

Relationship quality in higher education and the interplay with student engagement and loyalty

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Background. To date, studies that have investigated the bonds between students and their institution have emphasized the importance of student–staff relationships. Measuring the quality of those relationships (i.e., relationship quality) appears to help with investigating the relational ties students have with their higher education institutions. Growing interest has arisen in further investigating relationship quality in higher education, as it might predict students' involvement with the institution (e.g., student engagement and student loyalty). So far, most studies have used a cross-sectional design, so that causality could not be determined.

Aims. The aim of this longitudinal study was twofold. First, we investigated the temporal ordering of the relation between the relationship quality dimensions of trust (in benevolence and honesty) and affect (satisfaction, affective commitment, and affective conflict). Second, we examined the ordering of the paths between relationship quality, student engagement, and student loyalty. Our objectives were to gain a deeper understanding of the relationship quality construct in higher education and its later outcomes.

Sample. Participants ($N = 1649$) were students from three Dutch higher education institutions who were studying in a technology economics or social sciences program.

Methods. Longitudinal data from two time points were used to evaluate two types of cross-lagged panel models. In the first analysis, we could not assume measurement invariance for affective conflict over time. Therefore, we tested an alternative model without affective conflict, using the latent variables of trust and affect, the student engagement dimensions and student loyalty. In the second type of model, we investigated the manifest variables of relationship quality, student engagement, and student loyalty. The hypotheses were tested by evaluating simultaneous comparisons between estimates.

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Results. Results indicated that the relation between relationship quality at Time 1 with student engagement and loyalty at Time 2 was stronger than the reverse ordering in the first model. In the second model, results indicated that cross-lagged relations between trust in benevolence and trust in honesty at Time 1 and affective commitment, affective conflict, and satisfaction at Time 2 were more likely than the reverse ordering. Furthermore, cross-lagged relations from relationship quality at Time 1 to student engagement and student loyalty at Time 2 also supported our hypothesis.

Conclusions. This study contributes to the existing higher education literature, indicating that students' trust in the quality of their relationship with faculty/staff is essential for developing students' affective commitment and satisfaction and for avoiding conflict over time. Second, relationship quality factors positively influence students' engagement in their studies and their loyalty towards the institution. A relational approach to establishing (long-lasting) bonds with students appears to be fruitful as an approach for educational psychologists and for practitioners' guidance and strategies. Recommendations are made for future research to further examine relationship quality in higher education in Europe and beyond.

Introduction

Recent studies in the field of education have demonstrated that improving and maintaining positive interpersonal relationships between students and teachers is essential (e.g., in a higher education context, see García-Moya, Bunn, Jiménez-Iglesias, Paniagua, & Brooks, 2019; Schlesinger, Cervera, & Pérez-Cabañero, 2017; Xerri, Radford, & Shacklock, 2018; in a school context, see Pianta, Hamre, & Allen, 2012; Pöysä et al., 2019). Those relationships positively stimulate students' academic and social development, including students' engagement in their studies and student loyalty intentions (Bonet & Walters, 2016; Parsons & Taylor, 2011; Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002; Umbach & Wawrzynski, 2005). In turn, student loyalty intentions may result in positive student loyalty behaviour towards their university. An example of loyalty behaviour is positive word-of-mouth, which is a critical factor for higher education institutions' continuity and growth (Snijders et al., 2019, Snijders et al., 2020; Farrow & Yuan, 2011; Hennig-Thurau, Langer, & Hansen, 2001; Rojas-Méndez, Vasquez-Parraga, Kara, & Cerda-Urrutia, 2009; Sung & Yang, 2008). Thus far, it has remained unclear how students' relationships with the faculty and staff of their institution (i.e., relationship quality) develop over time and how relationship quality subsequently affects student outcomes in higher education (i.e., student engagement and loyalty; e.g., Cho & Auger, 2013; García-Moya et al., 2019).

Educational researchers investigating student relationships have mainly focused on primary or secondary education (e.g., Roorda, Jak, Zee, Oort, & Koomen, 2017; Roorda, Koomen, Spilt, & Oort, 2011). Although their research findings are important for gaining insight into educational processes, the instruments used in these studies are not always applicable in all educational settings. Higher education differs from other educational contexts regarding students' involvement and participation (Leenknecht, Snijders, Wijnia, Rikers, & Loyens, 2020). Education-related interpersonal relationships within the primary or secondary school context are mainly formed between students and teachers (Roorda et al., 2011). However, the child–adult relationship in primary and secondary education becomes an adult–adult relationship in higher education (Hagenauer & Volet, 2014). Multiple frameworks are relevant for teacher–student relationships, such as self-determination theory (Deci & Ryan, 2008), which focuses on human motivation. However, in higher education, a student also builds relationships with other

people within their higher education institution/university. Besides their teachers, students have multiple and sequential interactions with other representatives of their higher education institution, such as librarians, student psychologists, study counsellors, or other staff members. The interpersonal relationships resulting from those interactions form a focal point in the educational process. How students perceive these relational ties – through relationship quality – will affect their future interactions, attitudes, intentions, and behaviours or actions towards their university or higher education institution (Gibbs & Kharouf, 2020; Palmatier, 2008).

