ORIGINAL RESEARCH

Crossover of Engagement Among Academic Staff and Students During COVID-19

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Purpose: Globally, the pandemic had adverse consequences on the engagement and overall well-being of individuals. From a positive psychological perspective, this study drew on processes of social exchange, Kahn's theory on personal engagement and crossover theory, to explore the impact of mutual influences among academic staff and students on the engagement of both parties. Subsequently, the study explored the positive outcomes of engagement for both academic staff and students.

Participants and Methods: Purposive, non-probability sampling was used, and cross-sectional data were collected through electronic surveys. The sample consisted of a total of 1594 students who were nested within 160 academic staff members.

Results: Findings highlighted the influence of interpersonal factors such as high student leader–member exchange on student engagement and the impact of students' lack of reciprocity on the emotional engagement of academic staff. Findings further revealed that student engagement was positively related to a deep-learning approach and negatively related to a surface-learning approach. Furthermore, this study found a positive significant association between the emotional engagement and the psychological well-being of academic staff.

Conclusion: Against the backdrop of the COVID-19 pandemic and to reduce the negative psychological and behavioural challenges resulting from the pandemic, this research intended to inform policy-makers in higher education of the impact that mutual influences among academic staff and students have on their engagement and the benefits of engagement in cultivating a culture of life-long learning among students and improving the psychological well-being of academic staff.

Keywords: engagement, lack of reciprocity, psychological well-being, student leader–member exchange, deep and surface learning

Introduction

Globally the COVID-19 pandemic has had adverse psychological consequences on the work engagement and overall well-being of employees,[1,2] as well as resulted in a decline of university students' emotional engagement.[3,4] A key priority for many organisations during this time was and still is, to reduce the negative psychological and behavioural challenges resulting from the pandemic.[2]

Engagement and psychological well-being are regarded as emerging constructs within the positive psychology domain and have become essential considerations in an organisational context.[5] Positive psychology draws on approaches and processes that enable the optimal well-being of individuals and organisations,[6] and has been labelled as jointly referring to positive emotions, meaning, and engagement.[7] Scholars have reaffirmed that engagement as a positive psychological construct is of particular importance to the higher education (HE) context.[8] A study among academic staff, for example, highlighted the importance of engagement in improving organisational citizenship behaviour.[9] With regard to students,[10] Lawson and Lawson stated that student engagement is one of the most important aspects that determine the success rate at schools and post-secondary education institutions.

Some of the earliest works on engagement include that of Kahn,[11] who considered various frameworks in the conceptualisation of what he termed a grounded theory on people's personal engagement. Kahn[11] described personal engagement as harnessing yourself in your work role, and expressing your "preferred self" physically, cognitively, and emotionally while performing your work. In line with Kahn's grounded theory of personal engagement and Astin's[12]

student involvement theory, Burch et al[13] described student engagement as a construct of emotional engagement, physical engagement, and cognitive engagement both in and out of class.

In establishing positive outcomes for HE institutions, it is important to make an effort to better understand what enables engagement as far as both academic staff and students are concerned. It appears, however, that research efforts exploring the enhancement of positive outcomes in HE have focused more often than not on the student or the lecturer in isolation,[14–16] instead of investigating the interactions that may facilitate the transference of positive experiences.[17] With reference to the transference of experiences, Westman[18] coined the term crossover and described it as a dyadic and inter-individual transmission of negative outcomes, such as strain, or positive outcomes, such as well-being, between individuals in the same environment.[18–21] Hagenauer and Volet[22] maintained that mutual influences between educators and students are of significance, and accordingly the impact of educators in supporting student performance and motivation has been widely recognised in studies addressing education within schools.[22–25] Hagenauer and Volet[22] viewed the quality and effect of teacher–student relationships as a precondition for excellence within teaching and learning, and they posited that the investigation of these relationships between the two parties can help remedy negative trends such as the dropping out of students. Accordingly, the present study aimed to gain a better understanding of the mutual influences between academic staff and students, the implications thereof for the engagement of both parties, as well as the benefits of engagement among students and academic staff.

Literature Review
Engagement and Mechanisms Underlying Crossover

Kahn's[11] work on personal engagement is based on two principles, the first being that the attitudes and behaviours of people are driven by the psychological experiences of their work, and, secondly, that these experiences are simultaneously influenced by "individual, interpersonal, group, intergroup, and organisational factors" (p. 695).[11] Kahn put forth that people's experiences of themselves, and their context influence the depths to which they decide to engage during role performance. Similarly, Fredricks et al[26] asserted that within an educational context, the concept of engagement is a function of both the individual or student and the context.

Crossover theory puts forth the possibility of a dyadic, bi-directional and inter-individual transmission of both positive and negative emotions, moods, and dispositions[18] or positive and negative outcomes such as well-being of or strain between individuals in a similar social domain.[18,19,21,27,28] For example, studies have found that strain or exhaustion can at times transfer from one colleague to another,[29] and from one spouse to the other.[30,31] Similarly, positive emotions or constructs can act as antecedents to the crossover process[32,33] between colleagues,[29] from line manager to subordinate,[17,27,33] or from teacher to student (eg, as with the crossover of flow or work passion).[32,34]

Westman[18] described the concept of crossover as the experiences of one person impacting on the experiences of another person with whom they interact. Crossover may operate directly or indirectly and can, accordingly, be explained by two main processes that underlie each.[18,35] The premise of direct crossover from one person to another is that crossover may operate via (1) empathy or an empathetic reaction, a process that is likely to occur between individuals who are closely related, share a big part of their lives, and care for one another.[18,35] Dikkers et al's[36] finding of empathy-based crossover of psychological health between husband and wife indicates support for this idea. An empathic reaction is said to occur in cases where one person (receiver) psychologically places themselves in the circumstances of another (sender) and shares their feelings. This process entails that the person (receiver) recognises and understands the feelings or thoughts of the other (sender).[28,35]

The premise of indirect processes of crossover is that crossover of stain occurs via (2) mediators or moderators of interpersonal exchange[18,37] such as personal attributes, social support, coping strategies, communication characteristics, and social undermining.[18] In their study conducted in an educational context, Warwas and Helm,[38] for example, found that crossover occurs through school teachers' characteristics (eg, enthusiastic teaching, communication clarity and support) as mediators.

Scholars also explored (3) various other mechanisms to explain indirect processes of crossover, most of these seemingly being variants of what Westman[18] referred to as aspects that underlie indirect mediating or moderating processes of crossover.

