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RESEARCH ARTICLE

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Adolescents' friendship quality and over-time development of well-being: The explanatory role of self-esteem

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Abstract

Introduction: The mechanism underlying the positive longitudinal link between adolescents' friendship quality and their well-being is unclear. The present study was performed to investigate whether this longitudinal association between friendship quality and well-being was established via adolescents' global self-esteem, and to examine gender differences in these associations.

Methods: Online questionnaire data were collected in two waves (in Spring 2018 and Spring 2019) from 1298 Dutch adolescents aged 11–17 years (mean age 13.7 ± 1.1 years, 53.2% girls).

Results: Multigroup path analyses revealed a significant indirect effect between friendship quality and well-being over time via global self-esteem for girls. For boys, significant direct effects of friendship quality on global self-esteem and well-being were found, but no significant indirect effect.

Conclusions: The findings indicate that higher-quality friendships improve boys' global self-esteem and well-being directly, and that they affect girls' well-being indirectly and positively, by improving their global self-esteem. These results suggest that preventive and intervention-based strategies for the promotion of well-being during the developmental stage of adolescence should incorporate focus on friendships, global self-esteem, and gender specificities.

KEYWORDS

adolescence, friendship quality, gender difference, global self-esteem, longitudinal, well-being

1 | INTRODUCTION

Adolescence is a critical period of the life course characterized by a heightened vulnerability to experiencing reduced well-being, a concept entailing one's sense of happiness, positive emotions, satisfaction with life, and good functioning in one's (social) life (Diener, 2009; Gallagher et al., 2009). Recent research has demonstrated an overall global decline in adolescents' well-being in the last decade (Marquez & Long, 2021; Twenge et al., 2018). Consequently, improving adolescents' well-being is increasingly recognized as an individual and societal goal (Every Woman Every Child, 2015). Moreover, as adolescents' lower well-being levels can manifest into (young) adulthood and lead to adverse outcomes throughout the rest of the life span (for reviews, see Bor et al., 2014; Costello et al., 2011), early prevention and intervention through the identification of and investment in determinants that protect and promote well-being in adolescence are of great importance.

Close friendships, and specifically adolescents' perceived quality (e.g., amounts of warmth and conflict; Furman & Buhrmester, 2009) of these peer relationships, have been identified as among the most important contextual resources that enable adolescents' realization of well-being (Almquist et al., 2014; Kesebir & Diener, 2009; Luijten et al., 2021b; Luijten et al., 2022). Indeed, adolescents with higher-quality (close) friendships reported higher well-being concurrently and

longitudinally (Demir & Özdemir, 2010; Raboteg-Saric & Sakic, 2014). However, the mechanism underlying the association of high-quality close friendships with higher well-being over time among adolescent boys and girls remains unclear.

Social cognitive theory suggests that associations between social environmental factors and well-being are mediated by individual cognitive factors (Bandura, 2001). More specifically, according to this theory, social environmental factors such as friendship quality are hypothesized to predict adolescents' well-being outcomes through individual cognitive factors such as global self-esteem. Accordingly, in the present study, we propose that global self-esteem mediates the association between adolescents' social relationships, specifically friendship quality, and well-being. Global self-esteem is defined as an individual's overall evaluation of his or her worth or value as a person (Harter, 1999), and has been linked positively to well-being theoretically and empirically (Joshanloo & Afshari, 2011; Yang et al., 2019). Theoretically, global self-esteem has been described as a crucial intrapersonal resource to adolescents' well-being (Avedissian & Alayan, 2021; Boden et al., 2008), as an individual's evaluation of him- or herself influences success and failure across a range of life tasks (e.g., Harter, 1999) and indicates the extent to which he or she feels accepted by others (Leary et al., 1995). This link has been confirmed empirically in multiple countries (e.g., Norway, Sweden, and Turkey): individuals aged 12–23 years who report higher levels of global self-esteem also consistently report higher levels of well-being (Almquist et al., 2014; Greger et al., 2017; Moksnes & Espnes, 2013; Savi-Çakar & Savi-Karayol, 2015).

In addition to well-being, global self-esteem has been linked positively to adolescents' friendship quality (Bum & Jeon, 2016; Farineau et al., 2013; Thomas & Daubman, 2001). Most of the empirical studies regarding the relationships between friendship quality and global self-esteem among adolescents have been conducted using cross-sectional data (e.g., Bum & Jeon, 2016; Schneider et al., 2014), providing limited information regarding the directionality between both variables. A meta-analysis showed that longitudinal relationships between friendship quality and global self-esteem can be reciprocal in a sample including children, adolescents, and adults (Harris & Orth, 2020). Another longitudinal study among young adults has confirmed that friendship quality was significantly linked to subsequent self-esteem, even after controlling for prior self-esteem (Zuffianò et al., 2016). In line with the scope of this study and the social cognitive theory, (close) friends have primarily been argued to constitute one of the most important social groups involved in the development of the self (Harter, 1999); high-quality friendships can validate or invalidate individuals' perceived worthiness and value (Hartup & Stevens, 1997).

