Examining the association between parenting and psychosomatic problems: self-esteem as a mediator across ages in early adolescence

Amy C. O’Neill, Valerie A. Kuhlmeier and Wendy M. Craig

Department of Psychology, Queen’s University, Kingston, Canada

ABSTRACT
Supportive parenting is known to protect against psychosomatic manifestations of distress, yet the mechanisms through which this association operates are less clear. The present study evaluates children’s self-esteem as a mediator, partially explaining the association between parent–child relationship quality and psychosomatic problems from late childhood to mid-adolescence. Results from a large, nationally-representative Canadian sample indicated that self-esteem partially mediated these associations, and self-esteem accounted for more shared variance between parent–child relationship quality and psychosomatic problems among younger children. Among older children, shared variance with self-esteem explained a smaller portion of this association, but the remaining direct effect of parent–child relationship on psychosomatic problems was larger. These findings suggest that supportive parents protect against psychosomatic problems, and that they do so by promoting self-esteem for younger children and through other mechanisms as children age. Results are discussed in the context of attachment theory and age-related trends in self-esteem development.

Introduction

The importance of parenting for healthy child development is well documented, and the mechanisms behind this association are numerous and complex. Parents foster healthy development both directly, through emotional support and assistance with problem solving, and indirectly, by enabling the child to develop intrinsic resources such as self-esteem. The effects of parenting behavior are most notable during sensitive periods of development, at which time the child is particularly susceptible to environmental influences (e.g. Feldman, 2015; Whittle et al., 2014). These sensitive periods include infancy, during which attachment representations are built through parent–child interactions (Ainsworth, 1979; Bowlby, 1969; Fraley, 2002), and adolescence, when parents continue to provide a secure base from which the teenager can safely explore independence (Allen et al., 2003). Adolescents who lack this secure base are not only left to navigate an increasingly complex and stressful social world without this ‘safety net’, but also tend to believe that other close relationships cannot be relied upon for support (e.g. Pascuzzo, Cyr, & Moss, 2013; Vaughn et al., 2016; Waters, Ruiz, & Roisman, 2017).

CONTACT Amy C. O’Neill 9ao19@queensu.ca

Supplemental data for this article can be accessed here https://doi.org/10.1080/02673843.2018.1482771.

© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
Without sufficient support from parents, stressors during adolescence often manifest as psychosomatic problems, defined as physiological manifestations of psychological distress (Berntsson, Ringsberg, Eriksson, & Köhler, 2015; Hagquist, 2016; Laundy Friesenstam, van den Bosch, Chen, Friberg, & Osika, 2017). The prevalence of internalizing disorders increases dramatically during adolescence (e.g. American Psychiatric Association, 2013; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Kim-Cohen et al., 2003), often resulting in physical symptoms such as tension headaches, indigestion, dizziness, sleep problems, and muscle aches (e.g. Eminson, 2007). However, supportive parents are able to offset these adverse effects, contributing to the adolescent’s resilience and overall mental health (Maunder & Hunter, 2001; Segerstrom & Miller, 2004). Rapid changes in ego development, emotion regulation, cognitive skills, and stress reactivity occur during this period (e.g. Blakemore & Mills, 2014; Erikson, 1968; Fuhrmann, Knoll, & Blakemore, 2015; Gullone, Hughes, King, & Tonge, 2010; Romeo, 2010; Steinberg et al., 2008), making adolescence a particularly crucial time for the interplay between familial factors (e.g. parental support) and personal factors (e.g. self-esteem). This interplay culminates in either resilience in the face of stressors, or heightened risk for internalizing problems.

Several underlying processes behind the protective effect of parents against psychosomatic problems have been identified, including attachment-based differences in physiological response to stress and health risk behaviors (Maunder & Hunter, 2001), blood pressure and cardiovascular reactivity (Uchino, Cacioppo, & Kiecolt-Glaser, 1996), use of emotion regulation strategies (Hagekull & Bohlin, 2004), and self-evaluation (Milevsky, Schlechter, Netter, & Keen, 2007). Parental influence on self-esteem is particularly compelling as an explanatory mechanism for this association, due to the sensitive nature of adolescence for self-concept formation. However, the potential mediating role of self-esteem within this association has not been assessed developmentally during adolescence.

