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Running head: *BEST FRIENDS AND BETTER COPING*

Best friends and better coping: Facilitating psychological resilience through boys' and girls' closest friendships

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Best friends and better coping:

Facilitating psychological resilience through boys' and girls' closest friendships

Abstract

This is a novel investigation of whether, and how, a single close supportive friendship may facilitate psychological resilience in socioeconomically vulnerable British adolescents. 409 adolescents (160 male, 245 female, 4 unknown), aged between 11 and 19 years, completed self-report measures of close friendship quality, psychological resilience, social support and other resources. Findings revealed a significant positive association between perceived friendship quality and resilience. This relationship was facilitated through interrelated mechanisms of developing a constructive coping style (comprised of support-seeking and active coping), effort, a supportive friendship network, and reduced disengaged and externalising coping. While protective processes were encouragingly significantly present across genders, boys were more vulnerable to the deleterious effects of disengaged and externalising coping than girls. We suggest that individual close friendships are an important potential protective mechanism accessible to most adolescents. We discuss implications of the resulting Adolescent Friendship and Resilience Model for resilience theories and integration into practice.

Keywords: Resilience, Peer Relationships, Friendship, Coping, Protective Mechanism, Adolescence, Social Support, Socioeconomic Status

Best friends and better coping:

Facilitating psychological resilience through boys' and girls' close friendships

Psychological resilience is a psychosocial developmental process through which people exposed to sustained adversity experience positive psychological adaptation (Luthar, Cicchetti & Becker, 2000; Rutter, 1999, 2006). Resilience is associated with lowered psychological distress and health-promoting lifestyles (Black & Ford-Gilboe, 2004; Campbell-Sills Cohan, & Stein, 2006). Promoting resilience in socioeconomically vulnerable adolescents is important given the pervasive impact of socioeconomic risk during adolescence upon functioning immediately and in later life, particularly upon mental health outcomes and risky externalising behaviours such as substance use and violence (Turner, Finkelhor & Ormrod, 2006; Zimmerman & Brenner, 2010). We extend the study of psychological resilience in two key ways. First, we posit a single close supportive peer friendship as a protective mechanism accessible to most adolescents. Second, we develop and test a theoretical model (the Adolescent Friendship and Resilience Model) of how a single supportive close friendship may facilitate resilience through several key psychological mechanisms.

Interpersonal protective mechanisms that directly or indirectly modify response to risk at turning points in life to facilitate resilience include perceived social support and good interpersonal relations (Rutter, 1990). Friendships are an important source of support during adolescence (Hartup & Stevens, 1999). Supportive friendships may model effective coping, demonstrate how to recruit and offer support, and foster well-being while best friendships are especially intimate (Finkenauer & Righetti, 2011; Frydenberg, 1997). These qualities suggest that adolescents' close friendships may be a protective mechanism facilitating resilience.

Good quality friendships have important effects on adjustment and psychological well-being across the lifespan (Hegelson & Lopez, 2010). Within adolescence and beyond,

friendships are important sources of support (Frydenberg, 1997). Moreover, throughout life, friendships fulfil many functions associated with affection and satisfaction, such as providing stimulating companionship, help, intimacy, reliable alliance, self-validation and emotional security (Mendelson & Aboud, 1999). Close relationships support basic needs for belonging, empathy and mutual engagement, forming a context of interpersonal exchanges through which growth and development occur (Jordan, 2013; LaGuardia, 2008). Friendship quality and friendship behaviours can be influenced by a multitude of factors including intimacy, attachment style, mutual closeness, closeness preferences, perceived support, gender norms, peer victimization, family-learned social skills, and culture (Bukowski & Adams, 2005; Hartup & Stevens, 1997; Masten, 2005; Way, 2013). Best friendships are often distinguished through secret-sharing and intimacy while reciprocal disclosures, similarities in life stages and interests, and sharing activities are characteristic of friendships more generally (Finkenauer & Righetti, 2011; Way, 2013).

While some models of resilience consider supportive peer relationships, many curiously omit or underplay them (e.g., Haase, Heiney, Ruccione, & Stutzer, 1999; Rew & Horner, 2003). However, peer relationships are assets for resilience promotion through school-based social competency (Morrison, Brown, D'Incau, O'Farrell & Furlong, 2006). Healthy peer relationships have been theorized to promote resilience by fostering a sense of belonging and providing ways of coping (Hart, Blincow & Thomas, 2007). Indeed, qualitative evidence suggests friendships are a source of companionate, emotional and motivational support among resilient young women (Everall, Altrows & Paulson, 2006; Shepherd, Reynolds & Moran, 2010). Resilient young adults value their close friendships for satisfying deep needs for companionship and sustaining them through challenging circumstances (Hauser, 1999).

Increasing resilience by initiating new opportunities and fostering positive chain reactions are two distinct processes to mitigating risk pathways (Rutter, 1999). Yet within resilience research, peer relationships have largely been conceptualised solely through associations with victimization and maladjustment (e.g., Tiet, Huizinga, & Byrnes, 2010). Most resilience research has furthermore focused on peer groups, whose effects need not be the same as the effects of a single close friendship. The ability to recruit and maintain supportive friendships is an important asset to resilience. Factors such as social competency, demographic similarity, attachment style, and mutual liking are important influences on friend selection and perhaps, therefore, subsequent associations. However, they are conceptually distinct from the perceived quality and supportiveness of the friendship, and are more powerfully captured using objective or informant reports as used elsewhere in the literature (Everall, Altrows & Paulson, 2006; Luthar, 1991; Newcomb & Bagwell, 1995). We therefore suggest that an association with greater resilience may be one, as yet unassessed, benefit of a single close friendship in vulnerable adolescents.

Mechanisms Facilitating Resilience

If greater perceived close friendship quality is significantly associated with greater resilience, then we need to understand how this arises. Prior research in the areas of peer relationships and psychosocial resilience suggests that several psychological (individual-level) mechanisms might mediate and moderate the anticipated relationship between adolescents' closest friendship and resilience on the basis of association with psychosocial resilience, peer support processes, or both. This section briefly explores some of these identified mechanisms, which are presented as the basis for developing the Adolescent Friendship and Resilience Model.

