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# Perceived Relationship Development in Anxious and Non-Anxious Adolescents: a Person-Centered Five-Wave Longitudinal Study

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## Abstract
Developmental changes in adolescents' relationships with parents and friends intertwine, but individual differences in these relationships are likely to emerge as not all adolescents develop similarly. Generalized anxiety symptoms may underlie these individual differences, as these symptoms have frequently been associated with interpersonal difficulties. This study examines relationship quality development with parents and friends in adolescents with low and high levels of generalized anxiety symptoms. A latent transition analysis was performed in a two-cohort five-wave study design covering ages 12 to 16 ($n = 923$, 50.8% males) and 16 to 20 ($n = 390$, 43.4% males). About one-third of adolescents with high levels of generalized anxiety symptoms perceived a turbulent relationship with both their parents and best friends, whereas only one-tenth of those with low levels of generalized anxiety symptoms did. Low levels as opposed to high levels of generalized anxiety symptoms predicted a twice as high likelihood to perceive harmonious relationships with both their parents and best friends. Nevertheless, adolescents with low and high levels of generalized anxiety symptoms exhibited similar trends in relationship development. Overall, our findings indicate that generalized anxiety symptoms are not deterministic markers for relationship difficulties as there were plenty of adolescents with high levels of generalized anxiety symptoms that experienced no relationship difficulties across adolescence.

**Keywords** Parent-adolescent relationship · Friendship development · Generalized anxiety symptoms · Individual differences · Person-centered approach

Adolescence is characterized by many developmental challenges in family and peer relationships (e.g., Sullivan 1953; Youniss and Smollar 1985). These challenges may give rise to worry that centers on social-evaluative concerns and consequently triggers the development of generalized anxiety symptoms (e.g., Newman and Llera 2011). Particularly those with high levels of generalized anxiety symptoms may have difficulties in relationship development as they often report more interpersonal problems than adolescents with low levels

of generalized anxiety symptoms (e.g., Hale et al. 2006). Large individual differences are also likely to emerge in the relationship development of adolescents with high and low levels of generalized anxiety symptoms as not all individuals develop similarly (e.g., Hadiwijaya et al. 2017). This study aims to explore the individual differences in relationship development with parents and friends in adolescents with high and low levels of generalized anxiety symptoms.

## Interpersonal Relationship Development during Adolescence

During adolescence, perturbations in family relationships occur while friendships become more close and important. Specifically, maturational (Youniss and Smollar 1985) and realignment (Collins and Luebker 1994) theories propose that conflict intensity increases in parent-adolescent relationships as adolescents strive for more independence. They also propose that these conflicts diminish as adolescents form a more egalitarian relationship with their parents. In addition, the developmental theory of interpersonal relationships (Sullivan

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1953) states that playful relationships with friends during childhood become more emotional and intimate during adolescence. Empirical studies support such a pattern of development in adolescent relationship with parents (e.g., De Goede et al. 2009b; van Wel 1994) and friends (e.g., De Goede et al. 2009a; Way and Greene 2006). However, most studies on adolescent relationship development with parents and friends have examined these relationships separately rather than together in the same design (e.g., Hadiwijaya et al. 2017; Seiffge-Krenke et al. 2010). This is a shortcoming, as there are several theoretical notions suggesting that adolescent relationship development with parents and friends intertwine.

More specifically, some theoretical notions suggest a spillover phenomenon, in which the relationship quality with parents and friends become relatively concordant as the relational quality in one domain generalizes to the other domain (e.g., Ehrlich et al. 2012). For instance, attachment theory suggests that adolescents form mental representations based on the relationship with their parents and that they use these to develop a certain way of dealing with their friends (Bowlby 1978). Likewise, social cognitive theory suggests that adolescents' relationship with their parents affects the relationships with their friends through modeling and imitation (Bandura 1977). According to both theories, a tumultuous relationship with parents would thus yield difficulties in the relationship with friends, whereas a satisfactory relationship with parents would yield close relationships with friends.

Other research suggests a compensation phenomenon (Helsen et al. 2000; Scholte et al. 2001). This entails that adolescents' relationships with parents and friends become relatively discordant as adolescents compensate the lack of connectedness in one relationship by seeking for connectedness in another relationship. The turn-to-friends hypothesis as a specific compensation phenomenon suggests that adolescents who experience a tumultuous relationship with their parents compensate the lack of connectedness with their parents by turning to their friends for support (e.g., Helsen et al. 2000). Similarly, those with tumultuous friendships would compensate the absence of connectedness by having close family relationships as they turn to family for support.

Numerous variable-centered studies have documented evidence for both spillover and compensation phenomena. These studies generally examined associations between variables for the entire sample (e.g., correlations, regressions). Some of these studies provided evidence for spillover by showing positive links between adolescents' relationship representations of parents and friends (e.g., Furman and Collibee 2016) and between parental and friend support (e.g., De Goede et al. 2009; Stice et al. 2004). Other studies provided evidence for compensation by revealing that a poor relationship with parents is linked to an earlier initiation of romantic and sexual activities (e.g., Ream and Savin-

Williams 2005) and stronger attachment to friends (e.g., Markiewicz et al. 2006).

However, most variable-centered studies ignored potential individual differences. Such studies provide information valid for the average individual in the sample that might not be true for subsamples deviating from this average. Thus, such studies could only find evidence for either compensation or spillover. This is a limitation because studies generally suggest that both phenomena could be present, but that they emerge in different groups of individuals (e.g., Kan and McHale 2007). Also, variable-centered studies generally focus on single components of relationships (e.g., support) rather than using constellations of relational components (e.g., support, dominance). This is a limitation as relationship quality can only be understood if combinations of multiple dimensions are considered. High levels of support and dominance indicate an authoritative relationship quality, whereas high levels of support and low levels of dominance indicate an egalitarian relationship quality. Thus, high levels of support may have a different meaning depending on whether they co-occur with high or low levels of dominance.

Person-centered studies are ideal to test whether spillover and compensation co-occur as such studies not only account for the multidimensional nature of relationships, but also capture potential individual differences. Such studies can generate relationship profiles of different relational aspects of family relationships and friendships at once, and as such allow to examine individual differences in relationship quality. By doing so, person-centered studies identified three to five relational profiles that reflect individual differences among adolescents in concordant and discordant relationships with parents and friends (e.g., Cohen et al. 2015; Kan and McHale 2007; Scholte et al. 2001). These studies revealed profiles of adolescents having concordant harmonious (e.g., high levels of support and low levels of conflict) or turbulent (e.g., low levels of support and high levels of conflict) relationships with both their parents and friends. They also revealed profiles of adolescents having discordant relationships with parents and friends, such as good relationship with parents and a poor relationship with friends.

Previous person-centered studies mainly captured concordant and discordant relationships of adolescents with parents and friends in a cross-sectional design (e.g., Cohen et al. 2015; Kan and McHale 2007; Scholte et al. 2001; Schwartz et al. 2011), whereas only few captured these longitudinally (e.g., Laursen et al. 2006). However, to investigate whether the quality of adolescent relationship with parents spills over to the quality of relationship with friends, one should capture the extent to which discordant relationships become more concordant. Additionally, to examine whether adolescent social relationships compensate each other, one should capture the extent to which concordant relationships become discordant. These phenomena thus indicate a change in relationships over

time, which can only be captured using longitudinal person-centered study designs.

Spillover and compensation phenomena can manifest themselves in different ways as concordant and discordant relationships could develop in numerous manners. As can be seen in Fig. 1, both spillover and compensation phenomena can reflect a partial deterioration or partial restoration in relationships. Spillover with partial deteriorations reflects a positive friendship or relationship with parents that becomes more negative as the other relationship already was more negative. An example of this are adolescents who changed from discordant friend-oriented or parent-oriented relationships to concordant turbulent relationships (i.e., notations 1a and 1b of Fig. 1). Spillover with partial restorations reflects a negative friendship or relationship with parents that becomes more positive as the other relationship already was. For example, adolescents may change from discordant friend-oriented or parent-oriented relationships to harmonious relationships (i.e., notations 1b and 2b of Fig. 1).

