Emotion

Better Relationships Do Not Always Feel Better: Social Relationships Interact in Predicting Negative Emotions in Early Adolescence

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How negatively young adolescents feel is central to their well-being. Intuitively, better social relationships should be linked to less negative emotions. This study tested this assumption, using a sample of over 80,000 young adolescents from 32 countries (ages 10–12). Inconsistent with the notion that better social relationships are always related to better emotional experiences, we found that links between negative emotions and adolescents' relationships with friends or teachers critically depend on their relationships with family. When young adolescents had relatively better relationships with family, better relationships with friends or teachers predicted less negative emotions. However, when adolescents had relatively poorer relationships with family, better relationships with friends or teachers predicted more negative emotions. Results were consistent across adolescents' gender, age, culture, or socioeconomic status. Findings suggest that the broader social context should be considered for understanding how specific relationships predict negative emotions in early adolescence.

Keywords: early adolescence, negative emotion, family, friends, teachers

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When entering early adolescence, negative emotions typically become more prevalent (K. J. Kim et al., 2001; R. Larson & Richards, 1994; R. W. Larson et al., 2002). Although such increase is partly expected as a result of both puberty and adolescent-parental conflict (K. J. Kim et al., 2001; Laursen & Collins, 1994; Mendle & Koch, 2019), further research is needed to understand negative

emotions in this developmental stage. This is especially true given that negative emotions at ages 10–12 play a central role in predicting psychopathology (e.g., Bai & Repetti, 2018; Schneiders et al., 2007), difficulties in social functioning (e.g., K. J. Kim et al., 2001; Sallquist et al., 2009), and lower academic achievement (Pekrun, 2017). A key factor that contributes to negative emotions is the quality of social relationships (e.g., Chu et al., 2010). In early adolescence, family is still the most central relationship (e.g., Blum et al., 2014; Morris et al., 2007). However, this is also when other relationships become more and more salient, such as the relationship with friends (e.g., Mitic et al., 2021; Oberle et al., 2011) and with other adults, such as teachers (e.g., Blum et al., 2014; Wentzel, 2002). Given the growing importance of relationships outside the family context, a central question is how these relationships contribute, together with the relationship with family, to adolescents' emotional experiences.

Relationships and Negative Emotion in Early Adolescence

The relationship of young adolescents with their family is consistently found to predict their emotional experiences and their emotion regulation (Bülow et al., 2022; Morris et al., 2007; Otterpohl & Wild, 2015). Indeed, contrary to the notion of low influence of parents during adolescence, relationships with family continue to be prominent in shaping adolescents' well-being, including their emotional well-being (Boele et al., 2019; Smetana & Rote, 2019; Waslin et al., 2022). At the same time, relationships with peers and teachers become increasingly more influential with regard to adolescents' emotions. For instance, adolescents become more emotionally reactive to social information during early adolescents (Somerville, 2013), suggesting a

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greater influence of relationships with friends or peers on their emotional experiences. Similarly, during the transition to middle school, the degree of connectedness and quality of relationships with teachers predicts adolescents' emotional well-being (García-Moya et al., 2015; Roeser et al., 1998, 2000; M. T. Wang et al., 2013). Because early adolescence represents a point where relationships other than with family become more significant, there is a need to understand how these relationships work together with the relationship with family in predicting adolescents' negative emotions.

According to an additive account, each relationship should have an independent and cumulative effect on adolescents' emotional experiences (e.g., Laible et al., 2000). According to this possibility, relationships do not interact with each other. Instead, the better (or worse) each of these relationships is, the better (or worse) adolescents should feel, regardless of the quality of their other relationships. For instance, among older adolescents (ages 13–15) negative interactions with friends were associated with more depressive symptoms, regardless of their negative or positive interactions with family (Herres & Kobak, 2015). Similarly, Garnefski and Diekstra (1996) found an accumulating rather than an interactive effect between relationships in predicting behavioral and emotional problems among 16–18-year-olds.

A different possibility is that relationships do not operate in a vacuum. Instead, the link between one social relationship and negative emotion can depend on the quality of another relationship. According to ecological systems theory (Bronfenbrenner, 1979), for instance, relationships with family, friends, and teachers that comprise the most immediate environment (i.e., microsystem) interact with each other, forming a new environmental system (i.e., mesosystem). The mesosystem involves the interactions between key relationships, and these interactions can predict the experiences and behaviors of adolescents, above and beyond each individual relationship (Bronfenbrenner, 1986). Indeed, several studies that examined the role of family and peer support in predicting older adolescents' psychological adjustment found that these relationships interacted in predicting depressive symptoms and antisocial behavior (e.g., Ciairano et al., 2007; Zhang et al., 2018). Specifically, the association between peer support and adolescents' psychological adjustment depended on their relationship with family. Similarly, the association between adolescents' relationships with friends or teachers and negative emotion might depend on their relationships with family members. Because family remains the most influential relationship in young adolescents' lives (e.g., Blum et al., 2014; Morris et al., 2007), it is likely that the association between this relationship and negative emotion would be relatively stable. However, the association between relationships with friends or teachers and negative emotion could be contingent upon adolescents' relationship with family.

Such contingency can take different forms. For instance, according to an amplification account, having better relationships with both family and friends might predict even less negative emotions than would be expected by adding the independent effects of each relationship. Among adolescents aged 14–20, for example, a combination of low stress within the family and high social support from friends predicted lower sense of alienation that would have been expected by merely combing the favorable effects of the family and friendship contexts (Ciairano et al., 2007). Similarly, antisocial behavior was found to be significantly higher among young adolescents (10–14) who experienced high levels of conflict with both family and friends (Sentse & Laird, 2010).

Alternatively, according to a compensation account, a relatively good relationship with family might compensate for a relatively low-quality relationship with friends, such that there should be no difference between having good relationships with both family and friends and having only a good relationship with family. Schacter and Margolin (2019), for instance, used daily dairies to test whether support from parents and friends interacted in predicting adolescents' (ages 14–18) well-being. They found that support by parents compensated for lack of support by friends and vice versa, such that there was no difference in well-being as long support was provided by either parents or friends. It is unclear, however, whether these relationships could compensate for each other more broadly. During adolescence, friendships serve a unique developmental function (Hunter & Youniss, 1982) and therefore the relationship with family might not be able to compensate for poor relationships with friends in all domains.

