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# When best friendships end: young adolescents' responses to hypothetical best friendship dissolution and associations with real-life friendship outcomes

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**Introduction:** This study examined young adolescents' responses to two types of hypothetical best friendship dissolution (complete and downgrade dissolutions). Responses included their attributions, emotional reactions, and coping strategies. It also considered whether responses vary across dissolution type and are related to the real-life friendship-specific outcomes of best friendship dissolution and friendship quantity.

**Method:** Data were collected from 318 young adolescents at two time points (Time 1 (T1):  $M_{\text{age}} = 11.87$  years) and included a newly-developed vignette measure of responses to hypothetical complete and downgrade dissolutions (T1), real-life complete and downgrade dissolutions experienced by participants (T2), and friendship (T1, T2).

**Results:** Findings showed that adolescents responded differently in their emotional reactions and coping strategies to hypothetical complete and downgrade dissolutions. Path models revealed unique linkages between several responses, such as vengeful coping and the real-life friendship-specific outcomes.

**Discussion:** Findings suggest variability in how young adolescents respond to hypothetical best friendship dissolutions and that such variability may explain differences in their real-life friendships.

## KEYWORDS

best friendship dissolution, friendship adjustment, responses, social tasks theory, adolescence

## Introduction

Friendships during early adolescence (10–14 years) are a topic of long-standing theoretical and empirical interest as they become increasingly intimate and uniquely influential on adjustment outcomes during this developmental period (Sullivan, 1953; Rubin et al., 2015). Young adolescents' friendships are also especially vulnerable to break-up. Approximately 50% of young adolescents experience friendship break-ups across a 6-month period, and 86% report friendship break-ups in their life-time (Meter and Card, 2016; Flannery and Smith, 2021). Despite its prevalence, little is known about friendship break-ups or dissolution (terms which have been used interchangeably elsewhere and will be used as such herein), especially relative to other aspects of young adolescents' friendship experiences (such as the extent intimate disclosure occurs between friends and the developmental significance of such disclosure). Thus, many unanswered questions about friendship dissolution remain, with one of the most important ones being: How do

young adolescents react or respond when best friendship dissolution occurs? By utilizing a longitudinal sample of young adolescents, the current study expands upon previous studies by investigating, for the first time: (1) how young adolescents respond to hypothetical best friendship dissolution, with a focus on whether responses depend on the type of the break-up (i.e., whether the break-up is complete vs. partial (or a downgrade) with the best friendship ending but a “good” friendship continuing; Bowker, 2011); and (2) hypothetical dissolution responses in relation to the real-life friendship-specific outcomes of friendship dissolution and quantity (or the number of friends). Additional studies on best friendship dissolution, and young adolescents’ responses to them, may provide new insights into which young adolescents are at-risk when their best friendships dissolve. Findings could also help generate new knowledge to better specify clinical intervention efforts for young adolescents struggling with worry and stress related to best friendship break-ups.

## Best friendship dissolution

Most of what is known about friendship dissolution during early adolescence pertains to its prevalence. Numerous studies of friendship (in)stability and a meta-analysis (Meter and Card, 2016) have shown that the majority of young adolescents experience at least one break-up of a best or regular friendship in any given school year (see also Bowker, 2004; Poulin and Chan, 2010). In the present investigation, the focus is specifically on *best* friendships as they tend to be more intimate and influential relative to other types of friendships (Buhrmester, 1990; Chan and Poulin, 2009). In addition, almost all young adolescents nominate at least one best friend, and the majority of young adolescents (>60%) have at least one *mutual* (or reciprocated) best friend (e.g., Zoe nominated Mika as a best friend, and Mika nominated Zoe as a best friend; Parker and Asher, 1993). Specific to *best* friendship dissolution, there is also some indication that best friendship dissolutions may be more common than dissolutions of other types of friendships during early adolescence. Wojslawowicz Bowker et al. (2006), for instance, found that 63% of young adolescents experienced the break-up of a best friendship across a single academic school year. Thus, due to these unique features, we reasoned that *best* friendship dissolutions might be especially developmentally significant for many young adolescents. Also of interest in the present study is the *type* of best friendship dissolution. Some best friendship break-ups may be *complete*, in which the adolescents cease to be friends when the best friendships ends, while others may be partial or *downgrade* dissolutions, in which the adolescents are no longer best friends but continue to be good or regular friends. In one study, downgrade dissolutions were found to be more common than complete dissolutions during early adolescence (55 vs. 36%; Bowker, 2011; see also Bowker et al., 2023).

Beyond prevalence, there is some evidence that other friendships (and the difficulties that come with coordinating multiple friendships; Azmitia et al., 1999) and dissimilarities between friends (e.g., in terms of social behaviors; Ellis and Zarbatany, 2007; Hartl et al., 2015) help to explain why some friendships break up. In addition, findings consistently show that friendship dissolution is associated with a myriad of negative

adjustment outcomes, including increased levels of depressive symptoms, peer victimization, and poor academic achievement (Parker and Seal, 1996; Wojslawowicz Bowker et al., 2006; Chan and Poulin, 2009; Lessard and Juvonen, 2018). Taken together, it appears that friendship dissolutions are understudied, but common, interpersonal stressors that can interfere significantly with healthy young adolescent development.

## Best friendship dissolution responses

In research on other types of peer challenges and stressors (i.e., victimization), a common focus of inquiry is how youth respond to such social difficulties and how such responses help to explain adjustment (e.g., Kochenderfer-Ladd and Skinner, 2002; Hunter et al., 2004; Puhl and Luedicke, 2012). But, relatively little is known about young adolescents’ responses to best friendship dissolution because only four studies, to our knowledge, specifically queried youth about their responses to friendship dissolutions (Benenson and Christakos, 2003; Bowker, 2011; Flannery and Smith, 2021; Bowker et al., 2023). In one of the studies, Benenson and Christakos (2003) found that most young adolescents, but especially girls, reported feeling “badly” when imagining their current best friendships ending and when remembering past best friendship dissolutions. In another study of young adolescents, Bowker (2011) found that most reported feeling sad when their best friendships ended, either completely (complete dissolution) or partially (downgrade dissolution). However, in this study and a follow-up study (Bowker et al., 2023), some young adolescents reported feeling happy and mad when their best friendships broke up, suggesting that although many young adolescents feel sad when their best friendships end, there is some variability in responses. In addition, the evidence of happy responses suggests that some dissolutions may be welcomed. In the most recent studies in this area, young adolescents were most likely to report feeling sad and positive when their friendships ended, with conflict and betrayal as the most common reasons for their friendships ending (Flannery and Smith, 2021), but stronger emotional responses were reported following complete vs. downgrade dissolution (Bowker et al., 2023).

None of these studies, however, evaluated specific *attributions* of intent (i.e., why they think the situation happened) and *coping* strategies (i.e., how they would cope with the situation) in response to best friendship dissolution. This is a notable research gap, as in other areas of peer challenge research (Burgess et al., 2006; Peets et al., 2007), specific types of emotional reactions as well as attributions and coping strategies have been shown to vary amongst young adolescents and across relationship contexts (friends vs. unfamiliar peers vs. enemies). They also have been shown to be strong predictors of real-life psychosocial adjustment outcomes (e.g., aggressive behavior), and thus, important targets for intervention. Bowker (2011) and Bowker et al. (2023) did evaluate and find significant links between the occurrence of downgrade dissolutions and sad emotional responses to complete dissolutions and self-reports of loneliness, and Flannery and Smith (2021) studied and found that the number of past friendship dissolutions was related positively to current symptoms of depression. However, to date, there has been no published research examining the

links between responses to hypothetical dissolutions and real-life *friendship*-specific outcomes. Thus, in the present study, we evaluated dissolution responses to hypothetical complete and downgrade dissolutions and whether they vary across type of dissolution (Study Goal 1), and whether hypothetical dissolution responses are related to real-life friendship specific outcomes (Study Goal 2). In addition to the aforementioned research, these goals and our hypotheses were informed by the following two theoretical frameworks.

## Social information processing theories and best friendship dissolution

The first framework is *social information processing theories* that emphasize the developmental significance of how youth perceive, interpret, and cope with stressful and challenging peer experiences (Crick and Dodge, 1994, 1996; Lemerise and Arsenio, 2000). In this area of research, hypothetical scenarios depicting challenging social situations (i.e., a peer spills milk on you in the cafeteria; e.g., Burgess et al., 2006) with follow-up questions are the most commonly utilized method for studying individual differences in responding (also referred to as individual differences in social information processing). An advantage of using vignette measures is that it allows all youth to report how they would respond to a peer stressor, even if they are not able to recall a specific occurrence.

Empirical research has identified several key types of processing or responding in which individual differences are present. For example, youth tend to differ in their *attributions*, *emotional reactions*, and *coping strategies/response decisions*, with some youth being more negatively biased in their responding than others. While it is clear from past research that young adolescents respond differently in terms of their emotional reactions to real-life friendship dissolution, an application of social information processing theories to friendship dissolution would suggest that individual differences might exist in *each* type of responding (attributions, emotional reactions, coping strategies). Therefore, the present study evaluated, for the first time, the specific types of *attributions* (internal blame or blaming oneself, external blame or the hostile blaming others, prosocial intent or assuming the best of another, neutral intent or assuming that a stressor was accidental), *emotional reactions* (happy, sad, mad, embarrassed), and *coping strategies* (active or problem-focused coping, feeling emotions but not acting, revenge, adult intervention) considered in past social information processing research (Burgess et al., 2006; Peets et al., 2007).

