



# Subjective well-being is reciprocally associated with academic engagement: A two-wave longitudinal study

Jesus Alfonso D. Datu<sup>a,c,\*</sup>, Ronnel B. King<sup>b</sup>

<sup>a</sup> Department of Special Education and Counselling, The Education University of Hong Kong, Hong Kong SAR China

<sup>b</sup> Department of Curriculum and Instruction, The Education University of Hong Kong, Hong Kong SAR China

<sup>c</sup> Integrated Centre for Well-Being (I-WELL), The Education University of Hong Kong, Hong Kong SAR China



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## ABSTRACT

Previous studies have shown that subjective well-being promotes a wide range of adaptive psychological outcomes. However, the role of subjective well-being in the school context, as a potential facilitator of key academic outcomes, remains underexplored. The primary objective of this study was to examine the extent to which the different dimensions of subjective well-being—life satisfaction, positive affect, and (low levels of) negative affect—were associated with academic engagement through a two-wave longitudinal study. Three hundred and eighty-nine Filipino high school students participated in this research project. Cross-lagged analysis revealed that Time 1 life satisfaction positively predicted Time 2 academic engagement, and that Time 1 negative affect negatively predicted Time 2 academic engagement, even after controlling for autoregressor effects. We also found evidence of reciprocal effects with prior academic engagement predicting subsequent well-being. The theoretical and practical implications are discussed.

## 1. Introduction

Subjective well-being (SWB) is a broad concept that pertains to individuals' overall quality of life (Diener, Suh, Lucas, & Smith, 1999). SWB is a multidimensional construct comprising cognitive and affective dimensions (Diener, 1984). The cognitive dimension, commonly known as life satisfaction, refers to an individual's overall evaluation of contentment with his or her life (Diener, 1984; Diener, Emmons, Larsen, & Griffin, 1985), whereas the affective dimensions include positive affect (momentary experience of positive feelings) and negative affect (momentary experience of negative feelings) (Diener, 1984).

Generally speaking, research has shown that individuals with higher levels of SWB experience greater levels of success in various domains of life, such as health, work, or social relationships (Lyubomirsky, King, & Diener, 2005). In recent years, however, there has also been an increasing recognition of the importance of fostering happiness and well-being in the educational context (Ciarrochi, Atkins, Hayes, Sahdra, & Parker, 2016; Ciarrochi, Heaven, & Davies, 2007; Seligman, Ernst, Gillham, Reivich, & Linkins, 2009) given that students' well-being and academic success are closely intertwined (Seligman et al., 2009). In the school context, studies have found that different dimensions of SWB (i.e., positive affect, life satisfaction, or negative affect) may be linked to academic outcomes in different ways. First, previous investigations have shown that students who have high life satisfaction exhibit higher levels of academic performance (Chow, 2005; Datu, 2018; Gilman & Huebner, 2006; Heffner & Antaramian, 2016; Ng, Huebner, & Hills, 2015; Rode et al., 2005; Salmela-Aro & Tuominen-Soini, 2010) and greater academic engagement (Datu, 2018; Heffner & Antaramian, 2016; Lewis, Huebner, Malone, & Valois, 2011; Salmela-Aro & Tuominen-Soini, 2010). Second, many studies have shown that

\* Corresponding author at: Room D2-2F-28, The Education University of Hong Kong, 10 Lo Ping Road, Tai Po, New Territories, Hong Kong SAR China.  
E-mail address: [jadatu@eduhk.hk](mailto:jadatu@eduhk.hk) (J.A.D. Datu).

students who experience frequent positive affective states are likely to achieve higher academic marks (Datu, 2015, 2018; Nickerson, Diener, & Schwarz, 2011; Villavicencio & Bernardo, 2013, 2016), to exhibit greater self-regulation (Villavicencio & Bernardo, 2016), to show higher levels of academic engagement (Datu, 2016; King, McInerney, Ganotice, & Villarosa, 2015; Lewis, Huebner, Reschly, & Valois, 2009), and to adopt autonomous types of motivation (Datu, 2017; Isen & Reeve, 2005). Third, research has also shown that students who experience high levels of negative emotions are more likely to exhibit low levels of academic achievement (Hashim, Freddy, & Rosmatunisah, 2012; Villavicencio, 2011), engagement (Garvik, Idsoe, & Bru, 2013; Hashim et al., 2012; Villavicencio, 2011), and motivation (Elmelid et al., 2015).

Although a number of studies have provided evidence as to how individual dimensions of SWB relate to school functioning, relatively few studies have simultaneously taken into account the three dimensions of SWB. For one, Ng et al. (2015) examined how life satisfaction was associated with subsequent academic achievement after controlling for the effects of positive and negative emotions felt in school as well as age, gender, race, and participation in school lunch program through a short-term longitudinal study. These authors demonstrated that life satisfaction positively predicted subsequent academic achievement even after controlling for the influence of the abovementioned covariates. This result suggests that life satisfaction may be linked to higher levels of school-related performance over and beyond the effects of positive and negative affect as well as demographic covariates. Similarly, Heffner and Antaramian (2016) explored the link between life satisfaction and academic engagement, after controlling for the influence of positive and negative affect through a cross-sectional investigation. They found that life satisfaction positively predicted academic engagement even after taking into account the possible effects of such covariates. Although both of these investigations measured all three domains of SWB, it is important to note that these studies primarily concentrated on exploring the unique contributions of life satisfaction to academic achievement. That is, the affective dimensions of SWB (i.e., positive and negative affect) were only used as covariates. Without exploring the simultaneous influence of all SWB domains on academic functioning, however, it may be difficult to understand the differential contributions of cognitive and affective well-being on key learning processes and outcomes in the school context. Indeed, more studies are needed to explore the association of SWB dimensions on other equally important educational outcomes like academic engagement.

