Future time perspective, positive emotions and student engagement: a longitudinal study

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Future Time Perspective, Positive Emotions and Student Engagement: A Longitudinal Study

Abstract

Student engagement is an important predictor of success, retention and perseverance in higher education. This study used structural equation modelling to evaluate a gain cycle of future time perspective (FTP), positive emotion and student engagement derived from the broaden-and-build theory (BBT). A second objective was to examine changes within study variables over time. Participants were 217 UK undergraduates sampled at two time points. Mean levels of positive emotion and engagement decreased over time, whereas FTP increased. At both time points, FTP predicted higher engagement, and engagement predicted greater positive emotion levels. Positive emotion at Time 1 predicted increased levels of FTP, engagement and positive emotion at Time 2. This was consistent with the 'build' hypothesis of BBT suggesting that positive emotions facilitate approach behaviour and the development of psychological resources. Findings indicate that interventions designed to enhance FTP and positive emotion can facilitate student engagement and retention in higher education.

Keywords: broaden-and-build theory, future time perspective, positive emotions, reciprocal relationships, student engagement, university students.

Introduction

Research indicates that students' experience of the first year of university is influential in determining their long-term participation in education (Zimitat, 2004). Student engagement has emerged as the focus of considerable research because it is central to persistence and retention (Horstmanshof, & Zimitat, 2007). Tinto (1993) suggests that engagement represents a synthesis of purposeful intentions and successful social and academic integration with the university environment. Relatedly, Kuh (2009) conceptualises student engagement as a combination of students' application to activities that associate with desired outcomes of university and how institutions facilitate student participation in these activities. Trowler (2010) conducted a review of student engagement literature and observed that studies often fail to define the term. This omission arises from the misguided assumption that there is consensual agreement about the definition of student engagement. At an individual level, Astin (1984) and Horstmanshof, and Zimitat (2007) view engagement to reflect the quantity of energy and effort (physical and psychological) students dedicate to their university experience. This view was consistent with this study.

Student engagement is widely acknowledged as a significant predictor of academic achievement and learner satisfaction in higher education (Kahu, 2011). Research has consistently demonstrated that students who 'feel' engaged perform better educationally and enjoy studying more (Salanova, Schaufeli, Martínez, & Breso, 2010). Relatedly, engagement is also a significant prognosticator of withdrawal from study (Crosling, Heagney, & Thomas, 2009). Consequently, strategies for improving the student experience and increasing retention frequently centre on cultivating learner engagement and commitment (Horstmanshof & Zimitat, 2007).

The present study, aligning with Fredericks, Blumenfeld and Paris's (2004) observation that optimisation of the learning experience at university requires behavioural, cognitive and emotional engagement, examined interactions between commitment to the future, positive affect and student engagement. Collectively, these factors measure personal allocation of psychological and behavioural resources to the academic experience (Horstmanshof & Zimitat, 2007). This approach is consistent with the notion that intrinsic motivations, such as feelings of vigour, dedication to studying and absorption in academic activities predict higher levels of engagement (Schaufeli, Martínez, Marques Pinto, Salanova, & Bakker, 2002).

Future time perspective

The concept of Time Perspective (TP) arose from interest in the impact of experience on present behaviour, future choices and the goals that individuals set themselves (see Zimbardo & Boyd, 1999). TP comprises three temporal viewpoints (past, present and future) that act as cognitive frames for organising personal experiences and provide a sense of order and coherence. TP acknowledges individual variations resulting from greater emphasis on particularly time perceptions (Zimbardo & Boyd, 2015). Research has demonstrated consistently that these influence judgments, actions and expectations (e.g., Boyd & Zimbardo, 2005; Drake, Duncan, Sutherland, Abernethy, & Henry, 2008). Temporal frames provide useful insights into reliable individual differences that influence decision-making, future planning, confidence and actions (Zimbardo, Keough, & Boyd, 1997).

Future Time Perspective (FTP), in contrast with other temporal orientations, is associated with adaptive self-regulatory study behaviour, including greater positive emotions towards studying, higher levels of determination and persistence (De Bilde, Vansteenkiste, & Lens, 2011). Hence, FTP is highly relevant to educational settings because students with FTP are more likely to be committed to identifying and achieving future goals (Horstmanshof & Zimitat, 2007). Indeed, Horstmanshof and Zimitat (2007) found that FTP was the strongest predictor of study engagement. Furthermore, future-oriented school students perform well across educational indices (i.e., obtain better grades, Zimbardo & Boyd, 1999; manage time more efficiently, Peetsma, 1994; and attend classes, Harber, Zimbardo, & Boyd, 2003). Accordingly, FTP provides the motivational resource needed to attain future goals. This explains why FTP is influential in determining the degree to which students engage with university study.