Coping. Effective coping is a key protective mechanism (Ahern, 2006). As coping underlies habitual responses to challenges, if friendships foster ineffective responses, this

may explain associations between peer groups and poor outcomes (e.g., Tiet, Huizinga & Byrnes, 2010). Approach (e.g., planning) and accommodation (e.g., positive reinterpretation) are typically adaptive while avoidance and self-punishment are typically maladaptive (Zuckerman & Gagne, 2003). Little research has assessed how friendships might facilitate resilience through effective coping. Because of opportunities for behavioural modelling, support and well-being (Frydenberg, 1997), we suggest that greater perceived friendship quality will be associated with adaptive coping which will in turn facilitate resilience.

Self-efficacy. General and specific self-efficacy beliefs relate to resilience, for example by predicting academic resilience in the face of general educational challenges and mediating between adolescents' home environment and problem indices (Bradley & Corwyn, 2001; Martin & Marsh, 2008). Tentatively providing evidence for associations between peer relationships and self-efficacy, and between self-esteem and resilience, peer-led initiatives such as reciprocal support positively influence self-efficacy in health contexts (Turner, 1999). We therefore suggest that greater perceived close friendship quality will be associated with greater self-efficacy and that this will, in turn, facilitate resilience.

Self-esteem. Self-esteem is a well-evidenced protective mechanism, although its role is complicated by inconsistent operationalization as an indicator or a consequence of resilience (Harvey & Delfabbro, 2004). Increased self-esteem mediates between social support and reduced adolescent problem behaviour (Moran & DuBois, 2002). Perhaps counterintuitively, resilient youth may have lower self-esteem than their peers (Dumont & Provost, 1999). Overreliance on peers for support and self-definition may negatively impact self-esteem (DuBois et al., 2002; Hay & Ashman, 2003; Moran & DuBois, 2002). We hypothesize a positive effect whereby higher perceived friendship quality should be associated with greater self-esteem and, in turn, greater resilience.

Self-construal. Self-constructs are influenced by sources including environment, family and – increasingly in adolescence – peers (Hay & Ashman, 2003). Individuals with high relational interdependent self-construal (RISC) construct their self-concept in terms of significant relationships, roles, and social networks (Cross, Morris, & Gore, 2002). This suggests that RISC linked to a supportive friendship may facilitate resilience.

Perceived stress. The link between perceived stress, social support and coping, as well as the role of friendships in providing distraction and support, suggests that perceived stress might mediate between perceived friendship quality and resilience (Frydenberg, 1997). Perceived stress may also be modified by coping appraisals and behaviours (Pearlin & Schooler, 1978).

Friendship network. A single supportive close friendship may facilitate the development of a wider friendship network which is supportive, rather than risk-promoting. Measurement of perceived friendship network support furthermore allows us to account for psychological influences of the group itself. Two key processes in friendship networks tend to differentiate along gender lines: an internalizing process of co-rumination among girls (Rose, 2002) and an externalizing process of deviancy training among boys in which friendships reinforce antisocial behaviour (Dishion, 2000).

Moderators. Gender has cascading effects on health and coping behaviours, with boys more likely to engage in risky health-related activities (Rew & Horner, 2003). We therefore expected to find weaker protective effects among boys. Boys' and girls' friendships may also differ, albeit inconsistently, along dimensions such as expression of antisocial and prosocial behaviour, mutual self-disclosure, similarity, and readiness to seek social support (Frydenberg, 1997; Hartup & Stevens, 1997; Mendelson & Aboud, 1999). We also included perceived family support because the significance of friendships as a risk or protective mechanism may depend on the quality of family relationships, due to social skills and other

social resources gained at home (Masten, 2005). In addition, we considered whether friendship might differentially promote resilience across early to late adolescence because of changes in friendship qualities during the transition to late adolescence and throughout life (Hartup & Stevens, 1997; Way, 2013).

Extending current research, we use cross-sectional analyses to build a structural model of whether and how supportive close friendships may facilitate psychological resilience. We first hypothesize that greater perceived friendship quality will be positively correlated with increased psychological resilience. We then hypothesize that this relationship may be fully or partially explained through the identified suggested inter-related mediating mechanisms: self-esteem, self-efficacy, coping, RISC, perceived stress, and friendship network support. Finally, we consider whether this process differs according to sex, developmental stage and perceived family support, such that boys exhibit comparatively weaker benefits from a supportive close friendship, associations differ between early adolescence and late adolescence, or adolescents with greater perceived family support demonstrate stronger associations between greater friendship quality and resilience processes.

Method

Participants

Participants were recruited through three comprehensive secondary schools and two colleges in Yorkshire, England serving low-socioeconomic status catchment areas, and an online mailing list for peer supporters. School A was located on a socioeconomically deprived estate where the surrounding area reported 36.8% child poverty. School B had a lower rate of socioeconomic deprivation in its ward (6.8%) but bussed in a high proportion of children from other areas of a city where child poverty ranged as high as 29.8% (personal communication, April 19 2010). The intake of School C covered areas with child poverty ranging from 11.9% to 40.6%. The two colleges were located in central areas reporting a

level of child poverty of 39.6%. All child poverty figures are taken from HM Revenue & Custom's report by ward for the year 2010, when data collection commenced and 20.6% of children in England lived in poverty (HM Revenue & Customs, 2011). The final sample was comprised of 409 (160 male, 255 female, 4 unknown) participants aged between 11 and 19 ($M = 14.77$ years, $SD = 2.16$). Fifteen (11 females, 4 males) were recruited online (total M age = 17.80 years, $SD = 1.37$). Sixty-six participants were recruited from college A (45 females, 20 males, total M age = 17.15 years, $SD = 0.98$) and 69, all female, from College B (M age = 16.71, $SD = 1.29$). School A yielded 133 participants (48 females, 84 males, total M age = 12.74 years, $SD = 1.16$). School B yielded 62 participants (37 females, 26 males, total M age = 15.05, $SD = 1.03$) and School C yielded 64 participants (37 females, 26 males, total M age = 13.42 years, $SD = 0.64$).

Procedure

Ethical approval was obtained from the Ethics Committee of the School of Psychology at the host university. We used an opt-out system of informed consent. Following administrators' consent, participants' completion of the questionnaire denoted permission for their responses to be used. Administration in schools and colleges took place during lessons lasting 45-90 minutes. The first author introduced the study, restated ethical information and remained to clarify items.