Compensation with partial deteriorations reflects a positive friendship and a positive relationship with parents in which one of these two relationships becomes more negative while the other relationship remains positive. For example, adolescents could switch from concordant harmonious relationships into discordant friend-oriented or parent-oriented relationships (i.e., notations 3c and 3d of Fig. 1). Compensation with partial restorations reflects a negative friendship and a negative relationship with parents in which one of these two relationships becomes more positive, while the other relationship remains negative. For example, those who switched from concordant turbulent relationships into discordant friend-oriented or parent-oriented relationships follow this pattern (i.e., notations 4c and 4d of Fig. 1).

It is important to keep in mind that adolescents can also show patterns of relationship development that are not indicative of spillover or compensation. As illustrated in Fig. 1, adolescents can also show relationship stability (i.e., notations 1c, 2d, 3b, and 4a), or full deteriorations or full restorations of concordant relationships (i.e., notations 3a and 4b of Fig. 1). In addition, they can also shift from discordant friend-oriented relationships to discordant parent-oriented relationships or vice versa (i.e., notations 1d and 2c of Fig. 1). However, this paper mainly focuses on spillover and compensation. These phenomena theoretically reflect the most common patterns of interpersonal relationship development (i.e., interdependency of friend and parental relationships), but no study has yet examined these thoroughly. Given the importance of satisfying relationships, extending previous studies using a longitudinal person-centered design could provide profound insights in spillover and compensation.
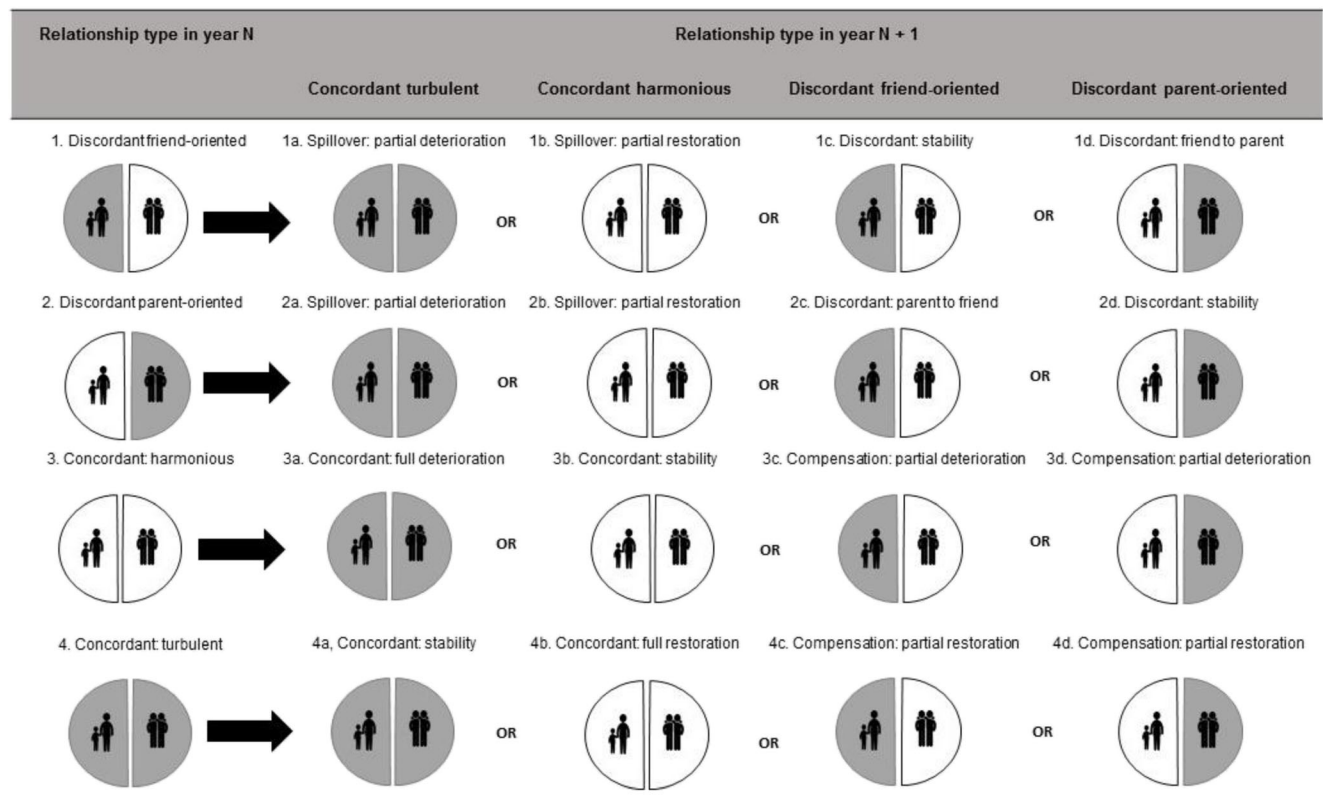


Note. Left domains represent adolescent relationships with their parents; right domains represent adolescent relationship with their best friend. Non-shaded domains represent satisfactory relationships and shaded domains represent poor relationships. Symbols are taken from and designed by Flaticon (www.flaticon.com).

Fig. 1 Potential changes in adolescent concordant and discordant relationship with parents and best friend

## Generalized Anxiety Symptoms and Interpersonal Relationship Experiences

The fact that individual differences in relationship development occur, raises the question of which factors are linked to these differences. Particularly important to consider are generalized anxiety symptoms. Individuals with high levels of generalized anxiety symptoms may be more susceptible to develop relationships that are of relatively poor quality for three main reasons. First, the core symptom of generalized anxiety is excessive, persistent, and uncontrollable anxiety and worry in which social functioning and relationships are reported as the most common topic of worry (e.g., Borkovec et al. 2004). Individuals with high levels of generalized anxiety symptoms seem to perceive a sustained state of distress that contributes to a negative bias in their relationship perceptions (e.g., Newman and Llera 2011). These individuals are thus likely to interpret their relationships as poor even if they are not according to the others involved in these relationships.

Second, it is also likely that the actual relationship quality is poor due to the negative impact of generalized anxiety symptoms (Newman and Llera 2011). For instance, excessive reassurance seeking can be demanding for parents and friends, and this may lead to frustrations for everyone involved (e.g., Priest 2013). Also, sustained feelings of distress could lead to a negative bias in which individuals fail to read social cues about their behavior, and this could make such individuals less liked by others (e.g., Erickson and Newman 2007).

Third, generalized anxiety symptoms are relatively prevalent among adolescents (e.g., Hale et al. 2006). Specifically, generalized anxiety symptoms generally increase in adolescence and further progress into adulthood (e.g., Nelemans et al. 2014). This is unlike many other anxiety symptoms, such as social and separation anxiety symptoms that generally decrease over the course of adolescence (e.g., Nelemans et al. 2014). Altogether, these three reasons illustrate the importance of examining generalized anxiety symptoms and social relationships in adolescents.

Despite the aforementioned reasons, only a limited number of studies have examined adolescent generalized anxiety symptoms and interpersonal relationships. Some of these studies revealed that generalized anxiety symptoms relate to experiences of parental rejection and less secure parental attachment (e.g., Hale et al. 2013). Other studies showed that although adolescents with higher levels of generalized anxiety symptoms have fewer friends; their friendships are not necessarily of a lesser quality when compared to less anxious adolescents (e.g., Scharfstein et al. 2011). One recent study, using the same dataset as the present study, did find poorer friendship quality among adolescents with generalized anxiety symptoms (Meeus et al. 2016).

However, previous studies examining these linkages were mainly cross-sectional and variable-centered. Thus, it remains unknown how individual differences in the spillover and compensation phenomena in relationship development would manifest in adolescents with low and high levels of generalized anxiety symptoms. To overcome this, the present study will use a longitudinal person-centered research design to investigate the spillover and compensation phenomena in adolescents with low and high levels of generalized anxiety symptoms.

