

The Role of Parental and Peer Attachment in the Psychological Health and Self-Esteem of Adolescents

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This paper presents the results of 3 studies examining the relationships of parental attachment, peer attachment, and self-esteem to adolescent psychological health. A model is presented in which parental attachment directly influences both psychological health and self-esteem and the influence of peer attachment on psychological health is totally mediated by self-esteem. Using structural equation modeling, Study 1 evaluates the model on a sample of 1998 Norwegian high school students (aged 12–19 years). With some modifications it is found to be a satisfactory fit. Study 2 replicates Study 1 using a sample of 358 Australian high school students (aged 15–18 years). A multisample analysis revealed no significant differences between the model for Studies 1 and 2. Study 3 was a further successful replication employing alternative measures of the constructs considered with a sample of 345 Australian high school students (aged 15–19 years). The major finding from all 3 studies is that the role of peer and parental attachment on psychological health is primarily mediated by self-esteem. Implications for research elucidating the links between attachment and specific aspects of self-esteem are discussed.

KEY WORDS: attachment; depression; self-esteem; adolescence.

A current and contentious issue in the literature considering the psychological health of adolescents is the extent of influence of the parental relationship in comparison to other interpersonal relationships. The relative importance of peer relationships has been a particular focus of much theoretical debate and research (Batgos and Leadbetter, 1994; Berndt and Ladd, 1989; Burke and Weir, 1978; Collins and Repinski, 1994; Greenberg *et al.*, 1983; Solomon and Grunebaum, 1982; Steinberg and Silverberg, 1986). Historically, there are 2 main conceptualizations of the link between family and peer relationships: Compensatory/competition models and Continuity/cognitive models (Cooper and Ayers-Lopez, 1985; Cooper and Cooper, 1992).

Compensatory/competition models typically argue that adolescents seek support in their peer environment in order to satisfy unmet needs in the parental/family environment. Adolescence is seen as a developmental phase where parental relationships become less salient or even inhibitory as the individuals orient themselves to the world of their friends and peers (Blos, 1979; Coleman, 1961; Douvan and Adelson, 1966). Relationships with parents and with peers are seen as being in tension and representing the “two worlds of childhood” (Bronfenbrenner, 1970). From this perspective, adolescence is a transitional period when the targets of attachment behavior become oriented more toward peers and intimate friends than toward parents (Cooper *et al.*, 1998; Furman and Buhrmester, 1992; Hazan and Zeifman, 1994).

Continuity/cognitive models, on the other hand, argue that the form and quality of relationships that develop with friends and peers is an extension of the form and quality of relationship that has developed within the family (Bowlby, 1969/1997; Offer *et al.*, 1981; Sullivan, 1953). Rather than being in competition, satisfying relationships in both “worlds” are seen as interrelated and complementary. Over time this “continuity” approach has come

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to dominate the literature, particularly with the invoking of attachment theory (Ainsworth, 1985, 1989; Bowlby, 1969/1997) as a central explanatory account.

Attachment

Bowlby's (Bowlby, 1969/1997, 1973/1998, 1980/1998) account of attachment processes underlying the relationship between infants and their primary caregivers, has become one of the most influential perspectives in contemporary developmental and clinical psychology. Bowlby argued that infants are motivated to engage in an organized behavioral system that ensures preferred others, usually the primary caregivers, remain close, provide support, and function as a "secure base." Over time, infants develop cognitive representations of their relationships with others based on their attachment experiences. These representations, known as "internal working models," continue to develop and are modified by experiences of other close relationships throughout childhood and adulthood. Bowlby, along with other theorists (e.g., Ainsworth, 1969, 1985, 1989, 1991; Main *et al.*, 1985; Sroufe and Waters, 1977), argues that the ways in which adult individuals form close and intimate bonds with other individuals are influenced by the patterns of relationships with primary caregivers established in childhood. It is a fundamental tenet of attachment theory that the security, or lack of it, experienced in the child-parent relationship forms a template for the pattern of interpersonal relationships the child experiences across the lifespan (Bowlby, 1977; Schneider *et al.*, 2001).

Whilst in the early years of attachment research the focus was primarily on the infant-parent relationships (e.g., Ainsworth, 1969; Bell, 1970; Feldman and Ingham, 1975; Maccoby and Feldman, 1973), in the contemporary attachment literature there has been movement toward considering attachment beyond infancy and beyond the parental relationship. For example, Hazan and Shaver (1987) and Bartholomew and Horowitz (1991) have promulgated alternative models of attachment styles based on adult romantic intimate relationships rather than parental bonds. These models have generated much interest and have become increasingly influential (Feeney, 1999; Fraley and Shaver, 2000).

Attachment and Adolescence

Research into attachments in adolescence beyond the parental relationship has generally focused on the role of peer rather than romantic relationships. The findings of the research in this area are, however, somewhat con-

tradictory and while it has frequently been asserted that quality peer attachments are just as important as quality parental relationships to adolescent psychological health and adjustment (Armsden and Greenberg, 1987; Batgos and Leadbetter, 1994; Goosens *et al.*, 1998), the empirical evidence is equivocal. While it is generally agreed that parental relationships still play a relatively important role in the psychological well-being of adolescents, the relative role of parental attachments compared to peer attachments, particularly with regards to self-esteem, is contested.

Greenberg *et al.* (1983) were among the first to examine the nature and importance of peer relationships conceived of as attachment relationships in adolescence. Importantly, their work was the first to examine the relative influence of parental and peer attachments at this crucial developmental period and the first to develop a specific instrument to evaluate parental and peer attachments in adolescence. Using the Inventory of Adolescent Attachments with a sample of 213 adolescents between the ages of 12 and 19 years, they found that the quality of both parental and peer attachments were significant predictors of life-satisfaction and self-esteem. However, parental attachment was found to be significantly more important than peer attachment as a predictor of well-being.

Armsden and Greenberg (1987), in their report on the development of the Inventory of Parental and Peer Attachment (IPPA), found that both peer and parental attachment were significant predictors of self-esteem and life-satisfaction. However, peer attachment appeared to be more highly related to self-esteem than to life-satisfaction and parental attachment appeared to be equally related to these 2 outcome measures. A limitation of this particular research, however, is the small sample size in both the instrument development study ($n = 179$) and in the second study where the regression equations are reported ($n = 86$).

In a study using the IPPA to assess attachment in clinically depressed adolescents, Armsden *et al.* (1990) found that the depressed sample reported significantly lower levels of parental attachment than either a nondepressed psychiatric control group, a nonpsychiatric control group, or a group of adolescents with resolved depression. However, peer attachment was only significantly lower in the nonpsychiatric control group.