This theoretical approach has been tested in previous cross-sectional studies focusing on the mediational role of global self-esteem in concurrent associations between adolescents' social support (of family, friends, and others) and different indicators of well-being. Partial (e.g., Aziz et al., 2021; Tian et al., 2013) and full (e.g., Kong & You, 2013; Poudel et al., 2020) mediating effects have been reported. For instance, one study showed that global self-esteem partially mediated the concurrent relationship between friends' support and well-being at school among individuals aged 15–17 years (Tian et al., 2013). Another study showed that (global) self-esteem fully mediated the concurrent relationship between social support from family, friends, and others and the psychological well-being of individuals aged 13–20 years (Poudel et al., 2020). Although these cross-sectional findings are valuable, longitudinal research on the mediating role of global self-esteem in the association between friendship quality and well-being is lacking, and whether these linkages persist over time and affect adolescents' future well-being remains unknown. From a developmental perspective, such additional knowledge would be important.

Another gap in the existing literature is the lack of understanding of whether the proposed longitudinal mediational model between friendship quality and well-being via global self-esteem differs between boys and girls. Girls report lower levels of global self-esteem and well-being than do boys (Way et al., 2007). In addition, girls are even more at risk, as their well-being has especially declined in the last decade (Marquez & Long, 2021). Furthermore, as girls are typically socialized to value social relationships more (You et al., 2018) and appear to be more sensitive than boys to social influences (Cialdini & Trost, 1998; Rudolph & Conley, 2005), friendship quality may affect the global self-esteem (Thomas & Daubman, 2001) and well-being (Almquist et al., 2014) of girls more than those of boys. In other words, the perception of close friendships as of lower quality may create greater distress for girls than for boys, leading to more profound effects on global self-esteem and well-being (Almquist et al., 2014; Thomas & Daubman, 2001). Thus, a more thorough understanding of the hypothesized longitudinal mediational model between friendship quality and well-being via global self-esteem requires the investigation of differences between boys and girls.

2 | HYPOTHESES

The present study was performed to examine the longitudinal association between adolescents' close friendship quality and well-being, and to determine whether this association was mediated by adolescents' global self-esteem (Figure 1), while testing for gender differences. We expected to find significant links between all three concepts of interest, as well as a mediating role of global self-esteem in the longitudinal association between friendship quality and well-being. Furthermore, we expected all associations to be stronger for girls than for boys.

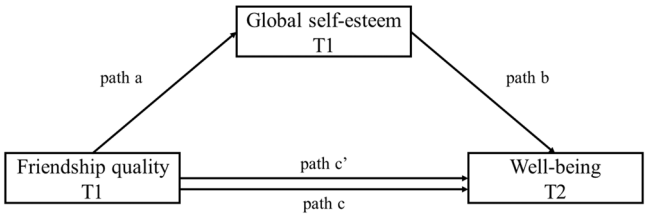

FIGURE 1 Conceptual mediation model of the relationship between friendship quality and well-being over time via global self-esteem. For clarity, paths from the covariates and baseline well-being to the outcome measure well-being at T2 are not displayed.

3 | METHODS

3.1 | Participants

The present study was part of a larger two-wave longitudinal project examining the psychological and socioecological predictors of the well-being of adolescents in the Netherlands (Luijten et al., 2021a, 2021b, 2022). Data for the present study were collected in the spring of 2018 (T1) and spring of 2019 (T2). The total sample that participated in either of the waves consisted of 1304 Dutch adolescents from three secondary schools with a mean age of 13.8 years (standard deviation [*SD*] = 1.1 years, 53.0% girls). A total of 1124 adolescents (53.1% girls) aged 11–17 years ($M = 13.7$; $SD = 1.1$) participated in the first wave in grades 7–9. A total of 1055 adolescents (55.4% girls) aged 12–18 years ($M = 14.6$; $SD = 1.1$) in grades 7–10 participated in the second wave. The majority ($n = 875$, 67.1%) of the participants participated in both waves. After the exclusion of participants with missing data for all variables of interest in the current study ($n = 6$), the final analysis sample for this study consisted of 1298 adolescents (mean age 13.7 ± 1.1 years, 53.2% girls). According to the stratified Dutch educational system, most (73.3%) participants were enrolled in higher (senior general and preuniversity) education; 26.7% were enrolled in lower (pre-vocational) education. Based on their and/or their parent(s) birthplaces, 57.0% of the participants had Western (Europe, the United States, Canada, Australia, and New Zealand) and 43.0% had non-Western (Africa, the Middle East, Asia, and Latin and South America) ethnocultural backgrounds.