### 1.1. SWB and academic engagement

Although many studies have documented the linkages between SWB and academic achievement, academic engagement has also been increasingly recognized as an important outcome in the educational and school psychology literature (Appleton, Christenson, Kim, & Reschly, 2006; Engels et al., 2017; Fredericks, Blumenfeld, & Paris, 2004; Shoshani, Steinmetz, & Kanat-Maymon, 2016; Skinner, Kindermann, Connell, & Wellborn, 2009). This is because research has shown that engaged students are more likely to achieve higher grades (Dotterer & Lowe, 2012; Ladd & Dinella, 2009; Li & Lerner, 2011; Reeve & Tseng, 2011) and to exhibit higher levels of adjustment (Fredericks et al., 2004) in the school context. Engagement is defined as the degree of a student's overall involvement in the school setting (Fredericks et al., 2004), and is a multifaceted construct that includes cognitive, behavioral, and emotional dimensions. Cognitive engagement concerns the degree to which students engage in complex cognitive and metacognitive strategies when studying a subject (Wolters, 2004). Behavioral engagement concerns the extent to which students actively perform academic tasks (Skinner, Kindermann, & Furrer, 2009). Emotional engagement refers to the degree to which students experience positive emotional states during classroom activities or other academic tasks (Skinner, Kindermann, Connell, & Wellborn, 2009).

Studies examining how the three dimensions of SWB are associated with academic engagement have suggested that SWB and academic engagement may be linked in three different ways. The first possibility is that SWB predicts subsequent academic engagement. The broaden-and-build theory (Fredrickson, 1998, 2001) posits that positive emotions are inherently adaptive because they broaden the mindsets that are useful in building durable social, psychological, and physical resources. Academic engagement can be considered as a key resource that is consolidated through frequent experiences of positive well-being. This first hypothesis is supported by numerous studies that have shown that SWB positively predicted behavioral (Heffner & Antaramian, 2016; King et al., 2015), emotional (Heffner & Antaramian, 2016; King et al., 2015), cognitive (Heffner & Antaramian, 2016), and overall academic engagement (King et al., 2015; Lewis et al., 2011). Existing literature has demonstrated that different SWB dimensions relate to various indicators of engagement. Positive affect has been associated not only with behavioral and emotional engagement (King et al., 2015) but also with overall student engagement (which encompasses affective, behavioral, and cognitive; Lewis et al., 2009). Life satisfaction has been linked to higher levels of cognitive, behavioral, and emotional engagement (Heffner & Antaramian, 2016). Furthermore, Salmela-Aro and Tuominen-Soini (2010) have shown that life satisfaction could predict student engagement (which they defined through the following dimensions: (a) vigor, (b) dedication, and (c) absorption) after two years.

The second possibility is that academic engagement positively predicts SWB. Academic functioning is a key part of students' lives (Suldo, Gormley, DuPaul, & Anderson-Butcher, 2014; Suldo & Huebner, 2006) and success in school may help students feel good about themselves. Previous studies have shown that academic engagement was linked to higher levels of well-being (Lewis et al., 2011; Ng et al., 2015; Ouweneel, Le Blanc, & Schaufeli, 2011; Reschly, Huebner, Appleton, & Antaramian, 2008). Longitudinal studies have also shown that engaged students are less likely to experience burnout and depression (Li & Lerner, 2011; Salmela-Aro, Kiuru, & Nurmi, 2008). Furthermore, those who experience a deeper sense of enjoyment, involvement, and motivation in various domains have experienced higher levels of well-being (Asakawa, 2004; Peterson, Park, & Seligman, 2005). Although these studies have not directly assessed SWB, these investigations indirectly point to the possibility that academic engagement may serve as a predictor of SWB than the other way around.

Finally, the third possibility is that SWB and academic engagement are reciprocally related. The upward spiral hypothesis (Fredrickson, 2001, 2013) argues that well-being promotes the development of durable physical, social, psychological, and other key

resources, which in turn lead to higher levels of subsequent well-being. To date, however, we do not know of any investigation which explored the reciprocal linkage between SWB and academic engagement.

### 1.2. The present study

Research on SWB is vast and much progress has been made in terms of understanding the correlates of students' SWB, such as academic achievement, temperament, school engagement, environmental events, and coping strategies, in school settings (Antaramian, 2017; Fogle, Huebner, & Laughlin, 2002; Heffner & Antaramian, 2016; Huebner & Park, 2005; Lyons, Huebner, & Hills, 2016; Lyons, Otis, Hills, & Huebner, 2014). However, despite the plethora of research on SWB in the school, there are still limitations that need to be addressed in order for the literature to move forward.