Past research has shown differential associations between some of these attributions, emotional reactions, and coping strategies and real-life psychosocial adjustment outcomes (e.g., aggressive behavior, internalizing problems; Quiggle et al., 1992; Burgess et al., 2006; Peets et al., 2007). For instance, Burgess et al. (2006) reported strong linkages between external blame attributions (in response to hypothetical vignettes) and aggressive behavior, and internal blame and anxiously-withdrawn behavior. External and internal blame attributions have also been linked to externalizing and internalizing problems, respectively (see Perren et al., 2013), and similar associations have been found for revengeful and inactive and avoidant coping (e.g., Benatov et al., 2020). In contrast, support

seeking coping responses has been linked to more positive real-life adjustment outcomes, including higher levels of self-worth and low levels of psychopathology (Compas et al., 2017; Yang et al., 2023). Accordingly, we conceptualized neutral and prosocial intent attributions, happy and sad emotional reactions, and active coping and adult intervention responses as *adaptive* responses, while internal and external blame attributions, mad and embarrassed emotional reactions, and revenge and emotional inaction coping were conceptualized as *maladaptive* responses. Drawing from this research, we expected that most young adolescents would report adaptive responses to best friendship dissolution but that significant variability would also be found.

## Social tasks perspectives and best friendship dissolution

A *social tasks perspective* leads us to further expect that individual differences in responding might depend on the type of dissolution that occurs. In these perspectives, situational/contextual specificity in responding is expected and explained by the different skills and knowledge required for different social tasks (e.g., Asher et al., 1996; Asher and McDonald, 2009). For example, and in support of these perspectives, evidence shows that adolescents might respond negatively and poorly (e.g., by retaliating) to victimization but competently to jealousy within a friendship (e.g., taking a neutral perspective) because different skills and knowledge are required for these social tasks (e.g., Shoda et al., 1994; Dodge et al., 2002). Moreover, an adolescent may respond positively to conflict in friendships but poorly to a friend in need of assistance, because although both challenges involve friends, different skills may be required for these social tasks.

Only the Bowker (2011) and Bowker et al. (2023) studies distinguished between emotional reactions to complete vs. downgrade dissolutions, with results from Bowker (2011) showing that young adolescents most commonly report sadness in response to both types of dissolution. However, the Bowker et al. (2023) study also found that young adolescents reported stronger emotional responses to real-life complete relative to downgrade dissolutions, with the largest differences in anger and happiness (with more anger and happiness in response to complete dissolutions). Additional research is needed because *social tasks perspectives* would suggest that different skills are required to navigate the different experiences of complete and downgrade dissolutions, and thus young adolescents' attributions, emotional reactions, and selected coping strategies should all differ by dissolution type. If this is the case, it would suggest that youth might need dissolution-specific instruction when struggling with complete vs. downgrade dissolutions. For these theoretical and empirical reasons, the present study utilizes an adapted social information processing vignette measure that depicts complete and downgrade dissolutions. Due to the dearth of research in this area, it is difficult to develop specific a priori hypotheses. Nevertheless, we reasoned that complete dissolutions, in which the relationship ties are completely severed (whereas in downgrade dissolutions, a relationship with the former best friend continues) might be experienced as more challenging,

possibly eliciting negatively biased and maladaptive responding, such as external and internal blame attributions and revengeful and avoidant coping.

Finally, both theories further posit that responses to hypothetical challenging peer scenarios directly guide and influence youths' actual or real-life social behaviors and their interactions with others. In support, aggressogenic responding patterns, such as tendencies to respond aggressively (e.g., by making external blame attributions, choosing vengeful coping strategies) to hypothetical peer challenges, have been associated consistently and significantly linked with real-life aggressive behavior, as well as externalizing problems and peer rejection (e.g., [Orobio De Castro et al., 2002](#); [Dodge et al., 2008](#)). In addition, negatively biased responding to hypothetical vignettes that is more depressive and anxious in nature (i.e., internal blame attributional tendencies, avoidant coping) has been linked to internalizing problems and social impairment ([Quiggle et al., 1992](#); [Rudolph et al., 1995](#)). In this regard, hypothetical vignette assessments are thought to capture social cognitive responding patterns that guide and translate into actual behavior and functioning ([Peets et al., 2011](#)).

Research in this area further suggests a specificity in the links between responses to hypothetical peer challenges and real-life outcomes ([Crick et al., 2002](#); [Burgess et al., 2006](#); [Peets et al., 2011](#)). For instance, numerous studies reveal responses-behavior associations that are specific to aggression form. As one example, several studies show that external blame in response to hypothetical relational aggression is related to real-life relationally aggressive but not physically aggressive behavior (e.g., [Crick et al., 2002](#)). In this regard, youths' social-cognitive evaluations of hypothetical peers are argued to be context-specific and are thought to guide real-life behaviors and experiences with peers within that *same* real-life social domain/context ([Burgess et al., 2006](#)).

The expectation was that dissolution responses may be related to friendship-specific real-life adolescent outcomes, which has not been previously evaluated. Two real-life adjustment outcomes in the friendship domain were considered: best friendship dissolution and friendship quantity (or the number of mutual friends). Young adolescents' specific thought patterns about dissolution likely influence their ongoing interactions with their friends, and therefore, it was hypothesized that more negatively biased or maladaptive responding (i.e., more anger, vengeful coping) will interfere with abilities to maintain friendships (friendship dissolution) and form friendships (friendship quantity). Vengeful coping tendencies, for instance, likely interfere with conflict resolution within existing friendships, and in turn, promote friendship break-ups. Such tendencies also might make it difficult for young adolescents to form friendships by interfering with the degree to which the young adolescents are viewed as attractive friendship partners. The current study included an assessment of real-life friendship dissolution that allowed us to examine the relations between responses to both hypothetical and actual/real-life complete and downgrade dissolutions, rather than dissolution in general.

## Study summary

The investigation addressed the limitations of past research and contributes to the extant literature with its examination of: (1) young adolescents' responses (attributions, emotional reactions, coping strategies) to two types of best friendship dissolution (complete vs. downgrade dissolutions) and whether responses depend on dissolution type (Study Goal 1); and (2) the longitudinal relations between dissolution responses and friendship-specific adjustment outcomes (Study Goal 2). This longitudinal study involved a diverse community sample of young adolescents who were in the developmental period when friendships become increasingly intimate and influential on adjustment outcomes ([Rubin et al., 2015](#)). Within the early adolescent developmental period, participants were all Grade 6 students in their first year of middle school and therefore had recently experienced a significant "reshuffling" of their peer relationships ([Hardy et al., 2002](#)). A 3-month interval between time points was chosen to address calls for shorter intervals than typically used in friendship research (i.e., 6–12 months) to better capture the numerous short-term fluctuations in friendships that occur during this developmental period ([Poulin and Chan, 2010](#)). Informed by *social information processing theory* and *social tasks perspectives*, the study evaluated the following general hypotheses:

1. Most young adolescents will report adaptive responding (e.g., prosocial intent attributions, sad emotional responses, active coping) to best friendship dissolution.
2. Complete dissolutions will be associated with more negatively biased or maladaptive responding in terms of attributions and coping, such as external and internal blame attributions and revengeful and avoidant coping. Due to conflicting findings reported by [Bowker \(2011\)](#) and [Bowker et al. \(2023\)](#), no specific hypotheses were developed regarding dissolution type differences in emotional responding.
3. More negatively biased or maladaptive responding (i.e., more anger, vengeful coping) will negatively predict real-life abilities to maintain friendships (friendship dissolution) and form friendships (friendship quantity).

*Social tasks perspectives* posit that boys and girls have distinct strengths and weaknesses in friendship tasks, which contribute to variability in responses to friendship challenges and friendship-outcomes ([Rose and Asher, 2017](#)). In support, there is some indication that girls report more negative emotional responses and attributional biases than boys in response to hypothetical depictions of friendship transgressions (e.g., when a friend fails to provide help; [MacEvoy and Asher, 2012](#)). Girls are also found to endorse more prosocial (and fewer aggressive) goals and strategies in response to depictions of conflicts with friends (e.g., [Rose and Asher, 1999](#)). These findings may reflect girls valuing and promoting qualities such as intimacy, harmony, and support in their relationships relative to boys, who tend to value and excel at tasks such as providing fun and companionship ([Rose and Asher, 2017](#)). As such, when best friendship dissolutions occur, girls may feel more threatened or jealous, leading to more negatively biased emotional reactions and attributions but

greater motivation to cope/respond using strategies that strengthen their relationships (e.g., Parker et al., 2005). We are tentative in these expectations, however, as our study is the first to evaluate these specific hypothesized sex differences. Although past research shows differences in how young adolescent boys and girls respond to friendship challenges, there has been little evidence that such responses are linked differently to friendship-specific outcomes (e.g., Rose and Asher, 2004). Therefore, without any a priori hypotheses, we explored sex differences in responding to hypothetical dissolutions and whether sex moderates the associations between dissolution responses and real-life friendship-specific outcomes.