Li et al,[39] for example, found that abusive supervision accounts for crossover via a process of social interaction and explains why the psychological distress of the leader influences the psychological distress of the subordinate. Conducting a study in the context of education, Bakker[34] found that, based on the notion of emotional contagion, the flow of teachers (eg, intrinsic work motivation, work enjoyment) has a positive influence on the flow of students. Bakker determined that interactive (verbal and non-verbal) processes and the role of the teacher in designing/facilitating lessons are aspects through which contagion takes place. Contagion is described as a person's involuntary "catching" of the attitudes and behaviours of another within the same domain or with whom the person is connected.[40]

The Influence of Academic Staff Engagement on Student Engagement and Outcomes

Scholars who explored the benefits of mutual influences between teachers and students in schools found that mutual influences support student performance and motivation.[23–25] Further, Eloff et al[41] established that various aspects, such as lecturers' benevolence, support, interactions with students, and attitude toward their work, contribute to the well-being of students. This is consistent with work by Moos[42] who put forth that the social climate (eg, teacher support or lack thereof) influences morale and that cultivating positive interpersonal relationships can lead to personal growth and lower absenteeism.

Studies have highlighted that engaged workers are viewed as radiating energy and being a source of inspiration.[21] Van Mierlo and Bakker[33] agreed that the ways engaged people express themselves, their attitude, and their vocalisations can easily be "caught" by others. This aligns with Kahn's[11] assertion that the psychological experiences of people are simultaneously influenced by individual and interpersonal factors, thus aligning with the premise that mutual influences between individuals can have an impact on the positive psychological state of engagement.[18,25,43] Crossover theory describes the bi-directional and inter-individual transmission of both positive and negative emotions, moods, and dispositions among individuals.[32,33,35] According to Warwas and Helm,[38] positive emotions enable individuals to show more helpful behaviour towards others, to be fair, and to implement more socially responsible behaviour in solving problems. Taking these findings into account, the present study focused on the emotional engagement of lecturers and the implications this might have for students. As engagement can be regarded as a positive psychological state or construct,[8,43,44] the present study draws on the premises of Kahn's theory on personal engagement and crossover theory, to put forth the following hypothesis:

Hypothesis 1: There is a statistically significant positive relationship between academic staffs' emotional engagement and student engagement.

Westman[18] stated that communication characteristics (eg, what a person says or how a person reacts) and social support (eg, transactions with people that provide support) serve as mediators and moderators of crossover. Westman[18] postulated that processes of social interaction with others (eg, providing appraisal, information, or instrumental support) can account for crossover. Gutermann et al[45] built on this premise and, using LMX as a mediator in the crossover link between the engagement of leaders and followers, determined that the engagement of leaders can serve as a salient example to followers and can have an impact on followers' level of engagement. These scholars asserted that better relationships exist between highly engaged leaders and their followers (in-group) and that, because the followers view the leaders as role models, good follower–leader relationships improve the engagement of the followers. According to Gilal et al,[32] lecturers can serve as role models to students, and students can emulate their lecturers' work behaviours.

Farr-Wharton et al[46] asserted that lecturers guide students' learning behaviour through interacting with their students. The scholars put forth the notion of student–LMX and described it as a temporal process due to the number of interactions between students and lecturers generally being limited over the period of a semester. They described positive student–LMX as generally characterised by supportive, reciprocal, and positive interactions between lecturers and students. Based on the premises of crossover theory and the findings of relevant prior empirical studies, the present study suggested that student–LMX could act as a mediator in the crossover of engagement from academic staff to students. Viewing LMX as a mediator in the crossover process captures the notion that interpersonal relations exist between the sender and receiver within the work or study context as outlined in crossover theory.[18] Furthermore, it also provides for alignment with Kahn's[11] assertion that interpersonal factors influence engagement. Accordingly, the present study put forth the following hypotheses:

Hypothesis 2: There is a statistically significant positive relationship between academic staffs' emotional engagement and student–LMX.

Hypothesis 3: There is a statistically significant positive relationship between student–LMX and student engagement.

Hypothesis 4: The positive relationship between the emotional engagement of academic staff and student engagement is mediated by student–LMX.

Generally, engaged individuals are enthusiastic, take pride in their work, and are willing to put effort into their work.[47] A significant number of research studies have indicated that engaged employees outperform employees who are disengaged.[48–53] This finding is in alignment with Kahn's[11] description of personally engaging behaviours that bring alive the person and the obligatory role (eg, becoming physically involved, cognitively vigilant, and emotionally connected to others in how the work in the obligatory role is performed). A similar observation can be made in respect of students; engaged students show interest in terms of learning activities[54] and perform better academically.[55] Student engagement, which is a multidimensional construct comprising emotional engagement, physical engagement, and cognitive engagement (in and out of class)[13] has been indicated as valuable because of its association with positive outcomes such as improved academic performance,[56,57] student well-being,[58] and retention.[59] Studies have further emphasised the importance of engagement in students' learning approach,[46,54] and demonstrated its association with deep learning.[60,61]

Scholars have advocated a focus on deep approaches to learning because deep learning is regarded as more closely aligned with the overarching purpose of education, which is to "sow the seed of lifelong learning" for the good of the public.[62] This is in agreement with an earlier study conducted in HE by Donnison and Penn-Edwards[63] in which they explain that a deep approach to learning is preferable to a surface approach, although the latter (in the form of, for example, a rote-learning strategy) is required at times.

Students' deep approach to learning has been described as an intrinsic motivation to understand the work studied, and this approach has been associated with a personal commitment to studies.[64,65] Deep learning is regarded as making an important contribution to students' success at universities,[66] and also preparing students to be lifelong collaborative and connected problem-solvers.[67] On the other hand, the surface learning approach is regarded as the tendency to study by relying on memorisation rather than comprehension, and on the accumulation of information for the purpose of meeting an extrinsic objective, for example, passing a test or an exam.[64,65] Based on the importance of engagement in supporting the intrinsically motivated intent of students to understand the meaning of their work,[66,68,69] and on the findings of previous studies that demonstrate the influence of engagement on learning approaches,[60,61,68,70] the present study proposed the following hypotheses:

Hypothesis 5a: There is a statistically significant positive relationship between student engagement and a deep-learning approach.

Hypothesis 5b: There is a statistically significant negative relationship between student engagement and a surface-learning approach.

Figure 1 provides an overview of the proposed theoretical framework for the crossover of engagement from academic staff to students.

The Influence of Students on Academic Staff Engagement and Outcomes

Past research has focused on the role of the lecturer as the promoter of outcomes relating to students, such as providing the needed support or resources that would influence students' academic achievement, work passion, exhaustion, engagement, and well-being.[32,41,71–73] In their study, Wirtz et al[74] ask the question, "What about the leader?" Similarly, the present study posed the question, "What about the lecturer?" and examined the influence of students on lecturers' perceptions and psychological outcomes.