In general, relationship quality can be defined as the overall strength of a relationship (Roberts, Varki, & Brodie, 2003). Within the relationship quality construct, two aspects can be distinguished: trust and affect. In line with previous research drawn from the management literature, we believe that trust plays a central role in the relationship quality construct (Crosby, Evans, & Cowles, 1990; Hennig-Thurau et al., 2001; Jiang, Shiu, Henneberg, & Naude, 2016; Morgan & Hunt, 1994). Without trust, there cannot be a relationship. Hence, trust can be seen as the foundation of a relationship's strength that, in time, results in the affective relationship quality aspects of satisfaction and (strong) commitment and reduction in conflict (Castaldo, 2007), which are termed 'affect' in this study). One must also consider the environment and the relational depth (or intensity) and duration to understand the dynamics of the relationship quality construct. The work by Van Maele, Forsyth, and Van Houtte (2014), for instance, described the role of trust in school life and its importance to learning and teaching in a primary or secondary school context. However, to our knowledge, how students' trust in their relationship with faculty and staff develops in higher education has been underexplored. Empirical research has emphasized the importance of students' relationships, indicating that higher education institutions benefit from engaged and loyal students (Bowden, 2011), for example, through active participation in extracurricular activities or loyalty intentions and behaviour during or after enrolment. Other studies have also indicated that students' perceptions of the quality of their relationship with the educational institution are positively associated with student engagement and student/alumni loyalty (e.g., Snijders et al., 2019, 2020). The relationship quality outcomes are of interest for educational psychologists and higher education institutions. However, previous studies in this field have mainly been cross-sectional in nature (e.g., Snijders et al., 2020; Miller, Williams, & Silberstein, 2019; Schlesinger et al., 2017), which means that the directionality of the causal relations to indicate cause and effect cannot be determined. The role of trust in a higher education context has also, to our knowledge, rarely been examined. This study addressed these gaps.

Relationship quality

Previous educational psychology research primarily focused on student–teacher relationships (e.g., Košir & Tement, 2014; Roorda, Verschueren, Vancraeyveldt, Van Craeyveldt, & Colpin, 2014; Zee, Koomen, & Van der Veen, 2013). However, Snijders et al. (2018) demonstrated that relationship quality in higher education could be seen as a multidimensional construct, capturing students' perceptions of the quality of their relationship with their educational faculty and staff. This study builds on relationship quality research by Snijders et al. (2019, 2020), where they used the relationship quality construct in higher education. Relationship quality consisted of five dimensions, based on students' perceptions of their educational faculty and staff. These dimensions include

trust in honesty and trust in benevolence (in this study, ‘trust’), and affective commitment, satisfaction, and affective conflict (in this study, ‘affect’).

Trust

Trust has been described in various ways, such as the confidence one has in a relationship and the belief that a trusted person or actor is reliable or has integrity (e.g., Bryk & Schneider, 2002; Tschannen-Moran, 2014). Students’ trust in educational faculty and staff can be subdivided into trust in honesty and trust in benevolence (Snijders et al., 2018; Roberts et al., 2003). Trust in honesty refers to the confidence students have in a university’s credibility as expressed by its educational faculty and staff. Or in other words, it refers to students’ trust in educational faculty/staff’s integrity and trustworthiness (i.e., reliability), the staff and faculty’s sincerity, and whether they will perform their roles effectively and reliably. Trust in benevolence in higher education includes the extent to which students believe faculty/staff are concerned about students’ welfare, have intentions and motives beneficial to them, and avoid acting in a way that will result in adverse outcomes for students (Snijders et al., 2018, 2019, 2020; Roberts et al., 2003). Students’ trust in educational faculty and staff’s benevolence is based on students’ perceptions of how faculty and staff respond to students’ questions, such as timely responses to email requests and feedback on assignments and grades (Snijders et al., 2020). For educational practitioners, it is important to think of how they respond to students. For instance, when students confide their problems, it is essential for them to feel that they can count on their educational faculty and staff. Based on commitment–trust theory (Morgan & Hunt, 1994), the factor of trust may lead to positive affect, in this case the affective relationship quality dimensions of commitment and satisfaction (Mohr & Speckman, 1994).

Affect

Affect can be further divided into affective commitment, satisfaction, and affective conflict. Affective commitment compels students’ feelings of belonging or connection to their educational faculty, staff, or institution. In other words, it is the feeling of having a connection or being emotionally attached and genuinely enjoying the relationship students experience with their educational faculty/staff. In general, commitment indicates a relationship’s health and is, therefore, part of the relationship quality construct (Roberts et al., 2003). In higher education, where there are multiple and sequential interactions between students and their educational faculty/staff, affective commitment might develop over time (Castaldo, 2007). In general, satisfaction is the ‘summary measure that provides an evaluation of the quality of all past interactions’ (Roberts et al., 2003, p. 174). Within this study, when we refer to satisfaction, we mean relationship satisfaction: students’ perceptions of their degree of satisfaction with the quality of their relationship with their educational faculty/staff. In other words, we tried to capture the cumulative satisfaction students perceived regarding their relationship with their educational faculty/staff, represented by students’ cognitive and affective evaluation based on their personal experiences across their time at the institution. Affective conflict is determined by students’ evaluations of their relationships with faculty/staff based on their perceived conflicts, such as irritation, frustration, or anger. It can be considered as the tension students experience due to the incompatibility of actual and desired responses from their educational faculty and staff (Snijders et al., 2020). For instance, students who

experience conflict in their relationships (with teachers) attain lower achievement levels compared to students who have close, positive, and supportive relationships (Rimm-Kaufman & Sandilos, 2010). Therefore, conflict reduction might also be necessary for the higher education context and the quality of the relations between students and their higher education institution.

Based on prior research on teacher–student relationships and the association between relationship quality and school outcomes (e.g., Culver, 2015), we assume that relationship quality positively affects student engagement and loyalty (e.g., Snijders et al., 2020; Bonet & Walters, 2016; Bowden, 2011; Hennig-Thurau et al., 2001; Parsons & Taylor, 2011; Schaufeli et al., 2002; Umbach & Wawrzynski, 2005).