## Materials and methods

### Participants

Participants were 318 Grade 6 students (161 boys;  $M_{\text{age}} = 11.87$ ,  $SD = 0.49$ ) from three public middle schools outside a large city in the USA. Written, informed parental consent and adolescent assent were obtained for all participants (overall consent rate = 65%; individual school consent rates = 56%, 67%, 73%). The sample was racially and ethnically diverse with ~58% of participants self-identifying as White/Caucasian, 19% as Black/African-American, and 19% as another minority ethnicity or as biracial. Information on socioeconomic status was not collected, but publicly available data indicated that the median household income for families in the participating schools was between \$43,536 and \$55,682. Grade 6 was the first grade level in all of the participating middle schools such that all participants started in a new school that year. A *post-hoc* power analysis indicated that the SEM models described below, even with their missing data, were adequately powered at 0.80 to detect medium effects (Soper, 2024).

### Procedures

Participants completed measures in their homerooms or larger classrooms (e.g., in the cafeteria). Data collection lasted ~30–45 min. Participants were informed that their answers were private and confidential and that they could stop completing the surveys without penalty. All participants completed measures at Time 1 (T1), which occurred in late February/early March (depending on the availability of the school). Participants from two of the schools ( $n = 175$ ) also completed the friendship measures at a second time point, Time 2 (T2), ~3 months later (late May/early June). The third school declined a second time point of data collection. In addition to the measures described below, participants completed several other measures, including a measure of stressful life events, which were not of interest in this study. All procedures and methods were approved by the Institutional Review Board at University at Buffalo and the study was performed in accordance with the ethical standards outlined in the 1964 Declaration of Helsinki and its amendments. The authors have no relevant financial or non-financial interests to disclose.

## Measures

### Responses to dissolution (T1)

Participants completed a modified version of the reliable and valid Attributions and Coping Questionnaire (Burgess et al., 2006; Spencer et al., 2013; ACQ). The ACQ includes vignettes depicting hypothetical and potentially challenging situations with friends and unfamiliar peers (e.g., being bumped by a peer). For the present study, the ACQ was adapted to include hypothetical best friendship dissolution scenarios. More specifically, the vignettes were modified so that three vignettes described complete dissolution and two described downgrade dissolutions (see the Appendix for specific vignettes). Consistent with the ACQ and the other vignette measures used in social information processing research (e.g., Peets et al., 2007), the vignettes were ambiguous with regard to the reasons why the dissolutions occur. They also varied with respect to who initiated the dissolution. Such ambiguity allows for individual differences in responding to emerge. The vignettes were developed in accordance with the methods and findings in Bowker (2011) and were pilot tested for comprehension and clarity by a small group of young adolescents ( $M_{\text{age}} = 12$  years;  $n = 5$ ).

In response to these vignettes, adolescents were first queried about their attributions (with the question, “Why did this happen?”). Like in the ACQ, adolescents chose between four alternative attributions for each vignette (a four-alternative forced-choice method): (1) external blame attributions (e.g., “My friend wanted to upset me,” “My friend was being mean”); (2) internal blame attributions (e.g., “I must have done something wrong to make it happen,” “I’m boring to be with”); (3) prosocial intent attributions (e.g., “My friend probably wanted to stay friends but couldn’t,” “My friend and I still like each other but are ready for new friends”); and (4) neutral attributions (e.g., “It might have happened because my friend’s family was moving away,” “Good friendships just come and go”). Next, participants rated the degree to which they would feel happiness, anger, sadness, and embarrassment (e.g., 1 = “Not angry”; 5 = “Very angry”), an assessment of emotional reactions. Finally, participants indicated how likely they would use five coping strategies (1 = “Definitely would not do”; 5 = “Definitely would do”; which were tailored to each vignette, as in the ACQ): (1) revenge (e.g., “I’d pour a drink down my friend’s back the next day,” “I’d mess up my old friend’s locker”), (2) avoidance (e.g., “I’d stay away from my old friend,” “I would run away”), (3) adult intervention (e.g., “I’d ask my mom or dad to hang out with me after school,” “I’d ask my parent to help me make a new friend”), (4) emotional coping (e.g., “I would do nothing but I’d be upset,” “I might cry”), and (5) active coping (e.g., “I would try to find a new best friend,” “I would ask a friend from class to hang out”). The types of attributions, emotions, and coping strategies were identical to those from the ACQ, and participants always selected from the same four types of attribution responses and the same five types of coping responses, but the specific attribution and coping response options were modified to be specific to dissolutions and tailored to each vignette.

Due to the four-alternative forced-choice method, summary scores were calculated for the attributions, separately for each dissolution type, by summing participants’ responses (1 = selected, 0 = did not select; Burgess et al., 2006), and dividing by the

TABLE 1 Means, standard deviations, skew and kurtosis, and internal consistencies for attributions, emotions, and coping strategies in response to complete dissolutions.

	Boys		Girls		Total		Skew	Kurtosis	$\alpha/\rho$
	M	SD	M	SD	M	SD			
A-External Blame	0.12	0.25	0.10	0.19	0.08	0.17	1.90	2.82	–
A-Internal blame	0.15	0.21	0.16	0.23	0.14	0.20	1.21	1.16	–
A-Neutral	0.37	0.33	0.36	0.35	0.29	0.29	0.68	–0.41	–
A-Prosocial	0.36	0.32	0.38	0.32	0.31	0.29	0.56	–0.55	–
E-Happy	2.00	0.91	1.81	0.89	1.91	0.90	1.14	1.16	0.66
E-Sad	3.26	1.19	3.75	1.18	3.50	1.20	–0.53	–0.93	0.82
E-Anger	2.56	1.11	2.88	1.31	2.72	1.22	0.17	–0.98	0.81
E-Embarrassment	1.82	1.04	2.04	1.09	1.93	1.07	0.99	0.25	0.87
C-Adult	2.03	1.05	1.77	1.09	1.89	1.08	1.14	0.27	0.75
C-Revenge	1.65	0.85	1.29	0.59	1.45	0.74	1.67	2.13	0.67
C-Active	3.64	1.11	3.67	1.11	3.66	1.11	–0.61	–0.58	0.67
C-Avoidant	2.27	0.97	2.33	1.19	2.31	1.09	0.66	–0.32	0.26
C-Emotions	2.44	1.16	2.98	1.29	2.73	1.26	0.24	–1.17	0.69

A, attributions; E, emotional responses; C, coping strategies; data was collected at Time 1.  $n_s = 173$ –161.

number of vignettes (2 for downgrade dissolutions, 3 for complete dissolutions). A longitudinal pilot study ( $n = 57$ ) showed evidence of strong test-retest reliability across a 3-month period for these attribution scores in a sample of young adolescents ( $M_r = 0.31$ ;  $r_s = 0.04$  (prosocial attribution, downgrade dissolutions) – 0.53 (sad emotions, downgrade dissolutions). Mean scores were calculated for each emotional response and coping strategy, separately in response to complete and downgrade dissolutions. In-line with recommendations (Eisinga et al., 2013; de Vet et al., 2017), internal consistencies were estimated with Cronbach alphas for the 3-item complete emotion and coping response variables and with Spearman-Brown coefficients for the 2-item downgrade emotion and coping response variables. Most of the internal consistencies for these mean scores were acceptable (or fair;  $\alpha_s > 0.65$ ,  $\rho_s > 0.50$ ; see Tables 1, 2; de Vet et al., 2017). Two exceptions were *happy emotions* and *active coping* in response to downgrade dissolutions and *avoidant coping* in response to complete dissolutions. Thus, although the means and standard deviations for all response variables are presented in Tables 1, 2, avoidant coping, as assessed with regard to both complete and downgrade dissolutions, was not considered in subsequent analyses. In addition, we caution the reader when interpreting results involving the happy emotions and active coping variables.

### Best friendship dissolution (T2)

Participants indicated whether they had experienced any recent complete and downgrade dissolutions by answering the following two questions: “In the last three months (March-May), have you had a best friend of the same-sex with whom you are now no longer friends?” (an assessment of complete dissolutions); and “In the last three months (March-May), have you had a best friend of the same-sex with whom you are now only a good friend?”

(an assessment of downgrade dissolutions). These questions were used previously in two studies of young adolescents (Bowker, 2011; Bowker et al., 2023), but were modified slightly to prompt the participants to report on dissolutions that occurred in the past 3 months. Participants were permitted to report on more than one complete and downgrade dissolution (if appropriate). In response to each question, young adolescents selected yes (coded as 1) or no (coded as 0), and sum scores were calculated to reflect the total number of complete and downgrade dissolutions experienced in the past 3 months. Of note, the range of complete dissolutions reported was 0–2, with 12% of participants ( $n = 27$ ; nine boys, 18 girls) reporting at least one recent complete dissolution at T2. The range of downgrade dissolutions reported at T2 was also 0–2, with 17% ( $n = 39$ ; 14 boys, 25 girls) reporting at least one recent downgrade dissolution. Exploratory  $t$ -tests did not reveal any significant sex differences in the reported number of recent complete,  $t_{(214)} = 1.90$ ,  $p = 0.058$ , or downgrade dissolutions,  $t_{(213)} = 1.71$ ,  $p = 0.088$ .