Van Horn et al[25] cited an example in which an educator described the scenario of putting in a lot of effort into the job and not reaching learners or getting back little in return in terms of enthusiasm or progress, as depressing. Van Horn et al[25]
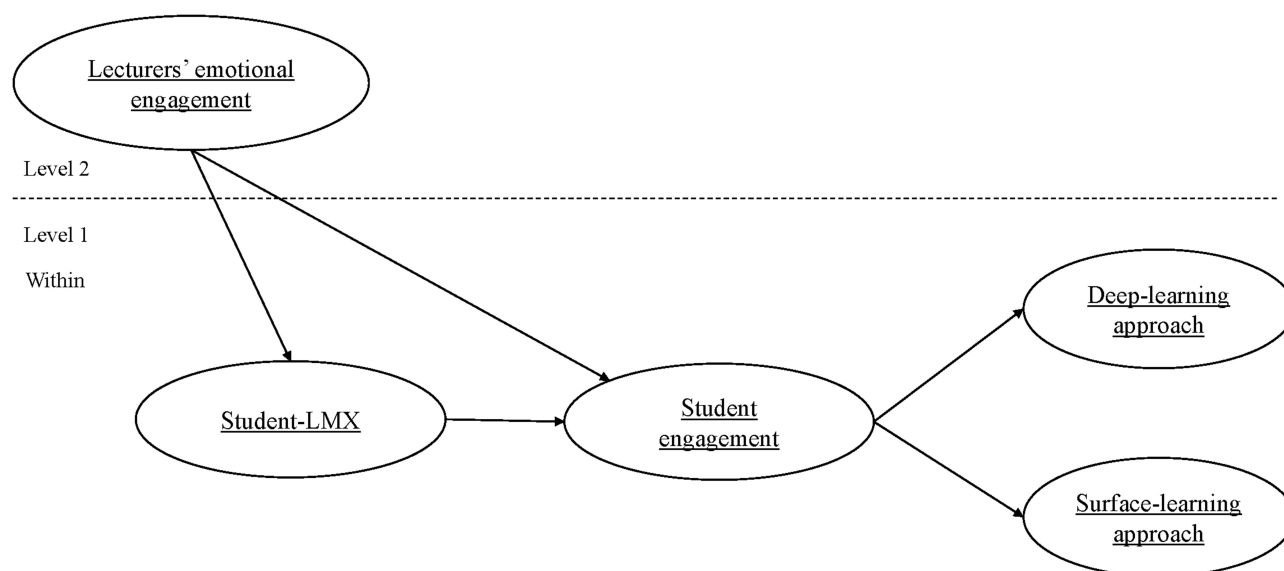
Figure 1 Conceptual framework – crossover of engagement from lecturer to students.

referred to this discrepancy between the person's internal standards, the person's investments and outcomes as a lack of reciprocity. Of importance here is Kahn's[11] assertion that interpersonal and group factors, among others, influence psychological experiences in a work context and that these experiences, in turn, influence personal engagement or disengagement. It can thus be assumed that perceptions regarding the existence of interpersonal exchanges or the lack thereof can act as antecedents to employee engagement. Studies have found that a lack of reciprocity in relationships (ie, where more is given than is received) results in emotional exhaustion and burnout.[75,76] Exhaustion and burnout may lead to the withdrawal of internal energy from emotional, cognitive, and physical labour, a situation which Kahn[11] described as disengagement. Accordingly, the present study formulated the following hypothesis:

Hypothesis 6: There is a statistically significant negative relationship between academic staff's perceptions of a lack of reciprocity and their emotional engagement.

Munyon et al[77] stated that the process of reciprocity complements the process of crossover in which one individual's psychological states may affect (directly, or through mediators of interpersonal exchange) another individual's experience of similar states in the same social domain.[18,29,31] Wirtz et al[74] provided an example of the aforementioned process: leaders who perceive the members of their team as being engaged tend to experience higher levels of engagement themselves because they can rely on their team members' efforts, commitment, and performance. Therefore, the present study put forth that lack of reciprocity as an interpersonal exchange process allows for crossover from the students to the academic staff member. This notion is in alignment with findings from a past study that the engagement of the follower influences the engagement of the leader.[74] Similarly, studies have shown that psychological states can transfer from the group or team to the individual.[29,78] Further, Bakker et al[29] argued that a collective mood (eg, a shared feeling of work engagement at the team level) can cross over from the collective to the individual, an argument for which they have found support. Thus, in relation to the teacher-student social-exchange relationship, premises regarding indirect processes of crossover, and assumptions based on the empirical studies listed above, the present study formulated the following hypotheses:

Hypothesis 7: There is a statistically significant positive relationship between student engagement and lecturers' emotional engagement.

Hypothesis 8: There is a statistically significant negative relationship between student engagement and lecturers' perceptions of lack of reciprocity.

Hypothesis 9: The positive relationship between student engagement and lecturers' emotional engagement is mediated by lecturers' perceptions of lack of reciprocity.

Van Horn et al[25] argued that, in the teacher-student exchange relationship, the outcomes of students are associated with teacher burnout. Jackson et al[79] included burnout, engagement, and psychological/physical ill health in their conceptualisation of positive and negative aspects of work-related well-being. This study regarded the physical, emotional, and cognitive engagement of students as outcomes that had implications for lecturers' engagement, and, in turn, lecturers' well-being. Models that describe well-being as a state of relatively stable optimal human functioning refer to eudaimonic or psychological well-being.[80] Wright and Hobfoll[81] and Cilliers and Flotman[82] argued that psychological well-being can assist individuals to better cope with the demands of life and work. Psychological well-being is not only associated with positive mental and physical health[83,84] but has further been shown to enhance productivity and performance.[81,83] Considering the importance of well-being, scholars have called for deliberate efforts to both assess and promote well-being.[85]

Past studies have shown that high levels of engagement are positively associated with well-being.[53,86] Further, scholars have identified engagement as an indicator of positive well-being in the workplace.[87] Robertson and Cooper[83] argued that, in order to determine the full extent of employees' engagement, their psychological well-being must be included. The present study aimed to replicate the psychological well-being benefit of engagement in a crossover setting, and, in this regard, it put forth the following hypothesis:

Hypothesis 10: There is a statistically significant positive relationship between lecturers' emotional engagement and psychological well-being.