Positive emotions

Fredrickson (2001) suggests that positive emotions are associated with experienced well-being and widened thought-action repertoires. These arise from induced exploratory behaviours, which create learning opportunities, foster goal achievement, and build personal resources. These affirmative factors in turn produce higher levels of well-being. Although the precise mechanisms involved in these relationships are currently unknown, laboratory studies provide useful insights. Particularly, Fredrickson (2004) demonstrated that positive emotions, via the production of expanded thought and behaviour, reverse the adverse effects of experiencing negative emotions. Moreover, Frederickson, Cohn, Coffey, Pek, and Finkel (2008), using a loving-kindness intervention, observed that daily increments in positive emotions helped to build personal resources (i.e., purpose in life and mindfulness), leading to higher life satisfaction.

Experimental research indicates that positive emotions have a beneficial impact on academic learning, facilitating creative and holistic methods of problem solving as well as optimistic reliance on generalized structures of knowledge (Bless et al., 1996). In addition, positive activating emotions (e.g., enjoyment) correlate with academic motivation (Pekrun, Goetz, Titz, & Perry, 2002). Precise links between positive emotions and student engagement are less clear, but positive emotions are thought to facilitate approach behaviour, and in turn engagement (Ouweneel, LeBlanc, & Schaufeli, 2011).

Positive emotions, future time perspective, and engagement

Although interactions between FTP, positive emotions and student engagement remain largely unexplored, associated work indicates that these variables are positively interrelated. Explicitly, open-ended FTP (the view that one has a long and undetermined future) correlates with the positive emotional element of subjective well-being (SWB) (Coudin & Lima, 2011). Furthermore, Ouweneel et al. (2011) reported a reciprocal enhancing relationship between positive emotions, personal resources and student engagement over a period of one month. Subsequently, Schaufeli and Van Rhenen (2006) confirmed that positive emotions directly predicted engagement in a cross-sectional study.

The broaden-and-build theory (BBT) (Fredrickson, 2001) provides a useful framework for conceptualising these relationships. BBT theorises that experiencing positive emotions enables individuals to access a range of thoughts and possible actions. These facilitate the ability to respond cognitively and/or behaviourally to events. Over time, these strategies become enduring resources.

The present study

Furthering the work of Ouweneel et al. (2011), the current paper examined whether FTP (enhanced resources) and positive emotions facilitated student engagement. Specifically, the 'build' function of the BBT and previous literature informed construction of an empirical model that tested reciprocal relationships between FTP, positive emotions and student engagement. In this context, engagement was conceptualised as a measure of well-being. This accords with Ouweneel et al. (2011) who considered engagement as an active measure of well-being. Other work (e.g., Reschly, Huebner, Appleton, & Antaramian, 2008) views engagement as an index of well-being. The focus on FTP derived from the observations that it represents a cognitive-motivational resource that has a beneficial psychological influence on educational outcomes (Horstmanshof & Zimitat, 2007). Presently, there is a lack of confirmatory evidence regarding broaden-and-build relationships it was therefore important that this study conceptualised and assessed BBT in an educational setting.

A further conceptual issue was lack of consensual agreement about the direction of relationships between resources, positive emotions, and well-being. Originally, Fredrickson (2001) proposed that positive emotions initiated a building of resources, however, subsequent work proposes a more dynamic relationship, deriving from reverse causation and gain cycles. For instance, Xanthopoulou et al. (2009) reported a gain cycle of personal resources (e.g., optimism) and work engagement. Whereas, Llorens, Schaufeli, Bakker and Salanova (2007) observed that resources (e.g., self-efficacy) can precede as well as result from engagement. Engagement has been shown to act as a positive motivational-affective state, which, in addition to being informed by positive affect (Cacioppo, Gardner, & Berntson, 1999), broadens and builds ‘by creating the urge to expand the self through learning and goal fulfilment’ (Chen & Cooper, 2014, p.51). Accordingly, analysis of reciprocal relationships provided a suitable assessment of resource gain cycles, such as those proposed by the BBT (Wood, Maltby, Gillett, Linley, & Joseph, 2008). The proposed reciprocal model appears in Figure 1.

Figure 1 here

Since BBT is a process model based on change over time, variable assessment occurred at two time points separated by a three-month interval. Focusing on the beginning of each university term enabled comparisons to be made of student engagement throughout the students’ first year of study; a critical period for determining degree progression (Denovan & Macaskill, 2013; Zimitat, 2004). This period provided an opportunity for FTP and positive affect to interact. The researchers anticipated that FTP acts as a motivational variable increasing student engagement. Additionally, that engagement would enhance positive emotions. The use of two time points allowed observation of this lagged effect.