Student engagement

Recent studies conducted in elementary or secondary school (e.g., Engels et al., 2016; Lee, 2012; Manzuoli, Pineda-Báez, & Vargas Sánchez, 2019; Nicholson & Putwain, 2020) considered student engagement to be a multidimensional construct consisting of emotional, cognitive, and behavioural dimensions (Fredricks, Blumenfeld, & Paris, 2004). In higher education, student engagement is considered crucial to achieving positive academic outcomes through students' bonds with their university (Bowden, 2009; Connell & Wellborn, 1991; Sung & Yang, 2008). Student engagement has been widely theorized and researched (e.g., Kahu, 2013) and can be considered a broad concept (Farr-Wharton, Charles, Keast, Woolcott, & Chamberlain, 2018) or be seen as a meta-construct (Fredricks et al., 2004) that includes student engagement's behavioural, cognitive, and emotional aspects. Although multiple definitions have been used in student engagement research in past years, the definition by Kuh (2001) helped to shape our conceptualization of student engagement. Student engagement can be considered to include a variety of constructs that measure both the time and energy students devote to educationally purposeful activities and how students perceive different facets of the institutional environment that facilitate and support their learning. Following the service management literature, where the quality of the relationship may positively affect engagement in term of the actor's involvement within the process, within our study we, therefore, chose to apply the definition and measurement of student engagement by Schaufeli and Bakker (2003), because it concerns the students' involvement in their studies.

In our study, we adopted the definition by Schaufeli et al., (2002), in line with recent studies (e.g., Snijders et al., 2019, 2020; Farr-Wharton et al., 2018) that focused on engagement as part of the student's overall experience in higher education. Schaufeli and Bakker (2003) defined engagement as 'a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication and absorption' (Schaufeli & Bakker, 2003, p. 4); see also Schaufeli et al., 2002; Schaufeli, Bakker, & Salanova, 2006). Furthermore, 'Vigour is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties' (Schaufeli & Bakker, 2003, p. 4). Dedication refers to 'being strongly involved in one's work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge' (Schaufeli & Bakker, 2003, pp. 4-5). Absorption is 'characterised by being fully concentrated and happily engrossed in one's work, whereby time passes quickly, and one has difficulties detaching oneself from work' (Schaufeli & Bakker, 2003, p. 5).

Student loyalty

Student loyalty refers to the extent to which students feel connected to the institution and how this is expressed in their attitudes and behaviours (Helgesen & Nettet, 2007; Hennig-Thurau et al., 2001). In higher education, attitude may refer to students' (positive) feelings related to their faculty/staff and university. Student loyalty behaviour is expressed, for example, in (positive) recommendations from students about their educational faculty/staff and university, active participation in extracurricular activities, or loyalty intentions, and behaviour during or after their period of enrolment. Higher education institutions benefit from loyal and successful students (Helgesen & Nettet, 2007). Therefore, in the international literature on student behaviour, student loyalty is increasingly considered a critical measure of those institution' growth or success (Rojas-Méndez et al., 2009).

The educational psychology literature implies that high-quality relationships with students result in positive academic outcomes. For instance, positive student–faculty interactions contribute to pedagogical objectives related to intellectual and personal student development, such as increased student motivation, engagement, social integration, and academic performance (Kim & Lundberg, 2016; Klem & Connell, 2004; Pascarella & Terenzini, 2005), and may subsequently promote student retention and perseverance in achieving a degree (O’Keeffe, 2013; Vander Schee, 2008a, 2008b). Furthermore, when interpersonal relationships between students and their institution are perceived positively by students, students may develop a sense of belonging or (growing) connection to their institution (García-Moya, Brooks, & Moreno, 2020; Kim & Lundberg, 2016).

In line with the services management literature, we place the student’s perceptions and attitudes at the centre of the educational experience. In services management research, a customer focus is essential, especially in high-quality service delivery processes such as those occurring in higher education, where the services consist of frequent human interactions between students and their educational faculty and staff.

In summary, positive student–faculty relationships are vital because they can positively influence student outcomes, such as student engagement (Pascarella & Terenzini, 2005; Pianta et al., 2012) or a willingness to continue to interact and engage in the relationship within the educational service process (Bowden, 2011; Zeithaml, Bitner, Gremler, & Lovelock, 2009), as expressed in student and alumni loyalty, for example (Bowden, 2011). Therefore, a closer look is necessary at how students perceive interpersonal relationships with their educational faculty and staff and the associated outcomes. As a result, the value of investing in positive bonds between faculty/staff and their students could become more evident, if these relationships can contribute in a positive way to students’ involvement during and after their time in higher education.

Present study

In this study, we applied a cross-lagged panel analysis to longitudinal data from two time points. The data were based on students’ questionnaire responses about relationship quality (Snijders et al., 2018; Roberts et al., 2003), student engagement (Schaufeli & Bakker, 2003), and student loyalty (Hennig-Thurau et al., 2001). The purpose was twofold: (1) to examine the ordering of the relations between the relationship quality factors of trust at Time 1 and affect at Time 2, and (2) to explore the strength and ordering of the relations between relationship quality (trust and affect), student engagement, and loyalty (see Figures 1 and 2). This study has practical implications for educational