Here, as elsewhere, self-esteem refers to valued self-evaluation and degree of satisfaction with oneself (e.g. Greene & Way, 2005; Steiger, Allemand, Robins, & Fend, 2014). It is thought to develop within the parent–child relationship, become internalized as a personal characteristic, and in turn influence social competence and well-being (Birkeland, Melkevik, Holsev, & Wold, 2012; Van Dijk et al., 2014). Self-concept is an important component of both attachment representations (i.e. seeing the self as worthy of compassion and care from significant others, Ainsworth, Bell, & Stayton, 1974; Bowlby, 1982) and depressogenic schemas (i.e. Beck’s cognitive triad: negative views of the self, the world, and the future; Beck, 1970). Meta-analyses of longitudinal data have demonstrated that poor self-esteem predicts later depression, after controlling for concurrent levels of each construct (‘vulnerability model’, Metalsky, Joiner, Hardin, & Abramson, 1993; Sowislo & Orth, 2012). Self-esteem also is robustly associated with psychosomatic manifestations of depression and other internalizing problems (e.g. Garaigordobil, Dura, & Perez, 2005; Sweeting, West, & Der, 2007). In summary, low self esteem is a key component in the development of internalizing problems, and fostering high self-esteem may be a mechanism behind supportive parents’ ability to protect against these issues. Thus, self-esteem may mediate the association between supportive parenting and psychosomatic manifestations of internalizing problems.

The role of self-esteem as a mechanism through which parent–child relationships serve as a protective factor has rarely been directly examined across ages during the pre- and early-adolescent period. Some empirical support for the mediating role of self-esteem was generated by Wilkinson (2004) with youth in mid-to-late adolescence. Wilkinson demonstrated a direct effect of parent–child relationship quality on depression and an indirect effect of parenting through self-esteem (Wilkinson, 2004). Hunter, Barber and Stolz also identified self-esteem as a mediator of the association between parenting behaviors and depression and antisocial behavior for students in grades 5 and 8 (2015). Both of these studies provide valuable evidence for self-esteem as a mechanism, as it partially explains how parents can protect against psychological distress; however, neither study accounts for other negative emotions (e.g. anxiety) or psychosomatic presentations of distress. Further, neither study examines the changing role of parents and self-esteem across adolescent development. The current study aims to extend the findings of both Wilkinson (2004) and Hunter and colleagues (2015) by examining whether self-esteem partially accounts for the influence of parent–child relationships on psychosomatic symptoms, and whether this pattern of influence varies in strength as a function of age from pre- to mid-adolescence.
The relative importance of both self-esteem and support from parents may change as children age into adolescence due to other developmental processes unfolding at this time (e.g. social role change, increased demands, and drive for independence; Baldwin & Hoffmann, 2002; Birkeland et al., 2012; Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2006; Zimmerman, Copeland, Shope, & Dielman, 1997). Indeed, research with older adolescent participants has documented a decreasing effect of parental support on emotional well-being, perhaps reflecting increased reliance on peer support and personal resources such as self-esteem (e.g. Helsen & Vollebergh, 2000; Laible, Carlo, & Raffaelli, 2000; Meeus, Oosterwegel, & Vollebergh, 2002). These age-related trends have not been assessed with a younger sample of adolescents. It is possible that, as with older children, the influence of parents will decrease as children age into the teenage years due to the increasing importance of other influences on well-being (e.g. academic performance, peer relationships, and dating; Helsen & Vollebergh, 2000; Scholte, van Lieshout, & van Aken, 2001). Although a longitudinal approach to this question would be ideal, the lack of existent research on this topic from a developmental perspective means that a cross-sectional approach constitutes a valuable addition to the literature.

The present study aims to evaluate whether self-esteem partially accounts for the association between parent–child relationship quality and psychosomatic problems in the pre- to mid-adolescent period, and whether the relative strength of these influences on psychosomatic problems varies by age. To address this question, a series of moderation and moderated mediation analyses were conducted on cross-sectional data. As depicted in Figure 1, it is hypothesized that: (1) higher parent–child relationship quality will be associated with fewer psychosomatic problems at all ages across pre-, early, and mid-adolescence; (2) this association will be partially accounted for by shared variance with the child's self-esteem (partial mediation), specifically, higher parent–child relationship quality will be associated with higher self-esteem, which in turn will be associated with fewer psychosomatic problems; (3) the association between parent–child relationship quality and psychosomatic problems will be moderated by age, such that the effect size will be smaller among older children; and (4) the association between self-esteem and parent–child relationship quality will be moderated by age, such that the effect size will be smaller among older children.