## Study Goals and Hypotheses

The aim of this study is to test spillover and compensation phenomena in adolescent relationship development with their parents and best friend, and the differences herein between adolescents with low and high levels of generalized anxiety symptoms. Recall that perceived relationship quality with parents and friends can either be concordant (i.e., similar to each other) or discordant (i.e., different from each other). Thereby, spillover indicates that adolescent perceived relationship quality with parent and friend becomes concordant, whereas compensation indicates that adolescent relationship quality with parent and friend becomes discordant. We hypothesize that some adolescents show spillover (i.e., discordant ➔ concordant relationships), whereas others show compensation (i.e., concordant ➔ discordant relationships). Thus, we expect individual differences in relationship development with parents and friends.

In terms of concordant relationship development, we based our hypotheses on literature that suggested a temporary decline in relationship quality in early to middle adolescence (e.g., Collins and Luebker 1994; Youniss and Smollar 1985). We expect that, on average, parent-adolescent relationship quality will be poorer in early adolescence than in late adolescence and that these relationship difficulties will also generalize to friendships. Therefore, we expect an increase of concordant poor relationship quality profiles in early adolescence and an increase of concordant satisfactory relationship quality profiles in late adolescence. In terms of discordant relationship development, we based our hypothesis on literature suggesting that adolescents tend to separate themselves from their parents while their friendships become more salient (e.g., Sullivan 1953; Youniss and Smollar 1985). Therefore, we expect to find an increasing number of adolescents that move away from a discordant parent-oriented relationship or change into a discordant friend-oriented relationship.

Finally, we expect adolescents with high levels of generalized anxiety symptoms to perceive more concordant relationships of poor quality than those with low levels of generalized anxiety symptoms. In terms of transitions, we expect that adolescents with high levels of generalized anxiety symptoms are more likely to show deteriorations in

their interpersonal relationships than those with low levels of generalized anxiety symptoms.

## Method

### Procedure

Data for the current study were collected as part of a longitudinal research project titled Conflict and Management of Relationships in The Netherlands. The review board of the Utrecht University division of the Institute of Education and Human Development (ISED) has approved this project. Data were collected among students/pupils of various high schools in the province of Utrecht, The Netherlands. Both adolescents and their parents received an invitation letter describing the research project and goals. The letter also provided information on how to decline from participation. Parents had to provide consent for their child to participate in this study and adolescents themselves had to provide consent for their participation. More than 99% of the approached parents and adolescents signed the informed consent form. Confidentiality of responses was guaranteed to all participants. Adolescents completed the questionnaires at school or at home at annual measurement waves and received verbal and written instructions. For every wave they participated in, adolescents received a reward of €10 (approximately US$ 11).

### Participants

Five measurement waves were used in the present study, with a one-year interval between each of these waves. The study sample ($N = 1313$) included two age groups: an early adolescent cohort ($n = 923$; $M_{age} = 12.4$ years, $SD = 0.57$ at the first wave) and a late adolescent cohort ($n = 390$; $M_{age} = 16.7$ years, $SD = 0.81$ at the first wave). Thus, we use a two-cohort five-wave longitudinal study design covering ages 12 to 16 and 16 to 20. The early adolescent cohort included 50.8% males, whereas the late adolescent cohort included 43.4% males. At the first measurement wave, the majority of adolescents in both age groups reported that they lived with both parents (84.9%). Others reported living with their mother (7.7%) or elsewhere (e.g., with their father, with their biological parent and stepparent, or with other family members). Most participants identified themselves as Dutch (85.8%), and others identified themselves as members of the most common ethnic minorities in The Netherlands (e.g., Surinamese, Antillean, Moroccan). Overall, approximately 10.6% of the relationship quality data was missing across waves. Little's (1988) Missing Completely at Random test indicated that these data were likely missing at random ($\chi 2/df = 1.40$; Bollen 1989). This suggests that adolescents with missing data were similar to those with complete data. For this reason, we included adolescents with missing data in the analyses using maximum likelihood estimation with incomplete data (Hox 1999).

### Measures

#### Adolescent Relationship Quality with Parents and Best Friend
We used the Network of Relationships Inventory (NRI; Furman and Buhrmester 1985) to measure adolescents' perceptions of relationship quality with their mothers, fathers, and best friend. We included three key components defining close relationships: support, negative interaction, and power (e.g., De Goede et al. 2009). Support refers to nurturance and affection, negative interaction includes conflict and antagonism, and power represents dominance and equality.

Specifically, adolescents reported their perceived level of support they received from, the intensity of negative interaction they experienced with, and the amount of relative power attributed to their fathers, mothers, and best friend. Adolescents indicated on a 5-point Likert scale (i.e., 1, "A little or not at all", to 5, "More is not possible") the degree to which each of the items described what they experienced. The support scale included 12 items (e.g., "How much does your mother really care about you?". The negative interaction scale included six items (e.g., "Do you and your father get on each other's nerves?". The power scale included another six items (e.g., "To what extent is your best friend the boss in your relationship?"). Cronbach's alphas across waves were $\geq 0.79$ for all scales.

Please note that we collapsed the scores for adolescent-mother and adolescent-father relationship quality. We did this for two reasons. First, principal component analysis showed that the underlying factors represented three relationship components rather than different adolescent-mother or adolescent-father relationship factors. Second, we aimed to identify straightforward profiles representing adolescents' family and friend relational domains.

**Generalized Anxiety Symptoms** We used nine items of the Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al. 1997) to measure generalized anxiety symptoms. Adolescents had to report on a 3-point Likert scale (i.e., 1, 'almost never', to 3, 'often') the degree to which each of the items described what they experienced. Example items are 'I worry about how well I do things' and 'I worry about the future'. The SCARED has good psychometric properties (e.g., Hale et al. 2011). Cronbach's alpha was >0.77 across waves.

### Data Analyses

**Main Analysis: Development of Adolescents' Relationship Profiles** To examine change from certain interpersonal relationship profiles into others, latent transition analyses (LTA)

were performed in Latent GOLD version 5.1 (Vermunt and Magidson 2013). LTA models are an advanced longitudinal extension of latent profile analysis (LPA). LPA aims to identify classes or profiles of individuals in a sample using a set of observed variables at one time point. To examine the extent to which individuals change from one profile to another profile over time, LPA can be extended to LTA. LTA generates initial classification probabilities and transition probabilities using a set of observed variables for consecutive time points (Vermunt et al. 2008). Initial classification probabilities reflect the probability of an adolescent belonging to a certain profile at baseline (i.e., the first wave of the current study). Transition probabilities refer to the probability of an adolescent moving to profile Y on the next measurement wave (e.g., wave 2) conditional on having been in profile X on the previous wave (i.e., wave 1). Thus, with LTA we can examine the extent to which adolescents who belong to a certain interpersonal relationship profile change into another profile on both short-term (i.e., wave 1 to wave 2) and long term (i.e., wave 1 to wave 5).

To examine whether initial classification and transition probabilities differ between younger and older adolescents and adolescents with low and high levels of generalized anxiety symptoms, we examined the fit of LTA models with the covariate age cohort (i.e., early to middle adolescence versus middle to late adolescence), generalized anxiety symptoms trajectory (i.e., adolescents with low and high levels of generalized anxiety symptoms), and both covariates (i.e., age cohort and generalized anxiety symptoms trajectory). By doing so, we investigated whether younger adolescents were more likely to perceive poor relationships when compared to older adolescents and whether adolescents low on generalized anxiety symptoms were more likely to perceive poor interpersonal relationships than adolescents high on these symptoms.

We used two criteria to select the best and final LTA model solution. First, the Akaike information criterion (AIC; Akaike 1987) and Bayesian information criterion (BIC; Schwarz 1978) should be the lowest, as lower values indicate an improvement in model fit (e.g., Collins and Lanza 2010). Second, each profile should include more than 5% of the sample. Less prevalent profiles indicate rare subsamples that may not represent common or general types.