### Current mutual friendship (T1, T2)

Young adolescents wrote the names of their first and second same-sex best friends and three good friends of any sex from their grade and school. Friendship nominations were considered mutual if two youth participating in the study nominated each other as either best or good friends. Participants were permitted to write the names of any friends, regardless of their participation status, in their grade and school. Accordingly, nominations for non-participating friends were disregarded. At T1, 67% of participants had at least one mutual friendship, with girls being more likely to have at least one mutual friendship than boys,  $\chi^2(1) = 21.30$ ,  $p = 0.001$ ,  $\eta^2 = 0.31$ . At Time 2, 74% of participants had at least one mutual friend, and there were no sex differences in the likelihood

TABLE 2 Means, standard deviations, skew and kurtosis, and internal consistencies for attributions, emotions, and coping strategies in response to downgrade dissolutions.

	Boys		Girls		Total		Skew	Kurtosis	$\alpha/\rho$
	M	SD	M	SD	M	SD			
A-External blame	0.08	0.20	0.09	0.24	0.07	0.20	2.60	6.43	–
A-Internal blame	0.11	0.23	0.13	0.29	0.09	0.21	1.86	2.31	–
A-Neutral	0.39	0.36	0.39	0.36	0.36	0.33	0.36	–0.75	–
A-Prosocial	0.42	0.36	0.39	0.38	0.36	0.32	0.32	–0.66	–
E-Happy	2.29	1.00	2.00	0.90	2.15	0.97	0.58	–0.11	0.41
E-Sad	2.89	1.33	3.30	1.40	3.10	1.37	–0.12	–1.22	0.79
E-Anger	2.39	1.18	2.72	1.44	2.56	1.32	0.33	–1.07	0.85
E-Embarrassment	1.87	1.22	1.97	1.15	1.92	1.18	1.04	–0.05	0.87
C-Adult	1.82	1.22	1.78	1.24	1.80	1.23	1.41	0.84	0.73
C-Revenge	1.50	0.85	1.36	0.76	1.42	0.80	1.76	2.05	0.67
C-Active	3.94	1.04	3.78	1.10	3.85	1.07	–0.72	–0.28	0.47
C-Avoidant	1.86	1.06	1.55	0.86	1.69	0.96	1.32	1.01	0.63
C-Emotions	2.08	1.15	2.83	1.39	2.49	1.33	0.45	–0.95	0.73

A, attributions; E, emotional responses; C, coping strategies; data was collected at Time 1.  $n_s = 144-132$ .

of having at least one mutual friendship,  $\chi^2(1) = 0.79, p = 0.37, \eta^2 = 0.06$ . Of interest in the present study was friendship quantity, or the number of mutual friendships. Thus, mean friendship quantity scores were calculated by dividing the number of reciprocated or mutual friendships by the total number of nominations made for participating friends. Relative to boys ( $M = 0.38$ ), girls had higher mean friendship quantity scores at T1 ( $M = 0.52$ ),  $t_{(251)} = 3.33, p = 0.001$ , but not at T2,  $t_{(196)} = 0.42, p = 0.67$  ( $M_s = 0.66, 0.64$ , for girls and boys, respectively).

## Data analytic plan

After preliminary descriptive analyses, three repeated measures MANOVAs were performed to evaluate whether young adolescent boys and girls respond different to hypothetical complete and downgrade dissolutions. In these analyses, best friendship dissolution type (complete vs. downgrade dissolution) served as the within-subjects factor and sex served as the between-subjects factor (0 = boys, 1 = girls). Consistent with previous studies (e.g., Burgess et al., 2006), separate MANOVA models were performed for the attributions, emotional reactions, and coping strategies (serving as the dependent variables).

To evaluate potential connections between young adolescents' responses to the hypothetical friendship dissolutions and their self-reported real-life friendship-specific outcomes, Mplus version 6.12 (Muthén and Muthén, 1998-2012) was used to estimate two sets of three path models, with full maximum likelihood estimation, in which each set of response variables (attributions, emotional reactions, coping strategies; T1) were related to: (1) self-reported recent complete (CD) and downgrade dissolutions (DD; at T2); and (2) friendship quantity (at T1 and T2). Covariances between exogenous variables were estimated, and in

the models with the dissolution variables, covariances between these two endogenous variables (self-reported actual complete and downgrade dissolutions) were estimated. In the models with friendship quantity, the stability path between friendship quantity at T1 and T2 was estimated. Adolescent sex and ethnicity were also included as exogenous demographic covariates. Model fit was assessed with the chi-square goodness-of-fit statistics and the root-mean-square error of approximation (RMSEA; 0.08 or less), standardized root mean square residual (SRMR; 0.09 or less), and comparative fit index (CFI; 0.95 or greater; Hu and Bentler, 1999). As reported below, all models provided a good fit to the data, and thus no *post-hoc* model fitting was performed. Only significant paths are described. Multiple group analysis in which a fully unconstrained model (all paths and covariances freely estimated for both sexes) was compared to a fully constrained model (all regression paths and covariances set equal for both sexes) to examine potential differences across boys and girls, but significant  $\chi^2$  difference tests between the constrained and unconstrained models indicated no differences across sex.

## Results

### Descriptive statistics and zero-order correlations

Tables 1 and 2 show the means and standard deviations for all of the response variables, presented separately for boys and girls, and complete and downgrade dissolutions. Also displayed in these tables are the skew, kurtosis, and internal consistency values for each response variable. As expected, the highest rated responses, across dissolution type and adolescent sex, were neutral and prosocial intent attributions, sad emotional reactions, and

TABLE 3 Zero-order correlations between response scores at time 1 and real-life friendship adjustment variables at times 1 and 2.

	Complete dissolution	Downgrade dissolution	Friendship quantity	Friendship quantity
	T2	T2	T1	T2
<b>Attributions</b>				
External blame-CD	0.33**	-0.10	-0.02	-0.29*
Internal blame-CD	0.02	-0.08	-0.06	0.06
Prosocial-CD	-0.01	0.00	0.03	0.12
Neutral-CD	-0.10	0.15	0.02	-0.02
External blame-DD	0.15	0.14	-0.12	-0.07
Internal blame-DD	-0.01	0.06	-0.13	-0.04
Prosocial-DD	0.04	-0.23*	-0.05	-0.09
Neutral-DD	-0.12	0.14	0.18*	0.19
<b>Emotions</b>				
Happy-CD	0.09	-0.07	-0.11	-0.14
Sad-CD	-0.13	-0.05	0.11	0.11
Anger-CD	-0.12	-0.13	0.01	0.12
Embarrassment-CD	-0.03	-0.08	0.10	-0.07
Happy-DD	0.01	-0.06	0.04	-0.02
Sad-CD	-0.14	-0.02	0.01	0.15
Anger-DD	-0.09	-0.12	-0.18*	-0.01
Embarrassment-DD	0.09	0.01	-0.14	-0.07
<b>Coping</b>				
Adult-CD	0.08	0.01	-0.17*	0.11
Revenge-CD	0.13	-0.04	-0.12	0.05
Emotions-CD	0.04	0.08	0.08	-0.06
Active-CD	-0.01	0.05	0.11	0.09
Adult-DD	0.02	-0.12	-0.29**	0.08
Revenge-DD	0.18	0.13	-0.16	-0.08
Emotions-DD	-0.06	0.02	0.10	0.14
Active-DD	-0.04	-0.09	0.15	0.00

CD, complete dissolutions; DD, downgrade dissolutions; all response variables were assessed at Time 1; T1 = Time 1, T2 = Time 2; \* $p < 0.05$ , \*\* $p < 0.001$ ;  $ns = 165-81$ .

active coping. As reflected in the standard deviations, however, variability in dissolution responses were also present.

Table 3 displays the zero-order correlations between the response variables and the real-life friendship outcomes. Of note, there were several differences in how the response variables for complete (CD) vs. downgrade dissolutions (DD) were related to the outcome variables. For instance, external blame-CD was related negatively to self-reported complete dissolutions and friendship quantity at T2, but the same associations were not significant for external blame-DD. In addition, in response to DD only, prosocial attributions were related negatively to self-reported downgrade dissolutions, and neutral attributions were related positively to T1 friendship quantity. One exception: adult intervention in response to both types of dissolution was associated negatively to T1 friendship quantity.

## Missing data and attrition

There was missing data at both time points due to all students from one school not completing measures at T2, study absences on the day of the data collections, time limitations placed on the data collections by the schools, and the ACQ measure being the final measure in the survey packet (missing data ranged from 22 to 59%). There was no attrition in the longitudinal participants. MANOVA analyses, however, revealed only three differences between those with and without complete data at T1 and T2 on the T1 study variables: participants with complete data were less likely to make internal blame attributions and more likely to make neutral and prosocial attributions in response to complete dissolutions; Wilks'  $\lambda = 0.89$ ,  $F_{(3,169)} = 7.30$ ,  $p = 0.001$ . As described above, missing data were handled within the models with full maximum likelihood



estimation, which allowed us to maximize power and retain all participants in the analyses (Johnson and Young, 2011). The same pattern of results emerged when analyses were limited to participants with complete data.