Cotterell (1992), in a small study of Australian adolescents ($n = 57$), found that peer attachment (0.54) had a stronger correlation with self-esteem than parental attachment had (0.38). Similarly, peer attachment (0.47) had a stronger relationship with general self-concept than parental relationship had (0.18). Attachment in this study was assessed with the IPPA, self-esteem was assessed with

a 10-item version of the Rosenberg Self-Esteem Scale, and general self-concept was assessed with “General Self” subscale of the Self-Description Questionnaire.

Raja *et al.* (1992) also examined the relative importance of peer attachment in psychological health outcomes for adolescents. In a large ($n = 935$) study of New Zealand adolescents they found that parental attachment was a more important predictor than peer attachment for indicators of psychological health. Further, they argue that low levels of attachment to parents do not appear to be compensated for by high levels of attachment to peers. There is evidence from their study, however, that the quality of relationships with both parents and peers may be necessary for the development of positive self-esteem in adolescence.

Wilkinson and Walford (2001), in a study of over 400 Australian adolescents, found that when entered after parental attachment in hierarchical regression equations peer attachment had no significant influence on measures of either psychological well-being or distress. In other words, after controlling for parental attachment, peer attachment had no significant effect on psychological health outcomes. They suggested that, given the positive findings from previous research, the role of peer attachment in psychological health may, in fact, be indirect via its relationship with self-esteem/self-concept. Self-esteem may mediate the relationship between peer attachment and psychological health outcomes such as depression, anxiety, and life satisfaction.

However, contradictory evidence comes from a number of studies. Laible *et al.* (2000) examined the differential effects of parental and peer attachment on psychological health outcomes in a small sample of adolescents ($n = 89$). They concluded that peer attachment may be more important than parental attachment for psychological health outcomes. Paterson *et al.* (1995) examined the relationship between parental and peer attachment and self-esteem in a sample of 473 New Zealand adolescents aged between 13 and 19 years of age. Using the Rosenberg Self-esteem Scale (Rosenberg, 1965) and a shortened version of the IPPA, they found almost no relationship between peer attachment and self-esteem. On the other hand, both attachment to fathers and attachment to mothers displayed a modest correlation with self-esteem.

Noom *et al.* (1999) investigated the relationships between maternal attachment, paternal attachment, peer attachment (all assessed with the IPPA), self-esteem, and depression in a sample of 400 Dutch adolescents. They found that maternal and paternal attachments were more strongly correlated with self-esteem (0.36 and 0.31, respectively) than was peer attachment (0.16). Further, in a series of multiple regression analyses that included various

indicators of attachment and autonomy, peer attachment was not a significant predictor of self-esteem but was a significant predictor of depression.

In summary, while there is a theoretical view that both parental and peer attachments should both play important roles in the psychological adjustment of adolescents, the empirical evidence that has emerged is inconsistent. To an extent this may be due to different ways in which outcomes have been conceptualized. When measures of psychological health, such as depression and life-satisfaction, are employed there appears to be more evidence that parental attachment plays a more important role than peer attachment. On the other hand, when measures of self-esteem or self-concept are considered, there appears to more evidence for a greater role for peer attachment, although this is not always the case.

The Present Studies

The studies presented here seek to clarify the roles of parental and peer attachment in the psychological health and adjustment of adolescents. A key issue to be considered is the different relationships that parental and peer attachment may have with regard to self-esteem and how these differences then impact on psychological health. A model is proposed representing the hypothesized direct and indirect relationships of parental attachment, peer attachment, and self-esteem to psychological adjustment (Fig. 1).

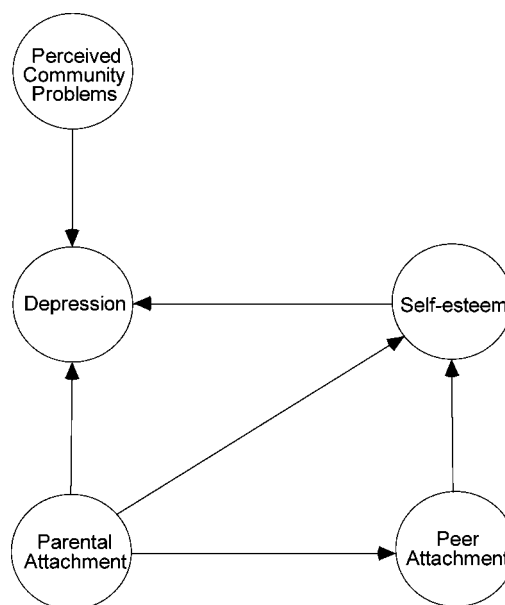


Fig. 1. The hypothesized model.

In accordance with the cognitive conception of attachment theory, based on the development of “working models” representing expectations for interpersonal relationships, it is hypothesized that the quality of parental attachment will have a direct and positive influence on the quality of peer attachments reported by adolescents. A high quality of parental attachment, representing a high degree of security in attachment, is predicted to result in a high level of quality (or security) in peer attachments. Parental attachment is also expected to have a direct and positive influence on psychological health outcomes. The literature clearly supports the view that parental attachment is one of a number of important determinants of psychological adjustment in adolescents. It is expected that adolescents with higher levels of parental attachment will report decreased levels of psychological symptoms compared to those with lower levels of parental attachment. Also in accordance with attachment theory and previous empirical findings (e.g., Rice, 1990), it is predicted that parental attachment will have a direct and positive influence on self-esteem in adolescents.

An important feature of the model is the way in which peer attachment is predicted to influence psychological outcomes. Previous research has focused on considering the role of peer attachment on *either* psychological health *or* self-esteem. By simultaneously modeling the relationships between these variables a more complex set of hypotheses can be evaluated that will clarify the contradictory findings previously reported. Specifically, it is hypothesized that the effect of peer attachment on psychological health is totally mediated by self-esteem. No direct path from peer attachment to psychological health is included in the model. Additionally, the role of a non-interpersonal relationship variable, Perceived Community Problems, is also considered. This is included in the model because it is known that environmental stressors negatively impact on psychological health and such a variable provides a reference point by which to gauge the relative importance of the roles of the interpersonal relationship variables of parental and peer attachment in the model.