Measures

Measures on friendship quality and social support were counterbalanced with measures on other resources. Missing item scores were substituted for individual sub-scale or scale mean scores for further analyses as appropriate for data missing at random, but not completely at random, given the administration conditions (Schafer & Graham, 2002).

Perceived Friendship Quality. Adolescents were asked to select their closest friend, who was not a sibling or romantic partner, and assess perceived friendship quality using the

McGill Friendship Function Questionnaire (FF - Mendelson & Aboud, 1999). This is a 30-item subjective assessment ($\alpha = .94$, $N = 404$) of how well a friend fulfils each of 6 friendship functions scored along a 9-point Likert scale ranging from “never” to “always” stimulating companionship (fun), help (perceived tangible support), intimacy (perceived openness and acceptance), reliable alliance (perceived availability and loyalty), self-validation (perceptions of encouragement) and emotional security (trustworthiness and perceived available emotional support). Items tap into both behaviours (e.g. “__ points out things I am good at”) and perceptions (e.g. “__ makes me feel special”).

Resilience. Psychological resilience was assessed using the 25-item ($\alpha = .94$, $N = 404$) Resilience Scale (RS) on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree”. The RS encompasses five dimensions of resilience: self-reliance (belief in oneself and one’s abilities), meaning (a sense of life purpose), equanimity (balanced perspective of life and experiences), perseverance (persistence and self-discipline despite adversity); and existential aloneness (perceived ability to face experiences alone). Items included “I usually manage one way or another” and “I can usually find something to laugh about.” Scores of 120 and below indicate low resilience; 121 to 145 indicate moderately-low to low resilience; and 146 to 175 indicate moderately-high to high resilience (Wagnild, 2009).

Hypothesized Moderators. Sex, perceived family support and developmental stage were hypothesized to moderate between close friendship and resilience. The 4-item Family sub-scale of the Multi-dimensional Perceived Social Support Scale (MPSSS - Zimet, Dahlem, Zimet, & Farley, 1988) assessed family support along a 7-point Likert scale ranging from “very strongly disagree” to 7 “very strongly agree” ($\alpha = .92$, $N = 399$). Items included “My family really tries to help me.” To subsequently assess the potential effects of developmental stage, participants were coded as belonging to early ($N = 222$) or late ($N = 187$) adolescence

according to guidelines demarcating early adolescence as 10 through 14 years of age (Journal of Early Adolescence, 2015).

Hypothesized Mediators. The 11-item Relational Interdependent Self-Construct scale (RISC - Cross, Bacon, & Morris, 2000) measured participants' tendency to base their self-construct in relation to others using a 7-point Likert scale ranging from "strongly disagree" to "strongly agree", ($\alpha = .80$, $N = 384$). Items included "My close relationships are an important reflection of who I am." The MPSSS Friends 4-item sub-scale ($\alpha = .94$, $N = 400$) assessed wider friendship network support. Items included "I can count on my friends when things go wrong." The Perceived Stress Scale (PSS - Cohen, Kamarck & Mermelstein, 1983) assessed how often participants experienced their lives within the past month to be unpredictable, uncontrollable or overloading (e.g., "felt difficulties were piling up so high that you could not overcome them?"), using 14 items scored on a 5-point Likert-style scale ranging from "never" to "very often" ($\alpha = .73$, $N = 407$). Self-efficacy was measured using the General Self-Efficacy Scale (GSES - Bosscher & Smit, 1998). The GSES supports one higher-order factor, general self-efficacy ($\alpha = .77$) and 3 correlated factors represented by three sub-scales scored on a 5-point Likert scale ranging from "Strongly disagree" to "Strongly agree": a 5-item Effort component ($\alpha = .79$) and 2 negatively-valenced components, Initiative (3 items; $\alpha = .76$) and Persistence (4 items; $\alpha = .78$). Summed sub-scale scores give a total for general self-efficacy. Items included "When I have something unpleasant to do, I stick at it until I finish it." Self-esteem was assessed using the Self-Esteem Scale (SES - Rosenberg, 1989), a 10-item scale of general self-esteem scored on a 4-point Likert scale ranging from "Strongly disagree" to "Strongly agree" ($\alpha = .82$, $N = 407$). The highest possible score of 30 denotes low self-esteem. Example items include "I feel that I have a number of good qualities" and "I take a positive attitude towards myself."

We assessed coping using the Brief COPE (Carver, 1997), a 28-item measure of coping using 14 sub-scales of conceptually distinct coping responses. Participants rate on a 4-point scale (ranging from “very often” to “never”) how often they perform various behaviours in response to a problem. Alphas were calculated for sub-scales to reflect distinct coping responses (Carver, 1997). Moderate to good internal reliability ($N = 409$) was achieved for each of the 2-item sub-scales: active coping such as engagement ($\alpha = .58$), planning ($\alpha = .51$), positive reframing of a situation ($\alpha = .58$), acceptance ($\alpha = .50$), prolonged behavioural disengagement ($\alpha = .46$), self-blame ($\alpha = .51$), humour ($\alpha = .49$), religion ($\alpha = .72$), substance use ($\alpha = .81$), using emotional support ($\alpha = .58$), using instrumental support including help or advice ($\alpha = .43$), self-distraction ($\alpha = .39$), denial ($\alpha = .63$) and venting ($\alpha = .42$). Items included “I think hard about what steps to take” and “I get comfort and understanding from someone.” We reduced the sub-scales into coping styles using exploratory factor analysis ($N = 409$) to aid interpretation, generate regression scores for analyses, and inform latent model variables. Preliminary analyses indicated data suitability (determinant = .015, Kaiser-Meyer-Olkin value = 0.848, Bartlett’s $p < .001$). Principal axis factoring extraction using a direct oblimin rotation revealed an acceptable 2-factor structure cumulatively explaining 45.27% of the total variance. Two distinct coping styles were observed: Factor 1 contributed 32.30% of the variance and Factor 2 contributed 12.97%. Factor 1, Constructive Coping, included positive reframing (0.81), active coping (0.76), planning (0.74), using instrumental support (0.69), using emotional support (0.63), acceptance (0.52), self-distraction (0.40), humour (0.34), and religion (0.26). Factor 2, Disengaged and Externalising Coping, included behavioural disengagement (0.81), self-blame (0.56), denial (0.56), venting (0.43), and substance use (0.44).