Figure 2 depicts the main elements of the proposed theoretical framework for the crossover of engagement from students to academic staff, and the well-being benefit of engagement.

Methods
Participants and Procedure
Cross-sectional data were collected by means of electronic surveys distributed to academic staff and students at a South African university. Purposive, non-probability sampling was used as a sampling strategy. Academic staff members had to have lectured a second-semester undergraduate module during 2020 or a first-semester module during 2021 to meet the criteria for inclusion in the study. As students were nested within lecturers, the students needed to have registered for a specified module taught by a participating lecturer. The responses of students who were not matched with a participating lecturer were excluded, as matching was a requirement for testing the hypotheses.
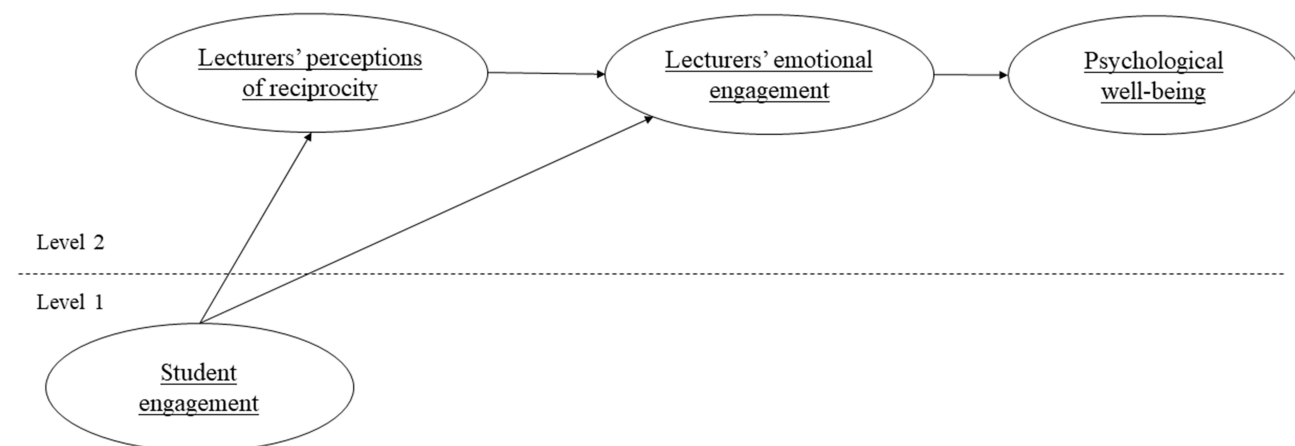

Figure 2 Conceptual framework – crossover of engagement from students to lecturers.

Maximising the sample size of level 2 participants (ie, the lecturers in the present study) is more important than maximising the sample size of level 1 participants (ie, the students in the present study) when researchers wish to draw inferences about contextual or group effects, and particularly about variation in groups.[88] The proportion of singletons (n = 1) or small cluster sizes (eg, n = 2) has little impact on either the point or interval estimates of model parameters when large numbers (eg, 200) of level 2 units are included.[89,90] Only 13% singletons were included in the present study, a percentage which was expected not to have an adverse impact on the parameter estimates. Also, the level 2 sample size was maximised to ensure sufficient power for the model estimates on level 2. In total, 1 594 students (level 1) were nested within 160 lecturers (level 2), and the sample was drawn from all the faculties in the university. The average cluster size comprised 9.9 members. In the student sample, 56% were female and 44% male. The majority of the respondents fell within the age category of 20 to 22 years old (38%), followed by the age category of 23 to 25 years old (24%). In the lecturer sample, 48% were female and 52% male. The majority of the respondents fell within the category of 30 to 39 years old (29%), followed by the category of 50 to 64 years old (28%). The majority (97%) of the lecturers occupied permanent (including fixed-term contract) positions, and only 3% of the sample were in temporary positions.

Measures

The survey for academic staff included the following measures:

Engagement of academic staff: The Job Engagement Scale (JES)[91] was chosen as a measure of engagement. A second-order factor measure of the JES was not supported by the data. Thus, in alignment with Kahn's[11] premise relating to the explanation of the emotional reactions of people to conscious and unconscious phenomena, the six-item emotional engagement subscale of the JES was used to measure emotional engagement. The scale demonstrated omega reliability (ω) of 0.94 and factor determinacy (FD) of 0.98. The model fit in respect of the scale was good (comparative fit index (CFI) = 0.98; standardised root mean square residual (SRMR) = 0.02). Respondents could score the items on a 5-point rating scale ranging from 1 = "strongly disagree" to 5 = "strongly agree".

Psychological well-being: The Schwartz Outcome Scale-10 (SOS-10)[92] was used to measure psychological well-being. The scale consists of 10 items; however, due to method effects which showed item redundancy, only eight items were included in the present study.[93,94] The scale demonstrated ω = 0.91, and FD = 0.96, and the model fit was good (CFI = 0.97; SRMR = 0.04). Items were rated on a 7-point scale ranging from 1 = "never" to 7 = "all of the time/nearly all of the time".

Lack of reciprocity: In alignment with work done by Schaufeli et al[95] and Tayfur and Arslan,[76] perceptions of lack of reciprocity were measured by three items. These items were adapted to reflect the HE context. The items read as follows: "I spend much time, effort and consideration on work for students in the specified module, but in general, students in the specified module give back little effort, appreciation, and interest", "I invest more in the relationship with students in the specified module than what I receive back in return from them", and "I know that my students will complain, no matter what I do". Items could be rated on a 5-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree". The scale was a just-identified model (zero degrees of freedom (*df*)), and it demonstrated good model fit (CFI = 1.00; SRMR = 0.00), ω = 0.81, and FD = 0.93.

The survey for students included the following measures:

Student engagement: The 24-item Burch Engagement Survey for Students (BESS)[13] was used to measure students' engagement. Due to method effects of item redundancy and item adjacency,[94,96,97] the residuals of two items (v51 and v50) were allowed to correlate. Item adjacency is prevalent when items are block-ordered for each measure used in a survey, which creates a high likelihood of respondents rating items similarly in a process to avoid cognitive dissonance, resulting in elevated correlated residuals.[97,98] The scale demonstrated ω = 0.91, FD = 0.93, and the model fit of the scale was good (CFI = 0.95; SRMR = 0.04). The measure was rated on a 5-point scale ranging from 1 = "strongly disagree" to 5 = "strongly agree".