**Preliminary Analysis: Adolescents with Low and High Levels of Generalized Anxiety Symptoms** To identify generalized anxiety symptoms as a moderator of adolescents' relationship development with parents and friends, we identified adolescents low and high on generalized anxiety symptoms across years. To do this, we performed a preliminary analysis using latent class growth models in Latent GOLD version 5.1. This analysis can identify distinct homogeneous developmental trajectories (i.e., low levels or high levels of symptoms) within a heterogeneous sample (i.e., our adolescent total sample). Trajectories are based on the initial levels (i.e., intercepts)

and growth rates (i.e., slopes) of individual scores on a set of variables (i.e., generalized anxiety symptoms). Hereby, we identified that a two-class developmental trajectory is best. Please see Text A in the supplemental material for information on the identification of these trajectories.

The first class included 78% of the sample and showed a low level of generalized anxiety symptoms ($M_{intercept} = 1.26$) that remained relatively stable over time ($M_{slope} = -0.01$, $p < 0.01$). The second class included 22% of the sample and has a significantly higher level of generalized anxiety symptoms ($M_{intercept} = 1.83$) that slightly increased ($M_{slope} = 0.03$, $p < 0.01$). Initial levels and change of generalized anxiety symptoms of these two classes were significantly different from each other ($p < 0.05$). Thus, the first class represents adolescents low on generalized anxiety symptoms and the second class represents those high on generalized anxiety symptoms.

## Results

### Model Selection of the Latent Transition Analysis

We tested latent transition models for up to six relationship profiles (see Table 1 of the supplemental material). Solutions up to six latent profiles led to lower BIC and AIC-values, suggesting that each additional profile improved model fit. When examining the profiles more specifically, the five-profile solution appeared to be the most meaningful. The six-profile solution included a sixth class that represented a rare relationship profile (i.e., 10% in younger adolescents and < 5% for older adolescents) and the four-profile solution showed a worse model fit than the five-profile solution. Thus, we selected the five-profile solution as the final model.

Finally, likelihood ratio tests showed that the inclusion of the covariates age cohort and anxiety symptoms ($LL$: −15,542.92; $df$: 132) significantly improved the model fit ($p < 0.001$) when compared to the model with no covariates ($LL$: −15,652.20; $df$: 84), with only age cohort ($LL$: −15,609.42; $df$: 108), and with only anxiety symptoms as covariates ($LL$: −16,689.33 $df$: 108). Hence, we chose the model with the covariates age cohort and anxiety symptoms as our final model. Our final model thus represented five profiles with classifications and transitions among profiles being different for the four groups we distinguish in this study (i.e., younger adolescents with low and high levels of anxiety symptoms; and older adolescents with low and high levels of anxiety symptoms).

### Profiles of Adolescents' Relationship Quality with Parents and Best Friend

Using the data of all waves, we found five relationship quality profiles reflecting concordant relationships, in which adolescents' perceived relationship quality with their parents is

**Table 1** Three-step ANOVA mean comparisons of relationship profiles for each relationship domain

| Relationship quality | Turbulent $(n = 221)$ M (SD) | Harmonious $(n = 172)$ M (SD) | Average $(n = 170)$ M (SD) | Friend-oriented $(n = 464)$ M (SD) | Parent-oriented $(n = 284)$ M (SD) | Total $(N = 1313)$ M (SD) | Wald $\chi^2$ |
|---|---|---|---|---|---|---|---|
| **Parents** | | | | | | | |
| Support | 3.03 (0.71)[a] | 3.77 (0.55)[b] | 3.49 (0.60)[c] | 3.41 (0.61)[d] | 3.58 (0.51)[e] | 3.44 (0.64) | 892.18* |
| Negative interaction | 2.11 (0.62)[a] | 1.00 (0.00)[b] | 1.41 (0.39)[c] | 1.49 (0.40)[d] | 1.40 (0.30)[e] | 1.50 (0.51) | 8812.44* |
| Power | 2.69 (0.71)[a] | 2.18 (0.64)[b] | 2.43 (0.61)[cd] | 2.36 (0.62)[d] | 2.50 (0.59)[c] | 2.43 (0.65) | 318.41* |
| **Best friend** | | | | | | | |
| Support | 2.98 (0.75)[a] | 3.40 (0.71)[b] | 3.27 (0.70)[c] | 3.31 (0.77)[c] | 3.16 (0.71)[c] | 3.23 (0.75) | 148.61* |
| Negative interaction | 1.94 (0.57)[a] | 1.00 (0.00)[b] | 1.17 (0.00)[c] | 1.00 (0.00)[d] | 1.59 (0.25)[d] | 1.31 (0.45) | 27,832.15* |
| Power | 2.16 (0.66)[a] | 1.59 (0.51)[b] | 1.76 (0.48)[c] | 1.66 (0.48)[d] | 1.84 (0.50)[c] | 1.79 (0.55) | 615.55* |

Samples with different superscripts across rows significantly differ from one another with regard to relationship quality. Superscripts are sorted from high to low levels of perceived support, and from low to high levels of perceived negative interaction and power. Post-hoc tests were Bonferroni corrected with $\alpha = 0.003$, in which we divided the usual critical $p$-value of 0.05 in a two-tailed test by ten (i.e., the total number of profile comparisons). Comparisons of profiles on relationship quality were controlled for gender and age and were conducted using the total sample of adolescents. We compared the differences in relationship quality between the profiles, while controlling for classification inaccuracy of the relationship profiles using a three-step procedure ANOVA. For more information about this three-step procedure, please see Vermunt (2010)

*$p < 0.001$

relatively similar to the relationship quality with their friend and discordant relationships, in which adolescents' perceived relationship quality with their parents more strongly differs from the relationship quality with their friend.[1] We labelled the three concordant profiles as *turbulent (17% of the sample), harmonious (13% of the sample),* and *average (13% of the sample).* Additionally, we labelled the two discordant profiles as *friend-oriented (35% of the sample)* and *parent-oriented*[2] *(22% of the sample).* Figure 2 displays these profiles. Table 1 illustrates the mean scores on relationship quality of each relationship profile based on the data of all waves.

## Relationship Quality Profiles: Prevalence and Individual Transitions

There were significant overall changes in profile prevalence over waves in the early (Wald $\chi^2 = 162.78$, $p < 0.001$) and late adolescent cohorts (Wald $\chi^2 = 62.32$, $p < 0.001$) and for adolescents low (Wald $\chi^2 = 191.12$, $p < 0.001$) and high on generalized anxiety symptoms (Wald $\chi^2 = 43.87$, $p < 0.001$), separately. Table 2 displays the prevalence rates of each profile in each wave and indicates whether they differed between younger and older adolescents, and between those low and high on generalized anxiety symptoms. Table 3 displays the transition probabilities of relationship profiles for younger and older adolescents and for adolescents low and high

on generalized anxiety symptoms across a 4-year interval. We mainly focused on transitions across four years, as these illustrate long-term developments. Transitions across a 1-year interval (i.e., short-term developments) are in Table 2 of the supplemental material.