Analysis of School-Group Differences. A series of one-way ANOVAs with Bonferroni post-hoc tests ($p = .004$) were conducted to detect differences in scores according

to educational institution on the assessed variables. While sample sizes prevent testing institutional differences in the structural model, the emphasis on personal and relational mechanisms, rather than structural (e.g., school-level) factors, lessens the imperative of such testing. Only significant differences are reported. Students at School B reported lower perceived stress than at College A [$F(5, 403) = 3.98, p = .002$]. School B reported less Disengaged and Externalising Coping [$F(5, 403) = 4.82, p < .001$] than College A ($p = .003$) and College B ($p < .001$). A difference in FF scores was observed [$F(5, 403) = 5.66, p < .001$] such that College A expressed greater friendship quality than School C ($p < .001$) and School A ($p < .001$). However, subsequent confirmatory factor analyses achieved a well-fitting factor structure across the sample with minor modification, indicating that the sample is suitable to be examined in its entirety attending to any age differences observed.

Results

Characteristics of Friendships, Resilience and Perceived Support

Adolescents reported a high-quality close friendship and a high degree of perceived support from their family and friendship network. 89.6% of participants reported gender-congruent friendships. Mean friendship duration was 5.47 years ($SD = 4.50, N = 374$). They spent an estimated mean 21.9 hours ($SD = 20.25, N = 388$) each week with their closest friend. Participants' closest friendships were perceived as highly supportive and fulfilling, even as they varied in closeness. Participants demonstrated a low mean level of resilience.

Correlational Analysis

Supporting the first hypothesis, bivariate correlations revealed that higher perceived friendship quality was significantly and moderately correlated with higher psychological resilience (Table 1; Cohen, 1988).

Mediational Analyses

To facilitate subsequent development of a structural model, mediational analyses examined hypothesized mechanisms underlying the significant relationship between perceived friendship quality and psychological resilience: friendship network support, RISC, perceived stress, self-efficacy and its components, self-esteem, constructive coping, and disengaged and externalising coping. A series of linear bootstrapping mediations (Table 2) used 5000 resamples and 95% bias-corrected intervals (Preacher & Hayes, 2008).

The total effect of perceived friendship quality upon resilience (c) was 5.11 ($p < .001$). The 95% bias-corrected confidence intervals indicated that the predictive relationship of perceived friendship quality upon resilience was significantly and partially mediated by positive associations with a supportive wider friendship network (direct effect of friendship upon resilience ($c' = 3.72$, $p < .001$), RISC ($c' = 3.72$, $p < .001$), the effort ($c' = 3.62$, $p < .001$) component of self-efficacy, and constructive coping ($c' = 3.36$, $p < .001$). The relationship was additionally mediated by reduced persistence component of self-efficacy ($c' = 5.57$, $p < .001$) and reduced externalising and disengaged coping ($c' = 5.54$, $p < .001$). Analysis of effect size (Table 2) indicated that constructive coping ($\kappa^2 = 0.10$) and effort ($\kappa^2 = 0.09$) both showed medium-sized mediational effects, a supportive wider friendship network ($\kappa^2 = 0.07$) and RISC ($\kappa^2 = 0.07$) showed slightly less robust effects, and disengaged and externalising coping ($\kappa^2 = 0.03$) exhibited a small mediational effect (Preacher & Kelley, 2011).

Structural Equation Analyses

We undertook structural equation modeling (SEM) using AMOS 18 (Arbuckle, 2009) to develop a structural model using a hierarchical process of model trimming using fit guidelines appropriate for complex models (Kline, 2011; Schmitt & Kuljanin, 2008). Root Mean Square Error of Approximation (RMSEA) values of 0.08 or below and a chi-square to degrees of freedom (CMIN/DF) ratio of less than 3.0 indicate good fit, as large samples can yield a significant chi-square (Arbuckle & Wothke, 1999; Kline, 2011). Comparative Fit

Index (CFI) values of .95 and above indicate good fit. Akaike Information Criterion (AIC) and chi-square difference tests assessed comparative fit (Kline, 2011).

Confirmatory Factor Analyses of Latent Variables. We refined each of the four hypothesized latent variables through confirmatory factor analysis: perceived friendship quality, resilience, constructive coping, and disengaged and externalising coping (Table 3). No latent variable was constructed combining persistence and effort because of an inadmissible solution arising from opposing directions in their correlations with resilience.

Model Development. In our hypothesized model ($N = 409$), perceived friendship quality facilitated psychological resilience through development of a supportive friendship network, RISC, effort and constructive coping; and suppression of disengaged and externalising coping and persistence. Effort, persistence, friendship network support, and RISC were specified as manifest variables. This model (AFR.1) demonstrated moderate fit and predicted a good proportion of outcome variance (R^2 resilience = .42; Table 3). However, the regression pathways revealed that neither persistence ($p > .1$) nor RISC ($p > .1$) predicted resilience. We therefore tested a more parsimonious model removing persistence and RISC.

A revised model (AFR.2) demonstrated better fit according to relative and absolute indices. In contrast to AFR.1, all regression paths were significant ($p < .01$), with the path from friendship to externalising and disengaged coping marginally significant at $p = .06$. All indicators loaded significantly onto lower order factors ($p < .001$). The model predicted a good proportion of the variance in resilience (42%) with all paths in hypothesized directions. Perceived friendship quality significantly predicted the hypothesized mediators, promoting effort, a supportive friendship network and constructive coping while discouraging disengaged and externalising coping. Disengaged and externalising coping negatively related to resilience. Relationships were positive between resilience and other mediators. Figure 1 depicts the retained Adolescent Friendship and Resilience Model (AFRM) including the

standardized regression weights for the paths. This showed acceptable fit according to a portfolio of indices, considering complexity and novel theory development.

We then assessed whether AFR.2 showed mediational effects over and above indirect effects. A model including a direct effect of supportive close friendship upon resilience was compared to the hypothesized model, in which this direct effect was removed by setting the weight of the parameter to zero. Nested model comparison supported retaining the more parsimonious (i.e., the mediational) model ($\Delta\chi^2 = 1.70, p > .1$). Analysis showed that AFR.2 fully mediates the relationship between friendship and resilience as this direct effect was non-significant ($\beta = .06, p > .1$), over and above indirect effects. Table 4 shows the direct, indirect and total effects of perceived friendship quality, coping style, effort, and supportive friendship network on resilience. The most powerful mediator was constructive coping. Reduced use of disengaged and externalising coping was associated with resilience. Coping style and effort related to resilience more strongly than a supportive friendship network.