First, the majority of studies have only focused on only one or two dimensions of SWB rather than on multiple dimensions simultaneously. The pattern of associations with theoretically relevant constructs or nomological networks for cognitive and affective dimensions of well-being have been shown to be distinct (Aknin, Sandstrom, Dunn, & Norton, 2011; Datu, 2013; Luhmann, Hofmann, Eid, & Lucas, 2012; Luhmann, Lucas, Eid, & Diener, 2013; Lyubomirsky et al., 2005). It stands to reason that the different dimensions of SWB may also exhibit differential relations with school outcomes. Second, studies that have examined SWB in the school context either focused on SWB as a predictor (e.g., Heffner & Antaramian, 2016; Nickerson et al., 2011) or as an outcome variable (e.g., Lyons et al., 2016), with the bulk of the existing studies using cross-sectional designs. However, the association between SWB and school functioning is likely to be dynamic and studies that only examine unidirectional associations. Longitudinal studies are needed in order to more fully understand how SWB and school functioning influence each other across time.

The aim of the current study, therefore, was to examine the reciprocal associations between the different dimensions of SWB and a specific index of school functioning (i.e., academic engagement). Unlike previous investigations that focused only on a single dimension of SWB, we simultaneously examined the associations between all three dimensions of SWB and academic engagement. We also addressed the methodological gaps in past studies by exploring the possibility of bidirectional associations between different SWB dimensions (i.e., life satisfaction, positive affect, and negative affect) and academic engagement. Adopting a two-wave cross-lagged panel approach is considered more methodologically rigorous than using a cross-sectional design, as this approach allows us to test for not only the degree to which constructs are stable (temporal stability), but also the extent to which SWB dimensions and academic engagement may be reciprocally related.

In particular, we tested the following hypotheses in this investigation. First, given that previous studies have demonstrated that life satisfaction and positive affect are associated with higher levels of academic engagement (Datu, 2018; Heffner & Antaramian, 2016; Lewis et al., 2011; Ng et al., 2015; Salmela-Aro & Tuominen-Soini, 2010), we hypothesized that life satisfaction and positive affect at Time 1 (T1) will positively predict academic engagement at Time 2 (T2), even after controlling for autoregressor effects. Second, research has shown that negative affect is associated with lower levels of school engagement (Garvik et al., 2013; Hashim et al., 2012; King et al., 2015; Reschly et al., 2008; Villavicencio, 2011). We therefore hypothesized that negative affect at T1 will negatively predict academic engagement at T2, even after controlling for autoregressor effects. Third, as studies have demonstrated that academic engagement is positively associated with subsequent positive emotions (Ouweneel et al., 2011) and negatively linked to burnout and depression (Li & Lerner, 2011; Salmela-Aro et al., 2008), we hypothesized that academic engagement at T1 will positively predict both life satisfaction and positive affect at T2, even after controlling for autoregressor effects. Finally, consistent with the major tenets of the upward spiral hypothesis (Fredrickson, 2001), we hypothesized that academic engagement at T1 will negatively predict negative affect at T2, even after controlling for autoregressor effects.

## 2. Method

### 2.1. Participants

Three hundred and eighty-nine Filipino high school students from an urban public school in Manila participated in the research. The sample size represented about 12% of the school's total student population. The participants were selected via a convenience sampling technique based on the coordinators' selection of classes that were readily available at the time of data collection. The average age of the participants was 13.40, with a standard deviation of 1.44. There were 172 boys and 217 girls. The sample was composed of 105 7th grade, 84 8th grade, 122 9th grade, and 78 10th grade students.

In the Philippine educational system, students need to complete six years of primary education and another six years of secondary education because of the recent implementation of the K-12 educational system. Government-funded secondary schools (with the exception of science schools) normally implement a half-day class schedule, which requires all students to attend a 30-hour academic schedule every week. Enrollment in government high schools is free to all Filipino students.

### 2.2. Measures

#### 2.2.1. Subjective well-being

The nine-item Concise Measure of Subjective Well-Being (Suh & Koo, 2011) was used to measure the various facets of SWB, including life satisfaction, positive affect, and negative affect. Whereas the most common measure of life satisfaction (e.g., Satisfaction with Life Scale; Diener et al., 1985) focuses only on assessing the personal domain, the Concise Measure of Subjective Well-Being scale assesses life satisfaction in terms of the personal, relational, and collective domains.

In terms of affect, this scale included items that pertained to both low and high levels of emotional arousal. Previous investigations have faced a number of limitations in the assessment tools they have used to measure SWB. For instance, these studies have relied mainly on Western-derived measures of well-being (e.g., the Satisfaction with Life Scale), which may yield limited insight into well-being in collectivist contexts. The research has also indicated that one potential reason for the relatively lower happiness scores of people in collectivist cultures as compared with the scores of people in individualist societies is the inability of the Western-derived scales to measure the collectivists' interpersonal construal of happiness (Uchida & Ogihara, 2012). Furthermore, studies have shown that the more popular measures of positive and negative affect (PANAS; Watson, Clark, & Tellegen, 1988) are largely focused on measuring high-arousal positive emotions, which are ostensibly more valued in individualistic cultures. In collectivist cultures, low-arousal positive emotions are also highly valued, but these emotions have not received as much attention from researchers (Suh & Koo, 2011).