STUDY 1

Method

Participants

This cross-sectional study consisted of 2006 Norwegian high school students aged between 11.84 and 19.61 years (Mean = 15.27, SD = 1.93). Of this sample, 1060 were female (52.8%) and 946 (47.2%) were male. The

majority of participants reported living in rural communities (82%) with the remainder reporting that they lived in either a village or town (18%). Using occupations of parents as indicators, the majority of participants came from middle class backgrounds.

Procedure

Participants were volunteers recruited through high schools in the Trönderlag region of Norway. In a classroom setting, participants completed a questionnaire booklet that consisted of a number of self-report measures.

Measures

A range of multiple item measures was constructed to assess the psychological constructs of interest. The items were originally constructed in English and then translated into Norwegian.

Depression. The 10 items for this scale were constructed based on previously published scales. The response format required participants to rate each item on a 3-point scale (1 = *never*, 2 = *sometimes*, 3 = *A lot of the time*) for the extent to which they had experienced the described item in the last month. Examples of items include “I’ve felt unhappy or sad,” “I’ve felt hopeless about the future,” and “I’ve felt too tired to do things.” The items were scored and summed to create a scale with a possible range from 10 (*low depression*) to 30 (*high depression*). The mean of the scale was 15.86 with a standard deviation of 3.41. The scale displays a reasonable level of internal consistency (Cronbach’s $\alpha = 0.78$).

Self-Esteem. This 10-item scale was also based on previously published scales and required the participants to rate each item for the extent to which they agreed or disagreed using a 4-point scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*). Examples of items included, “I am easy to like,” “I am confident about myself and my abilities,” and “I’m happy with the way I am.” The items were scored and summed to create a scale with possible scores ranging from 10 (*low self-esteem*) to 40 (*high self-esteem*). The mean of the scale was 29.45 with a standard deviation of 4.67. The scale displays a high level of internal consistency (Cronbach’s $\alpha = 0.84$).

Parental Attachment. This 8-item scale was designed to assess the quality of the attachment relationship between the participants and their parents. For each item respondents were required to indicate the extent to which they agreed or disagreed using a 4-point scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*). Examples of items include “My parent/s listen to me, and

what I have to say,” “My parent/s are good at helping me with problems,” and “I get on well with my parent/s.” Items were scored and summed so that higher scores indicate a stronger level of attachment to parents. The mean of the scale was 23.42 with a standard deviation of 3.48. The scale displays a high level of internal consistency (Cronbach’s $\alpha = 0.76$).

Peer Attachment. This 7-item scale was constructed to assess the quality of the attachment relationship between participants and their peers. For each item respondents were required to indicate the extent to which they agreed or disagreed using a 4-point scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*). Examples of items include “I rely on my friends for support,” “My friends like to hear what I think about things,” and “My friends are good at helping me with problems.” Items were scored and summed so that higher scores indicate a stronger level of attachment to peers. The mean of the scale was 21.65 with a standard deviation of 3.43. The scale displays a high level of internal consistency (Cronbach’s $\alpha = 0.80$).

Perceived Problems. This 12-item scale required participants to rate each item for the extent to which they thought it was “a problem in your area.” For each item a 3-point scale was used (1 = *no problem*, 2 = *minor problem*, 3 = *serious problem*). The overall scale was designed to evaluate the kinds of social problems that adolescents and young adults might experience in their communities. Examples of items include “Not enough things for young people to do,” “Young people drinking too much,” and “Bullying and assaults on young people.” The items were scored and summed so that higher scores indicate a higher level of perceived problems. The mean of the scale is 22.12 with a standard deviation of 4.36. The scale displays a reasonable level of internal consistency (Cronbach’s $\alpha = 0.77$).

Results

In the first stage of the analysis sex differences on the major variables of interest were examined. The mean age of the females was slightly higher (15.37) than that for the males (15.15), $t = -2.44$ (2004), $p < 0.05$. As can be seen from Table I, females reported significantly higher levels of depression than males and lower levels of self-esteem. Females also reported more problems in their local area and higher levels of both parental and peer attachment than males.

Prior to examining the zero order correlations, the data set was screened for univariate and multivariate outliers. Employing the procedures outlined by Tabachnick

Table I. Sex Differences on Variables for Study 1

Variables	Sex	N	Mean	SD	t
Depression	male	946	15.17	3.28	-8.74*
	female	1060	16.48	3.41	
Self-esteem	male	946	30.77	4.38	12.45*
	female	1060	28.27	4.61	
Parental Attachment	male	946	23.23	3.44	-2.34*
	female	1060	23.60	3.51	
Peer Attachment	male	946	21.11	3.41	-6.61*
	female	1060	22.13	3.38	
Perceived Problems	male	946	20.99	4.31	-11.00*
	female	1060	23.12	4.16	

* $p < 0.05$.

and Fidell (1989), and using a Mahalanobis distance criteria of $p < .001$, 8 cases were found to be outliers. These cases were deleted from further analysis. Correlations between the major variables of interest are presented in Table II. These correlations range from weak to moderate, with the exception of that between Peer Attachment and Perceived Problems, which is essentially zero.

The hypothesized model of the relationship between the attachment measures (both peer and parental) and the outcome measures was evaluated using structural equation modeling (SEM) techniques implemented in the AMOS 4 computer program (Arbuckle and Wothke, 1999). The analysis proceeded in a number of steps. Firstly, the parceling technique was applied to construct multiple indicators of latent variables. Secondly, the hypothesized model was evaluated using Maximum Likelihood Estimation. Thirdly, model fit indices and modification indices were examined and parameters were freed as appropriate. Finally, the fit of the modified model was evaluated.

To take advantage of the use of latent variables in the model, the parceling technique (Kishton and Widaman, 1994; MacCallum and Austin, 2000) was used to construct

Table II. Correlations, Means, and Standard Deviations for Study 1

Variables	1.	2.	3.	4.	5.
1. Depression	0.781				
2. Self-esteem	-0.460	0.840			
3. Parental attachment	-0.344	0.339	0.762		
4. Peer Attachment	-0.226	0.342	0.315	0.803	
5. Perceived Problems	0.374	-0.208	-0.249	-0.070	0.774
Means	15.82	29.48	20.86	21.61	22.11
SDs	3.37	4.64	3.20	3.44	4.39

Note. Cronbach’s α presented on diagonals. All correlations significant at $p < 0.01$.