In summary, the present study using first year undergraduate students tested BBT assumptions in relation to FTP and engagement. Particularly, it assessed over time whether reciprocal relationships existed between FTP, engagement and positive affect (PA). In addition, this paper compared students' initial levels of engagement, FTP, and PA at their transition to university, which can be stressful (Denovan & Macaskill, 2016), with a time when they should be more settled, focused and engaged.

Based on the previous research literature, hypothesis 1 expected FTP, engagement and PA to increase over the three-month timeframe as a function of the students feeling more engaged at university. Hypothesis 2 assumed FTP at Time 1 (T1) will evince a positive relationship with T1 engagement, T1 engagement will possess a positive relationship with T1 PA; FTP and engagement at Time 2 (T2) will demonstrate positive relationships with T2 engagement and T2 PA respectively. For hypothesis 3, T1 FTP will predict T2 FTP; T1 engagement will predict T2 engagement; T1 PA will predict T2 PA. Hypothesis 4 expected T1 FTP to have a positive lagged effect on T2 engagement and T2 PA, and T1 engagement to have a positive lagged effect on T2 PA. Lastly, hypothesis 5 assumed a reciprocal relationship between FTP, engagement and PA. Specifically, in addition to the relationships expected for hypothesis 4, T1 engagement will have a positive lagged effect on T2 FTP; T1 PA will have a positive lagged effect on T2 FTP and T2 engagement.

Materials and Methods

Sample

First year social science undergraduates from a post-92 UK university completed study measures at the beginning of the academic year (T1) and at the start of the second term approximately three months later (T2). The time interval allowed sufficient time for well-being to change (Amati et al., 2010). In total, 217 (35 males and 182 females, mean age = 23.57, *SD*

= 7.47, range = 18 to 53) responded at both time points. There was a dropout rate of 18.7% from the initial sample of 267 respondents.

Measures

Positive emotion

The positive affect subscale of the Positive and Negative Affectivity Schedule (Watson, Clark, & Tellegen, 1988) assessed affirmative emotion. The subscale comprises 10 items (e.g., determined, proud). Participants rate the extent to which they felt each emotion over the past month using a 5-point Likert scale, from 1 (*very slightly or not at all*) to 5 (*extremely*). High alpha reliability has been reported for the subscale (α = .90) (Watson et al., 1988) and it was high in this study at both time points (time 1 PA α = .81, time 2 PA α = .83).

Future time perspective

The Future subscale of the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) measured future time perspective. The subscale consists of 13 items rated on a 5-point Likert scale ranging from *very uncharacteristic* (1) to *very characteristic* (5). The measure uses mean rather than total scores, thus scores range from 1 to 5 (Zimbardo & Boyd, 1999). Reported internal consistency for the subscale is acceptable (α = .77; Kooij, Bal, & Kanfer, 2014), and in the current study reliability was acceptable at time 1 (T1) and time 2 (T2) (T1 α = .70, T2 α = .74).

Student engagement

The 14-item version of the Utrecht Work Engagement Scale for Students (UWES-S) (Schaufeli et al., 2002) assessed student engagement. The UWES-S consists of three subscales representing vigour, dedication, and absorption, rated on a 7-point Likert scale from *never* (0) to *always* (6). Reported internal consistency is good for the subscales (vigour α = .74, dedication α = .87, absorption α = .84) (Casuso-Holgado, Cuesta-Vargas, Moreno-Morales, Labajos-Manzanares, Baron-Lopez, & Vega-Cuesta, 2013). In the current study, alpha reliability was high for the overall scale at both time points (T1 α = .93, T2 α = .92), and was high for the subscales at both times (T1 vigour = .85, T1 dedication = .90, T1 absorption = .88; T2 vigour = .86, T2 dedication = .86, T2 absorption = .86).

Procedure

Recruitment of participants occurred via laboratory classes and through email invitation across the university social sciences department. Instructions directed participants to complete an online self-report measure. Prior to commencement, participants received an information sheet describing the purpose of the study and indicated their consent. Following completion of the measures, participants were debriefed. The procedure for time 1 and time 2 were identical. The University Research Ethics Committee approved the study.

Data analysis

The initial stage of analysis involved comparison of mean scores. Due to the inclusion of multiple measures assessed at two time intervals differences were evaluated using Multivariate ANOVA procedures. Specifically, Hotelling's T^2, which reduces the likelihood of making a Type I error when comparing means among potentially correlated outcomes (Tabachnick & Fidell, 2001).

The next phase of analysis employed structural equation modelling (SEM), performed by AMOS 24, to test potential relationships among study variables. Following the recommended procedure of Anderson and Gerbing (1988), a measurement model preceded a test of structural models. Parcels of measured variables indicated latent variables of positive emotion (PA), future time perspective (FTP), and student engagement. Exploratory factor analysis (EFA) with oblique rotation examined each variable and determined the allocation of items to parcels. Item parcelling is effective for research scenarios with numerous measurement items because this increases the degrees of freedom and the statistical power of tested models (Coffman & MacCallum, 2005).