Different relationships, however, can do more than strengthen or compensate for each other. They can also undermine each other. According to an undermining account, a relatively poorer relationship with family might undermine good relationships with friends or teachers, making adolescents feel worse, rather than better, the better their relationships with teachers or friends. This might be the case if feelings pertaining to the relationship with family are a result of comparing it to other relationships. A relatively poor relationship with family might make adolescents feel worse if it is compared to a relatively good, rather than poor, relationship with friends or teachers. Consistent with this account, emotional reactions often result from comparing an outcome to a certain standard rather than evaluating the outcome independently (Eldar et al., 2016; Higgins et al., 1986; Rutledge et al., 2014). People might experience more negative emotions toward the same outcome when it deviates from the standard (vs. not). For instance, people experienced more negative emotions when they earned no money in a gambling game when the standard was to earn money rather than when the standard was to lose money (Rutledge et al., 2014). People form standards based on a reference point, often determined by a significant experience that severs as an anchoring example (e.g., Higgins et al., 1986). Therefore, to the extent that a good relationship with friends or teachers is regarded as a significant reference point, it might lead adolescents to set higher expectations for their relationship with family. As the relationship with family does not meet those expectations, adolescents might feel worse than they would have felt if they did not have a reference point of a relatively good relationship. Because of the central role family plays in shaping young adolescents' emotions (e.g., Smetana & Rote, 2019; Waslin et al., 2022), when this relationship does not meet expectations, this may affect how adolescents feel to a greater extent compared to when other relationships fail to meet the same expectations.

In support of this idea, two studies among adolescents have found undermining interactions between relationships (Helsen et al., 2000; Young et al., 2005). Helsen et al. (2000) found among a wide age-range of adolescents (ages 12–24) that when support from family was low, high support from friends predicted more rather than less emotional problems. Similarly, in a longitudinal study, Young et al. (2005) found that adolescents (ages 11–16) who had low support from parents experienced more depressive symptoms 2 years later the more they anticipated to receive support from their friends.

The undermining account might be particularly relevant during adolescence when self-evaluations become more dependent on

comparisons (Van der Aar et al., 2018), which could extend to comparisons between relationships. Furthermore, during this developmental stage there can be other reasons that render the undermining account more likely. For instance, during adolescence, relationships with friends deepen and tend to involve more problem-focused conversations and corumination (Bastin et al., 2015; Dirghangi et al., 2015; Rose, 2002). If the relationship with family is relatively poor, close relationships with friends might encourage increased corumination on familial problems, ironically increasing rather than decreasing negative emotions (e.g., Schacter & Juvonen, 2020). However, such explanation might not be as relevant with regard to relationships with teachers that are less likely to involve corumination.

To date, the question of whether and how social relationships interact to predict negative emotions in early adolescence remains largely unanswered. First, interactive effects were examined in different stages in adolescence and rarely in early adolescence when relationships outside the family begin to gain more weight in shaping emotional experiences. Second, most studies examining interactive effects between relationships did not target negative emotions per se but rather focused on predicting antisocial behavior (e.g., Sentse & Laird, 2010), behavioral and emotional problems (e.g., Garnefski & Diekstra, 1996), symptoms of depression (e.g., Young et al., 2005), and general well-being (e.g., Schacter & Margolin, 2019). Finally, because of variance across age groups, measures, and methods, research on interactive effects between relationships provided inconsistent evidence. Studies exist that support the additive (e.g., Herres & Kobak, 2015), amplification (e.g., Ciairano et al., 2007), compensation (e.g., Schacter & Margolin, 2019; Zhang et al., 2018), and undermining (e.g., Helsen et al., 2000; Young et al., 2005) accounts. There is also an absence of studies assessing interactions between relationships with family and relationships other than with friends, such as meaningful relationships adolescents can cultivate with their teachers (e.g., Fredriksen & Rhodes, 2004). In the current investigation, we sought to address these gaps by focusing on relationships with family, friends, and teachers as predictors of negative emotions in an exceptionally large and diverse sample of young adolescents.

The Current Investigation

In the current investigation, we targeted a sample of over 80,000 young adolescents (ages 10–12) from 32 different countries. We tested potential interactions between the quality of adolescents' relationship with their family and with friends in predicting their negative emotional experiences. To test for the generalizability of our effects, we also tested potential interactions between the quality of adolescents' relationship with family and with their teachers.

Given the centrality and importance of young adolescents' relationship with their family (e.g., Ackard et al., 2006; Blum et al., 2014; Morris et al., 2007) and building on previous findings (Helsen et al., 2000; Young et al., 2005), we hypothesized that better relationships with family would consistently predict less negative emotions. We further tested whether the association between adolescents' relationships with friends or teachers and negative emotions depended on their relationship with family.

Given the paucity of studies examining interactive effects between relationships in early adolescence, we used an exceptionally large sample to reliably examine competing hypotheses. Specifically, if

we find no interaction between relationships, this will support the additive account. Alternatively, if relationships interacted such that two relatively better relationships predicted less negative emotions (or two relatively poor relationships predicted more negative emotion), that would support the amplification account. If, however, there would be no difference in negative emotion between having two relatively good relationships with family and friends (or teachers) and having one relatively good relationship with family, that would provide support for the compensation account. Finally, if a relatively good relationship with friends or teachers would predict less negative emotions when the relationship with family is relatively good, but more negative emotion when the relationship with family is relatively poor, that would support the undermining account.

The size and diversity of the sample also enabled the generalizability of our findings across different countries and cultural backgrounds, as well as testing the robustness of our findings when accounting for different covariates and moderators. Specifically, we tested whether our findings hold when controlling for adolescents' gender, age group, culture (country-level individualism vs. collectivism), and socioeconomic status. We also conducted a series of moderation analyses to test whether the pattern of results differed as a function of these constructs (gender, age group, culture, and socioeconomic status). These analyses were designed to examine the stability of the observed pattern of results.

To the extent that relationships between family and friends or teachers interact, understanding how they jointly predict negative feelings could inform interventions designed to promote emotional well-being in young adolescents.

Method

We analyzed the third wave of the International Survey of Children's Well-Being (ISCWeb: www.isciweb.org; see Casas, 2019). Data were representative of the country or region in which they were collected. The study received Institutional Review Board approval from each participating institution in the 35 participating countries and met all relevant ethical guidelines, including adherence to legal requirements of each country.

Participants

The ISCWeb was administered to 128,184 children and adolescents in three different age groups (8, 10, and 12) in schools. Each country that participated in the survey designed a sampling strategy. The aim of the survey was to achieve, in each participating country, a representative sample of at least 1,000 children and adolescents in each age group included in the survey. The sampling strategy was reviewed and approved by the sample committee—a panel of sampling experts who review all sampling strategies and provide feedback and support to national research teams. Key requirements for full inclusion in the study were to use some form of random sampling (usually random stratified cluster sampling) with a sampling frame covering at least 95% of the child population in the age groups surveyed in mainstream schools. Up to 5% exclusions were allowed in each country because of issues such as the difficulties and costs of surveying very small schools in geographically remote areas.

Negative emotion was measured only in the 10 and 12 years age groups. Additionally, relationship qualities with family, friends, and teachers were not assessed in Bangladesh. This resulted in data from

93,618 participants from 34 countries (49.4% female, 48.2% male, and 2.4% unknown gender; 48,481 participants in the 10 years age group and 45,137 participants in the 12 years age group; see Table 1 for a summary of demographic information). To assess cultural background, we used measures of country-level individualism versus collectivism (e.g., Vishkin et al., 2022). Since individualism scores were available for the United Kingdom and not separately for England and Wales, we combined the data from England and Wales and refer to them as a single country. In analyses where we controlled for culture (country-level individualism vs. collectivism), Sri Lanka was excluded from the analyses because it did not have a score for individualism.