Table III. Correlations, Means, and Standard Deviations for Parceled Variables in Study 1

Variables	de1	de2	se1	se2	pa1	pa2	pe1	pe2	pp1	pp2
de2	0.657									
se1	-0.320	-0.414								
se2	-0.367	-0.446	0.708							
pa1	-0.285	-0.262	0.270	0.283						
pa2	-0.283	-0.291	0.264	0.301	0.597					
pe1	-0.176	-0.185	0.263	0.292	0.285	0.220				
pe2	-0.189	-0.199	0.285	0.310	0.283	0.232	0.668			
pp1	0.280	0.290	-0.136	-0.187	-0.185	-0.190	-0.021	-0.016		
pp2	0.324	0.318	-0.155	-0.199	-0.216	-0.199	-0.079	-0.105	0.583	
Mean	8.13	7.69	14.52	14.98	11.94	8.91	9.30	12.31	11.79	10.33
SD	1.90	1.80	2.34	2.68	1.97	1.61	1.65	2.11	2.41	2.52

Note. de1 = Depression 1, de2 = Depression 2, se1 = Self-esteem 1, se2 = Self-esteem 2, pa1 = Parental Attachment 1, pa2 = Parental Attachment 2, pe1 = Peer Attachment 1, pe2 = Peer Attachment 2, pp1 = Perceived Problems 1, pp2 = Perceived Problems 2.

multiple indicators based on single scales. This involves creating multiple indicators of variables based on subsets of items from the original scale. For example, instead of the full 10 items being employed to create a single depression scale, 2 depression scales of 5 items each were created. To provide a metric for the latent constructs and to identify the measurement model, the first indicator weight for each latent construct was set to 1.0. Correlations, means, and standard deviations for the parceled variables are presented in Table III.

In accordance with current practice in reporting the assessment of SEM models, a number of different statistics were employed to evaluate the fit of the models. Based on the recommendations of a number of authors (Browne and Cudeck, 1993; Hu and Bentler, 1995; MacCallum and Austin, 2000; Tanaka, 1987), the χ^2 , Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Root Mean Square Approximation Error (RMSEA) were selected as appropriate fit indices. Table IV presents the fit statistics from the analysis of the hypothesized model and subsequent modifications.

The AGFI and CFI statistics were both above 0.95 indicating that the hypothesized model was a good fit to the data (Bentler, 1990; Byrne, 1998). As χ^2 is considered sensitive to large sample sizes (Ullman, 1996), its failure to reach the appropriate value with $p > 0.05$ was not considered problematic. The RMSEA was below the

recommended value of 0.08 that would indicate an adequate fit (Byrne, 1998). Although these statistics indicated that the hypothesized model was an adequate fit without modification, examination of the modification indices revealed that allowing a covariance between the exogenous variables of Parental Attachment and Perceived Problems was indicated and could improve model fit. As such a covariance was not considered to comprise the theoretical integrity of the model, this path was freed and the fit statistics for the resultant model (Modification 1) are presented in Table IV. There was a significant improvement in the fit of the model ($\Delta\chi^2 = 140.33$, $df = 1$, $p < 0.001$), which is reflected, in the various fit indices. The resultant modified model was indicated to be an adequate fit by the absolute value of all the fit statistics except for χ^2 . Modification indices indicated that a path from the exogenous variable of Perceived Problems to the endogenous variable of Self-Esteem should be freed and could further improve model fit. Again, such a modification was not considered to compromise the underlying theory and, thus, the parameter was freed. The fit statistics for the resultant model (Modification 2) are presented in Table IV. There was a further significant improvement in the fit of the model ($\Delta\chi^2 = 29.52$, $df = 1$, $p < 0.001$). Minor improvements for all of the fit statistics can be noted. No further modifications to the model were considered to be necessary. This final model, with standardized coefficients, is presented in Fig. 2. All of the hypothesized path weights are in the appropriate direction and significant at the 0.05 level. Based on the squared multiple correlation coefficients, 28% of the variance in self-esteem, 46% of the variance in depression, and 16% of the variance in Peer Attachment is accounted for in the model.

Examination of the model reveals a moderate effect of Self-esteem on Depression. Perceived Problems also

Table IV. Model Fit Statistics for Study 1

Model	χ^2	df	p	AGFI	CFI	RMSEA
Hypothesized	243.10	29	>0.000	0.956	0.969	0.061
Modification 1	102.77	28	>0.000	0.980	0.989	0.037
Modification 2	73.25	27	>0.000	0.985	0.993	0.029

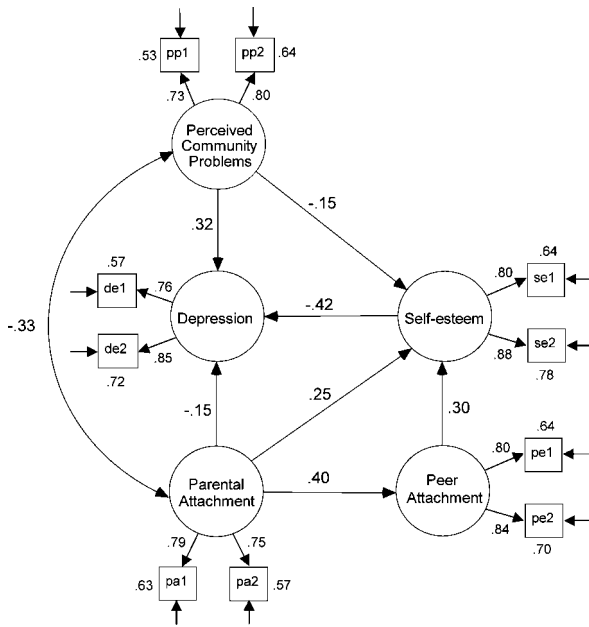


Fig. 2. Final model—study 1.

shows a moderate influence on Depression. Parental Attachment, on the other hand, displayed a much weaker direct effect on Depression than was expected. The indirect effect of Parental Attachment on Depression, mediated through Self-esteem, was also relatively small (−0.16). Peer Attachment had a moderate direct effect on Self-esteem and only a weak indirect effect (−0.13) on Depression.

Both exogenous variables and Peer Attachment significantly influenced Self-esteem. Peer Attachment had a marginally larger influence on Self-esteem than Parental Attachment and Perceived Problems displayed a weak direct influence on Self-esteem. The path between Parental Attachment and Peer Attachment is moderate and similar in magnitude to zero-order correlations found in previous research (e.g., Wilkinson and Walford, 2001). The correlation between Perceived Community Problems and Parental Attachment, suggested by the modification indices, is negative and moderate.

Overall, it can be concluded that the hypothesized model was supported and was improved by the inclusion of some additional paths linking Perceived Problems to Self-Esteem and to Parental Attachment.