**Method**

**Participants and procedure**

This study used the 2014 Canadian Health Behaviour in School-Aged Children (HBSC) data-set (Freeman, King, & Pickett, 2016). This nationally representative sample consists of 29,784 students in grades 6–10 across 377 schools. Only students who met the following criteria were retained for analysis: 11–16.5 years of age, reported gender, and did not omit more than one item within each scale (Psychosomatic Problems, Parent Relationship Quality, and Self-Esteem). After removing participants who did not meet these criteria, the final sample consisted of $N = 25,960$ students (51.9% female, $M_{age} = 14.01$ years). Participants who were excluded due to missing data were younger ($t(29,047) = 9.158$, $p < .001$).
Scores for each of the measures described below were calculated by computing the mean of all items, and then standardized by converting to z scores. Standardized values were used so that beta weights within the mediation analysis would be interpretable as effect sizes (Hayes, 2013) while preserving the distribution of scores and pattern of significant associations (Hayes & Rockwood, 2016). Further, this approach is recommended for measurements lacking a true zero point, so paths are evaluated using values for individuals who are ‘average’ on extraneous variables; by using raw scores, this estimate would be erroneously based on a true zero point representing the absence of that construct (Hayes & Rockwood, 2016). In this case, a score of zero would not be possible on the measures of interest, nor would it represent the absence of the construct.

**Parent–child relationship quality**

The HBSC 2014 questionnaire includes several items assessing family relationships. The parent–child Relationship Quality measure was created by combining items from the Family Support scale (i.e. ‘my family really tries to help me’, ‘I get the emotional help and support I need from my family’, ‘I can talk about my problems with my family’, ‘my family is willing to help me make decisions’) and the Parental Understanding and Trust section (i.e. ‘my parents understand me’, ‘my parents expect too much of me’, ‘my parents trust me’, ‘what my parents think of me is important’). The questionnaire was then reviewed for other items referencing parents, and one additional item was added: ‘I get in a lot of arguments with my parents’. Items from the Family Communication section of the HBSC survey were not included (despite referencing parents), as exploratory analyses indicated insufficient shared variance and poor scale reliability when combined with the other items. The resulting parent–child Relationship Quality variable comprises nine items, with strong inter-item reliability (α = .89). Notably, these items do not distinguish between the adolescent’s relationship with each parent respectively, but rather respondents independently interpret who is being referenced by the terms ‘parents’ and ‘family’ (detailed in Discussion section).

**Self-esteem**

This measure was based on the self-esteem variable created by Ma (2007) from HBSC 1998 data. Two notable diversions from Ma’s scale are that the item ‘I like myself’ was not available in 2014 so it was excluded, and a Likert scale was used instead of the yes/no response format used in the 1998 survey (Ma, 2007). Students rated the following six statements on a 5-point Likert scale ranging from Strongly Agree to Strongly Disagree: ‘I have confidence in myself’, ‘I have trouble making decisions’, ‘I am often sorry for the things I do’, ‘I often wish I were someone else’, ‘I would change how I look if I could’, and ‘I have a hard time saying no’. This overall measure had acceptable inter-item reliability (α = .71). These items are consistent with the construct of self-esteem, defined in the literature as the degree to which an individual is satisfied with him/herself and believes they are a person of worth (e.g. Greene & Way, 2005).

**Psychosomatic symptoms**

The HBSC questionnaire included a Psychosomatic Symptoms scale, which asked participants to indicate the frequency with which they experience the following eight symptoms: headache, stomach ache, back ache, feeling low (depressed), irritability or bad temper, feeling nervous, difficulty getting to sleep, and feeling dizzy. HBSC researchers selected these items as common physical manifestations of emotional distress; however, it is not possible to conclusively determine the cause of these symptoms from the questionnaire data. Frequency was rated on a 5-point Likert scale with the following
labels: About Every Day, More Than Once a Week, About Every Week, About Every Month, and Rarely or Never. Due to this scale’s strong inter-item reliability ($\alpha = .84$) and previous research documenting frequent somatic presentations of psychological distress in children and adolescents (e.g. Eminson, 2007; Murberg & Bru, 2004; Sweeting et al., 2007), emotional and physical symptoms were treated as a single measure, consistent with the approach taken by the HBSC research team (Freeman et al., 2016).