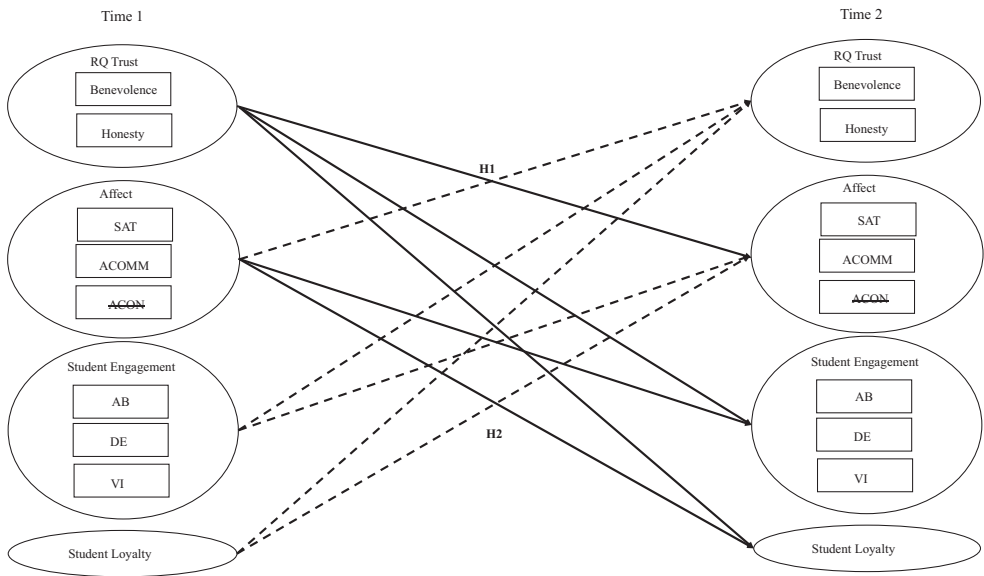


Figure 1. Cross-Lagged Panel Model. *Note.* The model shows semi-longitudinal relations between the relationship quality factors of trust (T1) and affect (T2; Hypothesis 1) and the relations between trust and affect (T1) and student engagement and student loyalty (T2; Hypothesis 2). Solid lines represent stronger cross-lagged paths than dashed line paths. The model is a simplification of the total model analysed; all possible relations between T1 and T2 were examined, including correlations and residuals; however, for reasons of clarity, they were not shown in the model. RQ = Relationship Quality, SAT = Satisfaction, ACOMM = Affective Commitment, ACON = Affective Conflict; AB = Absorption, DE = Dedication, VI = Vigour. ACON was initially used in the first analysis and excluded from the following analyses due to measurement invariance issues

psychologists and practitioners who want to understand the relational ties between students and their institution.

The first research question that guided this study was: Does trust provide the basis of the relationship quality construct in higher education, that is, does trust influence affect over time? The second was: Does relationship quality at the start of the year predict student engagement and loyalty in the second semester?

Based on prior research (Snijders et al., 2019, 2020; Hennig-Thurau et al., 2001) and (interpersonal) trust literature (e.g., Castaldo, 2007; Lewicki, Tomlinson, & Gillespie, 2006), our first hypothesis (H1) was that over time, students' trust would result in (higher) satisfaction and affective commitment and less affective conflict (see Figures 1 and 2). Furthermore, our second hypothesis (H2) was that relationship quality aspects might positively influence students' engagement in their studies and their loyalty intentions, when students perceive high-quality relationships with their educational faculty and staff (see Figures 1 and 2). In sum, this study's purpose was to examine first the strength and directionality of the relations between the five relationship quality dimensions, and second, how the relationship quality dimensions are associated with student engagement and student loyalty over time.

In conformity with multiverse analysis (Steege, Tuerlinckx, Gelman, & Vanpaemel, 2016), we evaluated two types of cross-lagged panel models (CLPM): (1) on a higher level

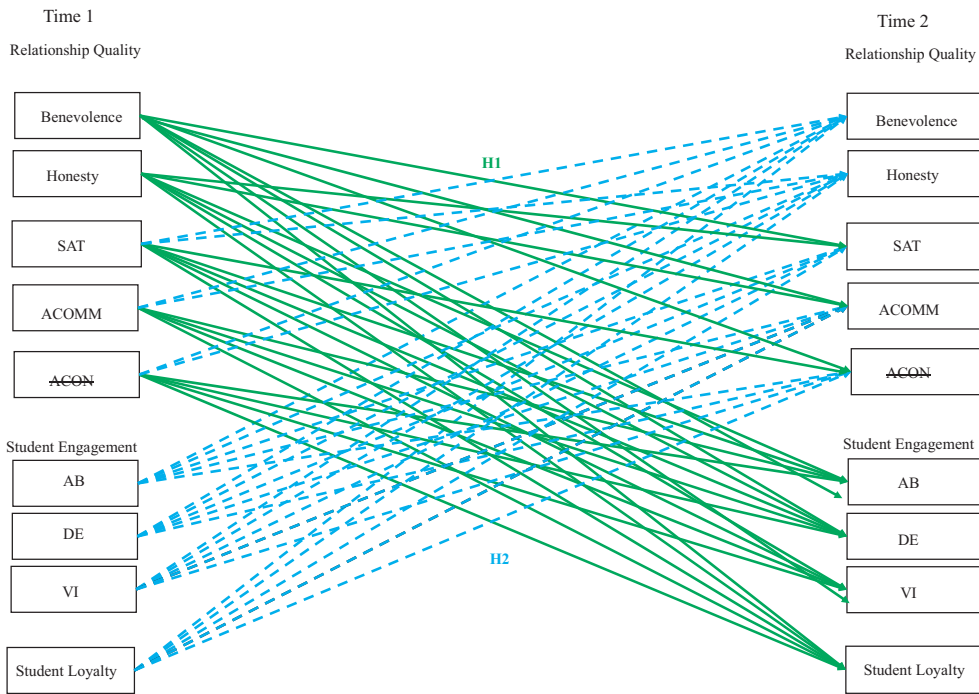


Figure 2. Cross-Lagged Panel Model. *Note.* The model shows semi-longitudinal relations between relationship quality dimensions (T1) and relationship quality dimensions (T2), and the relations between relationship quality dimensions (T1) and student engagement (SE) dimensions and student loyalty (SL) (T2) (hypothesis 2). Solid lines represent stronger cross-lagged paths than the dashed line paths. The model is a simplification of the total model analysed; all possible relations between T1 and T2 were examined, including correlations and residuals; however, for reasons of clarity, they were not shown in the model. SAT = Satisfaction, ACOMM = Affective Commitment, ACON = Affective Conflict; AB = Absorption, DE = Dedication, VI = Vigour. ACON was initially used in the first analysis and excluded from the following analyses due to measurement invariance issues

