

## RESEARCH ARTICLE

# Intrinsic and extrinsic future goals: Their differential effects on students' self-control and distal learning outcomes

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## Abstract

Research on intrinsic and extrinsic future goals has mostly focused on their impact on wellbeing with relatively lesser attention being focused on key learning outcomes. This study investigates how the pursuit of different future goals (i.e., society-, family-, career-, wealth-, and fame-oriented goals) affects students' self-control, and whether self-control mediates the relationship between future goals and distal learning outcomes (i.e., students' affect to school and academic achievement 1 year later). The study adopted a longitudinal design involving 8,354 secondary students from 16 schools in Hong Kong. Students had to complete English and Mathematics achievement tests and answer questionnaires measuring the key variables. Structural equation modeling analysis indicated intrinsic future goals were more adaptive compared to extrinsic ones. In particular, results revealed the importance of society-oriented goal on self-control and distal learning outcomes. Theoretical and practical implications are discussed.

## KEYWORDS

future goals, intrinsic and extrinsic goals, self-control, self-determination theory (SDT), academic achievement

## INTRODUCTION

Adolescence is a critical period for the development and formulation of personal future goals (Carroll, Durkin, Hattie, & Houghton, 1997). Future goals are self-relevant and self-defining goals that provide an incentive for action (Miller & Brickman, 2004). They are important not only in giving individuals a sense of purpose and meaning

in life, but also act as catalysts facilitating the regulation of behaviors that improve performance. Not all goals, however, facilitate learning and wellbeing. Studies have shown that the pursuit of intrinsic goals is positively associated with learning, overall wellbeing and self-actualization (Brdar, Rijavec, & Miljkovic, 2009; Schmuck, Kasser, & Ryan, 2000; Wilding & Andrews, 2006), whereas the pursuit of extrinsic goals is negatively associated with learning and wellbeing (Kasser, 2016; Unanue, Dittmar, Vignoles, & Vansteenkiste, 2014; Vansteenkiste, Soenens, & Duriez, 2008).

The content of future goals can be characterized as either intrinsic or extrinsic in nature. According to goal content theory, a mini-theory of the self-determination theory (SDT) (Deci & Ryan, 2000), intrinsic goals, such as community contribution, affiliation, personal development, are inherently satisfying, as they provide direct satisfaction of basic psychological needs for competence, autonomy, and relatedness. On the other hand, extrinsic goals, such as fame and financial success, are more negative because they thwart the fulfillment of these basic psychological needs.

Nowadays, there is an increasing trend for young people to value money, image, and fame over concern for others and intrinsic values (i.e., values that satisfy the inherent psychological needs of autonomy, competence, and relatedness) (Gordinier, 2009; Morgan & Robinson, 2013; Smith, Christoffersen, Davidson, & Herzog, 2011). This trend is not limited to Western societies (e.g., U.S. and the UK), but also Asian ones (e.g., China and Hong Kong) (Ku, 2016; Ku, Dittmar, & Banerjee, 2014). For educators, an important question to ask, therefore, is whether the pursuit of different future goals has implications for learning. The aim of this study was to examine how the pursuit of different future goals is associated with distal learning outcomes (i.e., student's effect to school and academic achievement 1 year later). The goals investigated include both intrinsic (i.e., family-, career-, and society-oriented future goals) and extrinsic goals (i.e., wealth- and fame-oriented future goals). We also examined whether and how self-control mediates the relationship between different future goals and student learning outcomes. In the pursuit of long-term goals, self-control is a critical capacity that facilitates an individual to engage in behaviors that would lead to goal attainment.

In the extant literature, studies tend to examine only one or two types of goals (e.g., studies on materialistic goals and learning) (King, 2018; King & Datu, 2017; Ku, Dittmar, & Banerjee, 2012; Lekes, Gingras, Philippe, Koestner, & Fang, 2010; Unanue et al., 2014). Hence, we examine a wider range of intrinsic-extrinsic future goals and investigate their effects on students' self-control and distal learning outcomes, including affect to school and academic achievement 1 year later. In so doing, the findings may help to enhance students' learning through guiding and nurturing the development of appropriate future goals of students.

This study addresses several of the methodological limitations of previous research. First, previous studies on intrinsic-extrinsic goals have either used experimental designs (which may have more limited external validity) or cross-sectional designs (which may give inflated estimates of the relationships among variables). In the current study, we used a longitudinal approach to examine the associations among Time 1 future goals, self-control and the relatively distal learning outcomes, including students' academic achievement and affect to school at Time 2. Second, the study was based on a broadly representative sample, involving more than 8,000 junior secondary school students from different school types, geographical locations and ability levels in Hong Kong. It is also worth noting that in addition to self-report questionnaire, the study used objective measures of achievement tests rather than school grades which could be biased by school-level differences.