**Results**

**Descriptive statistics and exploratory analysis**

All variables were standardized and subsequent results represent analyses conducted on z-scores. The expected pattern of association was observed across constructs, with higher Parent Relationship Quality associated with higher Self-Esteem and lower rates of Psychosomatic Problems. Parent Relationship Quality and Self-Esteem were lower among older participants, who also reported higher rates of Psychosomatic Problems (see Table 1 for associations with Age). A gender difference emerged across all variables of interest with small to medium effect sizes, wherein males reported fewer Psychosomatic Problems ($F(1,25\,958) = 1696.9, p < .001, \eta^2 = .01$), higher Parent Relationship Quality $F(1,25\,958) = 181.63, p < .001, \eta^2 = .06$), and higher Self-Esteem $F(1,25\,958) = 1595.24, p < .001, \eta^2 = .06$), indicating the importance of controlling for gender in the present analyses (discussed below).

**Self-esteem and psychosomatic problems: associations with parent–child relationships across ages (moderation)**

The impact of age on the strength of the association between parent–child Relationship Quality and both Self-Esteem and Psychosomatic Problems (respectively) was assessed using the Process macro for SPSS, Model 1 (Hayes, 2013). In each case, $R^2$ change was small but significant at $p < .001$. Consistent with hypotheses, the association between parent–child Relationship Quality and Self-Esteem was weaker among older children compared to younger children (See Figure 2 and Table 2). Contrary to hypotheses, older children demonstrated a stronger association between parent–child Relationship Quality and Psychosomatic Problems relative to younger children (See Figure 3 and Table 2).

**Self esteem as a mediator across ages (moderated mediation)**

Moderated mediation was evaluated using the Process macro for SPSS, model 8 (Hayes, 2013). Gender was expected to exert a main effect on each variable, but not to moderate associations between variables, and was therefore entered as a covariate. To confirm that this approach was appropriate, the model was re-run with males and females separately, and the same pattern of results emerged across genders (See Supplementary Material). All pathways depicted in the model are significant at $p < .001$ (Figure 4), and the confidence interval for the index of moderated mediation (CI: .01–.02) did not overlap zero, indicating statistical significance. The analysis indicated that Self-Esteem partially mediates the association between parent–child Relationship Quality and Psychosomatic Problems, moderated by Age (Figure 4 and Table 2). The Psychosomatic Problems variable includes both emotional and physical items, so the two alternative models were re-run with these items separately: one model including only emotional items (i.e. feeling low (depressed), irritability or bad temper, and feeling nervous) and

| Table 1. Correlations (r) among study variables. |
|-----------------------------------------------|
| Variable                                      | 2     | 3        | 4        |
| 1. Age                                        | −.205* | −.146*   | .179*    |
| 2. Parent–child relationship quality           | –     | .448*    | −.458*   |
| 3. Self-esteem                                | –     | –        | −.522*   |
| 4. Psychosomatic problems                     | –     | –        | –        |

*p < .01.
another including only physical items (i.e. headache, stomach ache, back ache, difficulty getting to sleep, and feeling dizzy). These two alternative models resulted in the same overall pattern of results (see Supplementary Material).

**Discussion**

The current results support the hypothesis that a high quality parent–child relationship protects against psychosomatic problems, in part through promotion of high self-esteem. This pattern of associations was significant at all ages from pre- to mid- adolescence; however, effect sizes in the model varied as a function of age. Self-esteem accounted for a smaller portion of this association among older children, and older children showed a stronger child relationship quality and psychosomatic problems relative to younger children (contrary to the hypothesized direction). Together, these results suggest that although children's self-esteem becomes increasingly independent from their family context with age, they also rely more heavily on their parents to support well-being as they age.

These findings are consistent with principles of attachment theory, which posit that the child develops a sense of self-worth out of the relationship with the primary caregiver (Ainsworth, 1979; Bowlby, 1980; Fraley, 2002), which then exerts an ongoing influence on mental health throughout development (Sroufe, 2005). Although attachment theory and empirical evidence support this conceptualization (Ainsworth et al., 1974; Bowlby, 1982; Metalsky et al., 1993; Sowislo & Orth, 2012), the present data

---

**Figure 2.** Moderation: age and self-esteem.

**Table 2.** Associations with parent–child relationship quality by age (standardized beta).

| Age  | Self-esteem | Psychosomatic problems |
|------|-------------|------------------------|
| 12.6 | -.48        | -.41                   |
| 14.0 | -.44        | -.44                   |
| 15.4 | -.40        | -.47                   |