Six hundred and forty-eight participants had missing data for the quality of their relationship with family, 601 participants had missing data for the quality of their relationship with friends, 1,913 participants had missing data for negative emotions, and 3,714 participants had missing data for the quality of their relationship with teachers. This resulted in eligible data from 90,664 participants from 33 countries for the analyses focusing on relationships with family and friends and 87,534 participants from 32 countries for the analyses focusing on relationships with family and teachers. To account for the missing data, we repeated the main analyses with all available data using full information maximum likelihood (Enders, 2001), and obtained identical results (see details and results of the full information maximum likelihood analysis in the online supplemental materials).

Measures

Relationship With Family

Participants completed three items assessing the quality of their relationship with their family on a 5-point scale ranging from 0 (*I do not agree*) to 4 (*I totally agree*). The items reflected three themes that were previously demonstrated to be central across relationships, including care by family members (e.g., Smetana & Rote, 2019), support provided by family members (e.g., Branje et al., 2002), and positivity of interaction with family members (e.g., Barber et al., 2005; Herres & Kobak, 2015; Smetana & Rote, 2019). Specifically, the items were "There are people in my family who care about me" (care); "If I have a problem, people in my family will help me" (support); and "We have a good time together in my family" (positivity of interaction; $\omega_{\text{between countries}} = .93$, $\omega_{\text{within country}} = .70$), which were previously used to assess the connection with family (Whitaker et al., 2022). Participants also completed items pertaining to safety at home and the degree of their participation in decisions at home. We did not include these items because they do not necessarily speak to the quality of the relationship with family members, yet results were identical when these items were included in the analyses (see the online supplemental materials).

Relationship With Friends

Participants completed four items assessing the quality of their relationship with friends on a 5-point scale ranging from 0 (*I do not agree*) to 4 (*I totally agree*).

Similar to the assessment of the relationship with family, the items reflected themes of support provided by friends ("If I have a problem, I have a friend who will support me") and positivity of the interaction with friends ("Me and my friends get along well together"; "My friends are usually nice to me"). Participants also rated an item assessing satisfaction with their number of friends ("I have enough friends"; $\omega_{\text{between countries}} = .93$, $\omega_{\text{within country}} = .79$; see also L. Wang et al., 2023, for previous use of these items).

Relationship With Teachers

Participants completed two items assessing the quality of their relationship with their teachers on a 5-point scale from 0 (*I do not agree*) to 4 (*totally agree*). Items reflected the themes of care by teachers ("My teachers care about me") and support provided by teachers ("If I have a problem at school my teachers will help me"; $\omega_{\text{between countries}} = .95$, $\omega_{\text{within country}} = .77$). Participants also completed items pertaining to safety at school and the degree of

Table 1
Summary of Demographic Information

Demographics	N (%)
Age group	
Age 10	48,481 (51.8)
Age 12	45,137 (48.2)
Gender	
Female	46,262 (49.4)
Male	45,145 (48.2)
Unknown	2,211 (2.4)
Socioeconomic status	
Low affluence	25,766 (27.5)
Medium affluence	28,764 (30.7)
High affluence	39,088 (41.8)
Country	
Albania	2,339 (2.5)
Algeria	2,191 (2.3)
Belgium	2,188 (2.3)
Brazil	1,787 (1.9)
Chile	1,929 (2.1)
Croatia	2,395 (2.6)
Estonia	2,092 (2.2)
Finland	2,142 (2.3)
France	2,184 (2.3)
Germany	2,353 (2.5)
Greece	822 (0.9)
Hong Kong	1,525 (1.6)
Hungary	2,029 (2.2)
India	1,923 (2.2)
Indonesia	15,718 (16.8)
Israel	3,102 (3.3)
Italy	2,255 (2.4)
Malaysia	992 (1.1)
Malta	1,382 (1.5)
Namibia	2,164 (2.3)
Nepal	2,046 (2.2)
Norway	1,618 (1.7)
Poland	2,348 (2.5)
Romania	2,386 (2.5)
Russia	1,904 (2.0)
South Africa	7,114 (7.6)
South Korea	6,569 (7.0)
Spain	4,297 (4.6)
Sri Lanka	2,377 (2.5)
Switzerland	1,229 (1.3)
Taiwan	2,848 (3.0)
United Kingdom	3,344 (3.6)
Vietnam	2,627 (2.8)

their participation in decisions at their school. As before, we did not include these items because they were less relevant for assessing the relationships with teachers. However, results were equivalent when including these items (see the online supplemental materials).

Negative Emotions

Following Feldman Barrett and Russell (1998) and Russell (2003), the survey included three items that assessed negative emotions at varying levels of activation. Specifically, the survey included an item for activated negative emotion (stressed), general negative emotion (sad), and deactivated negative emotion (bored; see Casas & González-Carrasco, 2021). Participants reported how much they felt each of these emotions in the past 2 weeks on an 11-point scale from 0 (*not at all*) to 10 (*extremely*). Specifically, the instructions were "Please read each word and then tick a box to say how much you have felt this way during the last two weeks. Here '0' means that you have not felt this way at all over the last two weeks. '10' means that you have felt this way "extremely" over the last 2 weeks." We averaged across participants' ratings on these three items ($\omega_{\text{between countries}} = .85$, $\omega_{\text{within country}} = .68$).[1]

Culture

Following previous research (Vishkin et al., 2022), country-level ratings of individualism–collectivism were computed by averaging across measures of Hofstede's individualism index (Hofstede et al., 2010), Schwartz's scores for autonomy versus embeddedness (Schwartz, 1994, 2006), and Welzel's scores for emancipative values (Welzel, 2014), which were each normalized to a scale from 0 to 10. A principal components analysis revealed that a single factor explained 77.5% of the variance, with loadings ranging from .80 for Hofstede's scores to .93 for Schwartz's scores (see Vishkin et al., 2022). Averaging scores across measures is a common practice in assessing individualism versus collectivism (Fischer & Boer, 2011).

Socioeconomic Status

To assess socioeconomic status, we used the Family Affluence Scale II (FAS-II; Boyce et al., 2006; Currie et al., 2008), which is also used by the World Health Organization–Health Behaviour in School-aged Children to assess family wealth. The scale includes four items regarding indicators of wealth children or adolescents are likely to know about: "Does your family own a car, van or truck?" (*no* = 0; *yes, one* = 1; *yes, two or more* = 2); "Do you have your own bedroom for yourself?" (*no* = 0, *yes* = 1); "During the past 12 months, how many times did you travel away on holiday with your family?" (*not at all* = 0, *once* = 1, *twice* = 2, *more than twice* = 3); and "How many computers does your family own?" (*none* = 0, *one* = 1, *two* = 2, *more than two* = 3). A composite FAS score is calculated as a 3-point ordinal scale, where FAS low (sum of items = 0, 1, 2) indicates low affluence, FAS medium (sum of items = 3, 4, 5) indicates middle affluence, and FAS high (sum of items = 6, 7, 8, 9) indicates high affluence (Boyce et al., 2006; Currie et al., 2008).