3.2 | Procedure

Secondary schools in the metropolitan areas of Amsterdam and Rotterdam were approached with an information letter and then contacted by telephone and/or email 1 week later. Three schools provided preliminary active informed consent for their students' participation, after which informational emails outlining the study aims and procedure were sent to the adolescents and their parents. Parents had the opportunity to decline their child's participation (informed passive consent) and adolescents themselves were free to verbally decline participation at any time during the study (informed active consent). At T1, 6.2% ($n = 84$) of the parents and 1.0% ($n = 13$) of the adolescents contacted declined participation. At T2, no parent and 0.8% ($n = 11$) of the adolescents declined participation. The participants were given a unique ID number to ensure confidentiality of the data in the longitudinal design. Participants used the same ID number at both measurement points. This allowed us to match the participants' data, which were fully pseudonymized, from the two times points.

Online questionnaires were administered during regular class hours at both timepoints. The lead researcher (first author) and trained research assistants supervised the questionnaire administration to introduce the study and procedure, answer questions, and ensure the participants' privacy and data confidentiality. Upon questionnaire completion, the participants received small, nonfinancial encouragements (e.g., candy) and the lead researcher's contact information in case of questions on a card that also listed websites with information about the questionnaire topics. Furthermore, one gift card (€5–10, depending on grade) per class and one gift (e.g., iPhone, PlayStation) per school were raffled off to the participants. The medical ethics committee of Erasmus Medical Centre, Rotterdam, the Netherlands, established that the rules stipulated in the Medical Research Involving Human Subjects Act did not apply to this study (protocol no. MEC-2018-055).

4 | MEASURES

4.1 | Well-being

The 14-item Mental Health Continuum–Short Form (MHC-SF; Keyes, 2005) was used to measure adolescents' well-being. Participants were asked to report on their emotional well-being (three items; e.g., "How often did you feel happy?"),

psychological well-being (six items; e.g., "How often did you feel good at managing the responsibilities of your daily life?"), and social well-being (five items; e.g., "How often did you feel that you had something important to contribute to society?") in the past month using a six-point scale (0 = never, 5 = every day). Mean total scores were calculated, with higher scores indicating higher well-being. The MHC-SF has been validated for use with Dutch adolescents (Luijten et al., 2019) and showed good reliability in the present study (Cronbach's $\alpha = .91$ at T1, 0.92 at T2).

4.2 | Friendship quality

We used two subscales from the Network of Relationships Inventory (Furman & Buhrmester, 2009), which are often used to operationalize the quality of relationships with parents (e.g., Van de Bongardt et al., 2016; Zhang et al., 2018) and peers (e.g., Zhang et al., 2018), to assess the quality of adolescents' relationships with their close or best friends, namely the three-item satisfaction (e.g., "How satisfied are you with the relationship with your close friends?") and three-item conflict (e.g., "How much do you and your close friends argue with each other?") subscales. Item responses were provided on a six-point scale (1 = none, 6 = the most). The conflict item scores were inverted so that higher scores reflected greater overall relationship quality, and total mean friendship quality scores were then calculated (e.g., Zhang et al., 2018). Cronbach's α values for this scale were .82 at T1 and .81 at T2 in the current study.

4.3 | Global self-esteem

Five items from an adapted version of Harter's (2012) Self-Perception Profile for Adolescents were used to measure adolescents' levels of global self-esteem, based on prior research on Dutch adolescents' global self-esteem (Doornwaard et al., 2016; Nogueira Avelar e Silva et al., 2018; Van de Bongardt et al., 2016; Verbeek et al., 2020). Responses to all items (e.g., "I am often disappointed in myself") were provided on a five-point scale (1 = completely not true, 5 = completely true). Average scores were computed, with higher scores indicating higher levels of global self-esteem. In the current study, Cronbach's α values for this instrument were .83 at T1 and .86 at T2.

4.4 | Statistical analyses

Descriptive statistics were calculated for the study variables using SPSS (version 27; IBM Corporation). Independent-samples and paired-samples *t* tests were performed to compare all mean scores between boys and girls, and to compare mean well-being scores between T1 and T2.

Then, the study hypotheses were tested using path analysis with structural equation modeling in R (version 4.0.3; R Core Team) and the *lavaan* package (Rosseel, 2012). As missing value analysis indicated that 13.9%–19.0% of the total friendship quality, global self-esteem, and well-being scores were missing, primarily because of participants' absence in one or both waves, the full information maximum likelihood method (Enders & Bandalos, 2001) was used to deal with missing values. Bootstrapping (5000 samples) was used to test the significance of the mediating effect of global self-esteem. The hypothesized path model (Figure 1) included adolescents' friendship quality at T1, global self-esteem at T1, and well-being at T2, with control for baseline (T1) well-being. Adolescents' age, ethnocultural background, and education level were included in the model as covariates due to their documented relevance to the current study variables (Kriesi et al., 2012; Salmela-Aro & Tynkkynen, 2010; Vacek et al., 2010; Yucel & Yuan, 2016). For instance, a recent large-scale study among Dutch adolescents revealed that older adolescents, adolescents with a migration background, and adolescents with higher education levels report lower well-being levels than younger adolescents, adolescents without a migration background, and those with a lower education level (Boer et al., 2022). Concurrent correlations between baseline well-being and global self-esteem and between the covariates and friendship quality were allowed (see Table A1 in Appendix A), except for the correlation between age and ethnocultural background.