---
is cross-sectional and therefore cannot establish causal directionality. It is possible that chronic and severe psychosomatic problems and corresponding negative mood states may impair self-esteem via affect-induced cognitive biases and social impairment (Christodoulou & Burke, 2016; Joiner, 2000; Shahar & Davidson, 2003) and also strain the parent–child relationship. Results indicated that parental support protects against psychosomatic problems even after accounting for self-esteem. This pattern demonstrates the increasingly important role for parents during the early- and mid-adolescent period. Above and beyond fostering self-esteem, supportive parents may provide strategies for emotion regulation, a secure base from which to explore independence, and the opportunity for fun experiences that induce positive mood states (e.g. Allen et al., 2003; Buckholdt, Parra, & Jobe-Shields, 2014; Wilson et al., 2014). This association is probably reciprocal; children with lower rates of psychosomatic distress are more likely to elicit positive interactions with their parents (Hummel, Kiel, & Zvirblyte, 2016; Kochanska, Kim, & Boldt, 2015). Children who experience frequent negative mood states (which may manifest

Figure 3. Moderation: age and psychosomatic problems.

Figure 4. Moderated mediation results, statistical diagram.
physiologically or emotionally) are more challenging to parent, and therefore elicit more negative parent–child interactions (Brooker et al., 2015; Edwards et al., 2017; Klein et al., 2016).

The moderating effect of age underscores the importance of investigating these constructs developmentally. A reduction in the strength of the indirect effect through self-esteem was expected due to additional, extra-familial influences on self-esteem (e.g. academics, peers, body-image) which become more salient during adolescence (Baldwin & Hoffmann, 2002; Birkeland et al., 2012; Hay & Ashman, 2003). Note that this pattern does not reflect a decrease in the association between self-esteem and psychosomatic problems, but that the portion of shared variance between parent–child relationship quality and psychosomatic problems that can be attributed to self-esteem declines with age. Documented associations between self-esteem and psychosomatic symptoms (e.g. Garaigordobil et al., 2005; Sweeting et al., 2007) suggest the presence of additional shared variance separate from the parent–child relationship. Thus, relationships with parents become increasingly important as children develop into adolescence, despite the fact that self-esteem becomes less tied to familial relationships at this time.

The age-related increase in the influence of parents on physical and emotional well-being may be attributable to the age range in the present sample, which spanned late childhood to mid-adolescence. Previous studies documenting an age-related decline in the impact of parent–child relationships on well-being have done so with older samples (e.g. Helsen & Vollebergh, 2000; Laible et al., 2000; Meeus et al., 2002), suggesting that reliance on support from parents may peak in mid-adolescence and then decline later in development. This pattern may be partly attributable to internal and external stressors faced during the first half of adolescence. Prior studies with this age range have found decreases in self-esteem during this period (Ogihara, Uchida, & Kusumi, 2016; Robins & Trzesniewski, 2005), a trend which was replicated in this sample. It is possible that, in the face of declining self-esteem, children with a positive relationship with their parents use this source of support to partially buffer against corresponding emotional distress. When relationships with parents are poor, adolescents face this age-related reduction in self-esteem without effective support from parents, and experience adverse effects in the form of psychosomatic problems.

This conceptualization accounts for the moderation of age on both pathways: the decreasing indirect effect of self-esteem (which declines with age regardless of familial relationship quality, resulting in decreased shared variance) and increasing direct effect of parent–child relationship quality on psychosomatic problems (possibly as a compensatory mechanism for the effects of declining self-esteem). The increasing direct effect of parent–child relationship quality with age is consistent with the sensitive period conceptualization of adolescence (e.g. Blakemore & Mills, 2014; Fuhrmann et al., 2015). As children transition into adolescence, environmental effects (in this case, relationship with parents) become more influential for well-being. Longitudinal research suggests that the effects of environmental influences during adolescence are likely to persist into adulthood (e.g. Blakemore & Mills, 2014; Raphael, 2013; Sawyer et al., 2012; Weinfield, Sroufe, & Egeland, 2000) via mechanisms such as HPA axis development, cognitive styles, and regulatory skills (Fuhrmann et al., 2015; Romeo, 2010; Whittle et al., 2014; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000).