## 1 | SDT: THEORETICAL UNDERPINNINGS ON THE RELATIONSHIPS AMONG FUTURE GOALS, SELF-CONTROL, AND LEARNING

SDT provides an overarching theoretical framework that helps to elucidate how the pursuit of different types of future goals affect self-control and learning. The theory posits that there are three basic psychological needs for competence, autonomy, and relatedness, which form the basis for human motivation (Ryan & Deci, 2000). Competence refers to the feeling of being effective in one's pursuits, that is, feeling able to exercise, expand and

express one's capacities. Autonomy refers to feeling volitional in freely choosing behaviors that are congruent with one's deepest values. Relatedness refers to feeling connected with others and having a sense of belonging within one's community. The satisfaction of these basic psychological needs is assumed to promote one's motivation and self-regulation for optimal functioning. However, when these needs are thwarted, the individual may exhibit diminished motivation that adversely affects learning and wellbeing (Ryan & Deci, 2010).

The type of goal that one pursues can determine whether one's basic needs are fulfilled or thwarted. As suggested by Deci and Ryan (2000), the pursuit of intrinsic goals is inherently satisfying, as it provides direct satisfaction of basic psychological needs for competence, autonomy, and relatedness. The pursuit of extrinsic goals, however, might be experienced as need-thwarting as it shifts learners' attention away from thorough engagement in learning towards the external rewards of an activity (e.g., receiving rewards or acquiring external signs of self-worth), thereby reducing the quality and commitment in learning (Vansteenkiste, Lens, & Deci, 2006). Moreover, extrinsically oriented individuals are oriented towards interpersonal comparisons to outperform others, which are likely to interfere with the possibility of deeply relating to others (Vansteenkiste et al., 2008). This is detrimental to learning especially in an increasingly interactive learning environment, which requires students to learn through discussion and collaboration. Furthermore, extrinsic goals have a "crowding-out" effect on intrinsic goals. Since time and energy are limited resources, putting much energy into extrinsic goals are likely to reduce the time and energy a person can put into intrinsic goals (Frey & Oberholzer-Gee, 1997). Hence, excessive concentration on external rewards can distract people from intrinsic endeavors that interfere with learning and actualization (Kasser & Ryan, 1993).

The frustration or satisfaction of the three basic psychological needs could lead to distinctively different types of motivation (Ryan & Deci, 2000). From the least to the most autonomous types of motivation are: amotivation (lack of any motivation), external regulation (motivated by an external demand or reward), introjected regulation (motivated by ego enhancement to maintain feelings of worth), identified regulation (conscious valuing and accepting the goal as personally important), and intrinsic motivation (motivated by inherent satisfaction and enjoyment of the task). While the frustration of the three basic psychological needs could lead to amotivation or controlled motivation (includes both external and introjected regulation), their satisfaction is likely to induce autonomous motivation (includes both intrinsic motivation and identified regulation). There is empirical evidence to support this contention. For example, autonomous regulation was found to be positively related to increased persistence, greater engagement and more self-regulated learning (Niemic et al., 2006; Vansteenkiste, Zhou, Lens, & Soenens, 2005), whereas controlled regulation was found to be associated with lower vitality and less persistence in learning (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005).

On the basis of the theoretical considerations elucidated above, it can be expected that the pursuit of intrinsic goals (i.e., family-, career-, and society-oriented future goals) is likely to facilitate learning and self-control. In contrast, the pursuit of extrinsic goals (i.e., wealth- and fame-oriented future goals) is likely to adversely affect learning and the effective development of self-control.

## 2 | EMPIRICAL EVIDENCE ON THE RELATIONSHIP BETWEEN FUTURE GOALS AND LEARNING

There is increasing evidence that the pursuit of extrinsic future goals is associated with maladaptive learning outcomes, whereas the pursuit of intrinsic future goals is associated with adaptive learning outcomes. To illustrate, studies on materialism may shed some light on the association between extrinsic future goals and learning outcomes as materialism is a personal life goal that focuses on the acquisition of money, fame, success, and image over other intrinsic goals such as affiliation and self-acceptance (Kasser & Ryan, 1996; Unanue et al., 2014). In fact, studies have found a negative association between materialism and academic achievement. For example, Goldberg, Gorn, Peracchio, and Bamossy (2003) found that materialistic youths liked school less and had lower grades. Similarly, King and Datu (2017) found that students with high levels of materialism have lower levels of engagement, achievement, and these

associations are partially mediated by amotivation. Moreover, Froh, Emmons, Card, Bono, and Wilson (2011) found that materialism predicted lower levels of academic achievement among adolescent students. Ku et al. (2012, 2014) found that materialism was associated with lower intrinsic mastery goal and higher extrinsic performance goal. The latter, in turn, was associated with lower levels of academic achievement.