Approaches to learning: The approach to learning was measured by the 20-item Revised Two-Factor Study Process Questionnaire (R-SPQ-2F).[99] The scale measures deep- and surface-learning approaches, and contains four subscales (deep motive, surface motive, deep strategy, and surface strategy). In respect of the deep-learning approach subscale, two items were allowed to correlate due to method effects of item redundancy and adjacency.[94,96,97] The scale demonstrated good model fit (CFI = 0.96; SRMR = 0.03), ω = 0.87, and FD = 0.94. In respect of the surface-learning approach

subscale, method effects were apparent, and, accordingly, items v93 and v96, and items v80 and v81 were allowed to correlate.[93,94] The scale demonstrated good model fit (CFI = 0.91; SRMR = 0.05), ω = 0. 81, and FD = 0.90.

Student–LMX: Student–LMX was measured using an adapted version of the seven-item LMX scale of Graen and Uhl-Bien,[100] which is measured on a 5-point Likert scale. The first three items of the scale were allowed to correlate. These items, due to their being in close proximity to each other and reflecting the perceived personal interest of the lecturer in the student, might have resulted in respondents giving similar ratings and avoiding cognitive dissonance.[97,98] The scale demonstrated good model fit (CFI = 0.97; SRMR = 0.04), ω = 0.87, and FD = 0.94.

Data Analysis

The path model of effects between all the constructs was tested using structural equation modelling (SEM) in Mplus version 8.6. The maximum likelihood robust (MLR) estimator was used to address non-normality in the data.[101] Based on recommendations by Kenny et al[102] and McNeish et al,[103] model fit was appraised by considering CFI and SRMR, although other popular indices, such as TLI and RMSEA, were also reported. Note should be taken of the effect of the degrees of freedom (df) on the model fit of TLI and RMSEA (all the models in the study had very low df). A CFI value above 0.90 but preferably more than 0.95 and SRMR of preferably less than 0.08[104,105] were used. Hu and Bentler[104] reported cutoffs for TLI and RMSEA at more than 0.95 and less than 0.08, respectively. The variables used in the structural models were optimally weighted regression factor scores that represented the latent variables under investigation in the present study. FD coefficients for each of the adapted measurement models were relevant to ensure the factor scores closely represented the latent variables or constructs of concern. A factor score determinacy value of 0.80 and above was regarded as demonstrating good internal consistency.[106] Correlation results were interpreted as small (r = 0.10), medium (r = 0.30), and large (r = 0.50).[107] Confidence intervals (CIs) were set at a level of 95% and evaluated in accordance with the guidelines for bootstrap results (ie, where CIs did not include zero, the indirect effect was regarded as significant).[108] Further, to ensure non-biased indirect effects, the delta method with a sandwich estimator for estimating robust standard errors for non-normal data was used. MLR in Mplus does not allow for bootstrapping to determine the standard errors for non-normal data and, therefore, the sandwich estimator which provides similar estimates as those obtained when using the bootstrapping technique was used.[101]

As each student group was nested within one lecturer, multilevel modelling was required.[109] To justify the use of the multilevel analysis of nested data, the intraclass correlation (ICC) coefficients were calculated. The ICC coefficient examines the proportion of variance of a single variable that can be accounted for at the between-group level.[88] Thomas and Heck[110] (see also Jak et al)[88] recommended ICC values of 0.05 and higher. All predictors were grand mean centered. This was done because the students participating in the study were enrolled in different modules that were facilitated by a specific lecturer, and grand mean centering allowed for the interpretation of the intercept as the expected outcome[111] (ie, the mean across all the students enrolled in the module facilitated by the specific lecturer). Due to the sparseness of data on level 1 (model of students), regression scores of student engagement per class size were used on the level 2 unit (model of academic staff). Between-cluster variance was estimated using random intercepts. To be noted is Clarke's[90] simulation results which show that when the average cluster size of balanced and unbalanced data exceeds five observations for two-level models, valid and reliable estimates of all parameters can be obtained.

Results
Descriptive Statistics, Correlations, and Reliabilities

Table 1 and Table 2 show the standard deviations, correlations, and skewness/kurtosis of all the variables (as listed in these tables) in the analyses. The data had no missing values. Mardia's multivariate skewness and kurtosis coefficients for the lecturer sample (n = 160; b = 9.72, 69.62) and for the student sample (n = 1 594; b = 4.7, 72.30) were statistically significant, which suggested non-normal data distribution, and which justified the use of MLR estimation in the study. As reported in Table 2, the results did not support the likelihood of adverse multicollinearity as the scale reliabilities of the variables with high intercorrelations were high (ω ≥ 0.8), and the ratio of sample size (N = 160) to the number of latent variables (6) exceeded 6:1.[112]

Table 1 Descriptive Statistics, Correlations, Skewness and Kurtosis of Study Variables at the Within Level and the Between Level (Crossover of Lecturer Engagement to Students)

	Variable	Skewness	Kurtosis	1	2	3	4	5	FD	ω
1	Lecturers' emotional engagement (between level)	−0.73	−0.06	0.81					0.98	0.94
2	Student–LMX	−0.52	−0.58	−0.02	0.70				0.94	0.87
3	Student engagement	−1.06	2.10	−0.13	0.44*	0.80			0.93	0.87
4	Students' deep-learning approach	−0.19	−0.55	0	0.41*	0.56*	0.63		0.94	0.87
5	Students' surface-learning approach	0.46	−0.15	0	0.03	−0.06	0.19	0.55	0.90	0.81

Notes: Student sample, N = 1 594. Underlined values on the diagonal represent the square root of the average variance extracted (AVE).[113] The variables in the correlation matrix show discriminate validity for all values below the diagonal are lower than the square root of the AVE presented on the diagonal. Factor scores are Z values with a mean of 0 and a standard deviation of 1. *Statistically significant at $p \leq 0.05$.
Abbreviations: FD, factor score determinacy; ω, McDonald's omega.

Table 2 Descriptive Statistics, Correlations, Skewness and Kurtosis of Study Variables at the Within Level and the Between Level (Crossover of Student Engagement to Lecturers)

	Variable	Skewness	Kurtosis	1	2	3	4	FD	ω
1	Students' engagement	−1.06	2.10	0.70				0.93	0.87
2	Lack of reciprocity	−0.60	−0.63	−0.16	0.75			0.93	0.81
3	Lecturer's emotional engagement	−0.73	−0.06	−0.05	−0.36*	0.81		0.98	0.94
4	Psychological well-being	−1.02	0.44	−0.01	−0.27*	0.51*	0.72	0.96	0.91

Notes: Lecturer sample, N = 160. Underlined values on the diagonal represent the square root of the AVE.[113] The variables in the correlation matrix show discriminate validity for all values below the diagonal are lower than the square root of the AVE presented on the diagonal. Factor scores are Z values with a mean of 0 and a standard deviation of 1. *Statistically significant at p ≤ 0.05.
Abbreviations: FD, factor score determinacy; ω, McDonald's omega.