This conceptualization is also consistent with the limited empirical evidence for this pattern of associations among older children. The present study replicates and extends findings by Wilkinson (2004), who documented an association between parental support and depression, partially mediated by self-esteem. The current results replicated these findings using a younger sample, with a stronger residual direct effect of parental support. A developmental trend was identified wherein this direct effect was stronger among older participants, whereas the mediating effect of self-esteem becomes slightly weaker with age as self-evaluation is less tied to the relationship with one's parents. Further, this model was extended to psychosomatic problems, a common manifestation of psychological distress among youth.

These findings must be interpreted in the context of study limitations, such as reliance on self-report and cross-sectional data. The HBSC questionnaire is not able to distinguish medically unexplained symptoms (i.e. psychosomatic problems) from those symptoms attributable to physiological conditions (e.g. lactose intolerance, scoliosis). Further, it is not possible to distinguish the unique ongoing contribution
of early-life experience with the attachment figure from the ongoing effect of parent–child interactions over time, a distinction emphasized in the attachment literature (e.g. Fraley, 2002; Weinfield et al., 2000). Future research may extend these findings using longitudinal data. Comparison across family structure and relative impact of mothers and fathers as a function of child’s gender and age is another promising direction as existent research has explored the role of parent and child gender in these relationships (e.g. Garside & Klimes-Dougan, 2002; Merrill, Gallo, & Fivush, 2015; Updegraff, Delgado, & Wheeler, 2009). Although participant gender was entered as a covariate, unfortunately it was not possible to differentiate this information in this study, as students responded to questions about their parents. It is also unknown whether self-esteem as a mechanism across ages operates the same way in other cultures. For example, in collectivist cultures, a strong ongoing impact of family relationships on self-esteem may occur, manifesting as greater shared variance and a larger indirect effect on psychosomatic problems. Finally, the cognitive mechanisms underlying the effects of self-esteem and family support (e.g. negative self-schemas with concurrent positive relationship-schemas) may further illustrate these influences.

Conclusions

Results from the 2014 HBSC survey suggest that supportive parents protect against psychosomatic problems in part by facilitating the development of self-esteem. These relationships are particularly important for children in early and mid-adolescence, at which time self-esteem declines and they rely more strongly on their parents for support. These findings highlight the importance of prioritizing parent–child relationships in this developmental period and the value of considering somatic expressions of psychological distress.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by Public Health Agency of Canada.

Notes on contributors

Amy C. O’Neill is a PhD candidate in Clinical Psychology at Queen’s University and research interests are parent–child interactions throughout development, early intervention parenting skills programs.

Valerie A. Kuhlmeier, PhD, is a professor of Developmental Psychology at Queen’s University, and Canada Research Chair for Cognitive Development and research interests are social cognition and prosocial behavior.

Wendy M. Craig, PhD, is the Psychology department head and professor of Developmental and Clinical Psychology at Queen’s University, and co-leader of PREV-Net (Promoting Relationships and Eliminating Violence) and research interests are bullying, victimization and defending, knowledge mobilization.

ORCID

Amy C. O’Neill http://orcid.org/0000-0003-1050-4571

References

Ainsworth. (1979). Infant-mother attachment. *The American Psychologist*, 34(10), 932–937. doi:10.1037/0003-066X.34.10.932

Ainsworth, M., Bell, S. M., & Stayton, D. J. (1974). Infant–mother attachment and social development: Socialization as a product of reciprocal responsiveness to signals. In M. P. M. Richards (Ed.), *The introduction of the child into a social world* (pp. 99–135). London: Cambridge Press.
Hay, I., & Ashman, A. F. (2003). The development of adolescents' emotional stability and general self-concept: The interplay of parents, peers, and gender. *International Journal of Disability, Development and Education*, 50(April 2016), 77–91. doi:10.1080/1034912032000053359

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York, NY: Guilford. doi:10.1002/dev.20437

Hayes, A. F., & Rockwood, N. J. (2016). Regression-based statistical mediation and moderation analysis in clinical research: Observations, recommendations, and implementation. *Behaviour Research and Therapy*, 98, 39–57. doi:10.1016/j.brat.2016.11.001

Helsen, M., & Vollebergh, W. (2000). Social support from parents and friends and emotional problems in adolescence. *Journal of Youth and Adolescence*, 29(3), 319–335. doi:10.1023/A:1005147708827

Hummel, A. C., Kiel, E. J., & Zvirblyte, S. (2016). Bidirectional effects of positive affect, warmth, and interactions between mothers with and without symptoms of depression and their toddlers. *Journal of Child and Family Studies*, 25(3), 781–789. doi:10.1007/s10826-015-0272-x