Procedure

The ISCWeb was administered to children and adolescents in schools. Prior research has demonstrated both the unique value

and the validity of using self-reports at these age groups (i.e., ages 10–12; Casas, 2011, 2017; Fosse & Haas, 2009; Waters et al., 2001). In most countries, surveys were administered on paper. Members of the research team visited each school to support the survey administration and were available to answer any questions from staff or participants. In some countries (Belgium [Flanders], Finland, Spain, Germany, Greece, Malta, Norway, Poland, Russia, Taiwan, and the United Kingdom), the survey was administered by electronic questionnaire instead of or in addition to pen and paper. Questions about relationship qualities and questions about negative emotions were separated by batteries of questionnaires unrelated to the current investigation (see ISCWeb www.isciweb.org for the full list of questionnaires). This minimizes potential influences of reports pertaining to relationship qualities on reports pertaining to negative emotions.

Analytic Approach

We ran multilevel models (participants nested within countries) using lme4 package in R (Bates et al., 2015), with *p* values calculated using lmerTest (Kuznetsova et al., 2013). We included random intercepts and slopes. Following Barr et al. (2013), when models did not converge or resulted in singular fits, we removed the random effect explaining the least variance. Continuous Level 1 predictors were country-mean centered, so that higher scores indicated higher levels of that variable compared to the average in participants' own countries. To calculate simple interaction effects, we conducted simple slopes analysis using the interactions package in R (Long, 2019). We used Johnson–Neyman intervals (Johnson & Fay, 1950) to assess the values of the moderator for which the slope of the predictor will be statistically significant. To assess *p* values for simple interaction effects, we assessed the conditional slope of the predictor (e.g., relationship with friends) when the moderator (relationship with family) was held at 1, −3, and −3.5 (country mean-centered scores). To estimate effect size, following recommendations by Nakagawa and Schielzeth (2013), for each multilevel model, we calculated both marginal R^2 (R_M^2), which estimates the proportion of variance explained by the fixed effects, and conditional R^2 (R_C^2), which estimates the proportion of variance explained by both fixed and random effects. Because we did not expect schools within each country to substantially differ in associations between the variables in question, we did not account for variability across schools in our models. However, we obtained identical results when repeating the analyses accounting for variability across schools (using multilevel models with participants nested within schools, nested within countries; see the online supplemental materials).

Transparency and Openness

Study materials are publicly available, and study data are available upon request at the ISCWeb website www.isciweb.org. Analytic code is publicly available on the Open Science Framework at https://osf.io/mp35u/?view_only=5e8bf899a0fc4131afb6aa74316 73e20. We report all data exclusions in the Method section. This study's analyses were not preregistered.

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[1] Because of the relatively low within-country reliability of this measure, we repeated all analyses with each single item. Results remained identical for each emotion item (see the online supplemental materials).

Results

Please see Table 2 for descriptive statistics and zero-order correlations between our key variables.

Family and Friends

We conducted a multilevel regression model to test whether relationship qualities with family and friends and their interaction predicted negative emotion. Contrary to the assumption that relationships with family and friends have independent associations with negative emotions in adolescence (Garnefski & Diekstra, 1996; Herres & Kobak, 2015), the quality of relationships with family significantly interacted with the quality of relationships with friends in predicting how negatively young adolescents felt, $b = -0.26$, $SE = 0.02$, $t(35.34) = -12.24$, $p < .001$, 95% confidence interval (CI) $[-0.309, -0.222]$, $R_M^2 = .06$ (equivalent to $r = .245$; 6% of explained variance in experienced negative emotion), $R_C^2 = .12$, even after controlling for gender, age group, culture (i.e., country-level individualism vs. collectivism), and socioeconomic status, $b = -0.26$, $SE = 0.02$, $t(34.58) = -12.13$, $p < .001$, 95% CI $[-0.299, -0.214]$, $R_M^2 = .07$ (equivalent to $r = .264$; 7% of explained variance in experienced negative emotion), $R_C^2 = .13$ (see Table S1 in the online supplemental materials). Furthermore, we did not find evidence for the amplification or compensation accounts. Alternatively, findings supported the undermining account. The direction of the association between the relationship with friends and early adolescents' negative emotions was dependent upon the quality of their relationship with family (see Figure 1). When adolescents' relationships with their family were better (country mean-centered scores between 0.92 and −1.52), better relationships with friends were associated with less negative emotions, $b = -0.72$, $SE = 0.05$, $t = -14.19$, $p < .001$. In contrast, when adolescents' relationship with their families was relatively poorer (country mean-centered scores between −1.97 and −3.75), better relationships with friends were associated with more negative emotions, $b = 0.34$, $SE = 0.05$, $t = 6.77$, $p < .001$ (see Figure 2)

We hypothesized that the relationship with family would be a relatively stable predictor of negative emotion in young adolescence, such that the association between this relationship and negative emotion would be less dependent on other relationships. We found that the association between relationships with family and negative emotions also differed as a function of the relationship with friends, yet to a considerably lesser extent. When the relationship with friends was more positive (country mean-centered scores between 1.34 and −2.44), a better relationship with family predicted less negative emotion, $b = -0.99$, $SE = 0.06$, $t = -16.83$, $p < .001$. When the

relationship with friends was relatively poorer (country mean-centered scores between −2.44 and −3.15), the quality of the relationship with family was not significantly associated with negative emotions, $b = 0.06$, $SE = 0.05$, $t = 1.26$, $p = .22$. Only when the relationship with friends was extremely poor (country mean-centered scores between −3.15 and −3.52), a better relationship with family predicted more negative emotion, $b = 0.20$, $SE = 0.06$, $t = 3.30$, $p < .001$.

To assess the robustness and stability of our findings, we tested whether they were moderated by adolescents' gender, age group, culture (country-level individualism),[2] or socioeconomic status. There was no interaction between adolescents' relationship with family, their relationship with friends, and gender, $b = -0.03$, $SE = 0.02$, $t = -1.16$, $p = .246$, 95% CI $[-0.068, 0.017]$, $R_M^2 = .07$, $R_C^2 = .13$ (Table S2 in the online supplemental materials). For both adolescent girls and boys, a better relationship with friends predicted more negative emotion when their relationship with family was poor (Figure S1 in the online supplemental materials). The effect was not moderated by age group, $b = 0.02$, $SE = 0.02$, $t(979.6) = 0.90$, $p = .366$, 95% CI $[-0.023, 0.063]$, $R_M^2 = .07$, $R_C^2 = .13$ (Table S3 and Figure S2 in the online supplemental materials), ruling out the possibility that the overall effect was driven by adolescents in the older age group (age 12), who typically experience more negative emotions and lower relationship quality with family compared to the younger age group (e.g., Moed et al., 2015).