## Examining responses to hypothetical vignettes as a function of dissolution type and sex

### Attributions

There were no significant multivariate main effects for dissolution type, Wilks'  $\lambda = 0.95$ ,  $F_{(4,139)} = 1.84$ ,  $p = 0.12$ ,  $\eta^2 = 0.05$ , or sex, Wilks'  $\lambda = 0.99$ ,  $F_{(4,139)} = 0.16$ ,  $p = 0.96$ ,  $\eta^2 = 0.01$ , and no significant type-x-sex interaction effects, Wilks'  $\lambda = 0.99$ ,  $F_{(4,139)} = 0.17$ ,  $p = 0.96$ ,  $\eta^2 = 0.01$ , when young adolescents' attributions were examined.

### Emotional reactions

When focusing on emotional reactions, results revealed a significant multivariate main effect of dissolution type, Wilks'  $\lambda = 0.21$ ,  $F_{(4,125)} = 8.25$ ,  $p = 0.001$ ,  $\eta^2 = 0.21$ . Significant univariate effects for sadness,  $F_{(1,128)} = 28.63$ ,  $p = 0.001$ ,  $\eta^2 = 0.18$ , anger,  $F_{(1,128)} = 5.74$ ,  $p = 0.02$ ,  $\eta^2 = 0.04$ , and happiness,  $F_{(1,128)} = 11.93$ ,  $p = 0.001$ ,  $\eta^2 = 0.09$ , also emerged. Young adolescents reported more sadness and anger in response to hypothetical complete dissolutions, but more happiness in response to downgrade dissolutions. There were no significant sex main or interaction effects found.

### Coping strategies

In the model focused on coping strategies, a significant multivariate main effect emerged for dissolution type, Wilks'  $\lambda = 0.09$ ,  $F_{(4,132)} = 3.29$ ,  $p = 0.01$ ,  $\eta^2 = 0.09$ , along with significant univariate dissolution type main effects for emotional coping,  $F_{(1,135)} = 8.07$ ,  $p = 0.005$ ,  $\eta^2 = 0.06$ , and active coping,  $F_{(1,135)} = 4.33$ ,  $p = 0.04$ ,  $\eta^2 = 0.03$ . Young adolescents reported more emotional coping in response to hypothetical complete dissolutions, but more active coping in response to downgrade dissolutions. A significant multivariate between-subjects effect was also found for sex, Wilks'  $\lambda = 0.10$ ,  $F_{(4,132)} = 3.69$ ,  $p = 0.007$ ,  $\eta^2 = 0.10$ , with significant univariate main effects for sex evidenced for revenge,  $F_{(1,135)} = 4.25$ ,  $p = 0.04$ ,  $\eta^2 = 0.03$  and emotional coping,  $F_{(1,135)} = 9.66$ ,  $p = 0.002$ ,  $\eta^2 = 0.07$ . In general, girls reported more emotional coping while boys reported more vengeful coping.

## Associations between responses to hypothetical dissolution and self-reported real-life friendship outcomes

### Predicting self-reported real-life friendship dissolution

In each model that evaluated the unique associations between the response variables and self-reported actual complete and

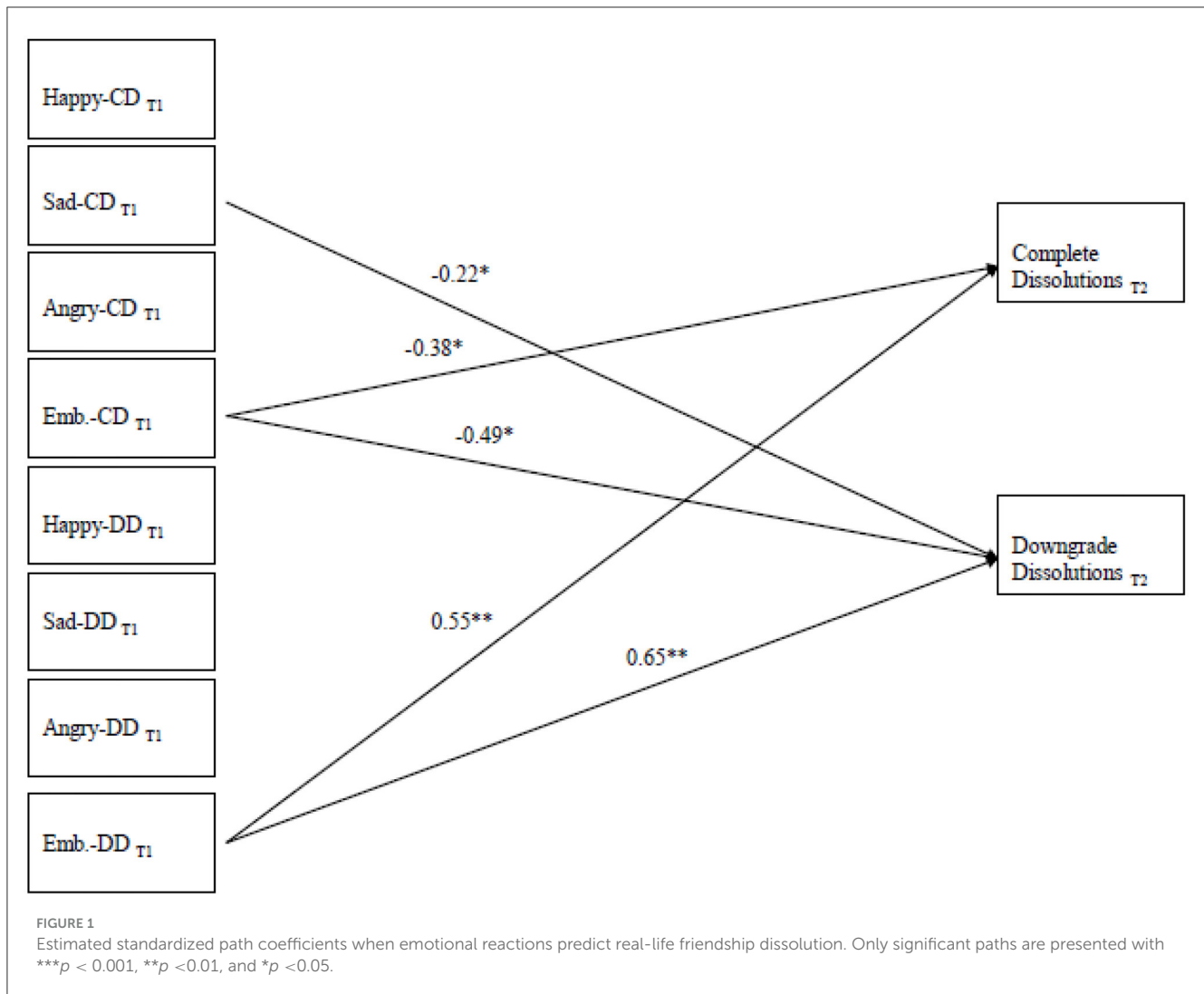
downgrade dissolutions, there was good fit to the data: (1) attributions:  $\chi^2_{(1)} = 1.11$ ,  $p = 0.29$ , RMSEA = 0.019, 90% CI (0.000, 0.153), SRMR = 0.007, CFI = 0.99; (2) emotional reactions:  $\chi^2_{(1)} = 1.08$ ,  $p = 0.30$ , RMSEA = 0.016, 90% CI (0.000, 0.152), SRMR = 0.007, CFI = 1.00; and (3) coping strategies:  $\chi^2_{(1)} = 1.03$ ,  $p = 0.31$ , RMSEA = 0.01, 90% CI (0.000, 0.150), SRMR = 0.007, CFI = 1.00. In the first model, external blame-CD was related positively to self-reported complete dissolutions ( $\beta = 0.33$ ,  $p < 0.05$ ). Figure 1 shows several unique and positive associations between embarrassed emotional reactions-DD and self-reported complete dissolutions and downgrade dissolutions, along with unique and negative relations between embarrassed emotional reactions-CD and self-reported complete and downgrade dissolutions. In addition, a unique and negative relation between sad emotional reactions-CD and self-reported downgrade dissolutions emerged. As shown in Figure 2, vengeful coping-CD was also related positively with self-reported complete dissolutions. In addition, adult intervention-DD was associated positively with self-reported complete dissolutions.

Although not depicted in the figures, there were several significant effects of the demographic control variables ( $ps < 0.05$ ). For example, in the first model, girls reported more actual downgrade dissolutions ( $\beta = 0.22$ ) than did boys. In the second model, girls reported more sadness-CD ( $\beta = 0.15$ ) and a greater number of actual complete ( $\beta = 0.13$ ) and downgrade dissolutions ( $\beta = 0.20$ ) than did boys. In the third model, girls reported more emotions-DD ( $\beta = 0.26$ ), emotional coping-CD ( $\beta = 0.15$ ), actual complete ( $\beta = 0.18$ ) and downgrade dissolutions ( $\beta = 0.22$ ), and less revenge-CD ( $\beta = -0.19$ ) relative to boys. Also not shown in the models, for ease of communication, are the significant covariances among the exogenous variables. Specific information about these covariances, along with the covariances found for the models presented next, are available by request.