Analysis assessed four models in relation to study hypotheses. Model 1, the *stability* model, assumed that each T1 variable leads to its respective T2 variable. Stability models test temporal constancy by estimating the stability coefficient between T1 and T2 without including variance from direct or indirect paths (Pitts, West, & Tein, 1996). Model 2 was a *synchronous* model in which synchronous paths at T1 and T2 (e.g., T1 FTP → T1 engagement → T1 PA) were incorporated in addition to stability paths to test the stationarity assumption of the model (James, Mulaik, & Brett, 1982). Model 3 was a *causality* model, which incorporated, in addition to the paths from Model 2, lagged paths from T1 FTP, engagement and PA to T2 FTP, engagement and PA. Model 4 was a *reciprocal* model that built on Model 3 and included additional lagged paths from T1 engagement to T2 and from T1 PA to T2 FTP and T2 engagement. According to Zapf, Dormann, and Frese (1996) the analysis of causal, reciprocal, and reverse relationships is justified in a latent modelling context when all variables are included at both time points.

The chi-square statistic, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root-Mean-Square Error of Approximation (RMSEA) and Standardized Root-Mean-Square Residual (SRMR) evaluated model fit. An acceptable model required CFI > .90, TLI > .90, SRMR < .08, and RMSEA < .10 (Browne & Cudeck, 1993). For RMSEA the 90% confidence interval (CI) was included. Model comparison used Akaike's Information Criterion (AIC; Akaike, 1974) in addition to chi-square difference. A lower AIC value indicated superior fit.

Results

Preliminary analyses and comparison of FTP, engagement and PA scores over time (hypothesis 1)

Data screening checked for normality and outliers. Skewness and kurtosis ranges for all variables were between -2.0 and +2.0 (Byrne, 2016). Following computation of z-scores, transformation of values above 3.29 or less than -3.29 to the next lowest or highest value occurred for each variable (Tabachnick & Fidell, 2001). Accordingly, three univariate outliers underwent transformation. No multivariate outliers existed; data values were greater than .001 relative to Mahalonobis Distance and chi-square distribution (Tabachnick & Fidell, 2001).

A MANOVA Hotelling's T^2 test revealed a significant main effect of time on FTP, engagement and PA, $T^2 = 54.86$, $F(5, 212) = 11.01$, $p < .001$, $\eta_p^2 = .21$. Univariate F tests indicated that FTP significantly increased from time 1 to time 2, $F(1, 216) = 6.89$, $p = .009$, $\eta_p^2 = .03$. Analysis failed to support hypothesis 1 because additional univariate tests indicated that there was a significant decrease from time 1 to time 2 in engagement, $F(1, 216) = 5.43$, $p = .021$, ηp2 = .03; dedication, F(1, 216) = 6.17, p = .014, ηp2 = .03; and PA, $F(1, 216) = 34.78$, $p < .001$, $\eta_p^2 = .14$. Means and standard deviations alongside the univariate analyses appear in Table 1.

Table 1 here

Intercorrelations and model evaluation (hypotheses 2 to 5)

Prior to analysis, an examination of data in relation to distributional assumptions of linearity, homoscedasticity, multivariate normality and multicollinearity was undertaken (Kline, 2010). This revealed no issues with multicollinearity and all correlations were below .9. At T1 and T2, total engagement and engagement subscales were positively associated with FTP (Table 2). T1 total engagement and vigour were associated with T1 PA, and T2 PA was correlated with T2 total engagement and engagement subscales. Examining both time points revealed that T1 total engagement positively related with T2 FTP, total engagement, dedication and PA. T1 PA was positively associated with T2 FTP, PA, total engagement and engagement subscales. These results supported hypothesis 2.

Table 2 here

EFA indicated that FTP possessed an underlying three-factor structure at both time points. PA had a single factor structure at T1 and T2. In order to include these single factors as indicators of latent variables (T1 PA and T2 PA) the variance of single factors was determined by multiplying scale variance with alpha reliability (Kline, 2010). In the case of PA and FTP, EFA was necessary to determine indicator parcels. UWES-S subscales acted as indicators of student engagement. Established research supports the hierarchical factor structure of this measure (see Schaufeli et al., 2002). Factor loadings for the measured variables on the latent variables were all significant ($p < .001$). The majority of indicators exhibited factor loadings above .60, meeting the strict factor loading requirements of Hair, Anderson, Tatham, and Black (1998). Prior to model evaluation, examination of a measurement model in which all latent variables covaried was undertaken (Anderson & Gerbing, 1988). Very good data-model fit was evident (see Table 3).