The effect was also not culture dependent, $b = -0.02$, $SE = 0.01$, $t(32.31) = -2.02$, $p = .052$, 95% CI $[-0.043, 0.00]$, $R_M^2 = .07$, $R_C^2 = .12$ (Table S4 in the online supplemental materials), such that it did not significantly change as a function of country-level individualism versus collectivism. Finally, we did find a significant interaction between adolescents' relationship with family, their relationship with friends, and socioeconomic status (Table S5 in the online supplemental materials), such that the interaction between the relationships with family and friends was stronger at medium or high socioeconomic status versus lower socioeconomic status, $|bs| > 0.06$, $SEs < 0.03$, $|ts| > 2.10$, $ps < .036$, 95% CI $[-0.119, -0.004]$ and $[-0.176, -0.053]$, $R_M^2 > .07$, $R_C^2 > .12$. Nonetheless, when separately examining the interaction between adolescents' relationships in each socioeconomic level, the effect persisted in each of the socioeconomic levels, $|bs| > 0.16$, $SEs < 0.02$, $|ts| > 8.28$, $ps < .001$ (Figure S3 in the online supplemental materials). Furthermore, the interaction between the relationships with family and friends in predicting negative emotions persisted as well, $b = -0.19$, $SE = 0.03$, $t(70.6) = -7.02$, $p < .001$, $R_M^2 = .07$, $R_C^2 = .12$. When adolescents' relationships with their family were more positive (country mean-centered scores between 0.92 and −1.55), better relationships with friends were associated with less negative emotions, $b = -0.55$, $SE = 0.06$, $t = -9.64$, $p < .001$. In contrast, when adolescents' relationship with their families was relatively poorer (country mean-centered scores between −2.59 and −3.74), better relationships with friends were associated with more negative emotions, $b = 0.19$, $SE = 0.07$, $t = 2.82$, $p = .01$.

Table 2
*Descriptive Statistics and Zero-Order Correlations Between Key Variables*

Index	Variable	1	2	3	M	SD
1.	Negative emotion	—			3.88	2.93
2.	Relationship with family	−.20*	—		3.45	0.74
3.	Relationship with friends	−.17*	.42*	—	3.19	0.87
4.	Relationship with teachers	−.15*	.36*	.35*	3.15	0.98

* $p < .001$.

Figure 1

Negative Emotion in Young Adolescents as a Function of Relationship Qualities With Their Family and Friends (Country Mean-Centered Values)
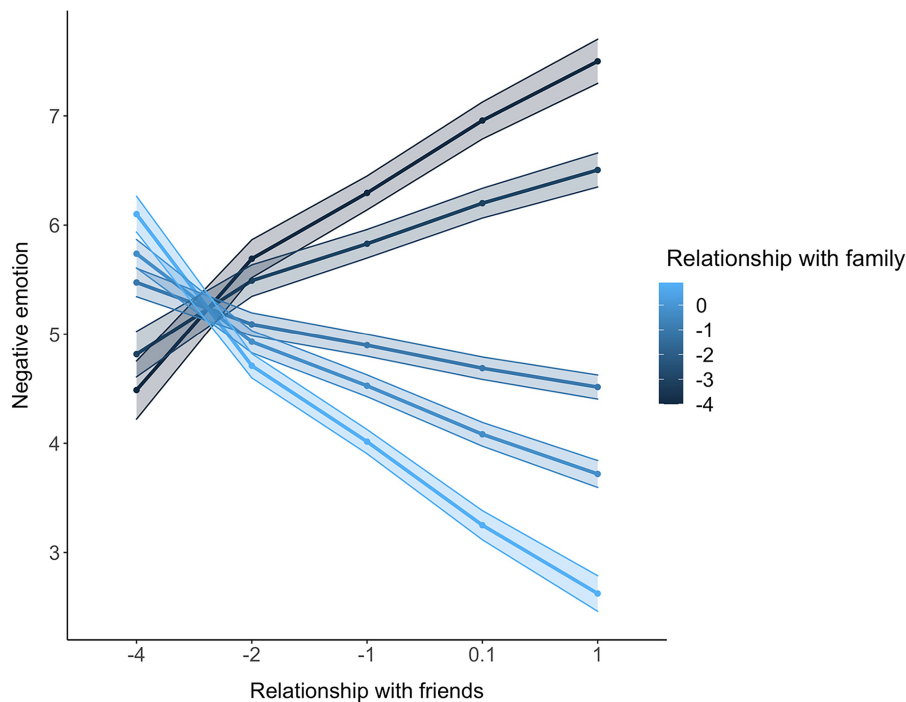
Note. Error bands represent $\pm SE$ from mean. See the online article for the color version of this figure.

Family and Teachers

We conducted a multilevel regression model to test whether relationship qualities with family and teachers and their interaction predicted negative emotion. Similar to the pattern observed when examining the interaction between the relationship with family and friends, the relationship with family and the relationship with teachers significantly interacted in predicting young adolescents' negative emotion (see Figure 3), $b = -0.17$, $SE = 0.02$, $t(28.74) = -10.94$, $p < .001$, 95% CI [$-0.200, -0.138$], $R_M^2 = .06$ (equivalent to $r = .245$; 6% of explained variance in experienced negative emotion), $R_C^2 = .12$, even when controlling for gender, age group, culture, and socioeconomic status, $b = -0.16$, $SE = 0.01$, $t(32.14) = -10.87$, $p < .001$, 95% CI [$-0.200, -0.137$], $R_M^2 = .06$ (equivalent to $r = .245$; 6% of explained variance in experienced negative emotion), $R_C^2 = .12$ (see Table S6 in the online supplemental materials).[3] When adolescents' relationship with their family was better (country mean-centered scores between 0.92 and -1.66), the better was their relationship with their teachers, the less negative emotion they experienced, $b = -0.51$, $SE = 0.04$, $t = -13.00$, $p < .001$. However, when adolescents' relationship with their families was relatively poorer (country mean-centered scores between -2.53 and -3.75), the better was their relationship with their teachers, the more negatively they felt, $b = 0.16$, $SE = 0.05$, $t = 3.43$, $p < .001$. In contrast, a better relationship with family predicted lower negative emotions in adolescents regardless of the quality of their relationship with teachers. Across relatively better and poorer relationships with teachers

(country mean-centered scores between 1.43 and -3.68), a better relationship with family predicted less negative emotions, $|bs| > -0.22$, $SEs < 0.05$, $|ts| > 5.29$, $ps < .001$ (see Figure 4).

As before, we also tested the robustness and stability of this finding by testing whether it was moderated by gender, age, culture, or socioeconomic status. There was no moderation by gender, $b = 0.02$, $SE = 0.02$, $t(63511) = 0.83$, $p = .407$, 95% CI [$-0.024, 0.059$], $R_M^2 = .06$, $R_C^2 = .12$ (Table S7 in the online supplemental materials). For both adolescent girls and boys, a better relationship with teachers predicted more or less negative emotion, depending on their relationship with family (see Figure S4 in the online supplemental materials).