First, we fitted the most parsimonious model to the data by conducting multigroup analyses to examine the expected gender differences. We compared an unconstrained multigroup model, in which each parameter was estimated separately for boys and girls, with various constrained models in which one path at a time was fixed between boys and girls. We first tested for gender differences in the associations of the four covariates (age, ethnocultural background, education level, and baseline well-being) with well-being at T2 and global self-esteem at T1, and then tested for gender differences in the hypothesized associations among friendship quality, global self-esteem, and well-being at T2. Gender variance was defined by a significant decrease in the fit of a model with a path constraint, assessed using the χ^2 statistic, comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Overall, good model fit was indicated by CFI > 0.90, RMSEA < 0.08, and SRMR ≤ 0.08 (Bentler & Bonett, 1980; Hu & Bentler, 1999). In the final

parsimonious model, the paths that differed between boys and girls were estimated freely and those that did not differ were constrained.

Second, we inspected the final parsimonious model and interpreted estimates of total, direct, and mediating or indirect effects. The total direct effect (path c) was calculated as the longitudinal association between friendship quality at T1 and adolescents' well-being at T2, controlled for baseline well-being at T1 and the sociodemographic covariates. To examine the direct effect (path c′), we assessed the same association after adjusting for global self-esteem at T1. We also calculated an indirect effect (path a × path b) to measure how much of the variance in the association between friendship quality at T1 and adolescents' well-being at T2 was explained by global self-esteem at T1, thereby testing the significance of the difference between paths c and c′. We took the concurrent significance of the total direct effect (path c) and indirect effect (path a × path b) to reflect traditional mediation (Baron & Kenny, 1986). When the indirect, but not total direct, effect was significant, we concluded that an indirect effect was present (Rucker et al., 2011; Zhao et al., 2010). For all analyses, the α level was set to 5.0%.

5 | RESULTS

5.1 | Descriptive results

Descriptive statistics for all variables are presented in Table 1. All means at T1 and T2 differed significantly between boys and girls (all $p < .05$): boys reported higher levels of well-being and global self-esteem than girls, whereas girls reported higher-quality friendships than boys. Between T1 and T2, well-being decreased significantly among girls, but remained unchanged among boys. Correlation matrices for boys and girls are presented in Table B1 in Appendix B.

5.2 | Model fitting: Gender differences

The unconstrained multigroup path model in which each parameter was estimated separately for boys and girls showed a good fit ($\chi^2[2] = 5.96$, $p = .051$, CFI = 1.00, RMSEA = 0.06, SRMR = 0.01). Fixing of the paths between well-being at T2 and age, ethnocultural background, education level, and baseline well-being revealed no gender difference (all $p > .05$). No gender difference was observed in the paths between global self-esteem and age and ethnocultural background (all $p > .05$), but a significant difference between boys and girls was observed in the relationship between education level and global self-esteem ($\Delta\chi^2[1] = 4.27$, $p = .039$). Thus, all covariate paths except for the one between education level and global self-esteem were constrained in the final parsimonious model.

The fixing of one path at a time revealed significant differences between boys and girls in the longitudinal relationships between friendship quality and well-being (path c; $\Delta\chi^2[1] = 7.68$, $p = .006$) and between global self-esteem and well-being (path b; $\Delta\chi^2[1] = 4.91$, $p = .027$). In other words, the constrained models in which paths b ($\chi^2[3] = 10.87$, $p = .012$, CFI = 0.99, RMSEA = 0.06, SRMR = 0.02) and c ($\chi^2[3] = 13.64$, $p = .003$, CFI = 0.99, RMSEA = 0.07, SRMR = 0.02) were fixed for boys and girls fitted the data significantly less well than did the unconstrained model in which these paths were freely estimated for both genders. The fixing of path a did not significantly worsen the model fit ($\Delta\chi^2[1] = 1.37$, $p = .242$), indicating similarity between genders in the link between friendship quality and global self-esteem. The final parsimonious model, in which the path between education level and global self-esteem and paths b and c were estimated freely while path a and the other covariate paths were constrained, showed a good fit ($\chi^2[9] = 12.39$, $p = .192$, CFI = 1.00, RMSEA = 0.02, SRMR = 0.01).

TABLE 1 Mean friendship quality, global self-esteem, and well-being scores.