Table 3 presents the data-fit of each model. As can be seen, Model 2 reported significantly improved data-fit compared with Model 1, χ^2difference (4, N = 217) = 183.85, $p < .001$. Model 3 did not significantly improve on Model 2, χ^2difference (2, N = 217) = 3.05, $p = .216$. Model 4 (Figure 2) significantly improved data-fit compared with Model 3, χ^2difference (3, N = 217) = 24.24, $p < .001$. Comparison of AIC values supported superior fit of Model 4, as the AIC is 164.46, which is lower than the AIC for Model 3 (182.70), Model 2 (175.65) and Model 1 (351.50).

Hypothesis 2 tested whether FTP positively related with engagement, and if engagement positively associated with PA at each time point. Hypothesis 3 expected that T1 FTP would predict T2 FTP, T1 engagement would predict T2 engagement, and T1 PA would predict T2 PA. Model 2 examined these assumptions and revealed significant positive paths between T1 FTP to T1 engagement ($\beta = .85$, $p < .001$), a significant path between T1 engagement to T1 PA ($\beta = .24$, $p < .001$), a significant path between T2 FTP and T2 engagement

(β = .58, p < .001), and a significant path between T2 engagement and T2 PA (β = .36, p < .001). Additionally, T1 PA significantly predicted T2 PA (β = .36, p < .001). However, hypothesis 3 was only partially supported as T1 engagement did not significantly predict T2 engagement (β = .13, p = .088), and T1 FTP did not meaningfully predict T2 FTP (β = .15, p = .123). Hypothesis 4 asserted that there would be a positive lagged effect from T1 FTP to T2 engagement and T2 PA, and from T1 engagement to T2 PA. When Model 3 was tested, it did not support hypothesis 4, no lagged effects were present.

Hypothesis 5 assumed a reciprocal relationship existed between variables and in addition to the causality model predictions. Specifically, that T1 engagement had a positive lagged effect on T2 FTP, and T1 PA had a positive lagged effect on T2 FTP and T2 engagement. Inspection of the structural paths of Model 4 revealed that T1 PA had a significant positive lagged effect on T2 PA (β = .33, p < .001), T2 FTP (β = .20, p = .012) and on T2 engagement (β = .26, p < .001). However, T1 engagement did not have a significant lagged effect on T2 FTP (β = .10, p = .71). Similar to Model 3, a significant lagged effect from T1 FTP to T2 engagement and T2 PA, and from T1 engagement to T2 PA did not emerge. The results support hypothesis 3 indicating that FTP predicts both engagement and PA, and that engagement predicts PA at both time points. Furthermore, T1 PA predicted T2 PA. Although hypothesis 4 was not supported, Model 4 revealed that T1 PA influenced FTP, engagement, and PA at T2, thus partially supporting a reciprocal relationship (and hypothesis 5).

Figure 2 here

Discussion

This paper examined how relationships between university student attitudes, traits and behaviours influenced engagement. Future time perspective (FTP) increased from T1 to T2. However, there was also a significant decrease in engagement levels and positive affect (PA).

Additionally, scores on the dedication to study subscale declined significantly. While there was a diminution in the vigour and absorption subscales at T2, this was not significant. Thus, hypothesis 1 was largely unsupported.

Previous research reports a link between reductions in student engagement and student dropout rates. Indeed, high first year attrition is a major concern in the UK (HESA, 2016), United States and Australia (Horstmanshof, & Zimitat, 2007). Within the present study, the researchers supposed that volunteer student participants would possess relatively high levels of engagement. Observed reductions in engagement and a dropout rate at T2 of 18.7% confounded this assumption. These findings reflect the complex nature of student engagement. This conclusion concurs with Denovan and Macaskill (2016), who reported a decrease in engagement and positive emotion over the first year of university study. Specifically, students reported an increased sense of academic alienation.

This may occur because university level study necessitates a movement to autonomous learning, which students find hard to negotiate (Macaskill, 2013). Within the present study, the timing of data collection coincided with the point at which the contrast between student centred and autonomous learning was particularly marked. Specifically, it spanned the period from school/college, through university induction to undergraduate study in this period. This is a challenging time for students because they encounter new delivery styles, different educational demands and novel content (Denovan & Macaskill, 2013). Future work should examine whether engagement increases subsequently, particularly how it develops throughout year one and within the middle and later stages of a degree programme.

The predictive relationships examined in the structural model indicated that FTP predicted engagement at both time points. This finding is consistent with Horstmanshof and Zimitat (2007), who identified FTP as an important psychological influence on student engagement. Specifically, FTP influences engagement via the use of deep learning strategies and a greater degree of academic application. This manifests as positive actions, attitudes and behaviours, such as the desire to work consistently, increased levels of motivation and ability to seek support from teaching staff.