Testing the Path/Structural Model

The ICC values found were 0.075 for student engagement and 0.095 for student–LMX. These values justified the use of multilevel analyses. Table 3 presents the multilevel path model fit statistics of the crossover of academic staff's emotional engagement to students via student–LMX, as well as the statistics of the student sample prior to the crossover effects. The results showed that, when considering CFI and SRMR as the decisive indicators where low degrees of freedom (df = 2) were evident, the multilevel path model of the crossover of lecturers' emotional engagement to students via student–LMX (Model 1) provided adequate model fit (CFI = 0.91, $SRMR_{Within}$ = 0.05, $SRMR_{Between}$ = 0.02; TLI = 0.61; RMSEA = 0.18). Table 4 presents the fit statistics of the multilevel path model of the crossover of student engagement to academic staff via lecturers' perceptions of lack of reciprocity, as well as the statistics of the academic staff sample prior to the crossover effects. The multilevel path model of the crossover of student engagement to academic staff via lack of reciprocity (Model 3) was a (just-) identified model which fitted the data well (CFI = 1.00, $SRMR_{Within}$ = 0.00, $SRMR_{Between}$ = 0.02; TLI = 1.00; RMSEA = 0.00). Furthermore, both models without the crossover effects (models 2 and 4) displayed good model fit: student–LMX model (CFI = 0.96, $SRMR_{Within}$ = 0.04, $SRMR_{Between}$ = 0.00; TLI = 0.88; RMSEA = 0.12); lack of reciprocity model (CFI = 0.98, $SRMR_{Within}$ = 0.00, $SRMR_{Between}$ = 0.03; TLI = 0.98; RMSEA = 0.03).

Table 3 Fit Statistics of Path Models (Crossover of Lecturers' Emotional Engagement to Students via Student–LMX)

Model	χ^2	df	p-value	CFI	TLI	$SRMR_B$	$SRMR_W$	RMSEA
1. Multilevel model: Student–LMX	99.61	2	0.00	0.91	0.61	0.02	0.05	0.18
2. Student–LMX model (without crossover)	44.05	2	0.00	0.96	0.88	0.00	0.04	0.12

Abbreviations: χ^2, chi-square statistic; df, degrees of freedom; CFI, comparative fit index; TLI, Tucker-Lewis index; $SRMR_B$, standardised root mean square residual value for between; $SRMR_W$ standardised root mean square residual value for within; RMSEA, root mean square error of approximation.

Table 4 Fit Statistics of Path Models (Crossover of Student Engagement to Academic Staff via Lack of Reciprocity)

| Model	χ^2	df	p-value	CFI	TLI	SRMR$_B$	SRMR$_W$	RMSEA
3. Multilevel model: Lack of reciprocity	1.66	2	0.44	1.00	1.00	0.02	0.00	0.00
4. Lack of reciprocity model (without crossover)	2.15	1	0.14	0.98	0.95	0.03	0.00	0.03

Abbreviations: χ^2, chi-square statistic; *df*, degrees of freedom; CFI, comparative fit index; TLI, Tucker-Lewis index; SRMR$_B$, standardised root mean square residual value for between; SRMR$_W$, standardised root mean square residual value for within; RMSEA, root mean square error of approximation.

To test the hypotheses, the MLR estimator in Mplus was used. Figures 3 and 4 illustrate the results of the multilevel path analysis of the proposed crossover of engagement from lecturer to students and vice versa. It should be noted that, for purposes of reporting the results, significant implies "statistically significant".

To test the first crossover hypotheses, lecturers' emotional engagement was regressed on student–LMX and student engagement, and student–LMX was regressed on student engagement. At the between level, the emotional engagement of lecturers showed an insignificant relationship to student engagement ($\beta = -0.14$, $p = 0.40$). Therefore, hypothesis 1 could not be supported. Hypothesis 2 was also not supported, as results showed a non-significant relationship between the emotional engagement of academic staff and student–LMX ($\beta = -0.02$, $p = 0.90$). At the within level, the direct effect of student–LMX on student engagement ($\beta = 0.44$, $p < 0.01$) was significantly positive (medium effect), providing support for hypothesis 3. To test the indirect effect, unstandardised path coefficients obtained from the Mplus analysis were used. Hypothesis 4 (ie, student–LMX mediated the positive relationship between the engagement of academic staff and students) was not supported ($\beta = -0.00$; $p = 0.89$; 95% CI [−0.05, 0.04], CIs included zero). Student–LMX explained 20% of the variance in student engagement ($R^2 = 0.20$).

To test hypotheses 5a and 5b, student engagement was regressed on a deep- and a surface-learning approach. A significantly positive relationship was found between student engagement and a deep-learning approach ($\beta = 0.56$, $p < 0.01$, large effect). A significantly negative relationship was found between student engagement and a surface-learning approach ($\beta = -0.06$, $p = 0.05$, small effect). Therefore, both hypotheses 5a and 5b were supported. Student engagement explained 31% of the variance in a deep-learning approach ($R^2 = 0.31$), whereas student engagement explained only 0.4% of the variance in a surface-learning approach ($R^2 = 0.004$), a percentage indicating that it was of almost no practical significance.

