social support system to create more adaptive expectations as well as a network ready to meet those expectations. Thus, clinicians and practitioners may do well to examine whether an individual's attachment expectations match the actual resources of support in their daily environment.

On the other hand, mothers with minimal expectations of support (i.e. low on script knowledge) showed no psychological benefit from social support. This finding is consistent with prior work indicating that insecurely attached individuals tend to perceive less social support, demonstrate less frequent and persistent help-seeking behavior, and accept less help when it is offered (Crowell et al., 2002; Simpson et al., 1992; Vogel & Wei, 2005). Our results indicate that secure base script knowledge was positively associated with overall maternal maladjustment. When examining results from our Simple Slope Analysis, mothers who scored lowest on secure base script knowledge reported lower levels of distress at lowest level of perceived social support, compared to their higher secure base script knowledge counterparts. This finding is noteworthy as prior research led us to predict that insecurely attached mothers would report higher levels of psychological distress than securely attached mothers (e.g., Atkinson et al., 2000). There are several potential explanations for the counter-intuitive pattern of low self-reported distress among mothers with low secure base script knowledge we observed, including: (1) heightened emotion regulation; (2) employing a deactivating/dismissing attachment strategy; (3) social desirability.

Adopting a heightened emotion regulation strategy, including suppressing emotion, disengaging from attachment figures, and using superficial problem-solving strategies, could explain the low levels of self-reported psychological distress among mothers with low secure base script knowledge observed in our sample. In a longitudinal study conducted by Girme et al. (2021), infants who were insecurely attached at 12 and 18 months old displayed higher levels of emotion suppression 30 years later when discussing relationship-threatening situations with their partners. In our sample, it is possible that mothers with low secure base script knowledge tended to avoid emotional experiences and conceal their emotions in communication, and thus reported lower levels of distress during their child's infancy. Mothers low in secure base script knowledge may have developed this strategy to manage their distress in the absence of secure base support and thus reported lower levels of psychological distress compared to mothers high in secure base script knowledge, whose emotion regulation strategies were more intertwined with their attachment figures. As a result, it is imperative to assess individuals' strategies for emotion regulation or stress management and include these strategies as moderators in future research.

Another potential explanation for the observed low levels of distress among mothers with low secure base script knowledge in our sample could be the adoption of a deactivating/dismissing attachment strategy. According to Bowlby (1980), individuals with insecure attachment tend to deactivate their response (i.e., ignore attachment-related information) and disconnect their affect from the source of distress. A dismissing attachment strategy refers to neglecting or rejecting the conscious awareness of attachment-related information to minimize distress and prevent oneself from being upset and potentially disorganized (Steele & Steele, 2008). Previous research demonstrated the discrepancy between self-reported and other-reported psychiatric symptomatology among individuals with deactivating/dismissing attachment strategies (Dozier & Lee, 1995). Findings suggested that those relying more on deactivating/dismissing strategies were more likely to report less symptomatology, compared with the amount observed by experts. Thus, our results might have also been influenced by the use of self-report questionnaires to measure maternal psychological adjustments. Mothers with lower secure base script knowledge could have experienced higher levels of postpartum depression, emotion dysregulation, or internalizing and externalizing problems. However, the adoption of a deactivating/dismissing strategy could have led to self-reported lower levels of distress compared with mothers with higher secure base script knowledge who did not utilize a deactivating/dismissing attachment strategy.

Finally, mothers with low secure base script knowledge may have been more likely to conform to social desirability, reporting a joyful, satisfying motherhood, while in fact, their ability to enjoy parenthood and deal with parenting stress was lower (e.g., Martin et al., 2018). Thus, mothers with low secure base script knowledge in our sample could have been experiencing greater distress and lower confidence in their caregiving (i.e., parenting self-efficacy; Kohlhoff & Barnett, 2013). However, due to social desirability, when mothers were asked to report their distress, they were less likely to accurately report their level of distress and thus reported lower levels of psychological distress.

Despite the strengths of this study and the intriguing results demonstrating the moderating effect of secure base script knowledge on perceived social support as it relates to maternal adjustment, several limitations should be acknowledged. First, due to the onset of COVID-19, attrition in our sample size was relatively high (26.7%). Although the initial sample and those with complete data across all three waves did not significantly differ on maternal education level and family income, the initial sample was more ethnically diverse than those with complete data. Furthermore, although ethnically diverse, our sample was drawn from a normative-risk and highly educated population in Toronto, Canada. According to the most updated Employment Insurance Benefits, mothers in Canada are entitled to have a 55% paid

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maternity leave for up to 15 weeks, and a parental leave of either 55% paid for up to 40 weeks or 33% paid for up to 69 weeks, which they can share with their partner/spouse (Government of Canada, 2023). In this sense, Canada is a unique context for parents with newborns where mothers are provided with extensive time to recover from childbirth, adjust to the arrival of the newborn, and build their relationship with the baby. Thus, our sample could be at lower risk of postpartum maladjustment compared to samples without these advantages. Furthermore, mothers in this sample who scored low on secure base script knowledge may have been suppressing their emotions or adopting a dismissing strategy, thereby distorting self-reported distress. However, under more stressful circumstances, perhaps these coping strategies would be more likely to break down and cause a sharp increase in the level of reported distress. We proposed that future work should adopt behavioral measures other than self-reported questionnaires and be extended to higher-risk populations as well as mothers transitioning back to work following maternity leave to further understand the interaction effect of secure base script knowledge and perceived social support on maternal adjustment for mothers low in secure base script knowledge.

The clinical implications of these findings are noteworthy. Most broadly, the findings are relevant to the search for personalized, stratified, or precision intervention, with its emphasis on adapting prevention and treatment to individual differences (Academy of Medical Sciences, 2015) in response to the question of what works for whom (Roth & Fonagy, 2005). In this regard, Hogan et al. (2002) noted that "Despite a massive literature on the benefits of support, there is surprisingly little hard evidence about how, and how well, social support interventions work." After reviewing 100 social support interventions, Hogan et al. (2002) concluded, "there is ... not enough evidence to conclude which interventions work best for what problems." Importantly too, precision medicine stresses the notion of change, and by extension life history, with its focus on the "uniquely evolving health status of each patient" (Kosorok & Laber, 2019).

With specific regard to precision intervention and social support, the clinician must be sensitive to the client's expectations regarding the possibility/utility of social support as developed earlier in life, and their match to current social circumstances. A distressed individual with historically low expectations regarding social support may not benefit from individual or group interventions designed to foster supportive relations (including attachment-based approaches wherein the therapist aims to provide a secure base). Depending on the difficulty and speed of needed resolution, such a client may benefit more from functional support. In contrast, an individual with high social support expectations that are currently unmet may benefit from a support intervention fully and/or faster than individuals with lower social support expectations.

In conclusion, this study showed that maternal perceptions of social support are negatively associated with psychological distress, as prior research indicates (e.g., Cutrona, 1984; Dennis & Ross, 2006; Kuscu et al., 2008; Priel & Besser, 2002). However, this association is selective. Mothers with higher script knowledge and low social support reported greater psychological distress; for mothers with lesser script knowledge, social support was unrelated to psychological distress. This pattern suggests that those who expect care (i.e., high secure base script knowledge) but receive minimal support (low perceived social support) find motherhood uniquely dysregulating, emotionally and in terms of internalizing and externalizing difficulties.

Author contribution. The research team would like to note that the first and second authors of this manuscript contributed equally to this work and wish to share the role of first author and have listed themselves in alphabetical order.

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