Each dimension in the scale comprised three items. These items were rated using a 7-point Likert scale, with 1 = “Strongly disagree” and 7 = “Strongly agree” for the life satisfaction domain, and 1 = “Never” and 7 = “Always” for the positive and negative affect domains. Sample items from the scale included, “I am satisfied with the personal aspects (i.e., achievement and health) of my life,” “I am satisfied with the relational aspects (e.g., relationships with family and friends) of my life,” and “I am satisfied with the collective aspects (i.e., the school or community where I belong) of my life.” In terms of positive and negative affect, we measured the extent to which the emotions “happy,” “joyful,” and “peaceful” (positive affect) and “helpless,” “irritated,” and “negative” (negative affect) were experienced during the past month. The composite score for each SWB dimension was calculated by computing the average score across items.

The results of confirmatory factor analyses (CFAs) revealed that the scale was valid at Time 1:  $\chi^2 = 30.92$ ,  $df = 24$ ,  $p = .156$ , CFI = 0.99, IFI = 0.99, TLI = 0.99, and RMSEA = 0.027 (0.000–0.051) and at Time 2:  $\chi^2 = 69.40$ ,  $df = 24$ ,  $p < .001$ , CFI = 0.97, IFI = 0.97, TLI = 0.95, and RMSEA = 0.068 (0.050–0.087). All of the item indicators significantly loaded on each dimension at  $p < .001$ . A review of the Cronbach's alpha reliability coefficients at the two time points also showed that the subscales had adequate reliabilities (Range = 0.75 to 0.92). The test-retest reliability coefficients of subscales ranged from 0.35 to 0.47 which indicate that there were considerable changes in the participants' perceived levels of life satisfaction across different time points. Previous investigations have also shown that scores from the subscales (e.g., life satisfaction and positive affect) of the Concise Measure of Subjective Well-Being scale tend to be reliable and valid among Filipino students (Datu, 2015; Datu, King, & Valdez, 2016; Datu & Reyes, 2015).

### 2.2.2. Academic engagement

The present research operationalized academic engagement as a multidimensional construct consisting of behavioral, emotional, and cognitive dimensions. To measure behavioral and emotional engagement, we used two subscales of the Academic Engagement and Disaffection Scale (Skinner, Kindermann, & Furrer, 2009). The five-item Behavioral Engagement subscale assessed the degree to which students are actively participating in academic activities (e.g., “In class, I work as hard as I can.”). The five-item Emotional Engagement subscale assessed the degree to which students experience positive emotional states during class activities (e.g., “I enjoy learning new things in class.”). These items were rated on a 5-point Likert scale (1 = “Strongly disagree”; 5 = “Strongly agree”). To assess cognitive engagement, we used the 8-item Cognitive Engagement subscale developed by Wolters (2004). All of the engagement items were designed to assess the degree to which students use cognitive and metacognitive strategies when completing academic tasks, and were rated on a 5-point Likert scale (1 = “Strongly disagree”; 5 = “Strongly agree”). A sample cognitive engagement item was “When I study, I try to connect what I am learning with my own experiences.”

The research has indicated that it is helpful to evaluate the overall engagement score instead of focusing separately on each domain of engagement, as a composite approach can generate more comprehensive insights into the students' beliefs, emotions, and forms of behavior in the educational context (Appleton et al., 2006; Wang, Willet, & Eccles, 2011). We therefore combined the scores across the behavioral, cognitive, and emotional engagement subscales to form an academic engagement composite score. Results of the CFA showed that the scores from the hierarchical model of academic engagement (with behavioral, cognitive, and emotional engagement as major dimensions) were valid at Time 1:  $\chi^2 = 352.48$ ,  $df = 135$ ,  $p < .001$ , CFI = 0.90, GFI = 0.91, TLI = 0.90, and RMSEA = 0.086 (0.078–0.094) and at Time 2:  $\chi^2 = 523.58$ ,  $df = 135$ ,  $p < .001$ , CFI = 0.90, IFI = 0.90, TLI = 0.91, and RMSEA = 0.074 (0.066–0.082). The factor loadings were all significant at  $p < .001$ . The Cronbach's alpha reliability coefficients of the overall academic engagement scale were 0.87 at Time 1 and 0.92 at Time 2. The test-retest reliability coefficient of the scale was 0.67.

### 2.3. Procedures

The first author sought approval from the school principal and the subject area coordinator for conducting a survey among the secondary school students. Before the actual administration of the survey, consent forms were distributed to the students' parents, which specified whether they would allow their children to participate in the study. A separate assent form was given to the students, which indicated their own willingness to voluntarily participate in the research. The first author and class advisers administered the survey in the participants' classes (around February). The participants were asked to complete the measures of life satisfaction, positive affect, negative affect, and academic engagement independently. The second survey was then administered during the fourth grading quarter (around February). The same set of measures was again administered to the participants.

## 2.4. Data analyses

First, the descriptive statistics, Cronbach's alpha reliability coefficients, and the correlation coefficients were computed using SPSS 23. Second, cross-sectional CFAs at each time point and a multi-group CFA across time points were conducted to assess the extent to which the constructs were invariant (or held the same meaning over time) using the AMOS 23. In particular, we examined the configural (equality in factor structure), metric (equality in factor loadings), and scalar (equality in latent intercepts) invariances of the scales. We referred to two recommended criteria in evaluating the invariance of the hypothesized measurement models as previous studies have indicated the necessity to examine more than one indices of invariance to provide more accurate evidence of longitudinal invariance (Koomen, Verschuere, van Schooten, Jak, & Pianta, 2012; Wu & Hughes, 2015). First, with reference to Cheung and Rensvold's (2002) recommendations for judging the invariance of measurement models, we regarded changes in the comparative fit index of  $< 0.01$  as implying invariance. Second, in accordance with Little (1997), changes in the Tucker-Lewis index of  $< 0.05$  indicated longitudinal measurement invariance.