(i.e., latent relationship quality factors and a latent factor for engagement; see Figures (1) and (2) on a fine-grained level (i.e., the manifest constructs, see Figure 2). In a multiverse analysis, multiple analyses are conducted on the same dataset using different researcher decisions (e.g., include versus exclude covariates, dichotomize versus non-dichotomize variables) to reduce the researcher degrees of freedom. We use it in this article to demonstrate that the results were consistent across model choice (using a latent variable model and a manifest variable model). The following hypotheses were tested in these models:

Hypothesis 1. The relationship quality dimensions of trust in benevolence and honesty (Trust) at Time 1 have stronger relations with the relationship quality dimensions of affective commitment, satisfaction, and affective conflict (Affect) at Time 2 than the reciprocal lagged relations (i.e., the relations between Affect at Time 1 and Trust at Time 2). *Hypothesis 2:* Relationship

quality (i.e., trust in benevolence, trust in honesty, affective commitment, satisfaction, and affective conflict) at Time 1 has a stronger relation with student engagement and student loyalty at Time 2 than the reciprocal lagged relations (i.e., the relations between student engagement and student loyalty at Time 1 and relationship quality dimensions at Time 2).

Method

Participants and procedure

Participants were higher education students who were enrolled in a variety of programs in the fields of economics, social work, and technology (T1: $n = 1031$, $M_{age} = 22.73$ years, $SD = 6.39$; T2: $n = 876$, $M_{age} = 22.42$ years, $SD = 5.59$). The total sample consisted of 1649 students whose responses were collected at three universities of applied sciences located in the southwest part of the Netherlands (Institution 1 = 1203; Institution 2 = 291; Institution 3 = 155). In two consecutive years, the same survey was sent out to enrolled students twice per academic year (Measurements 1–4), during the fall (T1) and spring (T2) semesters. From the total sample ($N = 1649$), not all students filled out the questionnaires each time, or they did not completely finish the questionnaire. Therefore, we comprised the data. Measurements 1 and 3 (both conducted in the fall semester) were taken together to form Time 1, Measurements 2 and 4 (both conducted in the spring semester) were taken together to form Time 2. When students participated in both academic years, we only included the data from one academic year, based on the number of completed questionnaires. For example, if only one questionnaire was completed in year 1 (e.g., only Measurement 2) but two in year 2 (Measurements 3 and 4), the responses for year 2 were selected.

Descriptive statistics regarding participants' gender and study year are included in the online supplemental materials (Table S1). Completing the online survey took approximately 15 min. Students were given a two-month period to respond. A reminder was sent after a two- to four-week period.

At each administration, participants were told that there were no (in)correct answers to the items, as long as the answers reflected their personal opinions. Participants were asked for informed consent; only participants who gave their permission to use their responses for research were included in this study and their data were treated anonymously. The institutions provided ethical approval for the organization of the study.

Measures

A survey instrument based on existing scales was used to measure relationship quality, student engagement, and student loyalty. Items were translated and presented in Dutch. All survey items per construct and Cronbach's alpha coefficients are presented in Table 1.

Relationship quality

An existing relationship quality scale was used to measure relationship quality (Snijders et al., 2018, adapted from Roberts et al., 2003). Five relationship quality dimensions were used to measure the relationship quality construct in higher education with a 15-item

Table 1. Survey items per construct and Cronbach's alpha coefficients

Scales	Items	Cronbach's α	
		Time 1 <i>n</i> = 1032	Time 2 <i>n</i> = 879
Relationship quality^a			
Trust			
Trust in benevolence	My faculty/staff is concerned about my welfare.	.88	.85
	When I confide my problems to my faculty/staff, I know they will respond with understanding.		
	I can count on my faculty/staff considering how their actions affect me.		
Trust in honesty	My faculty/staff is honest about my problems.	.83	.80
	My faculty/staff has high integrity.		
	My faculty/staff is trustworthy.		
Affect			
Affective commitment	I feel emotionally attached to my faculty/staff.	.87	.83
	I continue to interact with my faculty/staff because I like being associated with them.		
	I continue to interact with my faculty/staff because I genuinely enjoy my relationship with them.		
Affective conflict	I am angry with my faculty/staff.	.90	.89
	I am frustrated with my faculty/staff.		
	I am annoyed with my faculty/staff.		
Satisfaction	I am delighted with the performance of my faculty/staff.	.95	.93
	I am happy with my faculty/staff's performance.		
	I am content with my faculty/staff's performance.		
Student engagement^b			
Absorption	Times flies when I am studying.	.79	.79
	When I am studying, I forget everything else around me.		
	I am immersed when I'm studying.		
Dedication	I find the studying that I do full of meaning and purpose.	.85	.82
	My studying inspires me.		
	I am proud of the studying that I do.		
Vigour	At university, I feel bursting with energy.	.80	.82
	At university, I feel strong and vigorous.		
	When I get up in the morning, I feel like going to school.		
Student loyalty ^c	I'd recommend my course of studies to someone else.	.86	.87
	I'd recommend my university to someone else.		
	I'm very interested in keeping in touch with 'my faculty'.		
	If I were faced with the same choice again, I'd still choose the same course of studies.		
	If I were faced with the same choice again, I'd still choose the same university.		

^a Adapted from Roberts et al., (2003), applied in higher education by Snijders et al. (2018, 2019, 2020); item responses: 1 (*strongly disagree*) to 7 (*strongly agree*).; ^bAdopted from UWES-S, short version by Schaufeli and Bakker (2003); item responses: 1 (*almost never/a few times a year or less*) to 7 (*always/every day*).; ^cAdopted from Hennig-Thurau et al., (2001); item responses: 1 (*strongly disagree*) to 7 (*strongly agree*).

scale. Students had to indicate on a 7-point Likert scale how much they agreed with the provided statements, ranging from 1 (strongly disagree) to 7 (strongly agree).