In agreement with Horstmanshof and Zimitat (2007), strengthening of FTP has the potential to lead to an increase in study engagement and prevent against attrition, in this instance among university students. Similarly, engagement predicted increased levels of positive affect at each time point. This is expected given individuals with higher levels of engagement display not only a tendency to experience positive emotions (Schaufeli & Van Rhenen, 2006), but to experience positive emotions that are high in activation, including enthusiasm, joy, and interest (Langelaan, Bakker, Schaufeli, & Van Doornen, 2006).

The current study evidenced a gain relationship between positive emotions with FTP and engagement over time. It is possible, therefore, that these activating emotions in turn are responsible for mobilising students into action and in influencing a greater degree of FTP and sustained engagement. Indeed, the results for positive emotion provide support for the BBT. Particularly the ‘build hypothesis’, which posits that people will enhance their personal resources (in this instance FTP) as a function of experiencing positive emotions, leading to increased well-being (in this instance engagement) over time.

Although FTP rose at the mean level and positive emotion predicted this increase, in contrast to Ouweneel et al. (2012) no reciprocal gain relationship was evident. Greater specificity may help to provide an explanation. For example, research indicates that the cognitive-motivational effects of FTP are not only determined by its trait-like features (as in this study), but also by individual differences in the goals people possess as a function of FTP. Lens, Paixao, Herrera, and Grobler (2012) established that the content (what people are working towards) and depth (distance into the future) of goals have motivational consequences for the effects of FTP. A focus on goals could have accounted for greater variance when considering FTP as a predictor over time.

The results suggest that although engagement and positive emotion levels decreased over time at the mean level, that FTP, engagement and positive emotion increase as a function of initial level of positive emotion. Positive emotion in this context has a catalytic effect. Hence, from a practical viewpoint, the development of research on the role of positive emotion in relation to FTP and other resources can have significant implications for improving engagement and retention amongst undergraduates. Such progress is pertinent given the relatively high levels of attrition in first year (HESA, 2016).

Accordingly, in addition to creating supportive environments for undergraduates to thrive, universities should find ways to develop FTP and positive emotion as mechanisms to prevent early withdrawal from university. For example, place a greater emphasis on encouraging students to consider their future goals relative to university study through structured activities (e.g., skills assessment and planning for academic success) (Horstmanshof & Zimitat, 2007).

Furthermore, positive affect is to an extent malleable (Reschly et al., 2008). Research indicates that at a school-level promoting students' skills can increase positive emotion (Seligman, Ernst, Gilham, Reivich, & Linkins, 2009). Illustratively, through the Penn Resiliency Program, which uses relatively straightforward methods (e.g., 'Three Good Things' exercise). These when taught to school-based learners increase the student's ability to experience positive affect, even amidst difficult circumstances (Seligman et al., 2009). Integrating similar principles within higher education has the potential to equip students with skills that develop and sustain their positive affect, even when confronted with uncontrollable stresses and problems that typically undermine engagement.

Limitations

Although the design of the study allowed a focus on reciprocal relationships across two time points, findings require cautious interpretation for several reasons. Firstly, this study relied on the use of self-report measures, which introduced well-known limitations including common method variance. In addition, there was a lack of focus on goals to supplement measurement of FTP, and although the results are in line with previous research, it would have been beneficial to include objective criterion measures such as study grades (Brown et al., 2008). Another issue relates to generalisability of the results; a large proportion of the sample (83.8%) was female. It would be important to examine whether the results are consistent among samples where the quantity of men and women is more balanced.

Lastly, an important limitation concerns the exclusive focus on the first year of university study. Although this was necessary for assessing the most sensitive time relative to student engagement and retention (Tinto, 1993), a comparison with later time points and/or students from later years of a university degree course would potentially have enriched the findings, revealing whether students become more engaged in later years and how this relates to FTP and positive emotion. Research indicates, for example, that level of engagement measured at the start of university can predict later degree success (Svanum & Bigatti, 2009).

Conclusion

This study has demonstrated moderate to strong predictive relationships among FTP, engagement and positive emotion (PA) at single time points. Moreover, a gain cycle is evident over time relating to the effects of PA on later FTP, engagement and PA. The findings provide support for the 'build' hypothesis of the BBT and further understanding of the dynamic relationship that exists among FTP, engagement and PA. At odds with these results, mean levels of engagement and PA decreased. Therefore, for interventions to focus on and develop positive emotion in addition to FTP among first year university students has the potential to equip students with the capacity to improve their levels of engagement.