Third, a longitudinal CFA was conducted to assess whether the overall measurement model (which comprised the constructs at two time points) was valid. Consistent with Marsh and Yeung's (1998) suggestion for detecting the more accurate path coefficients in the structural model, we correlated the residual errors of each latent construct at distinct time points. Fourth, path analysis was used to test the hypothesized pattern of associations between the SWB dimensions (i.e., life satisfaction, positive affect, and negative affect) and the level of academic engagement across two time points. To evaluate the fit of the hypothesized measurement and structural models, the authors used the cut-off values suggested by Hair, Black, Babin, and Anderson (2010). According to these authors, the comparative fit index (CFI), goodness-of-fit index (GFI), incremental fit index (IFI), and Tucker-Lewis index (TLI) should be higher than 0.90 and the root mean square error of approximation (RMSEA) should be  $< 0.08$  to indicate that a model has an acceptable fit.

## 3. Results

### 3.1. Missing data analyses

The sample of students had a 6% attrition rate ( $n = 23$ ), as some of the participants who completed the measures at Time 1 were unable to attend classes during the Time 2 survey administration. To assess the possible consequences of attrition on the constructs of interest, a series of independent sample *t*-tests were carried out on Time 1 life satisfaction, positive affect, negative affect, and academic engagement between the participants who had complete versus incomplete responses. The findings of the *t*-tests showed there were no significant differences in terms of positive affect ( $t = 1.87, p = .06$ ), negative affect ( $t = -0.75, p = .45$ ), academic engagement ( $t = 1.62, p = .11$ ), or life satisfaction ( $t = 1.61, p = .11$ ). As missing data could potentially impact the findings of the study, we used a full information maximum likelihood estimation approach in performing testing the hypothesized measurement and cross-lagged panel models.

### 3.2. Longitudinal measurement model and invariance tests

First, before testing the invariance of constructs across the two surveys, we assessed the validity of the hypothesized measurement models at each time point (see Table 1). We performed different CFAs for the measurement models at Times 1 and 2. The measurement model comprised four latent factors, with three indicators for each SWB dimension, and three indicators for engagement (i.e., behavioral, cognitive, and emotional engagement). The results from the separate CFAs revealed that the measurement model was valid at both time points. All of the indicators significantly loaded on each latent factor at  $p < .001$ .

Second, to assess whether the measured constructs were valid over time, we conducted a longitudinal CFA. Each SWB dimension (i.e., life satisfaction, positive affect, and negative affect) was represented by three indicators at each time point (nine indicators for the SWB dimensions). For academic engagement, each domain (i.e., cognitive, behavioral, and emotional) was treated as one indicator, which resulted in a latent academic engagement construct with three indicators at each time point. In sum, there were 24 indicators in both time points (12 indicators at Time 1 and 12 at Time 2). Findings from the CFA revealed that the measurement model was valid at the two time points:  $\chi^2 = 389.28, df = 212, p < .001, CFI = 0.97, IFI = 0.97, TLI = 0.96, \text{ and } RMSEA = 0.045 (0.039\text{--}0.054)$ . In addition, all of the indicators significantly loaded onto the hypothesized latent constructs.

Third, we assessed whether the key variables in the study would exhibit configural, metric, and scalar invariance across the two time points by conducting a multi-group CFA using a maximum likelihood estimation approach (see Table 2). Specifically, we imposed constraints to the factor structure, factor loadings, and item intercepts that characterized the configural, metric, and scalar invariances. The results showed that the measurement model was invariant over time (i.e.,  $CFI < 0.01$  and  $TLI < 0.05$ ). These

**Table 1**

Cross-sectional CFA for Time 1 and Time 2.

Model	$\chi^2$	df	$\chi^2/df$	<i>p</i>	CFI	GFI	TLI	RMSEA	90% CI RMSEA
Model 1 (CFA for Time 1)	87.58	48	1.83	$< .001$	0.98	0.97	0.97	0.046	0.030–0.061
Model 2 (CFA for Time 2)	119.35	48	2.49	$< .001$	0.98	0.95	0.97	0.062	0.048–0.076

**Table 2**  
Longitudinal measurement invariance of the variables at Time 1 and Time 2.

Model	$\chi^2$	df	$\chi^2/df$	p	GFI	RMSEA	90% CI RMSEA	CFI	$\Delta$ CFI	TLI	$\Delta$ TLI
Model 3 Configural invariance	206.93	96	2.16	< .001	0.958	0.039	0.031–0.046	0.978	–	0.970	–
Model 4 Metric invariance	226.69	104	2.18	< .001	0.955	0.039	0.032–0.046	0.976	0.002	0.970	0.00
Model 5 Scalar invariance	256.92	114	2.25	< .001	0.948	0.040	0.034–0.047	0.972	0.004	0.968	0.02

findings indicated that all of the constructs had similar meanings at the two time points.