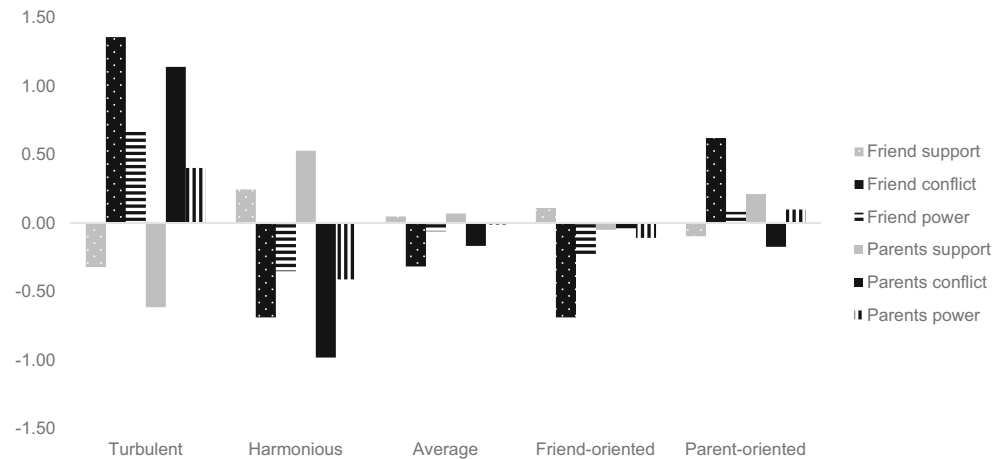**Concordant Turbulent and Harmonious Relationship Profiles**
Concerning the between-cohort differences in prevalence, we found results that were in line with our expectations. That is, we found a significantly higher prevalence of turbulent relationships profiles in the early adolescent cohort than in the late adolescent cohort. This prevalence increased from 14 to 21% in early adolescence and decreased from 20 to 10% in late adolescence. Relatedly, there was a significantly higher prevalence of harmonious relationship profiles in the late adolescent cohort than in the early adolescent cohort. This prevalence increased from 8 to 21% in late adolescence, whereas the prevalence of this relationship profile remained around 11 to 12% in early adolescence.

We found some transitions that explained the increasing prevalence of turbulent relationships in early adolescence and of harmonious relationship profiles in late adolescence. In terms of spillover with partial deteriorations (i.e., notations 1a and 1b of Fig. 1), younger adolescents in a parent-oriented relationship were significantly more likely than older adolescents to change into a turbulent relationship (i.e., 24% versus 11% for younger and older adolescents, respectively). In terms of spillover with partial restorations (i.e., notations 1b and 2b of Fig. 1), older adolescents in a parent-oriented relationship were more likely to change into a harmonious relationship when compared to younger adolescents (i.e., 17% versus

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[1] We refer to Text B of the supplemental material for further information regarding mean-level differences between adolescents' relationship experiences with their parents and their friends.
[2] We refer to Text C of the supplemental material for further a further explanation of the parent-oriented profile.

**Fig. 2** Five-class solution profiles of relationship quality based on adolescents' perceived support, negative interaction, and power in the relationship with their parents and best friend



10% older and younger adolescents, respectively). Thus, spillover with partial deteriorations from parent-oriented into turbulent relationships emerged in early adolescence, whereas spillover with partial restorations from parent-oriented into harmonious relationships emerged in late adolescence.[3]

It should be noted that many of the adolescents in a turbulent relationship did not remain in this relationship (i.e., 49%) and that many of the adolescents in the other relationships did not move into a turbulent relationship (i.e., 76 to 81%) in early adolescence. Comparably, many of the adolescents in a harmonious relationship did not remain in this relationship (i.e., 77%) and many adolescents in the other relationships did not move into this relationship (i.e., 82 to 84%) during late adolescence. Furthermore, not all adolescents demonstrated spillover or compensation. Some adolescents showed a stable relationship quality (i.e., 11 to 51% in the young and old cohort). Some adolescents changed from a certain type of concordant relationship into another type of concordant relationship (i.e., 5 to 24% in the young and old cohort), whereas others changed from a certain type of discordant relationship into another type of discordant relationship (i.e., 18 to 39% in the young and old cohort).

**Discordant Friend-Oriented and Parent-Oriented Relationship Profiles** Unlike our expectation that adolescents would increasingly turn to their friends, we found no significant increase of friend-oriented relationships. Instead, we found a significantly decreasing prevalence of parent-oriented relationships in the late adolescent cohort (i.e., 21 to 17%) as well as in the early adolescent cohort (i.e., 27 to 22%). Additionally, there were significantly less parent-oriented relationships in the late adolescent cohort when compared to the early adolescent cohort. This might be due to parent-oriented adolescents being significantly more likely to change into a friend-oriented relationship by late adolescence (i.e., 39%)

than in early adolescence (i.e., 32%). Similarly, in terms of compensation with partial deteriorations and restorations (i.e., notations 3c, 3d, 4c, and 4d of Fig. 1), younger and older adolescents in harmonious and turbulent relationships were significantly more likely to move into a friend-oriented than into a parent-oriented relationship ($p < 0.01$).

**Adolescents Low and High on Generalized Anxiety Symptoms**
Regarding the prevalence differences between adolescents with low and high levels of generalized anxiety symptoms, findings seem to support our expectations. Findings revealed that adolescents with high levels of generalized anxiety symptoms showed a higher prevalence of turbulent relationship profiles (i.e., increase from 29 to 35%) than adolescents with low levels of generalized anxiety symptoms (i.e., between 12 and 13%). These adolescents also showed a lower prevalence of harmonious relationship profiles (i.e., between 6 and 7%) than adolescents with low levels of generalized anxiety symptoms (i.e., increase from 12 to 17%).

We also identified transition patterns that seemed to explain the aforementioned differences in prevalence rates and that partly supported our expectations. Specifically adolescents with high levels of generalized anxiety symptoms were significantly more likely to remain in a turbulent relationship when compared to adolescents with low levels of generalized anxiety symptoms (i.e., 52% versus 14%). In terms of spillover, adolescents with high levels of generalized anxiety symptoms were more likely than adolescents with low levels of generalized anxiety symptoms to show spillover from friends to parents by changing from a parent-oriented relationship into a turbulent relationship ($p < 0.001$). They were less likely than adolescents with low levels of generalized anxiety symptoms to show spillover with partial restorations by changing from a parent-oriented relationship into a harmonious relationship ($p < 0.001$).

It should be noted that not all adolescents high on generalized anxiety symptoms remained in, or changed into a turbulent relationship. For example, almost half of adolescents high

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[3] We also identified these patterns among adolescents with low and high levels of generalized anxiety symptoms.

**Table 2** Percentage rates of relationship profiles across time

| | | Percentage rates of relationship types across time | | | | |
|---|---|---|---|---|---|---|
| | | Turbulent | Harmonious | Average | Friend-oriented | Parent-oriented |
| Age in years | Early adolescent cohort (n = 923) | | | | | |
| 12 | | 14.0% | 11.3% | 13.9% | 34.1% | 26.7% |
| 13 | | 17.0% | 12.0% | 12.4% | 34.9% | 23.7% [a] |
| 14 | | 18.8% [a] | 12.1% [a] | 12.0% | 34.5% | 22.5% [b] |
| 15 | | 20.0% [b] | 12.0% [b] | 11.8% | 34.1% | 22.0% |
| 16 | | 20.8% [c] | 11.9% [c] | 11.7% | 33.8% | 21.8% |
| | Late adolescent cohort (n = 390) | | | | | |
| 16 | | 20.4% | 8.6% | 15.3% | 35.7% | 20.1% |
| 17 | | 15.3% | 14.1% | 14.6% | 38.3% | 17.7% [a] |
| 18 | | 12.6% [a] | 17.6% [a] | 14.1% | 38.6% | 17.0% [b] |
| 19 | | 11.1% [b] | 19.7% [b] | 13.9% | 38.6% | 16.8% |
| 20 | | 10.2% [c] | 20.9% [c] | 13.8% | 38.5% | 16.7% |
| Assessment wave | Adolescents with lower levels of generalized anxiety symptoms (n = 1033) | | | | | |
| 1 | | 12.3%[a] | 11.6% | 14.9% | 35.9% | 25.4% |
| 2 | | 12.5%[b] | 14.3% [a] | 13.6% | 37.3% [a] | 22.3% |
| 3 | | 12.7% [c] | 15.6% [b] | 13.2% | 37.2% [b] | 21.3% |
| 4 | | 12.8%[d] | 16.3% [c] | 13.0% | 36.9% [c] | 20.9% |
| 5 | | 12.9%[e] | 16.6% [d] | 12.9% | 36.7% [d] | 20.8% |
| | Adolescents with higher levels of generalized anxiety symptoms (n = 280) | | | | | |
| 1 | | 29.2% [a] | 6.4% | 12.4% | 29.6% | 22.3% |
| 2 | | 31.2% [b] | 6.7% [a] | 11.0% | 30.7% [a] | 20.4% |
| 3 | | 32.8% [c] | 6.9% [b] | 10.6% | 30.4% [b] | 19.3% |
| 4 | | 34.0% [d] | 7.0% [c] | 10.3% | 30.0% [c] | 18.7% |
| 5 | | 34.9% [e] | 7.1% [d] | 10.1% | 29.7% [d] | 18.3% |