STUDY 2

To evaluate the validity and stability of the model developed and tested on the Norwegian sample of adoles-

cents in Study 1, a further study was undertaken with an independent sample of adolescents from a different cultural background.

Method

Participants

This study consisted of 329 Australian high school students aged between 15.8 and 18.3 years (Mean = 16.84, SD = 0.43). Of this sample, 182 were female (55.3%) and 147 were male (44.7%). 41% of the participants reported living in rural communities with the remainder reporting that they lived in either a large town or city. Using reports of parental occupations as indicators, the majority of participants (69%) came from middle class backgrounds.

Procedure

In a classroom setting, volunteer participants completed an English language version of the questionnaire booklet used in Study 1.

Results

In the first stage of the analysis sex differences on the major variables of interest were examined (see Table V). There was no significant difference in the mean age of males and females in this sample (16.85 and 16.83, respectively). As can be seen from Table V females reported significantly more depression and higher levels of peer attachment and perceived community problems than males.

Prior to examining the zero order correlations the data set was screened for both multivariate and univariate outliers using the same procedure as reported in Study 1.

Table V. Sex Differences on Variables for Study 2

Variables	Sex	N	Mean	SD	t
Depression	male	147	17.03	3.69	−5.48*
	female	182	19.33	3.80	
Self-esteem	male	147	31.06	3.59	1.56
	female	182	30.41	3.85	
Parental Attachment	male	147	23.18	3.94	−0.88
	female	182	23.57	3.89	
Peer Attachment	male	147	20.86	3.34	−1.97*
	female	182	21.62	3.64	
Perceived Problems	male	147	21.65	4.51	−3.05*
	female	182	23.28	5.00	

*p < 0.05.

Table VI. Correlations, Means, and Standard Deviations for Study 2

Variables	1	2	3	4	5
1. Depression	0.831				
2. Self-esteem	-0.431*	0.801			
3. Parental attachment	-0.175*	0.211*	0.774		
4. Peer attachment	-0.176*	0.380*	0.250*	0.723	
5. Perceived problems	0.366*	-0.278*	0.001	-0.009	0.797
Means	18.31	30.70	23.40	21.28	22.55
SDs	3.92	3.74	3.92	3.52	4.85

Note. Cronbach's α presented on diagonals.
* $p < 0.01$.

One case was found to be a multivariate outlier and was deleted from further analysis. Correlations between the variables of interest are presented in Table VI.

The model developed in Study 1 was applied to the data using AMOS 4. Correlations, means, and standard deviations of the parceled variables are presented in Table VII. Evaluation of the model using the same methods and statistics as used in Study 1 indicated that it was a good fit to the data ($\chi^2 = 34.015$, $df = 27$, $p = 0.166$; AGFI = 0.959; CFI = 0.993; RMSEA = 0.028). The parameters of interest in the model are presented in Fig. 3.

All of the path weights are in the appropriate direction and, with the exception of the correlation between perceived community problems and parental attachment and the regression path from parental attachment to depression, significant at the 0.05 level. Based on the squared multiple correlation coefficients, 40% of the variance in self-esteem, 39% of the variance in depression, and 8% of the variance in Peer Attachment is accounted for in the model.

To evaluate if the models from Study 1 and Study 2 were significantly different, data from the Norwegian and Australian samples were subjected to a multigroup analysis using the procedures described by Arbuckle and Wothke (1999). The model developed on the Norwegian sample was applied to the Australian data with group-invariant estimates for the regression paths of the structural model. The parameter values for the measurement model, error terms, variances, and covariances were not constrained across groups. The results indicated that there was no significant difference between the models when the regression estimates were constrained to be equal ($\chi^2 = 8.31$, $df = 6$, $p = 0.216$).

A comparison of model results generated in Study 1 and 2 (Figs. 2 and 3) indicate some differences in path weights. Significantly, 2 of the largest differences are in the paths added to the original hypothesized model. The path between Perceived Community Problems and Parental Attachment generated by the Norwegian sample is essentially zero when applied to the Australian sample. On the other hand, the weight of the path from Perceived Community Problems to Self-esteem when applied to the Australian sample is over twice that generated in the Norwegian sample. When considering the "core" paths (i.e., those from the hypothesized model) the differences between weights between the 2 samples are more modest. Overall, the model comparison results indicate that, although there is some variation in path weights, the results from Study 1 have been replicated in Study 2.

STUDY 3

In order to evaluate if the results from Study 1 and 2 were an artifact of the particular self-report measures used, a third study was conducted employing

Table VII. Correlations, Means, and Standard Deviations for Parceled Variables in Study 2

Variables	de1	de2	se1	se2	pa1	pa2	pe1	pe2	pp1	pp2
de2	0.650									
se1	-0.282	-0.378								
se2	-0.328	-0.388	0.579							
pa1	-0.197	-0.094	0.109	0.189						
pa2	-0.152	-0.147	0.171	0.192	0.540					
pe1	-0.090	-0.166	0.262	0.308	0.221	0.164				
pe2	-0.112	-0.202	0.283	0.365	0.162	0.141	0.666			
pp1	0.324	0.328	-0.213	-0.266	-0.005	-0.024	0.068	-0.018		
pp2	0.287	0.291	-0.146	-0.274	-0.020	-0.026	-0.013	-0.041	0.694	
Mean	9.57	8.73	15.79	14.92	11.96	8.57	8.90	12.38	11.56	10.99
SD	2.07	2.23	1.96	2.25	2.17	1.72	1.74	2.12	2.46	2.80

Note. de1 = Depression 1, de2 = Depression 2, se1 = Self-esteem 1, se2 = Self-esteem 2, pa1 = Parental Attachment 1, pa2 = Parental Attachment 2, pe1 = Peer Attachment 1, pe2 = Peer Attachment 2, pp1 = Perceived Problems 1, pp2 = Perceived Problems 2.

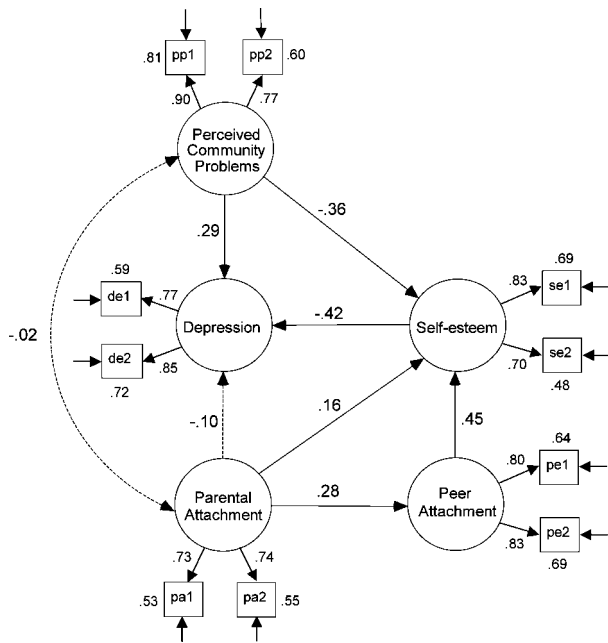


Fig. 3. Final model—study 2.

widely used self-report measures of the constructs under consideration.