In this study, the Cronbach alpha coefficients reported for trust in benevolence (.88, .85), trust in honesty (.83, .80), satisfaction (.95, .93), affective commitment (.87, .83), and affective conflict (.90, .89) showed good internal consistencies at Times 1 and 2, respectively.

Student engagement

Student engagement was measured with nine items from the Utrecht Work Engagement.

Scale-Student version (UWES-S-short version; Schaufeli & Bakker, 2003). Items were rated on a 7-point Likert scale, ranging from 1 (almost never/a few times a year or less) to 7 (always/every day). Student engagement was divided into the subdimensions of absorption, dedication, and vigour. In this study, Cronbach's alphas also showed good internal consistencies (absorption .79, .79; dedication .85, .82, and vigour .80, .82) at Times 1 and 2, respectively.

Student loyalty

Student loyalty was measured by an existing scale with five items, from Hennig-Thurau et al., (2001). On a 7-point Likert scale, statements had to be rated from 1 (strongly disagree) to 7 (strongly agree). In this study, Cronbach's alphas showed good reliability: .86 at Time 1 and .87 at Time 2.

Additional questions

An open-ended question at the end was included to allow students to express their thoughts about the questionnaire. Students were also asked some general questions related to their age, gender, ethnicity, study year, and educational program/major.

Analyses

First, we tested whether the missing data in our sample were missing completely at random using Little's MCAR test (see Little, 1988). Based on this test, $\chi^2(10) = 10.326$, $p = .412$, we concluded that the missing values pattern did not depend on the data values; that is, the complete-cases data were a random subset. Therefore, we used complete-cases data.

Second, the data were used to evaluate two cross-lagged panel models (CLPM). Since we had only two time points, using random intercept cross-lagged panel model analysis was impossible (Hamaker, Kuiper, & Grasman, 2015). In Model 1, we considered relationship quality as a higher-order construct consisting of two latent factors. Furthermore, a latent factor for engagement was included, for which the sum scores of vigour, dedication, and absorption were used as indicators. Finally, student loyalty was incorporated as a manifest variable. Both hypotheses were tested in this model. To evaluate Hypothesis 1, we examined the strength and ordering of the relations between the relationship quality dimensions. We investigated the paths between trust at Time 1 and the 'resulting' affective relationship quality dimensions of commitment, conflict, and satisfaction at Time 2.

The primary latent factor is trust, for which trust in honesty and trust in benevolence are used as indicators. The second latent factor is affect, which consists of the relationship quality dimensions of satisfaction, affective commitment, and (lack of) affective conflict.

To test Hypothesis 2, we investigated whether the paths from trust and affect (Time 1) to engagement and loyalty (Time 2) were stronger than from engagement and loyalty (Time 1) to trust and affect (Time 2).

Model 2 included the five manifest constructs for relationship quality, the three student engagement manifest constructs, and student loyalty. To evaluate Hypothesis 1, we tested whether the combined paths from trust in honesty and benevolence (Time 1) to affective commitment, affective conflict, and satisfaction (Time 2) were stronger than the combined paths from the affective constructs (Time 1) to trust in honesty and benevolence (Time 2). To examine Hypothesis 2, we examined whether the sequence in which the combined paths from the relationship quality constructs (Time 1) go to engagement and loyalty (Time 2) was more likely than the other way around, in which engagement and loyalty (Time 1) lead to the relationship quality constructs (Time 2).

This study's analysis was conducted using the lavaan package for structural equation modelling in R (R Core Team, 2012), in line with previous research in the field of educational psychology that has examined cross-lagged relations (e.g., Burns, Crisp, & Burns, 2020; Košir & Tement, 2014; Morinaj & Hascher, 2019; Nicholson & Putwain, 2020; Sánchez-Álvarez, Extremera, & Fernández-Berrocal, 2019). The R code for the CLPM analyses, including the two types of evaluation of the hypotheses using the GORICA function, and supplemental materials, can be downloaded (https://github.com/rebeccakuiper/GORICA_in_CLPM).

The specific hypothesized orderings of cross-lagged parameters cannot be tested with straightforward hypothesis testing. However, they can easily be evaluated with (order-constrained) model selection. We used GORICA weights (Altinisik et al., 2018; Kuiper, 2020; Kuiper, Hoijsink, & Silvapulle, 2011), an Akaike Information Criterion (AIC; Akaike, 1978) type of criterion, which can evaluate order-restricted, theory-based hypotheses as in this study. We evaluated each of our hypotheses against its complement, representing all possible orderings (i.e., all other possible hypotheses; Vanbrabant, Van Loey, & Kuiper, 2020). The resulting GORICA weights quantify the support for the hypotheses and their complements (cf. Akaike, 1978; Burnham & Anderson, 2002; Wagenmakers & Farrell, 2004). To calculate these GORICA weights, we used the goric function (Vanbrabant & Kuiper, 2020) of the restriktor R package (Vanbrabant & Rosseel, 2020).

Results

Descriptive statistics

In Table 2, means and standard deviations of the constructs at Times 1 and 2 are shown. The sample sizes differed between Times 1 and 2 (i.e., n at T1 = 1031 and n at T2 = 876). The means and standard deviations for relationship quality dimensions, student engagement dimensions, student loyalty at the two time points did not seem to differ much from each other.