The effect was moderated, however, by age group, $b = 0.06$, $SE = 0.02$, $t(7315) = 2.71$, $p = .007$, 95% CI [$0.016, 0.106$], $R_M^2 = .06$, $R_C^2 = .12$ (Table S8 in the online supplemental materials), such that the effect was stronger in the younger age group (age 10), $b = -0.17$, $SE = 0.02$, $t(4,252) = -11.00$, $p < .001$, and weaker among the older age group (age 12), $b = -0.15$, $SE = 0.02$, $t(22.70) = -6.64$, $p < .001$. Nonetheless, the interaction between the relationships with family and teachers persisted in both age groups (see Figure S5 in the online supplemental materials) and remained significant even though it was moderated by age, $b = -0.19$, $SE = 0.02$, $t(68.01) = -10.37$, $p < .001$, $R_M^2 = .06$,

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[3] Again, although samples were considerably smaller, we tested whether effects persisted within each individual country. The effects persisted in 19 out of 32 countries (59.4%).

Figure 2

Johnson–Neyman Plot for the Interaction Between Relationships With Family and Friends in Predicting Negative Emotion
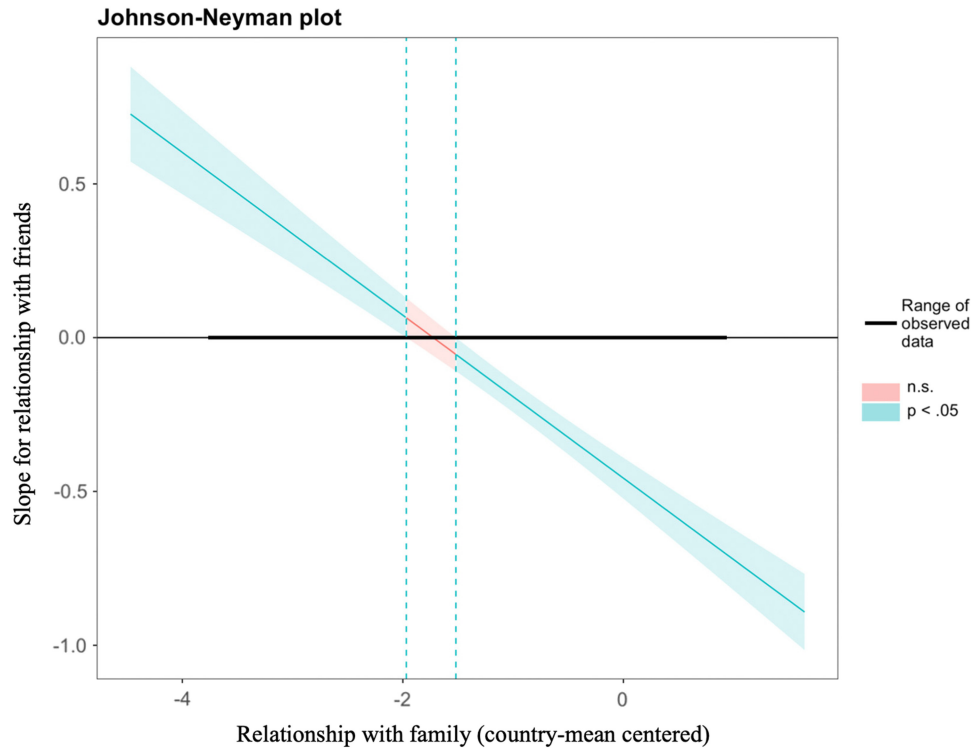
Note. The *Y*-axis represents the slope for the relationship with friends in predicting negative emotion. The *X*-axis represents the values of the relationship with family (country mean-centered values). When the relationships with family were more positive (country mean-centered scores between 0.92 and −1.52), the slope of the relationship with friends in predicting negative emotion was negative, indicating that the better was the relationship, the less negative emotion adolescents experienced. In contrast, when the relationship with family was relatively poorer (country mean-centered scores between −1.97 and −3.75), the slope of the relationship with friends in predicting negative emotion was positive, indicating that the better was the relationship, the more negative emotion adolescents experienced. See the online article for the color version of this figure.

$R_C^2 = .12$. Again, when adolescents' relationships with their family were better (country mean-centered scores between 0.92 and −1.65), better relationships with teachers were associated with less negative emotions, $b = −0.50$, $SE = 0.04$, $t = −12.83$, $p < .001$. In contrast, when adolescents' relationship with their families was relatively poorer (country mean-centered scores between −2.55 and −3.74), better relationships with teachers were associated with more negative emotions, $b = 0.15$, $SE = 0.05$, $t = 3.31$, $p < .001$. The effect was not moderated by culture, $b = −0.02$, $SE < 0.01$, $t(27.69) = −2.00$, $p = .055$, 95% CI [−0.029, −0.0002], $R_M^2 = .06$, $R_C^2 = .12$ (Table S9 in the online supplemental materials). Finally, we did find an interaction between the relationship with family, teachers, and socioeconomic status, such that the effect was stronger in high versus low socioeconomic status, $b = −0.08$, $SE = 0.03$, $t(153.69) = −2.71$, $p = .007$, 95% CI [−0.130, −0.020], $R_M^2 = .06$, $R_C^2 = .12$, and in high versus medium socioeconomic status, $b = 0.08$, $SE = 0.03$, $t(203.9) = 2.72$, $p = .007$, $R_M^2 = .06$, $R_C^2 = .12$ (Table S10 in the online supplemental materials). However, the interaction between the relationship with family and the relationship with teachers replicated in all socioeconomic levels, $|bs| > 0.12$, $SEs < 0.02$, $|ts| >$

6.55, $ps < .001$ (Figure S6 in the online supplemental materials), and remained significant although it was moderated by socioeconomic status, $b = −0.13$, $SE = 0.02$, $t(59.3) = −6.08$, $p < .001$, $R_M^2 = .06$, $R_C^2 = .12$. As before, when adolescents' relationships with their family were better (country mean-centered scores between 0.92 and −1.58), better relationships with teachers were associated with less negative emotions, $b = −0.41$, $SE = 0.05$, $t = −9.00$, $p < .001$. In contrast, when adolescents' relationship with their families was relatively poorer (country mean-centered scores between −3.43 and −3.74), better relationships with teachers were associated with more negative emotions, $b = 0.15$, $SE = 0.08$, $t = 2.04$, $p = .05$.