For the portion of the model predicting lecturers' emotional engagement (see Figure 4) at the between level, the direct effect of lack of reciprocity on lecturers' emotional engagement ($\beta = -0.38$, $p < 0.01$) was negative and statistically significant
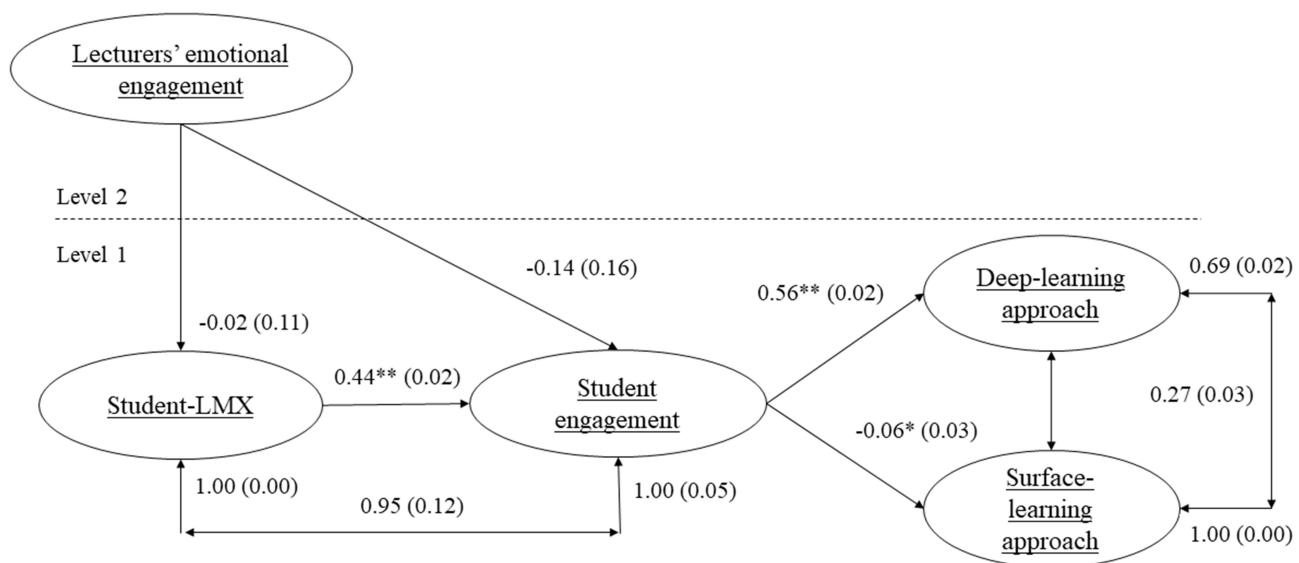
Figure 3 The path/structural model tested (crossover of engagement from lecturer to students).
Notes: **p < 0.01; *p < 0.05.
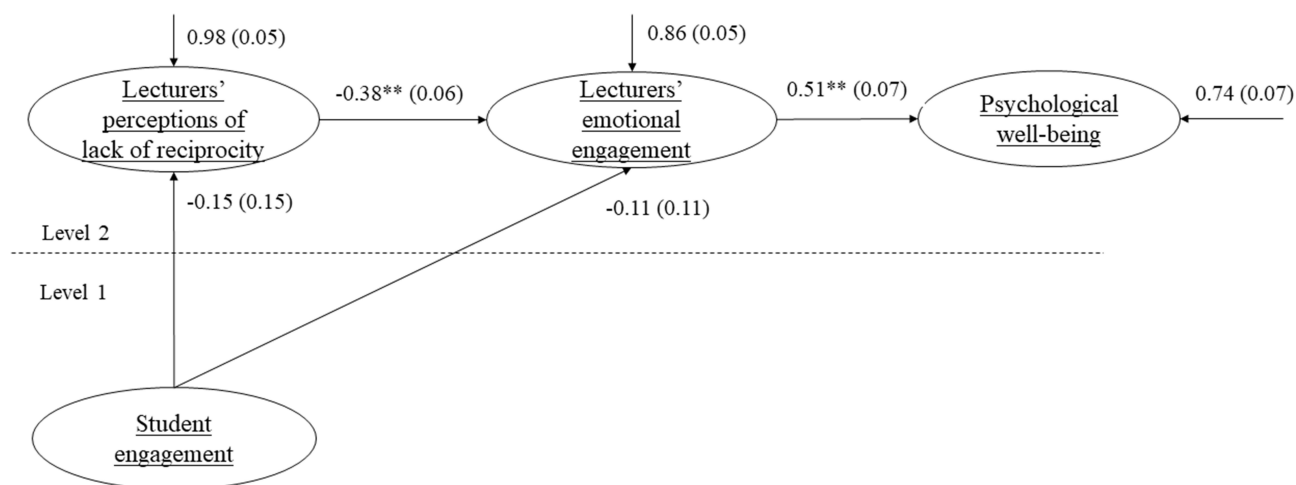
Figure 4 The path/structural model tested (crossover of engagement from students to lecturers).
Note: **p < 0.01.

(medium effect), providing support for hypothesis 6. Hypothesis 7 (β = −0.11, p = 0.32) and hypothesis 8 (β = −0.15, p = 0.29) were not supported. Furthermore, the proposed indirect effect of lack of reciprocity in the relationship between the engagement of students and the emotional engagement of academic staff (hypothesis 9) was non-significant (β = 0.15; p = 0.31; 95% CI [−0.14, 0.43], CIs included zero). Lack of reciprocity explained 14% of the variance in emotional engagement ($R^2 = 0.14$).

For the portion of the model predicting psychological well-being (see Figure 4) at the between level, the direct effect of lecturers' emotional engagement (β = 0.51, p < 0.01, large effect) was significantly positive, providing support for hypothesis 10. Emotional engagement explained 26% of the variance in psychological well-being ($R^2 = 0.26$).

Discussion

The purpose of this study was to gain a better understanding of the mutual influences between academic staff and students, the implications thereof for the engagement of both parties, as well as the benefits of engagement among students and academic staff during COVID-19.

The Influence of Engagement Between Academic Staff and Students

This study operationalised student–LMX as underlying and explaining the crossover process from lecturers to students, and similarly, lack of reciprocity as underlying and explaining the crossover process from students to lecturers. The findings of the study revealed non-significant relationships in respect of the crossover relationships proposed as well as the two indirect effects of student–LMX and lack of reciprocity as mediators in the crossover process. These findings were inconsistent with findings in similar previous research that showed crossover from the teacher/lecturer to the student through mediators such as enthusiastic teaching, clarity in teaching,[38] and emotional contagion.[32] The absence of statistically significant effects between lecturer and students gives the impression that crossover might depend on the context in which the instructional interaction takes place (eg, lecturer–student relationships during a global pandemic, which are characterised by remote or blended instructional interactions). Bakker and Xanthopoulou[21] stated that the engagement of the actor crosses over to the partner in cases where there are frequent interactions and communication, and that this, in turn, enhances the partner's performance. Similarly, Warwas and Helm[38] found that the observable characteristics of teachers, such as enthusiastic teaching behaviour, allowed for the crossover of enjoyment to students. In a longitudinal study, Wirtz et al[74] did not find a direct crossover of emotional exhaustion from the employees to their leader. They explained this finding by arguing that the power distance and limited interactions between the employees and the leader might have created an emotional distance that hindered the crossover process. Similarly, the nature of the interactions between lecturers and students during the COVID-19 pandemic (when teaching was mainly virtual—video

voice-over lecture recordings—or blended) might have caused a greater emotional distance between lecturers and students, which hindered crossover. Furthermore, the qualitatively different and possibly limited instructional interactions during the pandemic might have inhibited the direct effect of lecturers' emotional engagement on students via LMX as well as the influence of student engagement on lecturers via reciprocity.