3.3. Descriptive statistics and correlation analyses

The results in terms of the descriptive statistics, the reliability analysis, and the correlational analyses are described in Table 1. The pattern of correlations observed confirmed the theoretical predictions, as both life satisfaction and positive affect were positively correlated with academic engagement at each time point, and negative affect was not consistently linked to engagement (see Table 3). As previous studies have demonstrated gender differences in happiness (Blanchflower & Oswald, 2004; Petersen, Sarigiani, & Kennedy, 1991), we explored whether this finding may be applicable to the current sample. To assess gender differences with regard to the SWB dimensions (i.e., life satisfaction, positive affect, and negative affect), we conducted a multivariate analysis of variance (MANOVA). The results showed that there were no significant differences in the SWB dimensions between boys and girls, Pillai's trace  $V = 0.18$ ,  $F(6,382) = 1.19$ ,  $p = .31$ .

3.4. Cross-lagged path analytic model

The hypothesized model, which examined the temporal stability of all of the constructs, the relations of all T1 SWB dimensions on T2 academic engagement, and the link between T1 academic engagement and the T2 SWB dimensions, was assessed through a two-wave cross-lagged path analysis using a full information maximum likelihood estimation approach. The results yielded a good-fitting model:  $\chi^2 = 10.15$ ,  $df = 6$ ,  $p = .12$ , CFI = 0.99, IFI = 0.99, TLI = 0.97, and RMSEA = 0.041 (0.000–0.083). Although most of the paths in the model were in line with the theoretical conjectures, we noted that positive affect at T1 did not predict academic engagement at T2 ( $\beta = 0.03$ ,  $p = .13$ ). Hence, an alternative model was tested without the aforementioned, non-significant path. The findings revealed that the model had very good fit indices:  $\chi^2 = 12.44$ ,  $df = 7$ ,  $p = .09$ , CFI = 0.992, IFI = 0.99, TLI = 0.97, and RMSEA = 0.047 (0.000–0.082). As the results of the chi-square test of significant difference for the structural models yielded no significant differences ( $\Delta\chi^2 = 2.29$ ,  $df = 1$ ,  $p = .13$ ), the alternative model was adopted as the final model because it was more parsimonious than the initial model (see Fig. 1).

The results confirmed the first hypothesis regarding the temporal stability of all of the constructs (i.e., life satisfaction, positive affect, negative affect, and academic engagement). T1 life satisfaction, positive affect, negative affect, and academic engagement were all statistically significant predictors of their T2 counterparts. As expected, T1 life satisfaction positively predicted T2 academic engagement ( $\beta = 0.04$ ,  $t = 2.02$ ,  $p < .05$ ), which partially supported the first hypothesis regarding the link between the SWB dimensions and subsequent academic engagement. The second hypothesis was only partially confirmed. T1 negative affect negatively predicted of T2 academic engagement ( $\beta = -0.03$ ,  $t = -1.99$ ,  $p < .05$ ). The hypotheses regarding the reciprocal link between academic engagement and SWB were also supported. In particular, T1 academic engagement positively predicted T2 life satisfaction ( $\beta = 0.77$ ,  $t = 6.38$ ,  $p < .01$ ) and T2 positive affect ( $\beta = 0.66$ ,  $t = 5.75$ ,  $p < .01$ ), which corroborated the third hypothesis. Supporting the fourth hypothesis, T1 academic engagement negatively predicted T2 negative affect ( $\beta = -0.28$ ,  $t = 2.02$ ,  $p < .05$ ).

**Table 3**  
Descriptive statistics and bivariate coefficients among the variables.

Variable	$\alpha$	M	SD	r								
				1	2	3	4	5	6	7	8	
1. T1 Life satisfaction	0.75	5.31	1.04	–								
2. T1 Positive affect	0.86	5.69	1.07	0.47**	–							
3. T1 Negative affect	0.87	3.49	1.19	-0.05	0.00	–						
4. T1 Academic engagement	0.87	3.81	0.47	0.48**	0.46**	-0.08	–					
5. T2 Life satisfaction	0.92	5.41	1.10	0.47**	0.32**	-0.08	0.44**	–				
6. T2 Positive affect	0.91	5.78	1.04	0.36**	0.44**	-0.07	0.40**	0.58**	–			
7. T2 Negative affect	0.83	3.76	1.30	-0.19**	-0.11**	0.35**	-0.14**	-0.25**	-0.17**	–		
8. T2 Academic engagement	0.92	3.88	0.52	0.43**	0.38**	-0.13*	0.67**	0.67**	0.59**	-0.23**	–	

\*\*  $p < .001$ .

\*  $p < .01$ .