Method

Participants

This study consisted of 347 Australian upper high school students aged between 15.7 and 19.8 years (Mean = 17.14, SD = 0.68). Of this sample, 259 were female (74.6%) and 88 were male (25.4%). The participants were all recruited from high schools in a major capital city. Based on reports of parental occupations, the majority of participants (71.5%) came from a middle class background.

Procedure

The volunteer participants completed, in a classroom setting, a questionnaire booklet consisting of a number of self-report measures.

Depression. The 20-item Centre for Epidemiological Studies—Depression (CESD) Scale (Radloff, 1977) was employed to assess depression. This scale assesses how frequently participants experience 20 depressive symptoms using a 4-point scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*).

The scale is reported to have high internal consistency (Cronbach’s $\alpha = 0.85$) as well as reasonable stability (2-week test-retest $r = 0.51$ and 4-week $r = 0.67$) (Radloff, 1977). A single depression score was calculated for each participant by summing the responses for each item. Scores could range from 0 (*low depression*) to 60 (*high depression*).

Self-Esteem. Rosenberg’s Self-Esteem Inventory (Rosenberg, 1965) was used to measure participant’s self-esteem. This internally consistent scale (Cronbach’s $\alpha = 0.85$) consists of 10 items that measure positive and negative feelings toward the self on a 4-point scale (0 = *strongly agree*, 1 = *agree*, 2 = *disagree*, 3 = *strongly disagree*). An overall score of global self-esteem was calculated for each participant by summing the scores obtained for the items. Overall scores ranged from a minimum of 0 (*low self-esteem*) to a maximum of 30 (*high self-esteem*).

Attachment. The Inventory of Parent and Peer Attachment (IPPA) (Armsden and Greenberg, 1987) is a widely used measure of the quality of parent and peer attachment in samples of adolescents and young adults. The IPPA has separate Parental and Peer Attachment Scales. The Parental Attachment Scale is comprised of 28 items while the Peer Attachment Scale has 25 items. Using a 5-point scale, participants indicate the extent to which they felt items were true, ranging from 1 (*almost always or always true*) to 5 (*almost never or never true*). For the parent scale participants are advised that if their relationship with each parent differs they should respond with reference to the parent that has “most influenced” them. For the peer scale, participants are instructed to respond with respect to their closest friendships. A score for each scale is created by summing the responses for items after recoding so that higher scores indicate increased attachment. Possible scores range from 28 to 140 for the Parental Attachment Scale and 25–125 for the Peer Attachment Scale. Both the Parental and Peer Attachment Scales are reported by Armsden and Greenberg (1987) to have good internal consistency.

Unpleasant Events. To evaluate the level of negative external environmental influences, a 29-item version of the Mood-Related Subscale of the Unpleasant Events Schedule (UES) (Lewinsohn *et al.*, 1985; Wilkinson and Walford, 2001) modified for adolescents was employed. The UES measures the frequency with which various unpleasant events were experienced by respondents in the last month. Participants indicated the frequency with which the unpleasant events were experienced accordingly: 0 = has not happened; 1 = has happened a few times; 2 = has happened often. An overall UES score was calculated by summing responses for the items.

Table VIII. Sex Differences on Variables for Study 3

Variables	Sex	N	Mean	SD	t
Depression	male	88	15.79	11.61	-1.84
	female	259	18.92	14.27	
Self-esteem	male	88	19.44	5.81	2.44*
	female	259	17.66	5.92	
Parental Attachment	male	88	94.59	21.47	-0.98
	female	259	97.35	23.18	
Peer Attachment	male	88	91.56	15.56	-3.24*
	female	259	97.86	15.74	
Unpleasant Events	male	88	25.73	7.48	1.31
	female	259	24.37	8.51	

* $p < 0.05$.

Results

In the first stage of the analysis sex differences on the major variables of interest were examined (see Table VIII). There was no significant difference in the mean age of males and females in this sample (17.27 and 17.12, respectively). As can be seen from Table VIII females reported significantly lower levels of self-esteem and higher levels of peer attachment than males.

Prior to examining the zero order correlations the data set was screened for both multivariate and univariate outliers using the same procedure as employed in Study 1. Moreover, 2 cases were found to be multivariate outliers and were deleted from further analysis. Correlations between the variables of interest are presented in Table IX.

The model developed in Study 1 was applied to the data using AMOS 4. Correlations, means, and standard deviations for the parceled variables are presented in Table X. Evaluation of the model using the same methods and statistics as used in Study 1 indicated that it was a good fit to the data ($\chi^2 = 72.655$, $df = 27$, $p < 0.05$; AGFI = 0.920; CFI = 0.983; RMSEA = 0.070).

Table IX. Correlations, Means, and Standard Deviations for Study 3

Variables	1.	2.	3.	4.	5.
1. Depression	0.940				
2. Self-esteem	-0.680*	0.899			
3. Parental attachment	-0.434*	0.467*	0.953		
4. Peer attachment	-0.410*	0.488*	0.422*	0.929	
5. Unpleasant events	0.531*	-0.419*	-0.373*	-0.269	0.831
Means	18.10	18.10	96.66	96.27	24.73
SDs	13.67	5.94	22.76	15.91	8.27

Note. Cronbach's α presented on diagonals.

* $p < 0.01$.

The parameters of interest in the model are presented in Fig. 4.

Overall, the path weights are in the appropriate direction and of a similar strength to those found in the previous 2 studies with some exceptions. An interesting feature of this model is that the path between Parental Attachment and Depression is essentially 0, indicating no relationship when all of the other hypothesized paths are considered concurrently. Unpleasant Events displays a similar pattern of relationship as Perceived Community Problems to Self-esteem and Depression, although it does have a stronger relationship with Parental Attachment than demonstrated by Perceived Community Problems in the previous 2 studies. The weight of the path between Self-esteem and Depression is somewhat larger in this model (-0.63) than for the same path in Study 1 and 2 (-0.42). The remaining paths, from the original hypothesized model, are similar in magnitude to those found in Study 1.