For the younger and older adolescents comparisons, superscripts reflect a significant difference in percentage between the early and late adolescent cohorts. For example, the significant difference in turbulent relationship percentage rates between adolescents of the age 14 (18.8%) versus 18 (12.6%) years. For the low and high anxiety symptoms comparisons, superscripts reflect a significant difference in percentage rates between adolescents with low and high levels of anxiety symptoms. For example, the significant difference in turbulent relationship percentage rates between adolescents who are low (12.3%) and high (29.2%) on generalized anxiety symptoms on the first wave. All post hoc-analyses were Bonferroni corrected ($\alpha = 0.001$), in which we divided the p-value of 0.05 in a two-tailed test by 25 (i.e., the total number of profile comparisons)

on generalized anxiety symptoms in a turbulent relationship moved away into another relationship (i.e., 48%). Additionally, some adolescents high on generalized symptoms from each of the other four relationships changed into one of these four profiles rather than changing into a turbulent one. Despite these differences, these patterns may explain the higher prevalence of turbulent relationships and lower prevalence of harmonious and friend-oriented relationships in adolescents with high levels of generalized anxiety symptoms when compared to adolescents with low levels of generalized anxiety symptoms.

Moreover, adolescents with high levels of generalized anxiety symptoms demonstrated a significantly lower prevalence of friend-oriented relationships (i.e., 30 to 31%) when compared to adolescents with low levels of generalized anxiety

symptoms (i.e., 36 to 37%). This might be because adolescents high on generalized anxiety symptoms were significantly less likely to show compensation phenomenon with partial restorations, as they were less likely to change from a turbulent relationship into a friend-oriented relationship (i.e., 22%) than those low on generalized anxiety symptoms (i.e., 37%). However, adolescents with high levels and low levels of generalized anxiety symptoms were similar in changing from a harmonious relationship into a friend-oriented or parent-oriented relationship ($p > 0.05$); as well as in the prevalence of parent-oriented relationships quality profiles.

Figure 3a, b display the effect of age cohort and anxiety symptoms on adolescents' relationship development. Adolescents with high and low levels of generalized anxiety symptoms show a similar development pattern in early and in

**Table 3** Transition probabilities of relationship change across a four-year interval

| Relationship type in year N | Transition probabilities for relationship type in year N + 4 | | | | |
|---|---|---|---|---|---|
| | Turbulent | Harmonious | Average | Friend-oriented | Parent-oriented |
| Early adolescent cohort (n = 923) | | | | | |
| Turbulent | 0.51 [a] | 0.05 [a] | 0.08 [a] | 0.22 [a] | 0.14 |
| Harmonious | 0.19 | 0.13 | 0.12 | 0.34 | 0.22 |
| Average | 0.24 [b] | 0.10 [b] | 0.11 | 0.32 | 0.22 |
| Friend-oriented | 0.24 [c] | 0.10 [c] | 0.11 | 0.33 | 0.22 |
| Parent-oriented | 0.24 [d] | 0.10 [d] | 0.11 | 0.32 [b] | 0.22 |
| Late adolescent cohort (n = 390) | | | | | |
| Turbulent | 0.18 [a] | 0.16 [a] | 0.14 [a] | 0.36 [a] | 0.16 |
| Harmonious | 0.10 | 0.23 | 0.13 | 0.38 | 0.17 |
| Average | 0.13 [b] | 0.17 [b] | 0.14 | 0.39 | 0.18 |
| Friend-oriented | 0.11 [c] | 0.18 [c] | 0.13 | 0.39 | 0.18 |
| Parent-oriented | 0.11 [d] | 0.17 [d] | 0.14 | 0.39 [b] | 0.19 |
| Adolescents with lower levels of generalized anxiety symptoms (n = 1033) | | | | | |
| Turbulent | 0.14 [a] | 0.17 [a] | 0.14 [a] | 0.37 [a] | 0.18 |
| Harmonious | 0.10 [b] | 0.20 | 0.13 | 0.36 | 0.20 |
| Average | 0.10 [c] | 0.19 [b] | 0.13 | 0.38 | 0.20 |
| Friend-oriented | 0.10 [d] | 0.19 [c] | 0.13 | 0.37 | 0.20 |
| Parent-oriented | 0.11 [e] | 0.17 [d] | 0.13 | 0.37 | 0.21 |
| Adolescents with higher levels of generalized anxiety symptoms (n = 280) | | | | | |
| Turbulent | 0.52 [a] | 0.05 [a] | 0.08 [a] | 0.22 [a] | 0.12 |
| Harmonious | 0.20 [b] | 0.15 | 0.11 | 0.35 | 0.19 |
| Average | 0.25 [c] | 0.09 [b] | 0.12 | 0.34 | 0.20 |
| Friend-oriented | 0.24 [d] | 0.10 [c] | 0.12 | 0.35 | 0.20 |
| Parent-oriented | 0.26 [e] | 0.08 [d] | 0.12 | 0.33 | 0.21 |

For the younger and older adolescent comparisons, superscripts reflect a significant difference in transition values between the early and late adolescent cohorts. For example, the significant difference in transitions from friend-oriented to turbulent in early (0.24) and late (0.11) adolescent cohort. For the low and high anxiety symptoms comparisons, superscripts reflect a significant difference in transition values between the adolescents with low and high levels of generalized anxiety symptoms. For example, the significant difference in transitions from friend-oriented to turbulent in adolescents who are low (0.10) and high (0.24) on generalized anxiety symptoms. All post hoc-analyses were Bonferroni corrected ($\alpha = 0.001$), in which we divided the usual critical $p$-value of 0.05 in a two-tailed test by 25 (i.e., the total number of profile comparisons)

late adolescence (i.e., temporary increase in turbulent relationships, an increase in harmonious relationships, and a decrease in parent-oriented relationships). Adolescents high on generalized anxiety symptoms, however, showed higher rates of turbulent relationships and lower rates of harmonious and friend-oriented relationships.
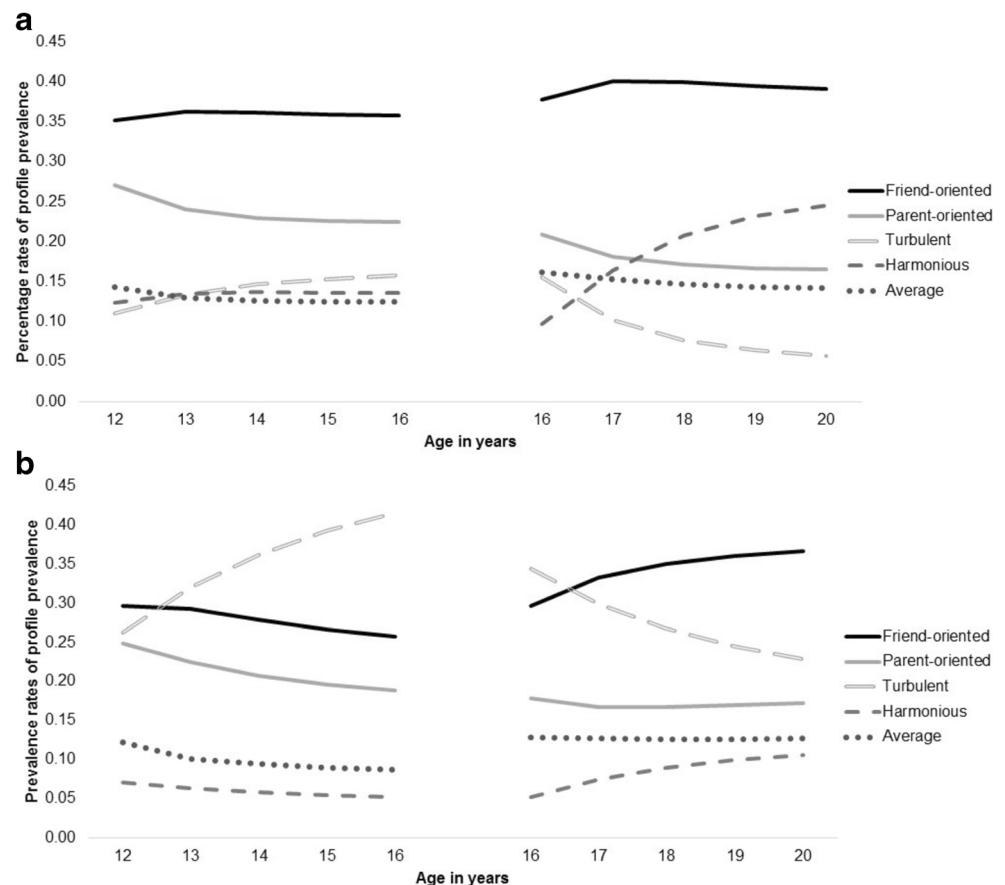
## Discussion