		Mean (*SD*)		
	Range	Total sample	Girls	Boys
Friendship quality T1	1.83–6.00	4.98 (0.64)	5.03 (0.68)	4.89 (0.65)
Global self-esteem T1	0.00–5.00	4.12 (0.84)	3.95 (0.89)	4.37 (0.72)
Well-being T1	0.00–5.00	3.37 (0.97)	3.26 (0.96)	3.52 (0.99)
Well-being T2	0.00–5.00	3.31 (0.98)	3.14 (0.96)	3.53 (0.95)

Note: All means differed significantly between girls and boys ($p < .05$, independent-sample t test).

Abbreviations: SD, standard deviation; T1, baseline (spring 2018); T2, follow-up (spring 2019).

5.3 | Final mediation model (gender hypotheses testing)

In the final parsimonious model, the total direct effect of friendship quality on well-being at T2 was significant for boys (path c; B = 0.21, standard error [SE] = 0.08, $\beta = .15$, $p = .006$), but not girls (Table 2). Boys with higher-quality friendships reported greater well-being 1 year later, even after controlling for baseline well-being and the sociodemographic covariates. Friendship quality was related significantly to girls' and boys' global self-esteem at T1 (path a; B = 0.37, SE = 0.04, $\beta = .33$, $p < .001$; Table 2); adolescents with higher-quality friendships reported higher levels of global self-esteem. Global self-esteem was associated significantly with girls', but not boys', well-being one year later (path b; B = 0.22, SE = 0.05, $\beta = .21$, $p < .001$; Table 2); girls with higher levels of global self-esteem reported higher well-being 1 year later (controlled for baseline well-being). After adjustment for global self-esteem at T1, the direct effect between friendship quality and well-being 1 year later remained significant for boys (path c′; B = 0.23, SE = 0.08, $\beta = .15$, $p = .004$), and insignificant for girls (Table 2). Although this (total) direct effect was not significant among girls and we could not conclusively identify traditional mediation, we did find a significant indirect effect between friendship quality and well-being 1 year later via global self-esteem for girls (B = 0.08, SE = 0.02, $\beta = .06$, $p < .001$). For boys, no significant traditional mediation or indirect effect of global self-esteem was identified.

6 | DISCUSSION

Positive linkages between the quality of adolescents' close friendships and their well-being have been established (e.g., Almquist et al., 2014; Demir & Özdemir, 2010; Luijten et al., 2021b; Luijten et al., 2022; Raboteg-Saric & Sakic, 2014). However, the underlying mechanism explaining why higher-quality close friendships are associated with higher over-time well-being of adolescent boys and girls remains unclear. The present study examined the longitudinal association between adolescents' close friendship quality and well-being, and whether this association was mediated by adolescents' global self-esteem, while testing for gender differences. Overall, our findings indicate the importance of higher-quality friendships for adolescents' global self-esteem and well-being, with gender differences in the role of global self-esteem in the association between friendship quality and well-being. No direct link between friendship quality and well-being over time was observed for girls. Rather, we found a significant indirect effect between friendship quality and well-being via girls' global self-esteem. Girls' higher-quality friendships predicted higher global self-esteem, which, in turn, predicted higher levels of their well-being 1 year later. These results indicate the importance of the social peer environment, specifically close friendships, to girls' self-evaluations and confirm theoretical and empirical findings that girls are socialized to value social relationships and are sensitive to social influences (Almquist et al., 2014; Cialdini & Trost, 1998; Rudolph & Conley, 2005; Thomas & Daubman, 2001; You et al., 2018).

We found no evidence of traditional mediation, for which a significant direct effect between an independent variable and a dependent variable is required (Baron & Kenny, 1986). However, the literature on mediation analysis increasingly shows

TABLE 2 Results from the final longitudinal mediation model.

	B	SE	β	p
Girls				
Path c: friendship quality T1 to well-being T2	−0.03	0.06	−.02	.669
Path a: friendship quality T1 to global self-esteem T1[a]	0.37	0.04	.29	<.001
Path b: global self-esteem T1 to well-being T2	0.22	0.05	.20	<.001
Path c′: friendship quality T1 to well-being T2 via global self-esteem T1	0.06	0.06	.04	.352
Indirect effect (a × b)	0.08	0.02	.06	<.001
Boys				
Path c: friendship quality T1 to well-being T2	0.21	0.08	.15	.005
Path a: friendship quality T1 to global self-esteem T1[a]	0.37	0.04	.33	<.001
Path b: global self-esteem T1 to well-being T2	0.05	0.07	.04	.455
Path c′: friendship quality T1 to well-being T2 via global self-esteem T1	0.23	0.08	.15	.004
Indirect effect (a × b)	0.02	0.03	.01	.461

[a]Equal/constrained path for boys and girls.

that this traditional definition of mediation is limited; assessment of the magnitude and significance of indirect effects when no significant direct effect of an independent variable on a dependent variable is present is increasingly preferred (Rucker et al., 2011; Zhao et al., 2010). For instance, Rucker et al. (2011) revealed the presence and relevance of significant indirect effects in the absence of significant direct effects between an independent and dependent variable.