CLPM with latent factors for trust and affect

Before we evaluated the hypotheses, we first checked for measurement invariance to examine whether the same constructs were measured over both time points (i.e., that the

Table 2. Means and Standard Deviations (SD) of Constructs

	Time 1			Time 2		
	<i>n</i>	<i>Mean</i> ^a	<i>SD</i>	<i>n</i>	<i>Mean</i> ^a	<i>SD</i>
Relationship quality dimensions						
Trust in benevolence	1024	15.62	3.76	864	14.97	3.76
Trust in honesty	1024	15.79	3.24	864	15.09	3.27
Satisfaction	1024	14.70	3.85	864	14.33	3.92
Affective commitment	1024	14.96	4.07	864	14.41	3.94
Affective conflict	998	14.37	4.34	864	15.06	4.14
Student engagement dimensions						
Absorption	998	12.96	3.78	798	12.41	3.81
Dedication	998	16.00	3.57	798	15.51	3.47
Vigour	998	12.86	3.62	798	12.32	3.59
Student loyalty	998	26.01	6.41	798	25.36	6.63

^aThe means are based on the sum scores of variables (relationship quality dimensions range: 3–21; student engagement dimensions range: 3–21; student loyalty range: 5–35).

constructs had the same meaning across measurement occasions, see Putnick & Bornstein, 2016). To that end, a model without constraints was compared with a model where the factor loadings were constrained (i.e., weak measurement invariance) using the χ^2 difference test (see Table 3).

First, we evaluated both hypotheses in a model where the latent relationship quality constructs for trust and affect were included (i.e., Model 1a). Because the χ^2 difference test was statistically significant (see Table 3), we could not assume weak measurement invariance, although it has been argued that the criteria for testing measurement invariance may be too strict (Muthén & Asparouhov, 2013). Based on the comparisons of standardized factor loadings at Times 1 and 2, affective conflict measures differed over time (see also Table 3).

Therefore, we tested a new model in which affective conflict was excluded (i.e., Model 1b). When affective conflict was removed from the analyses, we could assume strong measurement invariance, since the χ^2 difference test was not statistically significant (see Table 3), indicating that the same constructs were measured over time. Both hypotheses were evaluated using Model 1b. Results indicated that order-restricted hypothesis 1 had

Table 3. Fit Indices for Models 1a & b

Model	χ^2	<i>df</i>	$p \Delta\chi^2$	RMSEA	SRMR	CFI	TLI
Model 1a							
Unconstrained model	885.53	114					
Weak factorial invariance	865.45	109	.001				
Model 1b							
Configural invariance	715.87	78	-				
Weak factorial invariance	721.02	82	.272				
Strong factorial invariance	725.49	84	.107	.07	.05	.94	.92

Note. RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; CFI = comparative fit index; TLI = Tucker-Lewis index.

1.7 times more support than its complement. This means that there is support for the hypothesis that the relation between trust at Time 1 and affect at Time 2 is stronger than the reverse ordering. Furthermore, order-restricted hypothesis 2 had 1.4 times more support than its complement. In other words, there is some support that the relation between relationship quality at Time 1 and student engagement and loyalty at Time 2 is stronger than the reverse ordering.

CLPM with manifest variables

Subsequently, we tested a model in which we examined all five dimensions of relationship quality and the three dimensions of engagement and student loyalty separately. All variables were included as manifest variables. Because our previous analyses indicated that we could not assume measurement (i.e., factorial) invariance for affective conflict over time, we estimated a model with affective conflict (i.e., Model 2a) and without affective conflict (i.e., Model 2b). Results for Model 2a revealed that, as hypothesized, the results showed that order-restricted hypothesis 1 had 4.1 times more support than its complement. This result indicates that cross-lagged relations from trust in benevolence and trust in honesty at Time 1 to affective commitment, affective conflict, and satisfaction at Time 2 are more likely than the reverse ordering. Furthermore, cross-lagged relations from relationship quality at Time 1 to student engagement and student loyalty at Time 2 also supported our hypotheses. The results showed that order-restricted hypothesis 2 had 148.3 times more support than its complement. Evaluation of the model without affective conflict (Model 2b) still confirmed the hypotheses, albeit the results were less strong, that is, order-restricted hypothesis 1 had 2.6 times more support than its complement; order-restricted hypothesis 2 had 14.0 times more support than its complement.

Discussion

Within this study, based on the theoretical underpinnings, we were interested in the strength and directionality of the relations between the relationship quality factors of trust and affect and of the associations between relationship quality, student engagement, and loyalty. This study used a relational approach by applying a newly developed relationship quality scale for higher education (Snijders et al., 2018, 2019, 2020). The focus was on students' perceptions of the quality of their relationships with all contact persons from their educational institution (e.g., teachers, professors, mentors, exam committee, librarians, and other faculty/staff members). Students' perceptions were examined to illuminate the associations between relationship quality dimensions in higher education over time, and also with likely outcomes (i.e., engagement with studies and loyalty intentions).

Relationship quality over time

The relationship quality factors of trust and affect were tested at both a higher level (i.e., latent factors for trust and affect) and a more fine-grained level (i.e., all relationship quality constructs taken separately). Both types of analyses confirmed that trust seems to be a precursor for affect; trust in benevolence and honesty at Time 1 have a stronger relation with affective commitment, satisfaction, and affective conflict at Time 2 than the reverse ordering. Our study's findings indicate that educational practitioners should focus on the

way students perceive trust in faculty/staff. The current research adds value to the body of knowledge on interpersonal relationships in education.

A psychological approach to trust development (Lewicki et al., 2006) mentioned the existence of a trust-distrust continuum. Our study's findings indicate that educational practitioners should focus on the way students perceive trust in faculty/staff and their higher education institution and that they should take into account the relational phase students are in (i.e., relationship intensity, see Castaldo, 2007).