Because different measures were used in this study compared to those used in Study 1 and 2 it is not possible to provide a direct statistical test comparing the similarity of the models. However, the fact that this model is an adequate fit to the data, and the parameters of the core hypothesized paths are similar in magnitude and direction to those found in the previous 2 studies, provides evidence that the model has been successfully replicated on a further independent sample with alternative measures of the constructs under investigation.

DISCUSSION

The results of the 3 studies presented here support the contention that the relationship between the quality of peer attachment and psychological health is completely mediated by self-esteem. Further, much of the influence of parental attachment on psychological health is also mediated by self-esteem. Contrary to expectations, the hypothesized direct role of the quality of parental attachment on psychological health was relatively minor and not consistently supported. By using independent samples from different countries and using alternative measures of constructs, it was demonstrated that these results were not artifacts of sampling, cultural background, nor of the measures employed.

Overall, the results demonstrate that the quality of the attachment relationship established between an adolescent and his/her parents tends to influence, to a moderate degree, the quality of peer attachment relationships that they form. This evidence lends support to the view that internal working models, as postulated in attachment theory, may establish patterns of interpersonal relationships in

Table X. Correlations, Means, and Standard Deviations for Parceled Variables in Study 3

Variables	de1	de2	se1	se2	pa1	pa2	pe1	pe2	pp1	pp2
de2	0.835									
se1	-0.631	-0.588								
se2	-0.660	-0.615	0.819							
pa1	-0.389	-0.432	0.471	0.443						
pa2	-0.360	-0.426	0.446	0.431	0.886					
pe1	-0.386	-0.447	0.472	0.472	0.401	0.442				
pe2	-0.312	-0.401	0.438	0.409	0.332	0.396	0.864			
ue1	0.467	0.403	-0.322	-0.373	-0.307	-0.245	-0.223	-0.201		
ue2	0.475	0.446	-0.373	-0.392	-0.432	-0.395	-0.298	-0.246	0.688	
Mean	9.61	8.47	9.49	8.63	45.37	47.65	50.39	45.88	13.32	11.40
SD	7.06	7.07	2.94	3.27	10.55	12.08	7.82	8.64	4.18	4.82

Note. de1 = Depression 1, de2 = Depression 2, se1 = Self-esteem 1, se2 = Self-esteem 2, pa1 = Parental Attachment 1, pa2 = Parental Attachment 2, pe1 = Peer Attachment 1, pe2 = Peer Attachment 2, ue1 = Unpleasant Events 1, ue2 = Unpleasant Events 2.

an individual’s psychosocial sphere. These patterns function across categories of relationship (i.e., parents, friends, peers, lovers) and, because they indicate a proclivity to construct relationships in a particular way, may be seen as “personality” constructs (Asendorf and Wilpers, 2000). On the other hand, this relationship is far from deterministic and many other factors besides quality of parental attachment are likely to contribute to the formation of satisfying peer relationships.

The construct of peer attachment and its operationalization is by no means uncontroversial. There is some

question as to whether or not this construct is compatible with attachment theory. Major attachment theorists, such as Bowlby (1969/1997) and Ainsworth (1991), have argued that attachments are fundamentally dyadic in nature. That is, they are formed on the basis of a relationship between an individual and a significant other. Weiss (1991, 1998) has argued that attachments can only be meaningfully discussed in terms of dyads and that relationships beyond dyads are not attachment relationships. This is problematic in the current context because extant measures of peer attachment do not specify dyadic relationships but ask the respondent to evaluate items that refer to “friends.” Thus, the individual respondent may respond with regard to individual friendships or the general quality of the relationships with their friends. The degree of intimacy in the relationship is not clearly established. Further clarification of the issues raised by Weiss (1998) should be examined by comparing the assessment of attachments to “peers,” specified as nondyadic, to the attachment to “close” or “intimate” friends. Dekovic and Meeus (1997), for example, in their study of 508 Dutch families with adolescents, found that involvement with peers, assessed as the degree of relatively superficial activity with peers and friends, was negatively associated with general self-esteem. On the other hand increased quality of peer relationships, assessed by measures of social acceptance and peer attachment, was positively associated with increased evaluations of self-worth.

The results of the studies presented here clearly indicate that both parental and peer attachment contribute to the psychological adjustment of the adolescent. This, in conjunction with the moderate positive relationships between the quality of parental and peer attachment, supports a continuity/cognitive model rather than a competitive/compensatory model. The effect on psychological

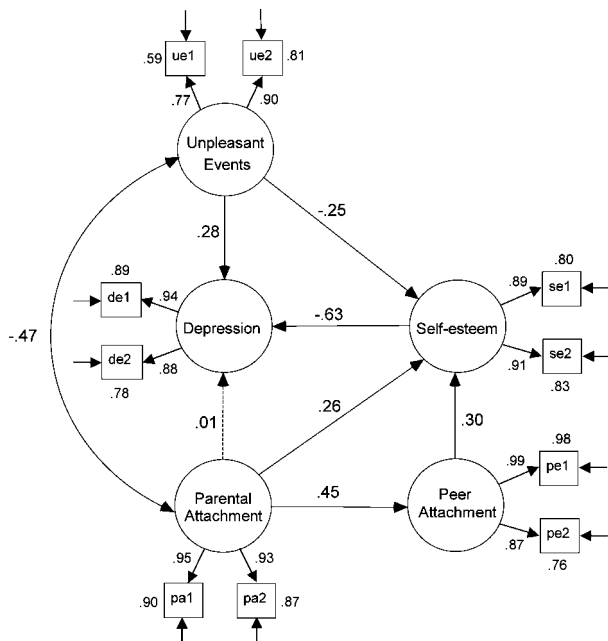


Fig. 4. Final model—study 3.

health (depression), however, was predominately indirect via self-esteem. This indicates that a primary role of attachment relationships appears to be in the bolstering of the individuals self-worth rather than directly influencing psychological symptoms. Quality attachments appear to be intimately related to how we think of and judge ourselves. Close, secure, and trustworthy relationships with parents and friends lead adolescents to evaluate their own attributes and worth more highly. It is this evaluation that then influences psychological symptoms.