### Predicting self-reported real-life friendship quantity

Model fit was also good for each of the models evaluating the response variables in relation to T2 friendship quantity: (1) attributions:  $\chi^2_{(1)} = 1.08$ ,  $p = 0.30$ , RMSEA = 0.015, 90% CI (0.000, 0.152), SRMR = 0.007, CFI = 1.00; (2) emotional reactions:  $\chi^2_{(1)} = 1.04$ ,  $p = 0.31$ , RMSEA = 0.012, 90% CI (0.000, 0.151), SRMR = 0.007, CFI = 1.00; and (3) coping strategies:  $\chi^2_{(1)} = 1.02$ ,  $p = 0.31$ , RMSEA = 0.01, 90% CI (0.000, 0.150), SRMR = 0.007, CFI = 1.00. There were no unique associations between the attribution variables and this outcome, although friendship quantity at T1 was related positively to friendship quantity at T2 ( $\beta = 0.40$ ,  $p < 0.001$ ). As shown in Figure 3, however, there were unique and positive associations between sadness-DD and embarrassment-CD and T2 friendship quantity. There were also unique and negative linkages found between embarrassment-DD and sadness-CD and T2 friendship quantity, above and beyond the effects of T1 friendship quantity. In the final model (Figure 4), emotional coping-CD was related negatively, and emotional coping-DD was related positively, to T2 friendship quantity, after accounting for the effects of T1 friendship quantity.

Significant ( $ps < 0.05$ ) links between the demographic covariates and response variables were also found in each of the



models. For example, in the attribution model, girls had more mutual friendships at T1 ( $\beta = 0.21$ ) but fewer at T2 ( $\beta = -0.17$ ) relative to boys. In the emotions model, girls reported more sadness-CD ( $\beta = 0.15$ ) and had more T1 mutual friends ( $\beta = 0.21$ ) than did boys. In the coping model, girls reported more emotional coping-CD ( $\beta = 0.16$ ) and -DD ( $\beta = 0.25$ ), but less revenge-CD ( $\beta = -0.17$ ) than did boys. In addition, sex was related to T1 ( $\beta = 0.21$ ) and T2 friendship quantity ( $\beta = -0.19$ ).

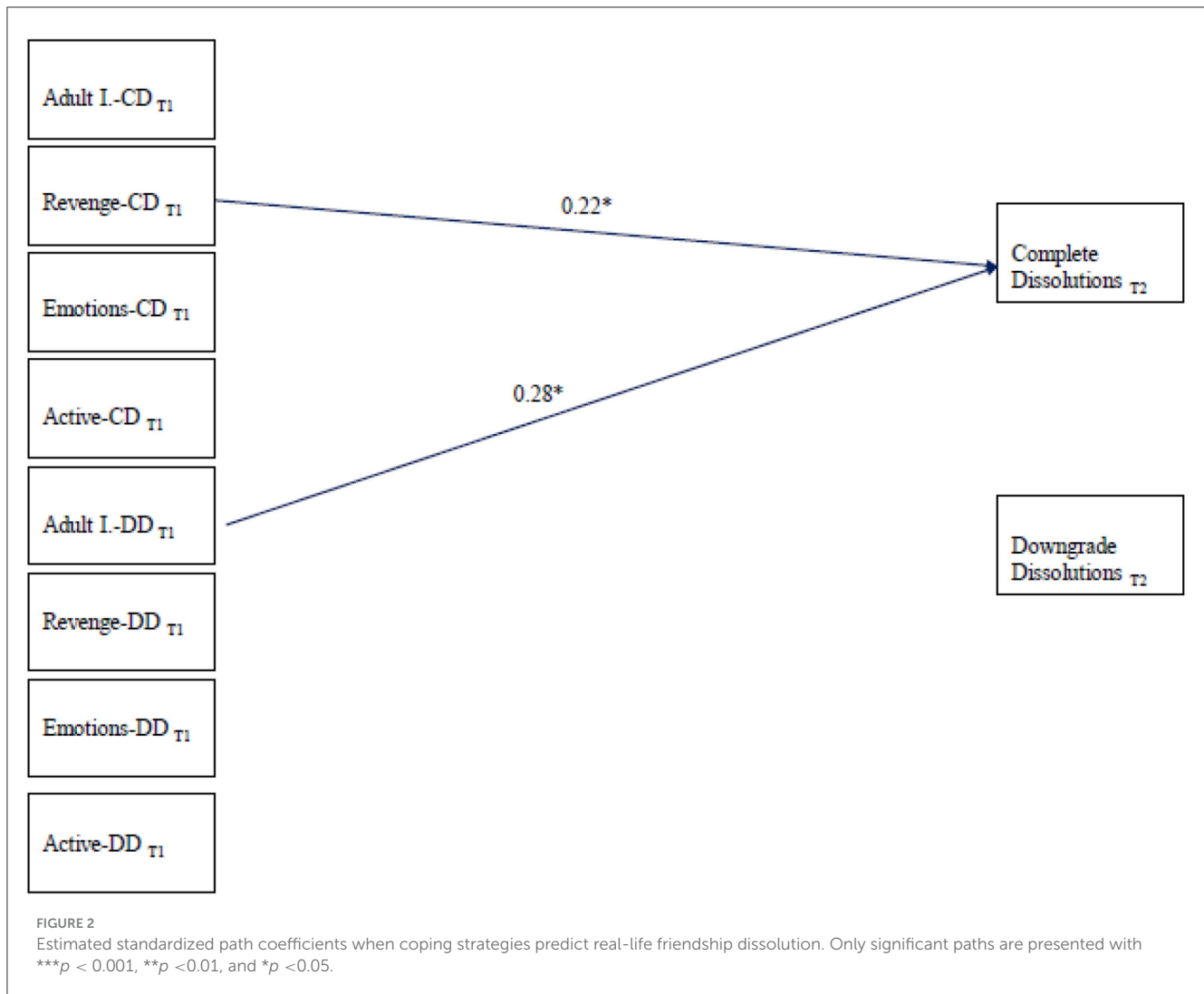
## Discussion

Results from earlier studies have indicated that friendships during early adolescence are highly influential, but also highly vulnerable to break-up or dissolution (Bowker, 2011; Meter and Card, 2016; Bowker et al., 2023). Few studies have evaluated how youth respond to and cope with friendship dissolutions, and even fewer have distinguished between different types of best friendship dissolution. The present study contributes to the literature on friendship dissolution in several novel ways, with one being that it examined, for the first time, responses to best friendship dissolution with a vignette measure. It also distinguished between

responses to hypothetical complete and downgrade dissolutions, thereby allowing for a new and more nuanced view of how young adolescents respond to different types of dissolution.

As a first study goal, responses to these two types of dissolution were examined, with the highest rated responses being those characterized as *adaptive* in past peer challenge research: neutral and prosocial intent attributions, sad emotional reactions, and active coping. In terms of maladaptive responses, the means in Tables 1 and 2 suggest that most young adolescents do not blame themselves (internal blame) or others (external blame) for the break-up, nor do they endorse such maladaptive coping strategies as revenge. We view this as preliminary evidence of positive/adaptive responding and as something that possibly could be leveraged in cognitive-behavioral intervention efforts (i.e., by teaching youth who report more negatively biased attributions about more positive ways to interpret the ending of their best friendships).

As expected, however, further analysis of the first study goal showed that certain aspects of young adolescents' dissolution responding may depend on the *type* of dissolution. For instance, young adolescents reported more sadness and anger, along with less happiness, in response to *complete* than downgrade dissolutions.