Due to the lack of longitudinal research, our hypotheses were based on findings from cross-sectional studies (e.g., Kong & You, 2013; Poudel et al., 2020; Tian et al., 2013). To cross-validate our findings with these cross-sectional results, we performed post hoc cross-sectional analyses of our model following the same steps used for the longitudinal analyses. These analyses revealed significant direct links between boys' and girls' friendship quality, global self-esteem, and well-being (Table C1, Appendix C). They also revealed an indirect (mediating) effect of global self-esteem on the concurrent association between friendship quality and well-being for both genders. Thus, the cross-sectional and longitudinal analyses revealed a significant indirect effect between friendship quality and well-being via global self-esteem for adolescent girls. As the cross-sectional direct path between friendship quality and well-being was significant, but the longitudinal direct path was not, the cross-sectional results also confirmed the presence of traditional mediation.

The lack of a longitudinal link between girls' friendship quality and well-being may be explained by girls' (more than boys') co-rumination (i.e., disclosing and extensively discussing emotional problems in dyadic relationships) with friends (Smith, 2015). Almquist et al. (2014) argued that co-rumination, during which personal problems are often discussed and revisited with a focus on negative feelings (Rose, 2002), may confound the benefits of close peer relationships on, e.g., girls' subsequent well-being. This confounding may, in turn, be explained by the heterogenous effects of the positive (i.e., satisfaction) and negative (i.e., conflict) aspects of friendships that together comprised our overall friendship quality measure. Although girls are known to experience more intimate and supportive friendships than do boys, they can also experience more empathic distress and conflict in these peer relationships due, for instance, to co-rumination (Rose, 2002; Smith, 2015). Girls may report satisfaction with close friendships that involve high levels of conflict (Kingery et al., 2011; Parker, 2011), and these effects may even cancel each other out. We recommend that future research on gender differences in the relationship between adolescents' friendship quality and well-being include consideration of the role of co-rumination.

Although boys' well-being did not change significantly between timepoints, girls' well-being decreased significantly over the 1-year period in this study. In addition, girls' well-being levels were lower than those of boys at baseline, confirming previous findings (Raboteg-Saric & Sakic, 2014; Stevens et al., 2018). The World Health Organization (WHO) (2015) has brought attention to the clear gender differences in adolescents' well-being, arguing that the gender gap emerges at the age of 13 years and increases with age. Empirical research has also demonstrated that girls are more likely than boys to experience a decline in well-being over time during adolescence (Booker et al., 2018; Patalay & Fitzsimons, 2018). The reduction in girls' well-being at T2 in this study may have disturbed the positive link with friendship quality, explaining the lack of a significant positive longitudinal relationship between girls' friendship quality and well-being.

For boys, we found no mediating or indirect effect over time, but we did find significant direct effects of friendship quality; boys with higher-quality friendships reported higher concurrent global self-esteem and higher well-being 1 year later. These results indicate the importance of the perceived quality of boys' friendships for their self-evaluation and evaluation of life as a whole, in line with previous findings (Farineau et al., 2013; Luijten et al., 2021b; Raboteg-Saric & Sakic, 2014; Way, 2011). Thus, the social peer environment, specifically that of close friendships, plays a crucial role in the self-evaluations of adolescent boys and girls. However, after controlling for baseline well-being and friendship quality, boys' global self-esteem was not related significantly to their well-being over time. This result was contrary to our expectations and may be due to our use of a strict longitudinal design with control for baseline well-being. Moreover, girls' friendship quality was not related significantly to their subsequent well-being, leaving more variance to be explained in well-being at T2 after controlling for baseline well-being. Boys' friendship quality was related significantly to their subsequent well-being, leaving less variance to be explained by global self-esteem after controlling for baseline well-being. Differences in adolescent boys' and girls' perceptions of global self-esteem (Moksnes & Espnes, 2012) may explain our observation of a significant link with girls', but not boys', well-being. We recommend further study of the roles of global self-esteem in boys' and girls' well-being to increase our understanding thereof.