Although the results did not reveal crossover effects from academic staff to students and vice versa, the findings did show that students' perceptions of high-quality relationships with lecturers (student–LMX) were significantly related to their engagement. In alignment with the premise of LMX theory, these results confirmed that the behaviour and attributes of leaders (lecturers in this study) influenced subordinates (students in this study) where leaders/lecturers and subordinates/students regarded themselves as belonging to a group.[46,114] These findings further supported work by other scholars who found significant positive associations between student–LMX and engagement.[46] As regards academic staff, the results revealed that their perceptions of lack of reciprocity were negatively associated with their emotional engagement, supporting previous findings that lack of reciprocity within the lecturer–student relationship results in educators feeling emotionally exhausted and depleted.[25]

Positive Outcomes of the Engagement of Academic Staff and Students

Apart from studying the crossover of engagement among academic staff and students, this study also explored the positive outcomes associated with the engagement of both academic staff and students. The purpose of any learning, including online learning, is to broaden the learners' understanding and knowledge of a subject.[115] Findings from the study revealed that students' engagement was significantly related to their learning approaches. The results showed that student engagement was positively related to a deep-learning approach, and negatively related to a surface-learning approach. These findings suggest that when students are engaged, they tend to be intrinsically motivated to understand the meaning of the material they study and not to opt for rote-learning strategies.[60,65]

In alignment with numerous studies that have highlighted the well-being benefit of engagement, eg,[53,86,116] the findings of the present study revealed a positive significant relationship between the emotional engagement and psychological well-being of academic staff.

Implications for Research

Gable and Haidt[117] expressed the hope that future studies in the field of positive psychology will improve functioning in the workplace, schools, and government. It is believed that the findings of the present study relating to aspects such as engagement in a HE context, students' learning approaches and lecturers' psychological well-being could assist in improving the functioning of HE institutions.

The positive psychological construct of engagement has been identified as an essential part of human resource management and has been described as one of the most critical talent development initiatives.[44,118,119] Since the seminal work of Kahn,[11] there has been a growing interest in engagement in the domain of both work (employees' engagement) and education (student engagement),[48,118,120,121] with numerous studies highlighting its importance and contribution in supporting optimal functioning within organisations and institutions of learning.[8,48,58,122] In this regard, the present study aimed to contribute to the existing body of knowledge by exploring the implications of mutual influences among academic staff and students for engagement and the positive outcomes of engagement for both groups. In the context of the challenges that organisations the world over have experienced and are still experiencing as a result of the COVID-19 pandemic, it seems even more imperative to better understand and improve engagement. Scholars have advocated the need for educational institutions to recognise the importance of lecturers in providing student support and enhancing student well-being.[41] The present study aimed to explore these needs by, for example, focusing on the influence of student–LMX on student engagement. The findings revealed that students' perceptions of high-quality relationships with their lecturer (student–LMX) had a significant influence on student engagement, and, further, that lecturers' perceptions of lack of reciprocity from the student group had a significant negative impact on their emotional engagement. The study's findings seem to align with the findings of Myers[123] that, in cases of perceived in-group relationships as per LMX processes, students' communication with instructors is motivated by the hope to develop interpersonal relationships (relational), the desire to demonstrate an understanding of course material (participatory), the hope to make a good

impression (sycophantic), and the desire to attempt to learn more (functional). The findings of the present study highlighted the importance of the lecturer–student exchange relationship in addressing engagement and well-being-related aspects in respect of academic staff and students, especially when circumstances necessitated mainly online or remote student–lecturer interactions. University management might find it worthwhile to consider aspects that could support and better equip lecturers to develop high-quality exchange relationships with their students. A suggestion that Farr-Wharton et al[46] offered is to support lecturers who do academic research because, according to them, research-active lecturers tend to be more able to develop high-quality student relationships and to be content experts (leaders) who can give guidance to students (followers) who are novice researchers.

In exploring the processes or conditions that promote the optimal psychological functioning of institutions and people, this study further revealed that engagement played a key role in supporting psychological well-being among academic staff and in fostering a deep approach to learning among students. In the light of these findings, university leaders could consider designing policies and practices that foster engagement, as engagement supports well-being among employees and promotes deep approaches to learning among students. To summarise, university leaders should recognise the importance of identifying and cultivating engagement as a holistic approach and a core institutional strategy.

Limitations of the Study and Recommendation Further Research

This study collected data from respondents at only one South African university, which created a limitation in terms of the generalisability of the findings. It is recommended that future studies should include populations of academic staff and students from HE institutions in other provinces of South Africa. In doing that, studies could also address the aspect of obtaining a bigger level 2 (ie, academic staff) sample size. A second limitation was that the study employed a cross-sectional design and measured all variables using self-report instruments, as a result of which the study was limited in terms of testing the causality underlying the research hypotheses and was subjected to the possibility of common method bias.[124] Longitudinal designs should be considered in future research to better determine causality in terms of proposed crossover interactions. Furthermore, given the lack of significance of the crossover relationship found in this study, it may be interesting for future studies to explore the role of other connecting variables that may shape engagement among academic staff and students in a similar context.

Conclusion

This study answered the call of scholars to address the scarcity of studies investigating mutual influences between students and academic staff within HE,[22] as well as the scarcity of studies on the crossover of positive emotions and constructs.[28] Drawing on crossover theory and the founding principles of the theory on personal engagement, the study proposed that the mutual influences between lecturers and students had implications for their engagement. The findings of the study revealed non-significant relationships in respect of the crossover relationships. These findings were inconsistent with similar previous crossover studies[32,38] and suggest that crossover might depend on the context in which the interaction takes place. The present study was conducted during the global pandemic, in which lecturer–student relationships were characterised by remote or blended instructional interactions. The findings of this study highlighted the positive influence of high student–LMX on student engagement and the negative impact that lecturers' experiences and observations regarding students' lack of reciprocity have on their emotional engagement. Against the backdrop of the COVID-19 pandemic and to reduce the negative psychological and behavioural challenges resulting from the pandemic, the research aimed to inform policy-makers in HE institutions of the impact that mutual influences among academic staff and students have on the engagement of both parties and the benefits of engagement in cultivating a culture of life-long learning among students and improving the psychological well-being of academic staff.

Ethics Statement

The researchers obtained ethical approval (protocol number EMS105/20) from the University of Pretoria, Faculty of Economic and Management Sciences, Research Ethics Committee. Participant informed consent formed part of the survey and participation in the study was voluntary.

Acknowledgments

Disclosure

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