Hunter, S. B., Barber, B. K., & Stolz, H. E. (2015). Extending knowledge of parents' role in adolescent development: The mediating effect of self-esteem. *Journal of Child and Family Studies*, 24(8), 2474–2484. doi:10.1007/s10826-014-0050-1

Joiner, T. E. (2000). Depression's vicious scree: Self-propagating and erosive processes in depression chronicity. *Clinical Psychology: Science and Practice*, 7(2), 203–218. doi:10.1093/clipsy/7.2.203

Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H., Milne, B. J., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder. *Archives of General Psychiatry*, 60(7), 709–717. doi:10.1001/archpsyc.60.7.709

Klein, M. R., Lengua, L. J., Thompson, S. F., Moran, L., Ruberry, E. J., Kiff, C., & Zalewski, M. (2016). Bidirectional relations between temperament and parenting predicting preschool-age children's adjustment. *Journal of Clinical Child & Adolescent Psychology*, 57(3), 1–14. doi:10.1037/ccp0000169

Kochanska, G., Kim, S., & Boldt, L. J. (2015). (Positive) power to the child: the role of children's willing stance toward parents in developmental cascades from toddler age to early preadolescence. *Development and Psychopathology*, 27(4pt1), 987–1005. doi:10.1093/psicoj3/415000644

Laible, D. J. J., Carlo, G., & Raffaelli, M. (2000). The differential relations of parent and peer attachment to adolescent adjustment. *Journal of Youth and Adolescence*, 29(1), 45–59. doi:10.1023/A

Laundy Frisenstam, K., van den Bosch, M., Chen, Y., Friberg, P., & Osika, W. (2017). Self-reported psychosomatic complaints in Swedish children, adolescents, and young adults living in rural and urban areas: An internet-based survey. *Journal of Adolescence*, 52(1), 93–106. doi:10.1016/j.jado.2001.0451

Merrill, N., Gallo, E., & Fivush, R. (2015). Gender differences in family dinnertime conversations. *Discourse Processes*, 52(7), 533–558. doi:10.1080/01638533.2014.958425

Metalsky, G. I., Joiner, T. E., Hardin, T. S., & Abramson, L. Y. (1993). Depressive reactions to failure in a naturalistic setting: A test of the hopelessness and self-esteem theories of depression. *Journal of Abnormal Psychology*, 102(1), 101–109. doi:10.1037/0021-843X.102.1.101

Milevsky, A., Schlechter, M., Netter, S., & Keehn, D. (2007). Maternal and paternal parenting styles in adolescents: Associations with self-esteem, depression and life-satisfaction. *Journal of Child and Family Studies*, 16(1), 39–47. doi:10.1007/s10826-006-9066-5

Murberg, T. A., & Bru, E. (2004). School-related stress and psychosomatic symptoms among Norwegian adolescents. *School Psychology International*, 25(3), 317–332. doi:10.1177/0143034304046904

Ogihara, Y., Uchida, Y., & Kusumi, T. (2016). Losing confidence over time: Temporal changes in self-esteem among older children and early adolescents in Japan, 1999–2006. *SAGE Open*, 6(3), 1–8. doi:10.1177/2158244016666606

Pascuzzo, K., Cyr, C., & Moss, E. (2013). Longitudinal association between adolescent attachment, adult romantic attachment, and emotion regulation strategies. *Attachment & Human Development*, 15(1), 83–103. doi:10.1080/14616734.2013.745713

Raphael, D. (2013). Adolescence as a gateway to adult health outcomes. *Maturitas*, 75(2), 137–141. doi:10.1016/j.maturitas.2013.03.013

Robins, R. W., & Trzesniewski, K. H. (2005). Self-esteem development across the life span. *American Psychological Society*, 14(3), 158–162. doi:10.1171/0963-7214.2005.00353.x

Romeo, R. D. (2010). Adolescence: A central event in shaping stress reactivity. *Developmental Psychobiology*, 52, 244–253. doi:10.1002/dev.20437

Sawyer, S. M., Afi, R. A., Bearinger, L. H., Blakemore, S., Dick, B., Ezech, A. C., & Patton, G. C. (2012). Adolescence: A foundation for future health. *Adolescent Health*, 379(1), 1630–1640. doi:10.1016/j.adohealth.2012.060072-5
Scholte, R. H. J., van Lieshout, C. F. M., & van Aken, M. A. G. (2001). Perceived relational support in adolescence: Dimensions, configurations, and adolescent adjustment. *Journal of Research on Adolescence, 11*(1), 71–94. doi:10.1111/1532-7795.00004.

Segerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. *Psychological Bulletin, 130*(4), 601–630. doi:10.1037/1061-6734.2014.910731.Two-stage

Shahar, G., & Davidson, L. (2003). Depressive symptoms erode self-esteem in severe mental illness: A three-wave, cross-lagged study. *Journal of Consulting and Clinical Psychology, 71*(5), 890–900. doi:10.1037/0022-006X.71.5.890

Sowislo, J. F., & Orth, U. (2012). Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychological Bulletin, 139*(1), 213–240. doi:10.1037/a0028931

Sroufe, L. A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment & Human Development, 7*(4), 349–367. doi:10.1080/14616730500365928

Steiger, A. E., Allemand, M., Robins, R. W., & Fend, H. A. (2014). Low and decreasing self-esteem during adolescence predict adult depression two decades later. *Journal of Personality and Social Psychology, 106*(2), 325–338. doi:10.1037/a0035133

Steinberg, L., Albert, D., Cauffman, E., Banich, M., Graham, S., & Woolard, J. (2008). Age differences in sensation seeking and impulsivity as indexed by behavior and self-report: Evidence for a dual systems model. *Developmental Psychology, 44*(6), 1764. doi:10.1037/a0012955

Sweeting, H. N., West, P. B., & Der, G. J. (2007). Exploring mothers’ and fathers’ relationships with sons versus daughters: Links to adolescent adjustment in Mexican immigrant families. *Sex Roles, 60*(7–8), 559–574. https://doi.org/10.1007/s11199-008-9527-y

Van Dijk, M. P. A., Branje, S., Keijsers, L., Hawk, S. T., Hale, W. W., & Meeus, W. (2014). Self-concept clarity across adolescence: Longitudinal associations with open communication with parents and internalizing symptoms. *Journal of Youth and Adolescence, 43*(11), 1861–1876. doi:10.1007/s10964-013-0055-x

Vaughn, B. E., Waters, T. E. A., Steele, R. D., Roisman, G. I., Bost, K. K., Truitt, W., … Booth-LaForce, C. (2016). Multiple domains of parental secure base support during childhood and adolescence contribute to adolescents’ representations of attachment as a secure base script. *Attachment & Human Development, 18*(4), 317–336. doi:10.1080/14616734.2016.1162180

Waters, T. E. A., Ruiz, S. K., & Roisman, G. I. (2017). Origins of secure base script knowledge and the developmental construction of attachment representations. *Child Development, 88*(1), 198–209. doi:10.1111/cdev.12571

Weinfield, N., Sroufe, L. A., & Egeland, B. (2000). Attachment from infancy to early adulthood in a high-risk sample: Continuity, discontinuity, and their correlates. *Child Development, 71*(3), 695–702. doi:10.1111/1467-8624.00178

Whittle, S., Simmons, J. G., Dennison, M., Vijayakumar, N., Schwartz, O., Yap, M. B. H., … Allen, N. B. (2014). Positive parenting predicts the development of adolescent brain structure: A longitudinal study. *Developmental Cognitive Neuroscience, 8*, 7–17. doi:10.1016/j.dcn.2013.10.006

Wilkinson, R. B. (2004). The role of parental and peer attachment in the psychological health and self-esteem of adolescents. *Journal of Youth and Adolescence, 33*(6), 479–493. doi:10.1023/B:JOYO.0000048063.59425.20

Wilson, B. J., Petaja, H., Yun, J., King, K., Berg, J., Kremmel, L., & Cook, D. (2014). Parental emotion coaching: Associations with self-regulation in aggressive/rejected and low aggressive/popular children. *Child & Family Behavior Therapy, 36*(2), 81–106. doi:10.1080/07317107.2014.910731

Zahn-Waxler, C., Klimes-Dougan, B., & Slattery, M. (2000). Internalizing problems of childhood and adolescence: Prospects, pitfalls, and progress in understanding the development of anxiety and depression. *Development and Psychopathology, 12*(3), 443–466. doi:10.1017/S0954579400003012

Zimmerman, M., Copeland, L., Shope, J., & Dielman, T. (1997). A longitudinal study of self-esteem: Implications for adolescent development. *Journal of Youth and Adolescence, 26*(2), 117–141. doi:10.1023/A:1024596313925