7 | STRENGTHS AND LIMITATIONS

The strengths of the current study include the participation of a large, culturally diverse sample of adolescents, the performance of longitudinal analyses, the study of mechanisms underlying the positive link between friendship quality and well-being via global self-esteem, and the examination of gender differences. However, some limitations of the present study need to be considered. First, it was based on adolescents' retrospective self-reports, which may have led to social desirability bias or recall bias (Krumpal, 2013). However, previous research has demonstrated that social desirability plays a limited role in self-reported well-being measures (Caputo, 2017) and that adolescents' self-reports of their well-being appear to be more reliable than, for instance, those of their parents, who tend to over- or underestimate their children's well-being levels

(Berman et al., 2016; López-Pérez & Wilson, 2015). Second, we analyzed data collected in two waves; mediation analyses are ideally conducted with three or more waves of data to assess directionality among the predictor, mediator, and outcome variables (Roth & MacKinnon, 2012). Since we only had two waves of data available for the present study, global self-esteem was selected as a mediator on T1. This was because the distance between the mediator and outcome variable was considered to be more important in studying whether global self-esteem explains the link between friendship quality and future well-being compared to overlap between the mediator and predictor variables. This decision also aligns with prior research studying mediating effects using two waves of data (e.g., Bean & Forneris, 2019; De Vries et al., 2016). Nonetheless, we were not able to determine directionality between friendship quality and global self-esteem and, as shown in the meta-analysis by Harris and Orth (2020), there can be reciprocal relationships between social relationships and self-esteem over time. As such, we recommend that future research be conducted with three or more consecutive waves of data to validate our assumptions and test whether our findings can be replicated. For instance, in addition to the fact that experience sampling methods decrease the recall period and may reduce the associated potential bias (Keijsers & van Roekel, 2018), this method also inherently yields more consecutive waves of data and with shorter time intervals. Third, without replication, our findings cannot be generalized beyond our nonclinical school-based sample of Dutch adolescents. Adolescents in the Netherlands have one of the highest-ranked well-being levels globally (Bradshaw et al., 2013), and different results may be obtained in countries in which adolescents report lower well-being levels. In addition, there seem to be larger differences in self-esteem between boys and girls in Western countries, including the Netherlands, than in other countries, indicating culture-specific influences on the development of boys' and girls' self-esteem (Bleidorn et al., 2016). Studies conducted with other adolescent samples in different countries may yield different results, with lesser or no gender difference. For instance, Poudel et al. (2020) showed that (global) self-esteem fully mediated the concurrent relationship between social support from family, friends, and others and psychological well-being among adolescent boys and girls in Nepal. Thus, we recommend further examination of the mediational model proposed here with broader (sub-)clinical and nonclinical adolescent samples, as well as cross-country comparisons.

8 | CONCLUSIONS

Notwithstanding its limitations, and in line with social cognitive theory (Bandura, 2001), the present study revealed significant interplay between individual (global self-esteem) and social environmental (friendship quality) factors in the development of Dutch adolescents' well-being over time. More specifically, the results suggest that higher-quality friendships improve boys' global self-esteem and well-being directly and positively, and that they affect girls' well-being indirectly and positively, by improving their global self-esteem. These findings are consistent with a large body of literature (e.g., Almquist et al., 2014; Demir & Özdemir, 2010; Luijten et al., 2021b; Raboteg-Saric & Sakic, 2014) and are highly relevant for parents, teachers, and pediatric and mental health professionals, who must be aware of the crucial role that close friendships play in promoting adolescents' well-being. Investment in adolescents' friendships may be an important means of improving their well-being, which is in line with the positive psychological approach (Kobau et al., 2011). Our findings also reveal the additional value of investing in girls' global self-esteem to promote their well-being. Consistent with global prevalence data (Marquez & Long, 2021; Twenge et al., 2018), our data suggest that girls' well-being is especially at risk, as girls' well-being levels were lower than those of boys at baseline and declined even further after 1 year. Thus, more attention should be paid to girls' well-being in particular during the developmental stage of adolescence. Finally, building on previous studies demonstrating the value of multi-setting approaches in (mental) health promotion efforts (Bloch et al., 2014; Busch et al., 2013), we recommend the development and implementation of preventive and intervention-based strategies to promote adolescents' well-being with a focus on friendships, global self-esteem, and gender specificities in settings including families, school health services, and afterschool programs (World Health Organization [WHO], 2012). As adolescents meet with peers, including their close friends, in all of these settings, they can be optimized as supportive contexts that facilitate the development of adolescents' supportive friendships, global self-esteem, and well-being (Moksnes & Espnes, 2012; World Health Organization WHO, 2012).

AUTHOR CONTRIBUTIONS

CL conceived of the study, participated in its design and coordination, performed the statistical analyses, interpreted the data, and drafted the manuscript; DB conceived of the study, participated in the design and coordination of the study, was involved in the interpretation of the data, and helped to draft the manuscript; APN conceived of the study, participated in the design and coordination of the study, was involved in the interpretation of the data, and helped to draft the manuscript. All authors read and approved the final manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data are available upon (reasonable) request. The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The medical ethics committee of Erasmus Medical Centre, Rotterdam, the Netherlands determined that the rules stipulated in the Medical Research Involving Human Subjects Act did not apply to this study (protocol no. MEC-2018-055). Informed consent to participate in the study was obtained from the schools, parents, and adolescents.