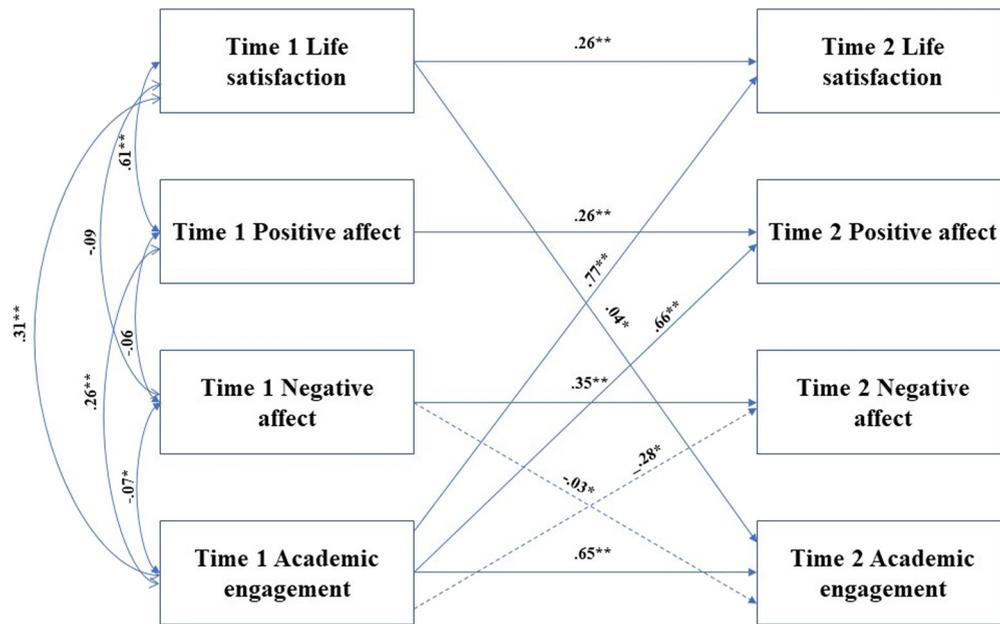


Fig. 1. Cross-lagged path model on the relations between subjective well-being and academic engagement. Note. \*\* $p < .01$ , \* $p < .05$ .

#### 4. Discussion

Although previous investigations have explored the influence of individual SWB dimensions (i.e. life satisfaction, positive affect, negative affect) on academic outcomes (Chow, 2005; Datu, 2018; Garvik et al., 2013; Gilman & Huebner, 2006; Ng et al., 2015), the current study contributes to the existing literature by examining how the different dimensions of SWB and academic engagement are related to each other across time via a two-wave cross-lagged panel design. Exploring how various domains of SWB may be mutually related to academic engagement can provide comprehensive insights on the role that all SWB dimensions play in promoting students' involvement in academic-related activities and vice versa.

Whereas previous research had shown life satisfaction to positively predict academic engagement (Datu, 2016; Heffner & Antaramian, 2016; Lewis et al., 2011; Salmela-Aro & Tuominen-Soini, 2010), we found that this association remained significant even after controlling for the influence of other SWB dimensions (positive and negative affect) and of autoregressor effects. It is therefore likely that the association found between Time1 life satisfaction and Time2 engagement may not be due to the influence of either positive or negative affect or the student's previous degree of engagement. Indeed, life satisfaction may uniquely contribute to the subsequent levels of students' academic engagement. These results suggest that students who reported their lives as fulfilling at T1 also reported two months later that they were actively working on their academic tasks, felt good about their school activities, and exerted cognitive effort when studying.

Previous literature has highlighted a number of reasons why life satisfaction may be linked to higher levels of academic engagement. Research has demonstrated that life satisfaction is related to higher intrinsic motivation (Elphinstone & Farrugia, 2016; Gillet, Lafrenière, Vallerand, Huart, & Fouquereau, 2014) and to academic self-efficacy (Sheu, Chong, Chen, & Lin, 2014). These findings have indicated that students who are satisfied with their lives not only tend to find greater value and fulfillment in doing academic activities, but also have a greater tendency to believe they can efficiently perform academic tasks. Life satisfaction, indeed, can serve as a psychological resource that may be associated with students' degree of involvement in school related activities.

In previous studies, negative emotions predicted dysfunctional academic outcomes such as low levels of academic engagement (Garvik et al., 2013; Hashim et al., 2012; Villavicencio, 2011), poor motivation (Elmelid et al., 2015), and reduced achievement (Hashim et al., 2012; Villavicencio, 2011). We also found the same pattern of association within the current study, as negative affect at Time 1 negatively predicted academic engagement at Time 2. This result indicates that students who frequently report high levels of negative emotions (i.e., feeling irritated and helpless) are not likely to actively participate in relevant academic tasks. However, whereas previous investigations have mostly relied on cross-sectional designs to examine the link of negative emotions to academic engagement and relevant educational outcomes, the current research adopted a longitudinal design to provide evidence about the association between negative affect and subsequent engagement. Furthermore, this finding on the inverse association between negative emotions and subsequent academic engagement provides some support for broaden-and-build theory (Fredrickson, 1998, 2001), which proposes that negative emotions are considered maladaptive affective states, as they narrow down the thought-action repertoires that are useful for gaining optimal resources.

The current study did not, however, identify an association between positive affect and subsequent perceived engagement, after accounting for the shared variance associated with life satisfaction, negative affect, and autoregressor effects. This finding

corroborated the investigation by [Ouweneel et al. \(2011\)](#) regarding the non-significant lagged effect of positive emotions at Time 1 on engagement at Time 2. The non-significant association between positive affect and subsequent engagement may be attributed to the potential influence of mediating variable/s in the association between positive emotions and engagement indices. For instance, [Ouweneel et al. \(2011\)](#) showed that positive emotions had indirect effects on student engagement via personal resources (i.e., academic self-efficacy, study-related hope, and study-related optimism). This finding implies that the association between positive emotions and academic engagement is relatively complex. Clearly, more research is needed to more fully understand why and how positive emotions can affect academic engagement.