The aim of this study was to test spillover and compensation in adolescents' relationship development, and the differences herein between adolescents with low and high levels of generalized anxiety symptoms. We identified five profiles representing adolescent relationships with parents and friends

that were either concordant (i.e., relationships with parents and friends of similar quality) or discordant (i.e., relationships with parents and friends of different quality). From ages 12 to 16 years, the proportion of adolescents that experienced a turbulent relationship with their parents and friend increased. From ages 16 to 20 years, the proportion of adolescents that experienced a concordant turbulent relationship with their parents and friend decreased, whereas the proportion of those in a concordant harmonious relationship with their parents and friend increased. Meanwhile, the proportion of adolescents that experienced a discordant parent-oriented relationship was lower in the late adolescent cohort compared to the early adolescent cohort.

As we explained in the introduction, spillover reflects a change from discordant to concordant relationships with

**Fig. 3** **a** Relationship profile percentage rates across years of early and late adolescents with lower levels of generalized anxiety symptoms. **b** Relationship profile percentage rates across years of early and late adolescents with higher levels of generalized anxiety symptoms



parents and friends, whereas compensation indicates that concordant relationships with parents and friends become discordant. In terms of spillover, we found that discordant friend-oriented and parent-oriented adolescents were equally likely to change into a concordant turbulent or into a concordant harmonious relationship. With regard to compensation, we found that adolescents were significantly more likely to change into a friend-oriented than into a parent-oriented relationship. Moreover, adolescents with low and high levels of generalized anxiety symptoms showed similar patterns of relationship development. However, adolescents with high levels of generalized anxiety symptoms displayed a higher prevalence of turbulent relationships and a lower prevalence of harmonious relationships.

## Adolescents' Relationship Quality Profiles

We identified relationship quality profiles representing concordant and discordant relationships with parents and best friend. The turbulent, harmonious, and average profiles reflected a concordant relationship quality across parent and friend relational domains. The friend-oriented and parent-oriented profiles reflected adolescents turning slightly more to their parents or best friend, respectively. Our profiles are also relatively similar to those found in previous person-

centered studies (e.g., Cohen et al. 2015; Kan and McHale 2007; Scholte et al. 2001). In addition, concordant and discordant profiles emerged at similar prevalence rates in early-to-late and late adolescence. In both age cohorts about half of the adolescents perceived concordant relationship quality with their parents and best friend, whereas the other half perceived discordant relationship quality.

## Adolescents' Relationship Development

**Deteriorations and Restorations in Relationships** Our findings were partly in line with the maturational (Youniss and Smollar 1985) and realignment theories (Collins and Luebker 1994), and with previous studies (e.g., De Goede et al. 2009; Hadiwijaya et al. 2017; van Wel 1994). Specifically, in addition to an increasing proportion of poor quality parent-adolescent relationships in the early adolescent cohort, we also found an increasing proportion of poor quality friendships (i.e., turbulent relationships). Furthermore, we found an increasing proportion of satisfactory parent-adolescent relationships in the late adolescent cohort as well as an increasing proportion of satisfactory friendships (i.e., harmonious relationships). Our findings thereby extend the previous literature by revealing that for some adolescents' relationship impairments and improvements do not only

manifest in the relationship with parents, but also in the relationship with friends.

Relatedly, our findings provide evidence for the spillover phenomenon (Bandura 1977; Bowlby 1978). In the early adolescent cohort, we found that parent-oriented relationships were likely to turn into turbulent relationship. This pattern of change reflects spillover, as adolescents seem to spill over the negativity in the relationship with their parents to the relationship with their friends. In the late adolescent cohort, we found that adolescents with parent-oriented relationships were likely to change into a harmonious relationship. This pattern of change reflects spillover, as adolescents seem to spill over the positivity they experience in the relationship with their parents to the relationship with their friends. Interestingly, younger and older adolescents in parent-oriented and friend-oriented relationships faced similar risks for relationship deteriorations and restorations. Thus, these findings suggest that parent- and peer-oriented adolescents face similar risks and opportunities in subsequent relationship development. Thereby, our findings add to past research that mainly indicated differences in parent-oriented and peer-oriented adolescents (e.g., Markiewicz et al. 2006; Ream and Savin-Williams 2005).

Our findings also add to the accumulating evidence of adolescence showing far less intensity and stress throughout their personal relationship development than was previously assumed (e.g., Arnett 1999; Hollenstein and Lougheed 2013). Variable-centered studies demonstrated general and typical patterns of relationship development in which adolescents' relationship with parents worsens in early adolescence and improves thereafter (e.g., De Goede et al. 2009; van Wel 1994; Wray-Lake et al. 2016). Our results seem to be relatively comparable to previous variable-centered research: we identified an increase in turbulent relationships as well as a decrease of parent-oriented relationships in early adolescence and a decrease in turbulent relationships as well as an increase in harmonious relationships in late adolescence. However, we complement previous research by revealing the individual differences around the mean-level trends. For example, we illustrated that only one-fifth of the younger adolescents experienced turbulent relationships and that also only one-fifth of the older adolescents experienced harmonious relationships with both parents and friends.

Altogether, our study extends previous findings in three ways. First, we revealed that adolescents mainly perceived a tumultuous relationship with their parents and friends in early adolescence. Second, we showed that a tumultuous period only occurred for some adolescents, but not for all. Finally, we demonstrated that turmoil in one relational domain can, but not necessarily does, spill over to the other domain. These promising findings mark the need for studying individual differences in relationship development across adolescence.

**Salient Friendships in Adolescence** Despite the absence of an increase in number of friend-oriented relationships, several of our findings suggest that adolescents' relationships with their friend become increasingly salient (Sullivan 1953). First, adolescents reporting harmonious or turbulent relationships are more likely to turn to their friends instead of their parents. Second, friend-oriented relationships were the most prevalent type. Third, the increasing prevalence of harmonious relationships suggests that adolescents form increasingly close emotional bonds with their parents as well as with their friends. Thus, the proportion of adolescents experiencing a high-quality relationship with their friends increases. Overall, these findings indicate that friendships become increasingly salient during adolescence, that salient friendships can already manifest themselves in early adolescence, and that high-quality friendship do not necessarily come at the expense of having a worse relationship with one's parents.