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Table 1 Means, standard deviations and univariate analyses for future time perspective, engagement, engagement subscales, and positive affect at time 1 and time 2

	Time 1		Time 2		
Variable	*Mean*	*SD*	*Mean*	*SD*	Significance of *F*
Future Time Perspective	3.36	.38	3.47	.52	p = .009
Engagement	49.94	11.60	47.38	13.69	p = .021
Vigour	15.05	4.97	14.41	5.49	p = .157 (ns)
Dedication	21.21	5.04	20.03	5.36	p = .014
Absorption	13.67	4.11	12.94	5.11	p = .081 (ns)
Positive Affect	30.48	7.69	27.38	7.44	p < .001

Note. ns = non-significant

Table 2 Descriptive statistics and correlations (*N*=217)

Variable	*Mean*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. T1 Future Time Perspective	3.36	.38		.58**	.57**	.42**	.45**	.15*	.09	.04	.08	-.01	.04	.12
2. T1 Total engagement	50.53	12.33			.87**	.82**	.76**	.20**	.17*	.19*	.15*	.18**	.16*	.13*
3. T1 Vigour	15.23	5.25				.57**	.54**	.25**	.15*	.23**	.20**	.20**	.20**	.15*
4. T1 Dedication	21.48	5.07					.40**	.10	.10	.07	.01	.10	.08	.08
5. T1 Absorption	13.81	4.32						.14*	.19**	.17*	.18**	.15*	.11	.09
6. T1 Positive Affect	31.31	7.95							.15*	.38**	.33**	.31**	.33**	.48**
7. T2 Future Time Perspective	3.47	.52								.41**	.41**	.29**	.35**	.24**
8. T2 Total engagement	47.38	13.69									.87**	.83**	.87**	.44**
9. T2 Vigour	14.41	5.49										.56**	.67**	.43**
10. T2 Dedication	20.03	5.36											.59**	.32**
11. T2 Absorption	12.94	5.11												.37**
12. T2 Positive Affect	27.56	7.32												

Note. T1 = time point 1; T2 = time point 2; *p < .05; **p < .001

Table 3 Fit indices of the five models

Model	$\chi 2$	*df*	CFI	TLI	SRMR	RMSEA (90% CI)	Chi-square difference
Measurement model	80.65	64	.98	.97	.04	.04 (.01-.06)	
Model 1 (stability)	291.50**	75	.73	.67	.16	.12 (.10-.13)	
Model 2 (synchronous)	107.65*	71	.95	.94	.05	.05 (.03-.07)	M1-M2 = 183.85**
Model 3 (causality)	110.70*	69	.95	.93	.06	.05 (.03-.07)	M2-M3 = 3.05
Model 4 (reciprocal)	86.46*	66	.98	.97	.04	.04 (.01-.06)	M3-M4 = 24.24**

Note. $\chi 2$ = chi-square goodness-of-fit statistic; *df* = degrees of freedom; CFI = Comparative Fit Index; SRMR = Standardized Root-Mean-Square Residual; RMSEA = Root-Mean-Square Error of Approximation; AIC = Akaike Information Criterion; **$\chi 2$ significant at $p < .001$, * $\chi 2$ significant at $p < .05$