Finally, we reversed the directionality of AFR.2 to investigate whether, conversely, resilience might facilitate supportive close friendships via the hypothesized mediating mechanisms. This strategy enables greater confidence about the ordering of mediational relationships, although cross-sectional correlational research cannot indicate causation. Analysis supported retaining AFR.2 over the reversed model (AFR.3). AFR.3 was less predictive of friendship quality ($R^2 = .28$) than AFR.2 was on resilience, and neither externalising coping nor effort predicted friendship quality. Compared to an outcome of resilience, total standardised effects on friendship quality were weaker for effort (.03) and engaged (.35) and externalising (-.02) coping. Total standardised effects of friendship network support upon friendship quality (.30) were higher than with a resilience outcome. The total standardised effect of resilience upon friendship quality (.25) was unchanged.

Multiple Group Analyses. A series of analyses tested whether observed processes differed according to sex, perceived family support or developmental stage. We compared a structural model constrained to equality to an unconstrained model where paths between variables and their indicators may differ by group. A non-significant difference in chi-square suggests retaining a more constrained model, indicating no group difference in fit (Widaman & Reise, 1997).

Analysis suggested gender differences in the mechanisms through which close friendships facilitate resilience. An unconstrained model fit the data well (CMIN/DF = 1.88, $p < .001$, RMSEA = .05, CFI = .92, AIC = 1140.51) across boys (N = 160) and girls (N = 245) and achieved measurement invariance ($\Delta\chi^2(19) = 24.51, p > .1$). A marginally significant structural difference ($\Delta\chi^2(6) = 12.18, p = .05$) indicated greater predictive ability for boys than girls (R^2 resilience = .39, .48, respectively). The structural path from perceived friendship quality to disengaged and externalising coping was non-significant ($\beta = .03, p > .1$) and pairwise parameter comparisons showed significant group difference ($z = 1.98$). The critical difference ratio for the path from disengaged and externalising coping to resilience was significant ($z = 4.39$). A revised model in which these paths were freely estimated while the others were constrained showed a significant fit across groups ($\Delta\chi^2(4) = 1.83, p > .1$).

Friendship network support was associated with resilience only for girls (Table 4). Direct negative effects of disengaged and externalising coping upon resilience were far larger for boys than girls. Perceived friendship quality facilitated effort and friendship network support more strongly for boys ($\beta = .34, p < .001, \beta = .48, p < .001$, respectively) than girls ($\beta = .23, p < .01, \beta = .36, p < .001$, respectively). By contrast, perceived friendship quality promoted constructive coping more strongly for girls ($\beta = .35, p < .001$) than boys ($\beta = .30, p < .001$). Perceived friendship quality weakly and positively linked to disengaged and externalising coping among girls ($\beta = .12, p < .05$) with no association among boys ($\beta = -.04, p > .1$).

By contrast, analysis suggested no difference in how close friendships facilitate resilience based on perceived family support. An unconstrained model which fit the data well (CMIN/DF = 1.90, $p < .001$, RMSEA = .05, CFI = .92, AIC = 1149.26) across groups of low support (N = 190) and family support (N = 219) based upon median MPSSS-Family scores showed metric ($\Delta\chi^2 = 20.83$ (19), $p > .1$) and structural invariance ($\Delta\chi^2 = 5.82$ (6), $p > .1$). Similarly, multiple group analysis revealed no difference in how close friendships facilitate resilience based on developmental stage. An unconstrained model which fit the data well (CMIN/DF = 1.88, $p < .001$, RMSEA = .05, CFI = .93, GFI = .84, AGFI = .80, AIC = 1143.55) amongst early (N = 222) and late (N = 187) adolescents displayed metric ($\Delta\chi^2$ (19) = 22.75 $p > .1$) and structural invariance ($\Delta\chi^2$ (4) = 2.42, $p > .1$).

Discussion

Supporting our first hypothesis, findings revealed a positive association between greater perceived friendship quality and increased resilience. Analysis partially supported our second hypothesis as selected mediators partially accounted for this association. Developing new theory, a fully-mediational Adolescent Friendship and Resilience Model revealed that a supportive close friendship facilitates resilience in socioeconomically vulnerable adolescents by supporting development of a constructive coping style (comprised of engaged coping and support-seeking), encouraging effort, using a supportive friendship network, and reducing disengaged and externalising coping. Important gender differences emerged. Girls' supportive close friendships weakly facilitated disengaged and externalising coping. Surprisingly, boys' supportive close friendships did not significantly relate to this coping style, even as such behaviours were associated nearly twice as powerfully with lowered resilience among boys. Friendship network support facilitated resilience only among girls.

Association between close friendship support and resilience

The association between greater perceived friendship quality and increased resilience revealed in this study supports previous qualitative evidence that close, supportive friendships facilitate resilience processes (Everall, Altrows & Paulson, 2006; Shepherd, Reynolds & Moran, 2010). A single close, or relatively close, friendship is available to most adolescents regardless of social competence, extraversion or closeness preferences (Finkenauer & Righetti, 2011). We add to the resilience literature by suggesting a protective mechanism which links with many aspects of adolescents' lives, and is amenable to facilitation and intervention (Luthar, Sawyer & Brown, 2006). Close friendships are a nexus between resilience processes of support, individual capacities, and interactions with the social environment. Resilience researchers should explore the presence of at least a single peer friendship as a protective resource and attend to supporting mechanisms.

How does a supportive close friendship facilitate resilience?

The Adolescent Friendship and Resilience Model explicitly links the benefits of peer relationships to psychological resilience processes. Perceived close friendship support facilitated resilience most powerfully through a constructive coping style characterised by social support-seeking and active engagement. Effective coping is an integral and pervasive component of resilience (Rutter, 1990). These adolescents' single closest friendship also promoted resilience through effort, supporting previous associations of self-efficacy with resilience and peer health interventions (Martin & Marsh, 2008; Turner, 1999).