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APPENDIX A

TABLE A1 Additional results from the final longitudinal mediation model.

	B	SE	β	p
Girls				
Concurrent covariances				
Age—education level	−0.06	0.02	−.12	.001
Age—friendship quality	−0.13	0.03	−.17	<.001
Age—well-being T1	−0.12	0.04	−.11	.005
Ethnocultural background—education level	−0.05	0.01	−.21	<.001
Ethnocultural background—friendship quality	−0.03	0.01	−.10	.014
Ethnocultural background—well-being T1	−0.01	0.02	−.01	.709
Education level—friendship quality	−0.00	0.01	−.02	.752
Education level—well-being T1	0.01	0.02	.01	.765
Friendship quality—well-being T1	0.20	0.03	.31	<.001
Global self-esteem—well-being T1	0.37	0.04	.47	<.001
Covariates				
Age T1 to well-being T2[a]	0.06	0.02	.08	.004
Ethnocultural background T1 to well-being T2[a]	−0.04	0.05	−.02	.423
Education level T1 to well-being T2[a]	−0.14	0.07	−.06	.039
Well-being T1 to well-being T2[a]	0.52	0.03	.51	<.001
Age T1 to global self-esteem T1[a]	−0.05	0.02	−.07	.016
Ethnocultural background T1 to global self-esteem T1[a]	0.04	0.05	.02	.387
Education level T1 to global self-esteem T1	0.01	0.09	.01	.877
Boys				
Concurrent covariances				
Age—education level	−0.07	0.02	−.13	.002
Age—friendship quality	−0.03	0.04	−.04	.408
Age—well-being T1	0.00	0.05	.00	.958
Ethnocultural background—education level	−0.06	0.01	−.27	<.001
Ethnocultural background—friendship quality	−0.00	0.01	−.01	.763
Ethnocultural background—well-being T1	0.04	0.02	.08	.062
Education level—friendship quality	−0.00	0.01	−.01	.822
Education level—well-being T1	−0.06	0.02	−.12	.004
Friendship quality—well-being T1	0.21	0.03	.33	<.001
Global self-esteem—well-being T1	0.30	0.04	.44	<.001
Covariates				
Age T1 to well-being T2[a]	0.06	0.02	.08	.004
Ethnocultural background T1 to well-being T2[a]	−0.04	0.05	−.02	.423
Education level T1 to well-being T2[a]	−0.14	0.07	−.07	.039

TABLE A1 (Continued)

	B	SE	β	p
Well-being T1 to well-being T2[a]	0.52	0.03	.54	<.001
Age T1 to global self-esteem T1[a]	−0.05	0.02	−.08	.016
Ethnocultural background T1 to global self-esteem T1[a]	0.04	0.05	.03	.387
Education level T1 to global self-esteem T1	−0.19	0.07	−.12	.004

[a]Equal/constrained path for boys and girls.

APPENDIX B

TABLE B1 Pearson correlations between variables of interest at T1 and T2 for boys and girls.

	1	2	3	4
1. Friendship quality T1	–	0.30***	0.31***	0.30***
2. Global self-esteem T1	0.33***	–	0.52***	0.34***
3. Well-being T1	0.33***	0.55***	_	0.59***
4. Well-being T2	0.20***	0.47***	0.61***	–

Note: Values below the diagonal are for girls and those above the diagonal are for boys. T1, baseline (spring 2018); T2, follow-up (spring 2019).
***$p < .001$.

APPENDIX C

TABLE C1 Results from the final cross-sectional mediation model.

	B	SE	β	p
Covariates				
Age T1 to well-being T1	0.01	0.02	.01	.779
Ethnocultural background T1 to well-being T1	0.03	0.05	.01	.579
Education level T1 to well-being T1	−0.05	0.06	−.02	.413
Age T1 to global self-esteem T1	−0.05	0.02	−.07	.017
Ethnocultural background T1 to global self-esteem T1	0.03	0.05	.02	.515
Girls: education level T1 to global self-esteem T1	0.00	0.09	.00	.973
Boys: education level T1 to global self-esteem T1	−0.19	0.07	−.12	.004
Mediation effects				
Path c: friendship quality T1 to well-being T1	0.25	0.04	.18	<.001
Path a: friendship quality T1 to global self-esteem T1	0.37	0.04	.29	<.001
Path b: global self-esteem T1 to well-being T1	0.57	0.03	.52	<.001
Path c′: friendship quality T1 to well-being T1 (controlled for global self-esteem T1)	0.44	0.05	.30	<.001
Indirect effect (a × b)	0.21	0.03	.15	<.001

Note: All analyses were performed using the same steps as for the longitudinal analyses. No gender difference was observed. Model fit: $\chi^2(1) = 3.84$, $p = .050$, CFI = 1.00, RMSEA = 0.05, SRMR = 0.01.