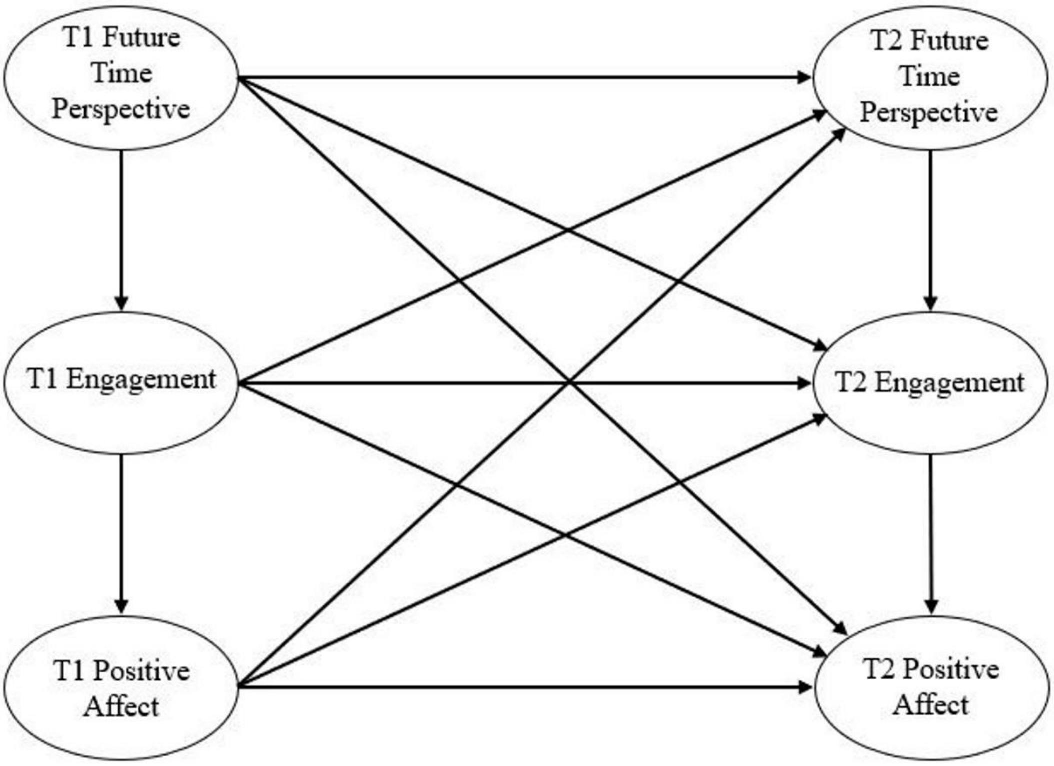

Figure 1 Model depicting the hypothesised reciprocal relationships among future time perspective, engagement, and positive emotion over time. *Note.* T1 = timepoint 1; T2 = timepoint 2

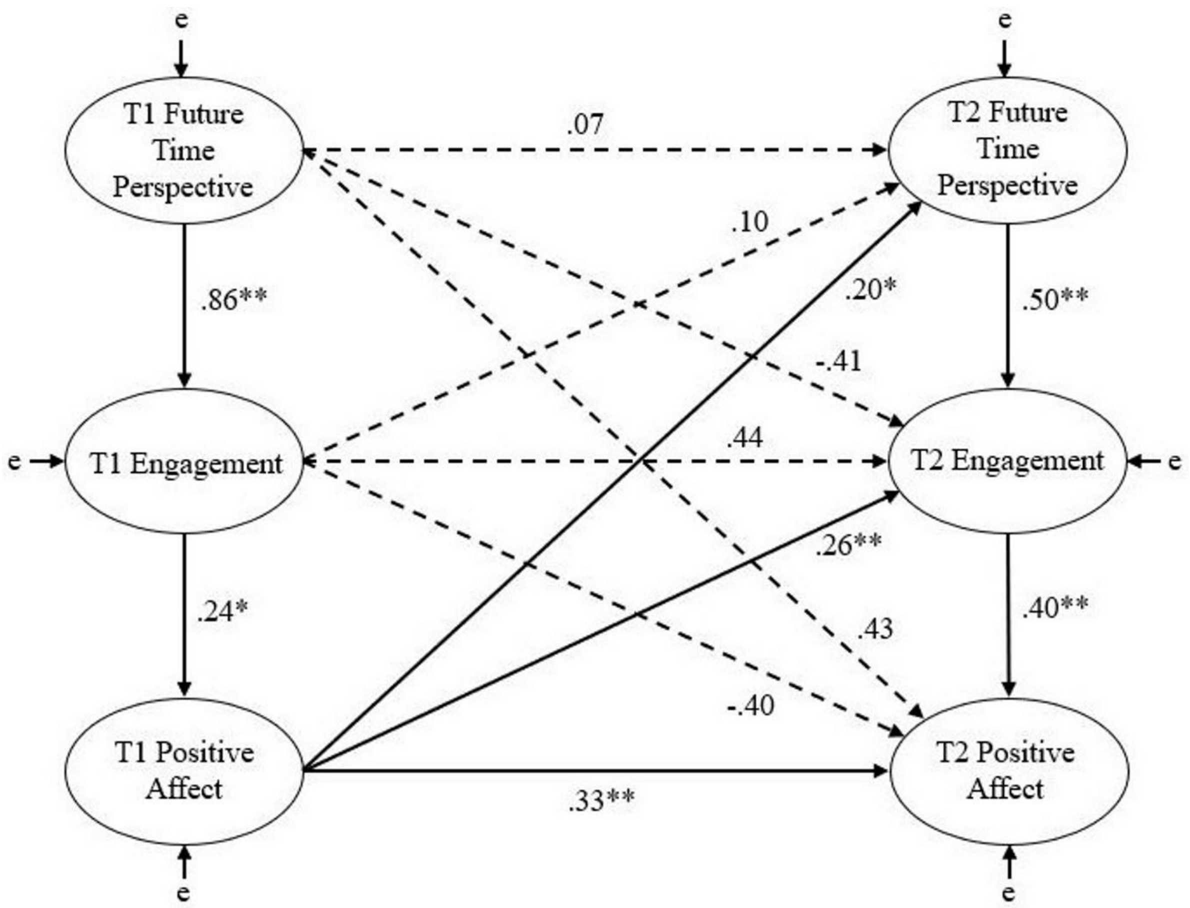

Figure 2 Model 4: Reciprocal model depicting the relationships among FTP, engagement, and PA at T1 and T2. *Note.* Latent variables are represented by ellipses; error is represented by 'e'; solid lines are significant paths and broken lines are non-significant paths; $*p < .05$; $**p < .001$