The positive implications of boys' single closest friendship are noteworthy. Our findings suggest that group mechanisms which promote risk are not necessarily evident in boys' single closest friendship. Meanwhile, girls' close friendship weakly promoted maladaptive coping, concurring with previous findings (Rose, 2002). This empirically supports arguments that boys' friendships are critical for emotional well-being. Boys may be intimate, trustworthy and supportive, even as they face social pressures towards a stoic or

macho masculinity, deviance-training processes, and risky behaviours (Dishion, 2000; Dishion, Nelson & Yasui, 2005; Way, 2013). Boys are highly vulnerable: the use and impact of disengaged and externalising coping was significantly more deleterious for resilience among boys, highlighting the need to differentiate and understand the links between adaptive single close friendships and more risky group processes in processes of boys' vulnerability and resilience.

Adolescents may perceive benefits such as friendship satisfaction from normatively negative coping responses such as shared substance use. Our findings show that positively-appraised friendships may nonetheless involve some externalising or disengagement. Occasional disengagement need not inhibit resilience (Haase, Heiney, Ruccione, & Stutzer, 1999). For example, both high- and low-resilience adolescents engage in more antisocial and illegal activity with peers than do moderately well-adjusted adolescents (Dumont & Provost, 1999). Significant activity may disrupt realizing goals which are often used as indicators of resilience, such as academic achievement. However, it may be problematic to assume absence of resilience processes, thereby overlooking mechanisms and outcomes which fall outside of dominant research paradigms, developmental norms and socio-cultural expectations (Clauss-Ehlers, 2008; Ungar, 2010).

Greater perceived close friendship quality acted to facilitate resilience through a supportive close friendship network for girls only. This may relate to boys' increased vulnerability to antisocial and maladaptive behaviour in groups. It may also relate to participants' number of friends or peer group qualities, which were not assessed. Peer group characteristics are also tied to social skills, peer acceptance, peer rejection, and victimization, which each affect outcomes (Dishion, Nelson & Yasui, 2005; Luthar, 1991).

How does a close friendship not facilitate resilience?

An implication of this research for resilience theories (e.g., Masten & Cicchetti, 2010) is that adolescents with stronger family support do not simply transfer social skills learned at home to their friendships, nor are they categorically more effective at recruiting supportive friendships. A supportive home environment does beget further resilience and social support through mechanisms such as parenting practices, facilitation of self-esteem and self-confidence, and negotiation of social, economic and political resources (Armstrong, Birnie-Lefcovitch, & Ungar, 2005; Masten, 2005; Ungar, 2010). However, a single close friend offers a distinctive resource from family support. This provides optimism for educators and practitioners targeting resilience in adolescents in difficult family contexts.

Perceived friendship quality was not tied to self-esteem nor contributed to resilience through this route. While negative peer interactions may negatively affect self-esteem (DuBois et al., 2002), positive peer interactions may not measurably affect self-esteem or resilience. Surprisingly, lowered perceived stress was not a significant mediator. Resilience is conceptually distinct from positive affect and sharing activities may not overcome the stress of adversity beyond short-term mood elevation (Zimmerman & Brenner, 2010).

Implications for applied and research practice

Practitioners might prioritize existing and emerging supportive adolescent friendships within resilience interventions, especially within schools-based approaches which may lack adolescent input and rarely target peer relationships as a mechanism to promote positive change (Hart & Heaver, 2013). This study provides evidentiary support for peer support programmes, mentoring programmes, and informal friendship opportunities. Interventions might promote peer-based coping skills and self-efficacy, for example to cope with neighbourhood risk, or to support healthy approaches to social alcohol use (de Visser et al., 2014). Supportive peer friendships might be regularly included within assessments of

psychosocial resources by clinicians and educators. Research and practice may better capture processes when these are operationalized from a salutogenic perspective.

Our use of self-report measures has three key methodological implications. Firstly, the use of self-report aligns practice to enable a lifespan approach. Adult resilience research prioritizes self-reports of well-being and functioning, while youth resilience research typically relies upon informant reports and achievement in behavioural domains, despite the availability of robust subjective measures (Luthar, Sawyer & Brown, 2006). Secondly, moving beyond informant reports and peer ratings avoids inferences and minimizes confounds of popularity and social competence (Bukowski & Adams, 2005; Hartup & Stevens, 1997; Mendelson & Aboud, 1999). Thirdly, it engages with implicit assumptions that friendships are primarily a risk mechanism, particularly for vulnerable young people, whose 'deviant' peers have historically been of interest despite the numerous observed benefits of peer relationships. This assumption may be culturally damaging and lead to an incomplete understanding of resilience processes: associations of peers with negative outcomes are unsurprising where discussion is framed in terms of risk processes and risk outcomes. Examination of self-reported perceived close friendship quality challenges and recalibrates the discussion to investigation into protective qualities and processes which are comparatively unexplored in the research paradigms surrounding resilience (Clauss-Ehlers, 2008; Ungar, 2010). The selection of a friendship measure prioritizing subjective self-report enhances knowledge of resilience processes by providing valuable insight into the effect of perceived friendship quality, addressing the 'deep' personal meanings of close friendships rather than the 'surface' observable exchanges of a given moment (Hartup & Stevens, 1997). Further research might build upon this approach to assess multiple attributes of friendship meanings and exchanges by using self-report within multiple-method designs or alongside other tools which reveal another flavour of insight across informants, relationships, contexts

and times (see Gable & Reis, 1999 for a review of methods). For example, mutual report might be used to explore whether correspondence in perceived quality enhances facilitation of resilience processes

This study aimed to identify whether there was a significant association between greater perceived close friendship quality and greater resilience, and to begin to identify mechanisms facilitating any such association. A questionnaire comprehensively incorporating all potential mechanisms would have been unwieldy and therefore impractical. Having developed a robust model, we may invite new questions about the nature of this association and about how other mechanisms may interplay with those identified here. We might, for example, anticipate a role for attachment style to affect the strength or quality of participants' close friendships and resilience processes (Furman, Simon, Shaffer, & Bouchee, 2002; Luke, Maio & Carnelley, 2004).