Although the influence of SWB on academic engagement had been explored across multiple studies, the current study was the first to examine the influence of overall engagement on all three SWB dimensions. Our results showed that perceived academic engagement was (a) positively predicted subsequent life satisfaction and positive affect, and (b) negatively predicted negative affect, even after controlling for autoregressor effects. These results imply that students who report high levels of engagement in school-related activities are more likely to experience greater life satisfaction and more positive emotions. Furthermore, engaged students are less prone to feeling negative emotions. In this way, our findings converge with the literature on the positive relations between academic engagement and various outcomes related to well-being and optimal psychological performance ([Lewis et al., 2011](#); [Li & Lerner, 2011](#); [Reschly et al., 2008](#); [Salmela-Aro et al., 2008](#); [Van Ryzin, Gravely, & Roseth, 2009](#)).

We found clear evidence that SWB and academic engagement are reciprocally linked. Indeed, this result points to the possibility that SWB may serve as both a potential antecedent and a direct consequence of a student's degree of involvement in school. Although previous research ([Ng et al., 2015](#)) has demonstrated that SWB is reciprocally related to academic achievement, we do not know of any research that investigated the reciprocal association between SWB and overall academic engagement. Furthermore, the current study also showed that the pathway from engagement to SWB appears to be stronger compared to the pathway from SWB to engagement. This finding implies that schooling can serve as an important venue for enhancing students' well-being ([DeSantis-King, Huebner, Suldo, & Valois, 2006](#); [Ma & Huebner, 2008](#)). Therefore, providing opportunities for students to experience a greater degree of involvement in various school-related activities can potentially lead to elevated levels of students' SWB or happiness.

A number of factors may help to explain why engagement can have a positive effect on well-being. First, individuals with higher levels of engagement in a specific domain are less likely to experience stress and burnout ([Demerouti, Bakker, Nachreiner, & Schaufeli, 2001](#)). Engagement can serve as a buffer against ill-being by focusing the individual's attention on a worthwhile task. Second, individuals with high levels of flow (deeper involvement, motivation, and enjoyment in a specific task; [Csikszentmihalyi, 1975, 1990](#)) tend to experience greater satisfaction with life and more personal fulfillment ([Asakawa, 2004](#); [Peterson et al., 2005](#)). Engagement can also make individuals feel more competent in the school domain, which is one of the most important contexts for young people ([Niemiec & Ryan, 2009](#)). These feelings of competence can generate positive well-being.

In general, the findings of this investigation point to the potential benefits of understanding how each component of SWB can contribute to students' perceptions of overall academic engagement. Although previous investigations demonstrated that both positive affect and life satisfaction could catalyze a wide range of positive educational outcomes (e.g., academic engagement, motivation, and achievement; [Ng et al., 2015](#); [King et al., 2015](#); [Lewis et al., 2011](#); [Salmela-Aro & Tuominen-Soini, 2010](#)), the findings of the current study showed that after controlling for the effects of affective well-being dimensions (e.g., positive and negative affect), only life satisfaction is clearly linked to higher levels of self-reported academic engagement. Negative affect was related to lower degrees of engagement, even after controlling for prior SWB.

#### 4.1. Limitations and future research directions

Our study had a number of limitations to consider. First, as the study was non-experimental in nature, causal inferences cannot be drawn among the key psychological constructs. Future studies could address this concern by developing experimental studies that aim to cultivate SWB and academic engagement. Second, the study relied solely on self-reported data, which are prone to mono-method bias. Future research should use alternative forms of data collection (i.e., teacher- or peer-reported measures of academic engagement, objective indicators of engagement such as student attendance, or physiological measures of positive and negative emotions). Third, the time lag between the first and second data collection points was relatively short (i.e., two months). Future research should carry out a long-term longitudinal study to provide stronger evidence of the temporal stability of the variables in the research and the temporal precedence between SWB dimensions and academic engagement. Fourth, as our research recruited only Filipino students, the results may not be generalizable to students in other sociocultural settings. Future studies could address this limitation by conducting cross-cultural investigations that assess the reciprocal associations between SWB dimensions and academic outcomes in both individualist (e.g., the U.S., Germany) and collectivist cultures (e.g., Japan, China). Fifth, as we focused only on examining the potential causal ordering between SWB and academic engagement, limited insights can be drawn concerning which specific theoretical mechanisms explain why various SWB dimensions (e.g., life satisfaction and negative affect) may enhance perceived academic engagement in a given educational context. Therefore, future studies could more fully explore the personal, social, and contextual variables that operate as mediating or moderating factors on the link between SWB and overall academic engagement.

#### 4.2. Practical implications

In terms of practice, most schools have placed great emphasis on nurturing traditional academic abilities or cognitive skills. However, our research shows that both promoting school engagement and cultivating well-being are equally important approaches to foster students' academic success. Developing new programs that include well-being as an essential component in the school's

curriculum could have a significant effect on both socio-emotional and academic outcomes (Ciarrochi et al., 2016; Seligman et al., 2009; Suldo et al., 2015; Suldo, Bateman, & Gelley, 2014). Furthermore, we encourage teachers to provide more opportunities for students to boost their levels of engagement in various academic tasks as a means of increasing their levels of well-being.

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