It should be noted that the increasing prevalence of high-quality friendships does not necessarily mean that adolescents managed to increase the quality of the relationship with one and the same friend. In the present study, we allowed adolescents' to nominate different best friends at different assessment waves. This means that adolescents could have also replaced unsatisfying friendships with more satisfying ones. Nevertheless, our findings do still suggest that adolescents are better able to make choices that contribute to the formation of closer and more satisfying friendships qualities as they grow older (see review Poulin and Chan 2010).

Parallel to the increase in the prevalence of high quality friendships, we found that fewer adolescents reported only having a good relationship quality with their parents. The prevalence of parent-oriented relationships decreased in the early adolescent cohort as well as in the late adolescent cohort. However, some adolescents remained parent-oriented or even changed into this relationship quality type. This suggests that some adolescents separate themselves from their parents to become autonomous and independent individuals (e.g., Youniss and Smollar 1985), while others do not. Additionally, older adolescents in parent-oriented relationship were more likely to change into a harmonious or into a friend-oriented relationship than younger adolescents. These findings thus show that adolescents who initially had a close relationship only with their parents, tended to form a close relationship with their friend as well (Bandura 1977; Bowlby 1978) or form a close relationship with their friend only (e.g., Helsen et al. 2000).

**Relationship Development of Adolescents with Low and High Levels of Generalized Anxiety Symptoms** Partly in line with our expectations, we found that adolescents with high levels of generalized anxiety symptoms perceived lower quality of their relationships than adolescents with low levels of generalized anxiety symptoms. Adolescents with high levels of

generalized anxiety symptoms perceived more turbulent relationships and less harmonious relationships with their parents and best friends. About one-third of adolescents with high levels of generalized anxiety symptoms experienced a turbulent relationship with their parents and friend, whereas only one-tenth of the adolescents with low levels of generalized anxiety symptoms did. The proportion of adolescents with low levels of generalized anxiety symptoms in harmonious relationships was also twice as high as for adolescents with high levels of generalized anxiety symptoms. Thus, higher levels of generalized anxiety symptoms seem to increase the risk of having difficulties in the relationship with parents and friends. This is in line with the assumption that adolescents with high levels of generalized anxiety symptoms would perceive a poorer quality of relationship development as they often report more interpersonal difficulties (e.g., Hale et al. 2006; Meeus et al. 2016).

Still, more than the half of adolescents with high levels of generalized anxiety symptoms did not perceive a tumultuous relationship with their parents and best friend. This is important to note, as previous studies did not reveal such specific nuances (e.g., Hale et al. 2013; Meeus et al. 2016). This may be of interest to both practitioners and researchers alike, since it could inspire further investigations into the factors that protect adolescents with high levels of generalized anxiety symptoms from developing interpersonal difficulties. These findings also emphasize the importance of studying heterogeneity in relationship development, as the key nuances that we revealed in this study would have been overlooked in variable-centered studies.

Second, adolescents with high levels of generalized anxiety symptoms seem to lag behind in relationship development when compared to those with lower levels of generalized anxiety symptoms. Although friend-oriented relationships were common in adolescents with high levels of generalized anxiety symptoms, friend-oriented profiles only become more prevalent in late adolescence for these individuals. Friend-oriented profiles were already prevalent in early adolescence for those with low levels of generalized anxiety symptoms. Our findings add to previous research by showing that generalized anxiety symptoms do not necessarily affect levels of friendship quality, but that they may cause a delay in the normative developmental course toward acquiring high-quality friendships.

Despite differences in the timing, the normative developmental trend does look similar adolescents with low and high levels of generalized anxiety symptoms. Although these similarities could be reassuring, at least one-third of the adolescents with high levels of generalized anxiety symptoms in the older cohort remained in a turbulent relationship with both their parent and friend. This is worrisome, because the more relationships with poor quality one has, the more likely one is to experience psychopathology symptoms (e.g., Cohen et al.

2015). In addition, more relationships of poor quality also increase the likelihood of developing difficulties in romantic relationships (e.g., Seiffge-Krenke et al. 2010).

## Study Limitations

The first limitation is our use of self-report measures for relationship quality. Self-reports do not protect against possible biases related to generalized anxiety symptoms. Parents and friends may perceive a different relationship development than adolescents themselves do. On the other hand, because relationship quality is mostly in the "eye of the beholder" (e.g., Branje et al. 2002), adolescents' own relationship experiences is crucial in predicting their outcomes on generalized anxiety symptoms.

A second limitation is that our adolescent sample with high levels of generalized anxiety symptom is not necessarily diagnosed with generalized anxiety disorder. Clinical populations may have a stronger negative bias, which could lead to a poorer relationship development than adolescents with low levels of generalized anxiety symptoms or those with subclinical symptoms. Adolescents high on generalized anxiety symptoms in our sample ($M = 8.75$, $SD = 1.64$) showed scores above or close to the cut-off score of 8 for generalized anxiety in clinical samples (e.g., Muris et al. 2000). Our sample with high levels of generalized anxiety symptoms is thus relatively similar to clinical populations.

A third limitation is that additional factors underlying the reported relationship quality remained unidentified. It remains unclear why some adolescents perceived concordant relationships, whereas others perceived discordant relationships. It also remains unknown why the spillover phenomenon manifested itself in some adolescents, while the compensation phenomenon emerged in others. One underlying factor that may affect individual differences in spillover compensation is social competence (e.g., Kan and McHale 2007). For example, some adolescents may initially learn adaptive social skills with parents that makes them bond with their parents and their peers. If the family ties start to worsen, adolescents with adaptive social skills may turn to peers for closeness and become successful among their peers as a result, whereas those with less adaptive skills may also turn away from peers.

A fourth limitation is that we collapsed the scores for adolescent-mother and adolescent-father relationship quality on each component. Examining the parental relational components separately would double the amount of parental relationship dimensions from three to six dimensions. Parental relational dimensions within such profiles may consequently have a larger influence than the three friendship relational dimensions. Additionally, there is evidence that adolescents may report slight differences in the quality of their relationship with their fathers and mothers, but that they report a similar pattern of relationship development for both parents across

time (e.g., De Goede et al. 2009b; Russell and Saebel 1997). Our global approach of parent-adolescent relationships combined with friendships thus seemed a good starting point to show the merits of person-centered method for relationship development research.

A fifth limitation is that we covered the period of adolescence using a two-cohort five-wave longitudinal study design (i.e., 12–16 years and 16–20 years). Both cohorts, however, seem to be quite comparable: we identified similar relationship profiles and consistent mean-levels of relationship variables across both cohorts. Data from both cohorts suggested that mid adolescence was the period in which relationship quality was the poorest.

Finally, we did not examine the causal relationship between adolescents' relationship quality and generalized anxiety symptoms. Thus, it remains unknown whether these symptoms leads to more perceptions of difficulties in relationship development or vice versa.

## Conclusions

Despite aforementioned limitations, this longitudinal person-centered study brings profound refinements to the existing literature on adolescent relationship quality. We found important individual differences in the development of relationship quality with their parents and best friend. Previous research typically investigated either the quality of the relationship with parents of with friends. However, our findings show that it is important to explore both the parent and friend relational domain in one and same design. Furthermore, previous studies seemed to point out that a tumultuous period in adolescents' relationship with parents is inevitable, but our study nuanced this perspective by showing important individual differences in adolescent relationship development. Overall, our findings show that some adolescents perceived a relationship quality with their parents that is similar to the one with their friend while others do not. Some developed a tumultuous or a harmonious relationship with their parents and friend while others turned to their friend or parents. There is thus substantial heterogeneity in adolescents' interpersonal relationship development (Hollenstein and Lougheed 2013).

By studying heterogeneity in a subsample with low and high levels of generalized anxiety symptoms, we illustrate that the latter group perceived a relatively normative relationship development and that only a subgroup of them developed tumultuous relationships. There are plenty of adolescents with high levels of generalized anxiety symptoms who did not report interpersonal difficulties. Thus, generalized anxiety symptoms are not universal and deterministic markers for perceiving relationship difficulties. These symptoms merely increase the chances of perceiving impairments in relationship development.

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