Generalizability of risk factors and other considerations

The AFRM provides a promising foundation towards understanding the resilience-promoting capacities of peer relationships across different life domains and risk encounters. Young people, such as those in this study, face the risks of low community socioeconomic status together, even as the financial circumstances of individual participants' families likely varied. Shared social, community-based, or developmental risks may be particularly responsive to peer support; on the other hand, participants' and their friends' continued exposure to the risks of socioeconomic adversity may mean that adaptive effects are underestimated or less straightforwardly observable than when risks are limited by duration, pervasiveness or to a single friendship partner. It would be worthwhile to explore the potential adaptive effects of perceived close friendship quality upon resilience processes when facing other risk factors. We acknowledge two additional considerations. The AFRM may have demonstrated stronger fit and associations given higher sample resilience or greater

variability in friendship quality. However, our aim was to explore resilience processes related to participants' most valued friendship. Including participants of varying resilience is appropriate when conceptualising resilience as a process instead of an extraordinary outcome available to a select few (Vanderbilt-Adriance & Shaw, 2008). Future research may consider whether poor- and high-quality friendships operate through distinct processes. Furthermore, longitudinal research should examine the likely iterative processes of facilitating resilience and recruiting, developing or maintaining supportive friendships taking into account the potentially different time frames required to exhibit growth via the proposed mechanisms along resilience trajectories which may be curvilinear, domain-specific or variable (Hart, Blincow, & Thomas, 2007; Masten & Cicchetti, 2010; Vanderbilt-Adriance & Shaw, 2008).

Conclusions

The Adolescent Friendship and Resilience Model extends resilience frameworks to suggest that a single, supportive close friendship facilitates resilience processes in socioeconomically vulnerable adolescents. We suggest that at least one close friendship helps adolescents craft meaning and strength amid substantial adversity. Findings challenge researchers and practitioners to further explore the positive impact of a valued peer relationship which is open to most young people.

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Table 1.

Descriptive Statistics and Inter-correlations of Measures in the Friendship and Resilience Questionnaire (Using Listwise Deletion)

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1 FF	7.52	1.44	-	.29***	.11*	.40***	-.03	.03	.20***	-.06	-.12*	.02	.45***	.37***	.14**
2 RS	122.18	28.85		-	.17***	.28***	-.32***	.39***	.46***	.11*	.17**	-.25***	.27***	.33***	-.13**
3 MPSSS-Family	5.11	1.72			-	.57***	-.27***	.20***	.20***	.06	.13**	-.27***	.18***	.10*	-.16**
4 MPSSS-Friend	5.34	1.66				-	-.14**	.08	.13**	-.02	.03	-.13**	.39***	.24***	.04
5 SES†	22.28	5.00					-	-.58***	-.30***	-.36***	-.54***	-.58***	-.02	-.07	.46***
6 GSES Overall	40.19	7.01						-	.58***	.77***	.76***	-.36***	.04	.22***	-.40***
7 GSES Effort	17.19	3.90							-	.08	-.01	-.15**	.21***	.33***	-.10*
8 GSES Initiative	10.07	2.73								-	.67***	.77***	-.07	.05	-.35***
9 GSES Persistence	12.93	3.51									-	-.41***	-.10	.02	-.41***
10 PSS	41.08	7.10										-	-.00	-.02	.42***
11 RISC	5.00	0.90											-	.39***	.15**
12 CC	-	-												-	.47***
13 DEC	-	-													-

Note. N = 409. ***Significant at the .001 level (2-tailed) **Significant at the .01 level (2-tailed). *Significant at the .05 level (2-tailed). † Scale is inversely coded such that high scores reflect low levels of self-esteem. FF: McGill Friendship Function scores; RS: Resilience Scale; MPSSS-Family/Friends: Multidimensional Perceived Social Support Family and Friends sub-scale; SES: Self-Esteem Scale; GSES Overall: General Self-Efficacy scale; GSES Effort: General Self-Efficacy Effort sub-scale; GSES Initiative: General Self-Efficacy Initiative sub-scale; GSES Persistence: General Self-Efficacy Persistence sub-scale; PSS: Perceived Stress Scale; RISC: Relational Interdependence Self-Constraint scale; CC: Constructive Coping factor scores; DEC: Disengaged and Externalising Coping factor scores.

Table 2.

Bootstrapping results for mediators of predictive relationship of perceived friendship quality upon resilience

95% BC Confidence Intervals						
Mediator	Point estimate	Lower	Upper	Effect size (κ^2)	Lower	Upper
Supportive Friendship Network*	1.40	0.60	2.36	0.07	0.03	0.13
RISC*	1.39	0.56	2.30	0.07	0.03	0.12
Perceived Stress	-0.09	-0.53	0.34	0.01	0.00	0.03
Self-Efficacy (General)	0.18	-0.46	0.84	0.01	0.00	0.03
- Self-Efficacy (Effort)*	1.50	0.69	2.44	0.09	0.04	0.14
- Self-Efficacy (Initiative)	-0.14	-0.52	0.05	0.01	0.00	0.03
- Self-Efficacy (Persistence)*	-0.46	-0.99	-0.14	0.03	0.01	0.06
Self-Esteem	0.15	-0.40	0.72	0.01	0.00	0.03
Constructive Coping*	1.76	0.87	2.88	0.10	0.05	0.15
Disengaged and Externalising Coping*	-0.43	-1.03	-0.10	0.03	0.01	0.06

NB N = 409, * denotes significant mediation.

Table 3.

Confirmatory Factor Analyses of Latent Variables and Results of Single-Group Structural Equation Modeling Analyses

Iteration	Latent Variable Model Name	CMIN/DF	RMSEA	CFI	AIC
FF1.	6-indicator Friendship Quality	15.14*	.19	.96	160.23
FF2.	5-indicator Friendship Quality†	5.34*	.10	.99	46.73
RS1.	5-indicator Resilience	8.25*	.13	.98	61.25
RS2.	4-indicator Resilience†	2.98*	.07	1.0	21.96
CC.1	9-indicator Constructive Coping	5.43*	.10	.89	182.69
CC.2	2-Level Constructive Coping†	2.80*	.07	.96	110.66
DEC.1	5-indicator Disengaged and Externalising Coping	3.39*	.08	.97	36.94
DEC.2	4-indicator Disengaged and Externalising Coping	3.15*	.04	1.0	19.15
AFR.1	6-Mediator Adolescent Friendship and Resilience Model	2.38*	.06	.94	806.68
AFR.2	4-Mediator Adolescent Friendship and Resilience Model †	2.52*	.06	.94	723.54
AFR.3	Reverse 4-Mediator Adolescent Friendship and Resilience Model	2.52*	.06	.94	723.54

Note: † Denotes the model retained as final. *Denotes χ^2 significant to $p < .001$. FF.2 omits “reliable alliance”. RS.2 omits “existential aloneness”. The disturbances of “using emotional support” and “using instrumental support” were linked to improve the CMIN/DF ratio as indicated by modification indices, retaining a 2-level factor, CC.2, comprising support seeking and engaged coping. DEC.2 omits “venting”.