When evaluating a second model leaving out affective conflict, the findings indicated that the path from trust to affect (i.e., satisfaction and affective commitment) is stronger than the reverse. Within this study, students responded differently over time to how they interpreted affective conflict, as evidenced by the test of factorial invariance, perhaps due to the multiple encounters within a student's experience. First-year students may initially understand the meaning of conflict differently from the conflict they later experience during that year (e.g., arising from unclear feedback on assignments or slow responsiveness to questions versus from negative binding study advice). Similarly, seniors might also interpret the meaning of conflict differently at the beginning of the year than near the end of the year (e.g., arising from adequate guidance versus from feedback on graduation research).

For students, the consequences of affective conflict seem to be bigger near the end of the year (e.g., difficulties surrounding internships, graduation research, negative binding study advice). Hence, our findings indicate that the meaning of affective conflict may change over time.

Relationship quality, student engagement, and loyalty

The second hypothesis focused on the strength of the ordering of relations between relationship quality, student engagement, and student loyalty. Our results confirmed H2, which proposed that relationship quality at Time 1 had a stronger association with student engagement and student loyalty at Time 2 than the reverse ordering. This study's findings contribute to the theoretical implications of student relationships in higher education (e.g., Hagenaur & Volet, 2014), which cover a broad array of positive student outcomes such as motivational outcomes (Gehlbach, Brinkworth, & Harris, 2012). This study's findings add to that body of knowledge, indicating that relationship quality is essential for student engagement and loyalty. Hence, building positive relationships with students through relationship quality might positively influence students' involvement. Following Castaldo's (2007) ideas of phases of relationship building, this study implies that relationship quality might eventually lead to loyalty during the relationship between students and faculty/staff. These findings are in line with previous studies (e.g., Hennig-Thurau et al., 2001). Student loyalty is essential for higher education institutions in several ways, for instance, positive word-of-mouth such as students' recommendations to others (Farrow & Yuan, 2011).

Limitations and future directions

Although this study adds value to the existing literature in higher education, several limitations need to be mentioned. First, the data were based on self-reported student responses. Although surveys are an acceptable way to collect data on students' perceptions and attitudes, including responses from other actors, teachers, or mentors might help get a more objective view (e.g., Demetriou, Ozer, & Essau, 2015). Therefore, it

would be interesting to replicate the study and also include teachers' perceptions and compare them with students' perceptions (see, for example, Koomen & Jellesma, 2015, who investigated both students' and teachers' perspectives in an elementary school setting).

Second, the sample used was based on students from three Dutch higher education institutions. Students were relatively evenly distributed concerning age, gender, and different educational programs of study. However, we recommend investigating the perceptions of students from several institutions from other countries, so that the intercultural interpretations of the constructs under study can be further examined (e.g., the relevance of intercultural competency through social exchange theory in a higher education setting; Pillay & James, 2015). Further investigation of student responses by study year and by gender might also reveal specific information on the relationship quality students perceive.

Next, the relationship quality construct was measured with the same items per relationship quality dimension per measurement point; however, weak measurement invariance could not be assumed for affective conflict. This means that students evaluated the affective conflict items differently over time. A possible explanation might be that in the second semester, students have had more positive or negative experiences and can better interpret what conflict means for them (i.e., irritations, frustration, and anger). Possibly, the more negative emotions (i.e., high levels of anxiety) students perceive in the relationships they have with their educational faculty and staff, the lower students' trust is in faculty and staffs' integrity, reliability, and helpfulness (see also control-value theory; Artino & Pekrun, 2014).

Future work may focus on how conflict develops over time; for example, what defining moments students indicate as conflicts and why they are critical incidents in students' academic lives (Snijders et al., 2020). Conflict within a student-teacher relationship might be due to the perception of reciprocal discontentment, disapproval, and unpredictability (Marengo et al., 2018).

Finally, collecting data from multiple time points over a closer interval could be used to apply a random-intercept cross-lagged panel analysis (Hamaker et al., 2015; e.g., Košir & Tement, 2014). Please also note that the relationships that were found only apply to the time intervals used in this study. When using a shorter time interval, the associations between variables would probably have been stronger, which is interesting to examine in future research. Furthermore, when investigating the development of loyalty, it would also be important to look over time periods such as from year to year and from students to alumni.

Conclusion

This study was a first attempt to explore the temporal ordering of the relationship quality dimensions of trust (i.e., trust in honesty and trust in benevolence) and affect (i.e., affective commitment, satisfaction, and affective conflict). We also investigated the temporal ordering between relationship quality, student engagement, and student loyalty. To that end, we used data from two time points.

This research adds to the existing body of knowledge that students' trust in the quality of their relationships with faculty/staff in higher education is essential for the development of commitment and satisfaction. Second, relationship quality factors positively influence students' engagement with their studies and their loyalty. Therefore, we recommend that higher education institutions apply a relational approach that

considers students' relationship quality evaluations in more depth. We examined the hypotheses by evaluating simultaneous comparisons between estimates. The findings supported our hypotheses; however, further research is needed to empirically capture the role of relationship quality in higher education more firmly. Moreover, we recommend investigating further the consequences of relationship quality for students' involvement and reciprocal effects using short-term longitudinal data.

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Author contributions

Remy Rikers (Conceptualization; Supervision; Writing – review & editing) Sofie Loyens (Conceptualization; Supervision; Writing – review & editing) Rebecca M. Kuiper (Formal analysis; Methodology; Software; Validation; Writing – review & editing) Ingrid Snijders, (Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Validation; Visualization; Writing – original draft; Writing – review & editing) Lisette Wijnia (Conceptualization; Data curation; Formal analysis; Methodology; Supervision; Validation; Visualization; Writing – review & editing).

Conflict of interest

All authors declare no conflict of interest.

Data availability statement

The data that support the findings of this study are available in the supplementary material for this article.

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Supporting Information

The following supporting information may be found in the online edition of the article:

Table S1. Gender and study year.