For a construct so pervasive in contemporary psychology, there is a surprising lack of consensus about what self-esteem actually is (Blascovich and Tomaka, 1991; Tafarodi and Swann, 2001; Wells and Marwell, 1976). However, there is a general view that self-esteem is the evaluative component of self-concept, and that it is more "global" than the evaluation of specific self-characteristics such as body-image, social-skill, or confidence. There is also some agreement that self-esteem is trait-like, although it is often employed as a measure of psychological state (e.g., psychological well-being). A number of authors have sought to "unpack" the global construct of self-esteem by positing a variety of subdimensions or "facets" underlying the construct. While there has been a vigorous debate on whether or not the multidimensionality of self-esteem is an artifact of the specific measurement instruments employed (e.g., Corwyn, 2000; Marsh, 1996; Tomas and Oliver, 1999), there is some evidence to suggest that there are at least 2 underlying evaluative aspects of global self-esteem: "ability" and "worth" (Brown, 1998; Tafarodi and Milne, 2002; Tafarodi and Swann, 1995). Ability relates to the degree of instrumental value or "self-competence" that the individual feels while worth relates to the extent of personal value or "self-liking" that the individual experiences (Tafarodi and Milne, 2002). While the current research has demonstrated the central role of global self-esteem as a mediator of attachment relationships on psychological health, the particular roles of these subdimensions have not been explored. It will be important for future research to examine the differential roles of parental attachments, close friendships, and peer relationships in the development of different aspects of self-esteem and how this may then impact on psychological health outcomes.

In common with most research in this area the current studies employed a measurement strategy that asked respondents to evaluate their relationship with their parents or the parent they feel closest to rather than separately evaluating attachments with each parent. To an extent the same criticism that has been leveled at the construct of peer attachment and its assessment can be leveled at this approach. If attachment relationships are only dyadic then at-

tempts to evaluate attachments to parents should assess the relationship between each parent and the respondent rather than employing a combined or preferred parent strategy. It is possible, and perhaps even likely, that this confounding of relationships will obfuscate evaluating the true impact of the quality of parental relationships on psychological health outcomes. In fact, those studies that have evaluated attachment to mothers and fathers separately have tended to find that attachments to mothers and fathers evince different patterns of relationships with peer attachment, self-esteem, and psychological health (e.g. Noom *et al.*, 1999; Patterson *et al.*, 1995). Future research examining the impact of adolescent attachment relationships on psychological adjustment would benefit from considering attachment to mothers and fathers as separate attachment relationships.

Similarly, the role of gender specific relationships with mothers and fathers is worthy of further attention. Although this study has reported some inconsistencies in the mean levels of the attachment and adjustment variables between females and males, structural differences in the relationship between these variables has not been examined across the sexes. If future research is to examine the separate role of mother and father attachment then it will also be useful to examine how these relationships vary by gender of the adolescent with regard to their relationships with attachments, self-esteem, and psychological health.

Overall, it was the relationship factors that had the largest effect on psychological outcomes in the studies presented here. While the nonrelationship factor, Perceived Community Problems in Studies 1 and 2 and Unpleasant Events in Study 3, certainly impacted on psychological symptoms both directly and indirectly via self-esteem, its effect was not as large as that of the attachment variables. A difference of note in the 3 studies is the variation in the relationship of Parental Attachment to either Perceived Community Problems or Unpleasant Events. Originally a covariation was not hypothesized between these variables but was included as part of the model modification procedure in Study 1. In Study 2, however, this path was essentially 0, indicating no relationship between Parental Attachment and Perceived Community Problems in the Australian sample. In Study 3, where Perceived Community Problems is replaced by Unpleasant Events in the model, this path is significant and stronger than in Study 1.

Examination of the items that make up these scales in Study 3 provides some explanation for the relatively large covariance indicated in the model. The Unpleasant Events measure employed includes a significant number of items dealing with unpleasant social interactions or events. (e.g. "Having someone disagree with me," "Doing something that I don't want to in order to please someone else,"

“Being without my privacy”). Higher levels of endorsement of such items are likely to result from conflictive and/or nonsecure relationships between the adolescent and their parents. Relationships characterized by more adaptive communication patterns and greater security of attachment would be more likely to result in lower levels of endorsement.

This explanation would not appear to apply, however, in accounting for the discrepant results in Studies 1 and 2. Firstly, the Perceived Community Problems measure does not include items assessing negative social interactions of the type that would be influenced to a significant degree by the quality of parental relationships. Rather, the items are much more focused on broader community problems than on conflicts between the individual and intimate others (e.g. “Not being able to go out at night safely,” “Not enough things for young people to do,” “Too few shops that sell the things you want”). Secondly, the fact that the covariance was significant in the first study but not in the second, when both studies used the same measures, indicate that the explanation may lie in the sample rather than in the measures employed. Of course the samples in Studies 1 and 2 are from different populations of adolescents. It may be that there are some particular set of circumstances in the lives of Norwegian adolescents that lead to this result for them rather than for the Australian adolescents or perhaps the difference may be the result of some specific cultural factors. Clearly further research should seek to identify the factors responsible for the link between the perception of community problems and the quality of parental relationships amongst Norwegian youth.

CONCLUSIONS

The evidence presented here is that adolescent attachment relationships with parents and peers are not in competition but play additive and complimentary roles in psychological well-being during adolescence. The primary effect of both parental and peer attachments would appear to be on adolescent self-esteem rather than directly on the expression of psychological symptoms. This suggests that the quality of relationships in this developmental period plays an important role in the construction and evaluation of the “self-identity.” It is the evaluation of the self rather than the quality of attachment relationships that then influences the levels of psychological symptoms reported by adolescents.

Of course, the research presented here is based on correlational data that is a cross-sectional “snap-shot” of the research participants’ responses at a particular point in time and, despite the logic of structural equation modeling, there are limitations to the extent that “causal” relation-

ships between the variables can be inferred. Longitudinal data examining possible changes in relationships between the attachment variables and adjustment outcomes from early to middle and late adolescence would be a valuable contribution to this area and would further elucidate the causal pathways. Future research in this area also needs to reconsider the ways in which some of the key constructs are operationalized. In particular, measures of peer and parental attachments should be modified to focus on the evaluation of intimate dyadic relationships to avoid confusion over exactly what kinds of relationships are being evaluated. Measures of peer attachment should focus on the assessment of intimate friendships rather than “peers” and measures of parental attachment should be separated into maternal and paternal attachment. Measures of self-esteem should also be employed that enable a closer examination of the relationship between attachment relationships and different aspects of self-evaluation such as self-worth and ability. By elucidating the paths through which important interpersonal relationships in adolescence come to influence the evaluation of the self and how this impacts on psychological health, a more comprehensive understanding of the role of psychological attachments across the lifespan can be developed.

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