Table 4.

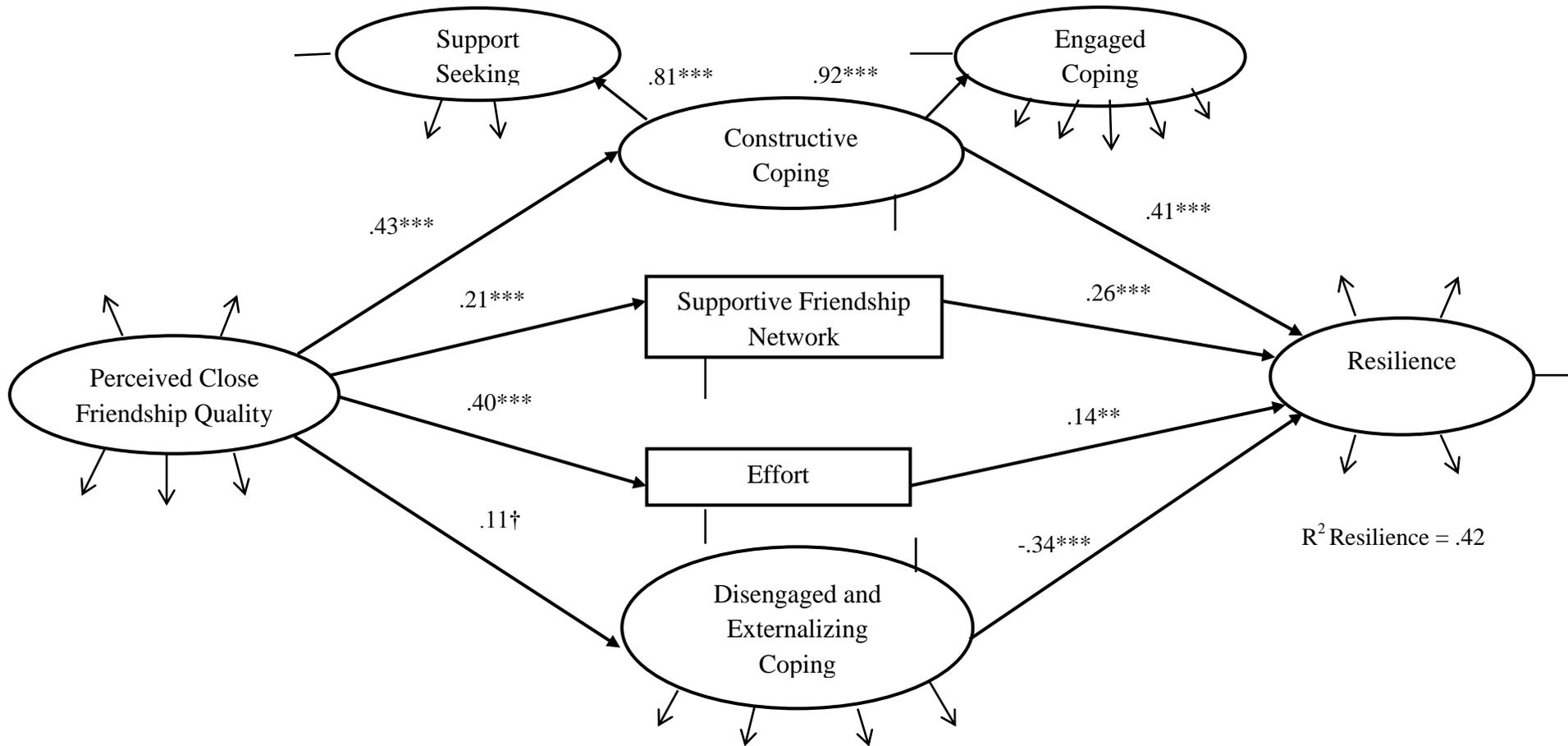
Decompositions for Effects of Predictor and Mediating Variables on Resilience in the LST1.2 SEM model

	Perceived Friendship Quality			Supportive Friendship Network			Effort			Disengaged and Externalising Coping			Constructive Coping		
	Unst.	SE	St.	Unst.	SE	St.	Unst.	SE	St.	Unst.	SE	St.	Unst.	SE	St.
Resilience															
Overall Sample (N = 409)															
Direct	-	-	-	.13**	.04	.14	.23***	.05	.26	-.50***	.10	-.34	.527***	.096	.412
Total	.29	-	.25	-	-	-	-	-	-	-	-	-	-	-	-
indirect															
Total	.29	-	.25	.13**	.04	.14	.23***	.05	.26	-.50***	.10	-.34	.527***	.096	.412
Males (N = 160)															
Direct	-	-	-	.12	.07	.13	.19*	.08	.22	-.72***	.18	-.49	.519***	.140	.434
Total	.31	-	.34	-	-	-	-	-	-	-	-	-	-	-	-
indirect															
Total	.31	-	.34	.12	.07	.13	.19*	.08	.22	-.72***	.18	-.49	.519***	.140	.434
Females (N = 245)															
Direct															
Total	.24	-	.20	.12**	.05	.13	.28***	.06	.31	-.38**	.13	-.25	.503***	.126	.369
indirect															
Total	.24	-	.20	.12**	.05	.13	.28***	.06	.31	-.38**	.13	-.25	.503***	.126	.369

Note: Unst., unstandardised; St., unstandardised. ***Denotes $p < .001$, **denotes $p < .01$, *denotes $p < .05$.

Figure 1.

The Adolescent Friendship and Resilience Model (AFR.2)



Note: *** denotes $p < .001$, ** denotes $p < .01$, † denotes $p = .06$. Indicators of latent variables are represented by arrowhead connectors and (error) residuals are represented by straight connectors.