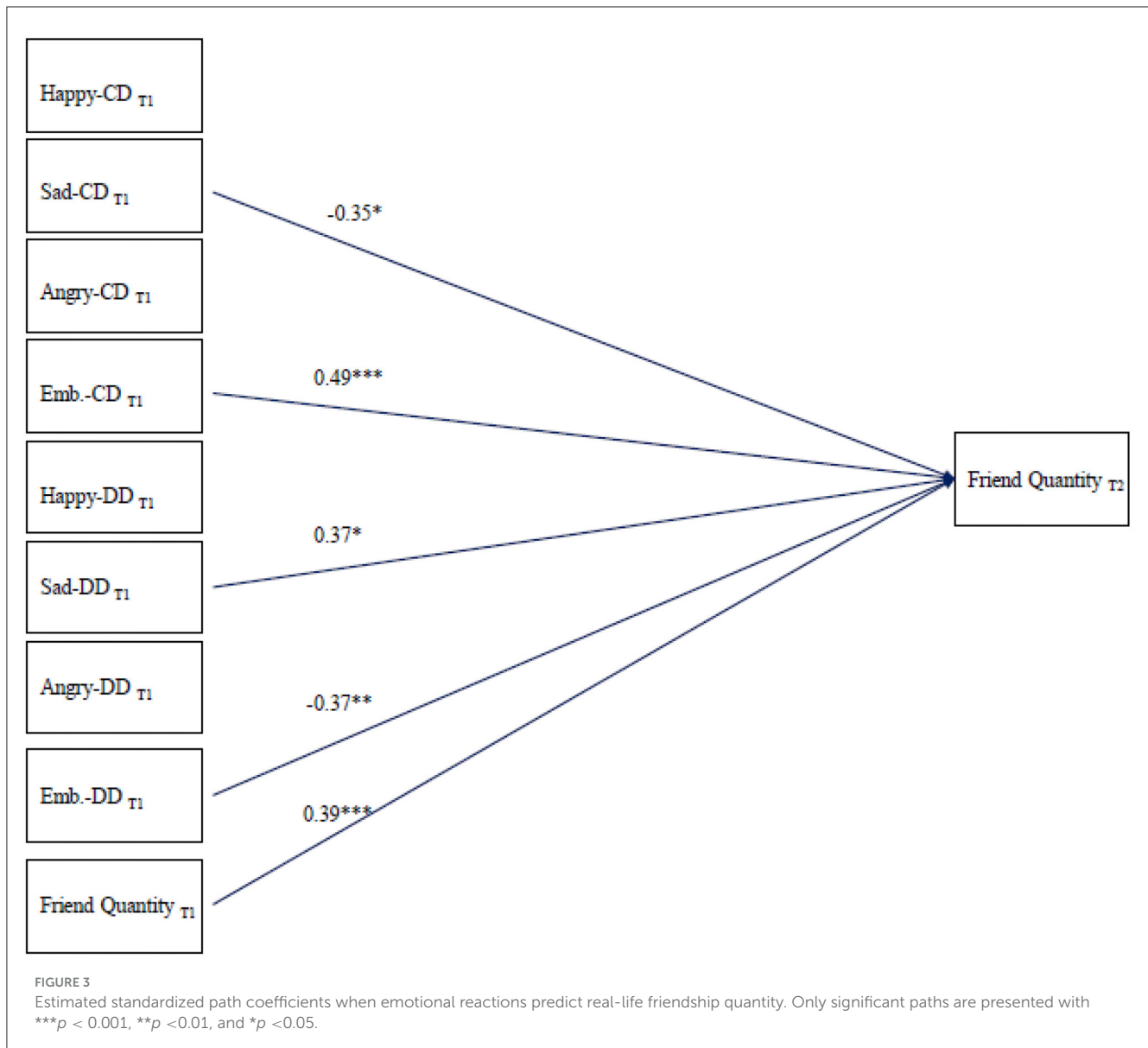


Additional research will be needed [especially since the happiness finding differed from that reported by Bowker et al. (2023)], but we think that these findings may be because complete dissolutions involve the severance of *all* relationship ties while downgrade dissolutions do not (Bowker, 2011). It was also found that young adolescents reported more emotional coping in response to complete dissolutions and more active coping in response to downgrade dissolutions. Perhaps this is because complete dissolutions elicit stronger (sad and angry) negative emotional reactions, which in turn, leads to overwhelming feelings and maladaptive emotional-focused coping (Bowker et al., 2023). In the absence of such strong emotional reactions, it might be easier for young adolescents to cope more actively and adaptively. These notions are consistent with the findings reported by Undheim and Sund (2017) in which a different type of interpersonal stressor, high levels of school stress, interfered with task coping (similar to active coping) and promoted avoidant and emotional coping during adolescence.

*Social tasks perspectives* (e.g., Rose and Asher, 2017) would further suggest that perhaps complete dissolutions are more challenging for youth to deal with, and thereby, are more likely to elicit negatively-biased ways of responding.

Research on adolescents' responding to challenging peer experiences has predominantly examined general ways in which youth respond to group-level peer experiences with less attention paid to situational variability in responses (for a notable exception, see Dirks et al., 2007), especially in the context of friendships (Rose and Asher, 1999, 2004; Burgess et al., 2006). Therefore, our findings are noteworthy as they address an important gap and contribute to a better understanding of the contextual/situational variability in how young adolescents respond to the specific friendship challenge of dissolution.

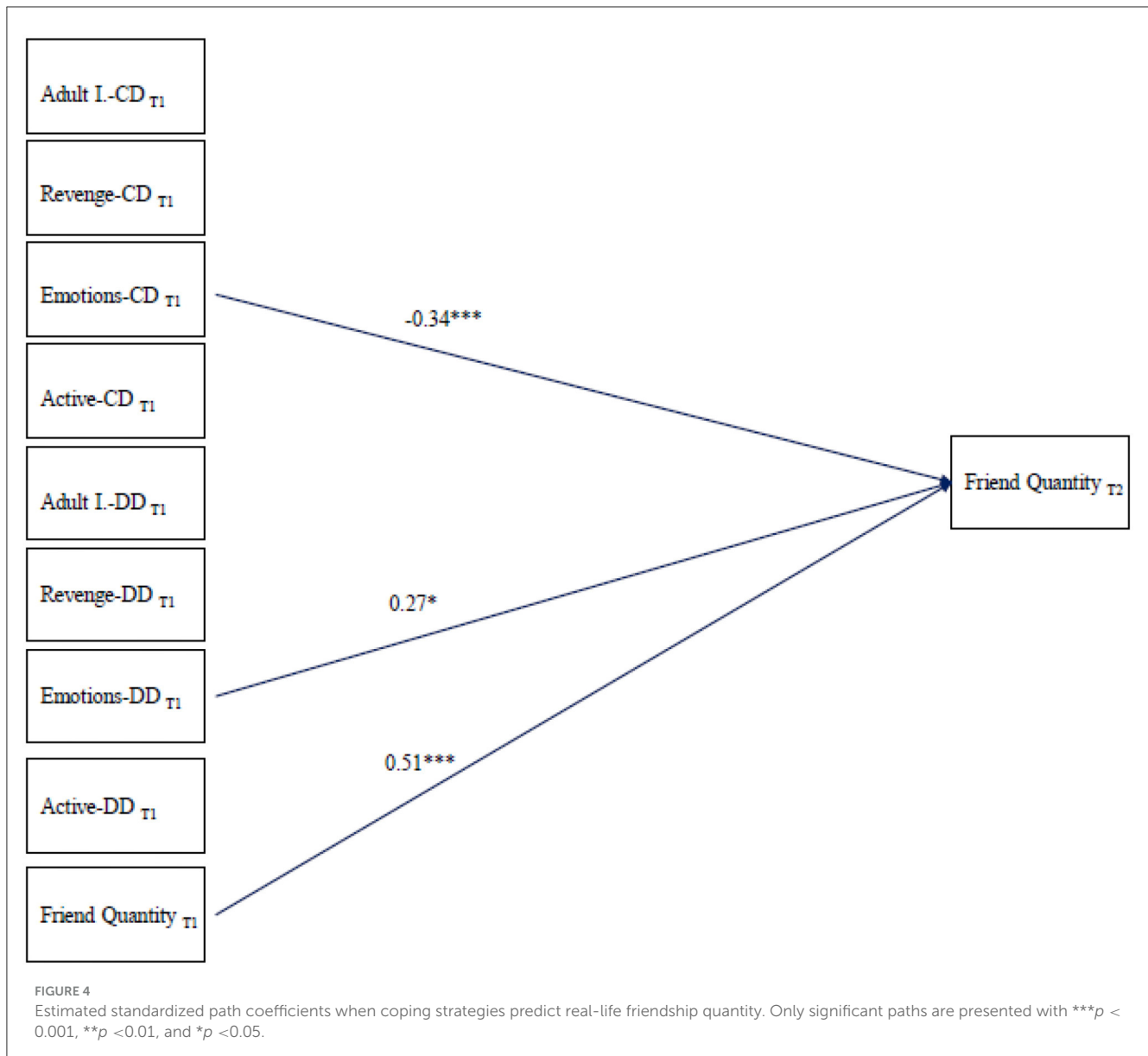
Young adolescents' *attributions*, however, did not differ in response to complete and downgrade dissolutions, perhaps because both types of dissolutions involved *friends*. Indeed, the majority of past research in this area showed situational variability in attributions when *different* relationship partners were involved (i.e., enemies vs. friends; Peets et al., 2007). Thus, young adolescents may differ in their emotional and coping responses when complete vs. downgrade dissolutions occur, but may be more consistent in their attributions when the same type of relationship partner is involved. *Why might this be the case?* We speculate that attributions, which are posited to be made automatically and early in social



information processing, might be more strongly linked to the “database” of stored information and past experiences (including past research experiences; Lemerise and Arsenio, 2000), whereas emotional and coping responses, which are further downstream in the SIP model, may be more susceptible to more numerous influences, including variability in *both* relationship type and other features of the situation.