General Discussion

The current investigation used an exceptionally large and multicultural sample to uncover the interplay between young adolescents' relationships with family, friends, or teachers in predicting negative emotions. Our findings were inconsistent with a simple additive account, according to which there should be no interaction between relationships in predicting negative emotional experiences. Findings

Figure 3

Negative Emotion in Young Adolescents as a Function of Relationship Qualities With Their Family and Teachers (Country Mean-Centered Values)
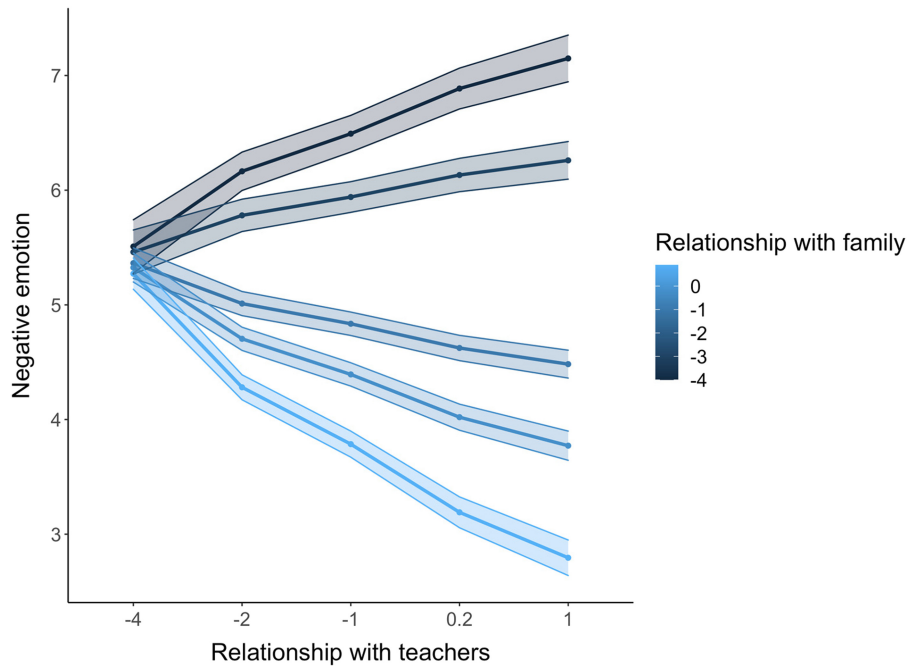
Note. Error bands represent $\pm SE$ from mean. See the online article for the color version of this figure.

were also inconsistent with the idea that relationships amplify the effects of one another or compensate for one another. Instead, we found robust support for the undermining account. Better relationships with either friends or teachers were not necessarily linked to less negative emotions. Instead, they were associated with less negative emotions when the relationship with family was relatively better but associated with more negative emotions when the relationship with family was relatively poorer.

Undermining interactions between relationships were identified before in predicting depressive symptoms and emotional problems (Helsen et al., 2000; Young et al., 2005) but have yet to receive considerable attention. This investigation provides robust support for this pattern of findings, at least with regard to the prediction of negative emotion. Relying on data from over 80,000 young adolescents, we obtained the same pattern of results in both genders and age groups, and across cultural backgrounds (country-level individualism vs. collectivism) and levels of socioeconomic status. Such evidence suggests that more scientific attention should be directed toward understanding undermining interactions between relationships and the mechanisms underlying them.

Findings also demonstrate that to understand negative emotion in young adolescence it is not enough to examine the independent effects of a specific relationship. Instead, it may be important to simultaneously consider the quality and interplay of multiple social relationships (Bronfenbrenner, 1986). Furthermore, our findings underscore the need to broaden the scope of the relationships being investigated. So far, studies examining interactions between relationships focused on the relationship with family and peers. The current findings demonstrate the importance of assessing other relationships, such as the relationship with teachers. The interaction between the relationship

with family and teachers showed a similar pattern to the interaction between the relationship with family and friends. This suggests that the relationship with teachers is no less important for predicting emotional experiences in young adolescents and therefore should be taken into account.

Our findings further reveal that the association between the relationship with family and negative emotion is more stable than associations between negative emotion and other relationships. Specifically, the link between adolescents' relationship with family and negative emotion depended on their relationships with friends but to a relatively small extent. Only when the relationship with friends was extremely poor, a relatively good relationship with family was associated with more, rather than less, negative emotion. Additionally, the link between adolescents' relationship with family and negative emotion did not depend on their relationships with teachers. These findings suggest that the relationship with family is a more stable predictor of how young adolescents feel, which is less dependent on other relationships (Smetana & Rote, 2019). Therefore, alongside highlighting interactive effects between relationships, our findings also support the centrality of the family context as a reliable predictor of negative emotions in early adolescence.

Limitations and Future Directions

Although the current investigation demonstrates a robust phenomenon, future research is required to understand what underlies it. Counter to the assumption that better social relationships would unequivocally predict less negative emotions, we found that better relationships are not always associated with less negative emotional

Figure 4

Johnson–Neyman Plot for the Interaction Between Relationships With Family and Teachers in Predicting Negative Emotion
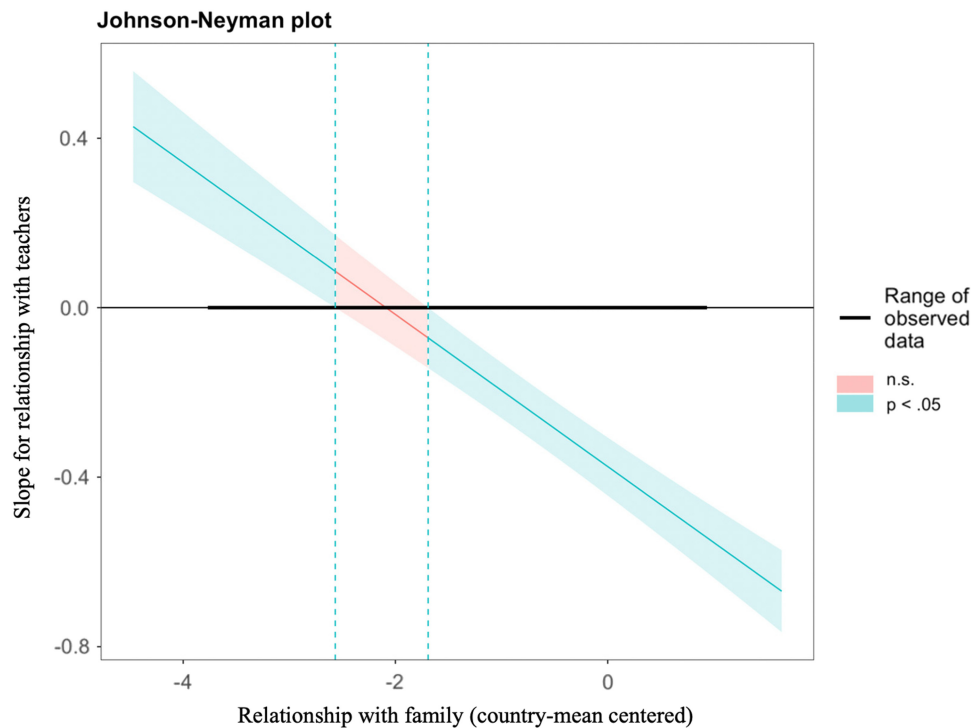
Note. The *Y*-axis represents the slope for the relationship with teachers in predicting negative emotion. The *X*-axis represents the values of the relationship with family (country mean-centered values). When the relationships with family were relatively better (country mean-centered scores between 0.92 and −1.66), the slope of the relationship with teachers in predicting negative emotion was negative, indicating that the better was the relationship, the less negative emotion adolescents experienced. In contrast, when the relationship with family was relatively poor (country mean-centered scores between −2.53 and −3.75), the slope of the relationship with friends in predicting negative emotion was positive, indicating that the better was the relationship, the more negative emotion adolescents experienced. See the online article for the color version of this figure.

experiences. One potential explanation is that negative emotions often result from relative comparisons rather than independent evaluations (e.g., Eldar et al., 2016; Higgins et al., 1986; Rutledge et al., 2014). In the context of a relatively poor relationship with family, having a relatively good relationship with friends or with teachers could ironically highlight the lower quality of the relationship with family members, which, in turn, might give rise to more negative emotions. In contrast, adolescents who have relatively poor relationships with family and with friends or teachers, may have lower expectations regarding the relationships in their lives. Consequently, their actual relationships might be more closely matched with their expectations, resulting in less negative emotions. This explanation, however, needs to be directly tested in future research.