It was also noteworthy that few sex differences were evinced in these analyses (as well as those linking the responses to real-life friendship-specific outcomes), with the exceptions of girls reporting more emotional coping and boys reporting more vengeful coping in response to both types of dissolution. These sex differences are consistent with prior work demonstrating similar patterns of responding to other types of peer and friendship challenges, including boys being more likely to endorse revenge goals and aggressive strategies to deal with conflict with friends (e.g., Rose and Asher, 1999; MacEvoy and Asher, 2012). The

findings with girls and emotional coping in our study likely reflect the greater emphasis girls place on the psychological provisions (intimacy, support) within their friendships and on maintaining harmony in their relationships (even when dissolution occurs; Rose and Rudolph, 2006). Emotional coping could be viewed by young adolescent girls as the best way to preserve the relationships, which of course, may or may not be true. Of course, this may not explain why girls had more friends than boys at T1 but not T2. Additional research will be needed to replicate this unexpected finding. Nevertheless, the remaining non-significant differences are important because they may suggest the two types of dissolution elicit similar responses in young adolescent boys and girls when their best friendships end, perhaps because *both* complete and downgrade dissolutions are experienced as an interpersonal *loss* during a developmental period when having friendships is perceived as important by all (Bowker, 2011).



For our second study goal, we evaluated the concurrent and prospective associations between responses to hypothetical dissolutions and real-life friendship-specific adjustment outcomes. Our two theoretical frameworks and associated research suggest that such links should exist, but our study was the first to evaluate them. Initial correlational analyses revealed many similar associations between the response variables and the friendship-outcomes. However, the path model models revealed several unique associations, particularly with regard to many of the more *negatively-biased* and maladaptive ways of responding. In particular, we found that *aggressogenic* attributional (external blame in response to complete dissolutions) and coping (i.e., vengeful coping in response to complete dissolutions) responses explained significant variability in self-reported complete dissolutions at Time 2. In addition, *depressogenic*-related emotional (i.e., sadness and embarrassment in response to complete and downgrade dissolutions) and coping (i.e., emotional coping in response to

complete and downgrade dissolutions) responses helped to explain variability in self-reported real-life complete and downgrade dissolutions and changes in friendship quantity over time.

The findings, however, also pointed to possible complexity in the associations between *depressogenic* dissolution responding and the friendship-specific outcomes. While external blame and vengeful coping in response to complete dissolutions were *only* linked with greater self-reported complete dissolutions, there were many instances when more depressogenic responding was related to more positive friendship outcomes. For example, with only one exception (i.e., embarrassment in response to downgrade dissolutions was related positively to complete dissolutions), *embarrassed* reactions to hypothetical dissolutions were related to fewer self-reported dissolutions and greater increases in the number of actual mutual friendships over time. In addition, *sad* emotional reactions were related to fewer self-reported downgrade dissolutions (when hypothetical complete dissolutions

were considered) as well as more mutual friendships (when hypothetical downgrade dissolutions were evaluated).

Of course, there were some instances in which one type of response, such as sadness in response to complete dissolutions, was related to both positive (fewer downgrade dissolutions) and negative (fewer mutual friends) outcomes. Additional research is needed, but we speculate that there is likely considerable variability in the ways in which young adolescents express (and show) their depressogenic responses to best friendship dissolution, as well as considerable variability in how peers and friends react to such responses. Such an interpretation is consistent with recent evidence highlighting the importance of *microsocial* processes that occur between friends and help to explain when friendship features lead to positive or negative trade-offs (i.e., the degree to which friends reinforce problem talk; e.g., Rose et al., 2016). We suspect less variability (and therefore greater consistency in the linkages with outcomes) for the aggressogenic responding variables because most of the aggressogenic response items described physically aggressive responses (e.g., “I’d hit my friend when he/she is with their new best friend”; “I’d mess up my old friend’s locker”), which tend to be visible, obvious, and interpreted by youth similarly, and physical aggression has been shown consistently to interfere with positive friendship experiences (Cillessen et al., 2005). Finally, it is important to highlight that we found that adult intervention in response to downgrade dissolutions was associated uniquely and positively with self-reported complete dissolutions, perhaps because downgrade dissolutions are common experiences that youth might think are best to handle themselves. Thus, with the specific social task of friendship dissolution, adult intervention may not be *adaptive*. Instead, youth who ask for adult help might be less socially skilled and inadvertently make themselves less attractive best friends (Dirks et al., 2007).

## Limitations and future directions

The findings from the present study suggest that investigating how young adolescents respond to the common but challenging experience of best friendship dissolution may be an important new research direction. There were, however, several study limitations that should be addressed in future research. First, our sample size was relatively small, which may have compromised our ability to detect more effects. In addition, the significant effects that did emerge had small effect sizes. Second, we were able to retain many participants across the course of the study, and the overall consent rate was between the generally accepted minimum rate of 60–70% (Cillessen, 2009; Cillessen and Marks, 2011). However, the consent rate for one of the schools was below the minimum accepted rate, and the longitudinal sample did differ from those who participated only once. This may have underestimated the number of mutual friendships, as only nominations for participating youth were considered, and limited the extent to which the results are generalizable. Third, there was a large number of analyses without correction. While this may be appropriate for exploratory and novel studies (for recent discussion, see Rubin, 2017), it may have led to some false positive results. Replication of the findings, thus, will be essential before strong conclusions are made, especially given the relatively small effect sizes.

Fourth, the study was also limited, to some extent, by the responses measure. Further psychometric work (and evidence of reliability and validity) on this new measure is clearly needed, particularly given that the avoidant coping response variables were dropped from analyses due to poor internal consistencies. The happy emotion and active coping response variables also had low internal consistencies. Situational variability in responding might explain the lower internal consistencies, as suggested in other related published work that involved vignettes (e.g., Rudolph et al., 1995). Nevertheless, future studies would benefit from including additional responses to more fully capture the many different ways that young adolescents might respond. Researchers should also develop additional vignettes, especially those depicting downgrade dissolutions, as the present study included fewer downgrade than complete dissolution vignettes (to be consistent with the original ACQ, which had five vignettes). Fifth, the study was longitudinal and informed by social information processing theories that posit that thoughts and cognitions guide behavior and outcomes, but only examined one direction of effects (responses to friendship outcomes) when the other direction of effects is plausible (friendship outcomes to responses). This study also neglected friendship quality, which may be determined, in part, by how young adolescents think about, and respond to, friendship challenges. It is also certainly plausible that positive friendship quality promotes more adaptive ways of thinking about friendship challenges, and negative friendship quality fosters more maladaptive patterns of responding. In addition, while a strength as it allowed the novel examination of short-term changes in friendship involvement, the 3-month intervals between our assessments may have failed to capture some changes in friendship involvement, including friendship dissolutions. It is also not known how well young adolescents are able to recall all dissolutions that occurred over 3-month intervals and if shorter intervals might be more ideal. Finally, the study lacked important information about some characteristics surrounding the dissolutions (e.g., whether the dissolutions were desired or initiated, the length of the friendship prior to the dissolution, whether the young adolescents had other friends and was part of a larger social network), which may impact how youth respond when their best friendships end. We think it is possible that such characteristics may explain some of the surprising findings herein, including the numerous non-significant associations and the few sex differences that emerged, as well as impact when responses are considered adaptive vs. maladaptive. For instance, external blame and anger could be adaptive when friendship betrayal occurs, and avoidant coping could be adaptive when friendships break-up that previously involved abuse and victimization. These possibilities have not yet been explored, but there is some indication that external blame attributions may be adaptive when general peer victimization occurs (e.g., Harper, 2012).

## Conclusion

Even given these limitations, the present study reveals novel information about young adolescents’ responses to challenging situations with friends. With the use of a hypothetical vignette measure, the findings show, for the first time, that most young

adolescents appear to respond adaptively to dissolutions, but that certain types of responding to best friendship dissolution depend on whether the relationship ties are severed completely or partially. Consistent with prior social information processing and coping theory and research, results further showed significant linkages between hypothetical vignette responses and real-life friendship-specific outcomes, although the associations were complex and depended on the type of response. The results are novel, but replication is needed. That said, the findings begin to add some new knowledge about best friendship dissolution, which we hope sets the stage for future research. Given the variability found in responses to best friendship dissolution, we also hope future work strives to help school and mental health professionals learn how to best intervene when young adolescents' best friendships inevitably break up.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

The studies involving humans were approved by University at Buffalo, The State University of New York, Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin. Participants also provided signed assent on the day of the data collection.

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JB: Conceptualization, Data curation, Formal analysis, Funding acquisition, Methodology, Project administration, Supervision, Visualization, Writing – original draft, Writing – review & editing. JW: Data curation, Formal analysis, Writing – review & editing. RE: Data curation, Formal analysis, Writing – original draft. MD: Writing – review & editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Appendix

### Complete dissolution vignettes

Imagine that you and your best friend have been best friends for one year. But, one day, your best friend decides that the two of you shouldn't be friends any longer. Suddenly, your friendship is over, and you two no longer play together or hang out.

Imagine that after years of being best friends, you and your best friend decide together that you should no longer be friends at all. You both decide to find new best friends.

Imagine that one day you decide that you no longer want to be friends at all with your best friend. You decide to end

the friendship with your best friend and start to look for a new best friend.

### Downgrade dissolution vignettes

Imagine that one day your best friend decides that he or she wants a new best friend. The two of you stay friends and hang out in school and at lunch, but your old best friend makes a new best friend.

Imagine that you and your best friend both decide together to make new best friends. After this decision, you stay friends and you spend time together at school, but you both find new best friends.