Nonetheless, our findings are inconsistent with a previous explanation for undermining interactions between relationships. Young et al. (2005), for instance, proposed that adolescents with poor family relationships might closely connect with "toxic" or deviant friends, who worsen rather than alleviate their depression. The current findings demonstrate that given a relatively poor relationship with family, a better relationship with teachers, and not only friends, is associated with more negative emotion. The probability of young

adolescents forming close, yet toxic, relationships with teachers is relatively low. Therefore, our findings suggest that undermining interactions may not be a result of the higher quality relationship being "toxic." However, other qualities of the interaction with friends could explain some of our findings. Specifically, more intimate relationships with friends might foster more communication about problems with family and corumination, leading to increases in negative emotions (Schacter & Juvonen, 2020). It is unclear, however, to what extent this explanation could pertain to the relationship with teachers.

One potential alternative explanation for our findings is that adolescents with poor relationships with family who experience more negative emotion form closer relationships with friends and teachers compared to adolescents with poor relationships with family who tend to experience less negative emotion. However, previous research pertaining to the effect of negative emotions on social relationships renders this explanation unlikely. Young adolescents who experience more negative emotion tend to form lower quality relationships with friends and tend to be rejected, rather than accepted, by peers (Abraham & Kerns, 2013; Bengtsson et al., 2022; Blair et al., 2014; Perry-Parrish & Zeman, 2011). The association between

negative emotion and peer rejection is also evident among young adolescents who have been maltreated or have insecure attachment styles (Bolger & Patterson, 2001; Contreras et al., 2000; Shipman et al., 2000). Therefore, this association also exists among adolescents who are likely to have low-quality relationships with family. Indeed, the link between maltreatment and peer rejection was mediated by negative emotionality among children and young adolescents (J. Kim & Cicchetti, 2010; Shields et al., 2001). Similarly, relationships with teachers are likely to be worse, rather than better, the more young adolescents experience negative emotion (Roslyne Wilkinson & Jones Bartoli, 2021; Rudasill et al., 2010). This is also true for older adolescents with insecure attachments with family members, who were found to be less likely to seek support from teachers compared to securely attached adolescents (Larose et al., 2001; Moran, 2007). Based on this body of research, we believe the possibility that negative emotion would facilitate better relationships, especially among adolescents with poor family relations, is less likely. Nonetheless, since relationship quality and negative emotions were assessed at the same time point, future research is needed to establish the direction of effects. Specifically, longitudinal studies are required to test whether inconsistent relationship qualities lead to increases in negative emotions or vice versa.

Longitudinal studies are also required to understand whether the observed pattern of results is specific to early adolescence, or whether it extends to middle and late adolescence. The interaction between the relationship with family and teachers was moderated by age, such that it was stronger at age 10 compared to age 12. This might suggest that as adolescents grow older, the association between relationships outside the family and negative emotion consolidate and become more independent from their relationship with family. Perhaps this process can be driven by older adolescents forming relationship-specific expectations rather than comparing across relationships. However, previous studies have identified undermining interactions also among considerably older adolescents (12–24 in Helsen et al., 2000, and 11–16 in Young et al., 2005). Testing the specificity of the results to early adolescence, therefore, is an important task for future research.

The interactions between relationships were also stronger in higher versus lower socioeconomic status. One potential explanation is that lower socioeconomic status is a source of stress that can strongly influence negative emotions (Gallo & Matthews, 2003), thereby diminishing the weight of social relationships and their interaction in predicting such emotional experiences. When adolescents struggle with low socioeconomic status, their financial situation might explain considerable variance in their negative emotions, reducing the predictive power of the relationships in their lives. Future research could directly test this possibility.

One of the goals of the current investigation was to test competing hypotheses about the interplay between relationships in predicting negative emotion. Our results were consistent with an undermining account (Helsen et al., 2000; Young et al., 2005) but inconsistent with other accounts (Ciairano et al., 2007; Garnefski & Diekstra, 1996; Herres & Kobak, 2015; Schacter & Margolin, 2019; Sentse & Laird, 2010; Zhang et al., 2018). Such inconsistencies could be driven by differences in the predicted variable (i.e., negative emotion vs. antisocial behavior, depressive symptoms, or general well-being) or measures of relationship quality (i.e., overall quality of the relationship vs. measurement of support or conflict). Inconsistencies could also be driven by

differences in the characteristics of the sample such as the sample's cultural diversity and sample size. Some of the samples used in previous research were relatively small (e.g., $N = 132$ in Herres & Kobak, 2015, $N = 182$ in Sentse & Laird, 2010, and $N = 119$ in Schacter & Margolin, 2019) and therefore might not have included sufficient numbers of adolescents that perceive their relationship with family as relatively poor (Ackard et al., 2006). Finally, inconsistencies can be related to the age of the samples. Undermining interactions could possibly be more relevant at early adolescence compared to later stages of development. Future research is needed to reconcile between these inconsistencies.

To test our research questions in a large sample, we relied on measures of negative emotions and relationship qualities that were available in the ISCWeb. As a result, we used a relatively limited set of items to assess each construct. For instance, three items were used to assess negative emotions. Future research should extend the current investigation by testing a wider range of negative emotions and by using additional measures other than adolescents' self-reports to assess relationship qualities, such as parents' and teachers' reports, or behavioral observations. Additionally, whereas some of the items that assessed relationship qualities with family and friends probed for a high-quality relationship within the family or friends' context, the relationship with teachers was assessed with respect to all teachers. Future research could more carefully equate across the relationship measures. Finally, we acknowledge that the effect sizes of the interactions were small–medium in magnitude (i.e., $.06 \leq R^2 \leq .07$; corresponding to $.245 \leq r \leq .265$), such that they accounted for 6%–7% of variance in experienced negative emotion. These effect sizes are consistent with typical effect sizes in meta-analyses focusing on emotion and emotion regulation in adolescence (e.g., Compas et al., 2017; Trentacosta & Fine, 2010).

To conclude, negative emotions in young adolescents can index mental distress and signal risks for psychopathology (Bai & Repetti, 2018; Schneiders et al., 2007). Therefore, identifying factors associated with negative emotions in early adolescence is important for facilitating adolescents' well-being. Contrary to the assumption that better relationships would always be associated with less negative emotions, our findings suggest that the link between negative emotions and some relationships (i.e., with friends or teachers) can depend on the quality of other relationships (i.e., with family). Therefore, our findings highlight the importance of adopting a holistic approach for understanding negative emotions in young adolescence, one that examines the operation of one relationship within the context of other relationships.

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