In contrast, intrinsic future goals are associated with more effort expenditure and autonomous regulation, which, in turn, were related to more persistence in learning and resulted in better performance (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Wilding and Andrews (2006) also found that intrinsic types of goals (e.g., altruistic life goals) were associated with deep learning strategies while extrinsic types of goals (e.g., wealth and status life goals) were associated with surface learning strategies. Compared with students who perform tasks for intrinsic rather than extrinsic goals, intrinsic-oriented students are more likely to adopt mastery-oriented motivation, show more interest and confidence in their studies, adopt more deep learning strategies, show higher persistence in learning and achieve better exam scores than the latter (King, 2018; Lee, McInerney, Liem, & Ortiga, 2010; Simons, Dewitte, & Lens, 2004).

### 3 | SELF-CONTROL MEDIATES THE RELATIONSHIP BETWEEN FUTURE GOALS AND LEARNING

Self-control is a prerequisite for successful goal attainment (Duckworth, Quinn, & Tsukayama, 2012). After having set a goal, people may face different temptations that lead them to procrastinate acting on their intentions, and hence, fail in initiating goal-directed behavior. Moreover, in everyday life, people normally strive for multiple goals. Some of these goals may be short-term ones, but others maybe long-term projects that require effort over a longer period of time. Self-control, the capacity to override natural and automatic tendencies, desires or behaviors, to pursue long-term goals, even at the expense of short-term attractions (Bauer & Baumeister, 2011), therefore, is critically important. In short, self-control focuses not only on the effort people exert to stimulate desirable responses, but it also entails the effortful inhibition of undesirable impulses (Tangney, Baumeister, & Boone, 2004).

While the relationships of future goals and self-control have been discussed earlier from the perspective of SDT, self-control is significant for learning as it helps to delay momentary gratification in the service of pursuit of established academic goals (Petrides, 2009). Indeed, studies have shown that individuals high in self-control are inclined to be more aware of goal-related cues and avoid temptation-related stimuli even in the presence of an attractive temptation (Fishbach, Friedman, & Kruglanski, 2003; Fishbach & Shah, 2006). We, therefore, assumed that self-control would be crucial in mediating the effects of future goals on the distal learning outcomes we examined, including academic achievement and affect to school.

There is empirical evidence on the positive relationship between self-control and learning. A meta-analytic study conducted by de Ridder, Lensvelt-Mulders, Finkenauer, Stok, and Baumeister (2012) found that the effect size for self-control on school and work performance was 0.36. More specifically, self-control was positively correlated with GPA and adjustment (Tangney et al., 2004). Furthermore, self-control and procrastination were found to explain four times more variance in grades than did cognitive ability (Hofer, Kuhnle, Kilian, & Fries, 2012). Galla and colleagues (2014) also found that the ability to self-control (i.e., to stay on task and avoid the digital distractions) demonstrated incremental predictive validity for GPA, standardized mathematics and reading achievement test scores.

### 4 | THE PRESENT STUDY

There were two main objectives of this study (a) to examine how the pursuit of different future goals affects students' self-control and learning outcomes; and (b) to examine whether self-control mediates the effects of future

goals on relatively distal learning outcomes (including students' academic achievement and affect to school in the second year of the study).

We examined two types of extrinsic future goals (i.e., (a) fame-oriented future goal, which concerns becoming famous and important in the future; and (b) wealth-oriented future goal, which concerns being wealthy in the future) as well as three types of intrinsic future goals (i.e., (a) career-oriented goal, which concerns having a good career in the future; (b) family-oriented future goal, which concerns supporting the future family; and (c) society-oriented future goal, which concerns contributing to society). This classification is based on an earlier study conducted by Lee and colleagues (2010). We posited that these goals would have differential relationships with self-control, which, in turn, would predict key learning outcomes. In particular, our study was informed by the following hypotheses:

**H1** *Intrinsic future goals (career-, family-, and society-oriented future goals) would be positively associated with self-control and distal learning outcomes;*

**H2** *Extrinsic future goals (fame- and wealth-oriented future goals) would be negatively associated with self-control and distal learning outcomes.*

**H3** *Self-control will partially mediate the relationship between future goals and distal learning outcomes.*

## 5 | METHOD

### 5.1 | Sample

Participants were 8,354 (male = 4,562 [54.6%]; female = 3,792[45.4%]) Secondary 1 to 3 (equivalent to Grade 7 to 9) students (S1 = 2,648 [31.7%]; S2 = 2,813 [33.7%]; S3 = 2,893 [34.6%]) whose mean age was 13.56 ( $SD = 1.09$ ). The sample was broadly representative of junior secondary as they were drawn from 16 secondary schools, which were (a) geographically distributed in the three main regions of Hong Kong (i.e., Hong Kong Island, Kowloon, and New Territories), (b) from different school types (including government schools, aided schools, and schools with direct subsidy scheme), and (c) dispersed across the three school academic bandings (i.e., high-ability [Band 1], medium-ability [Band 2], and low-ability [Band 3]).

### 5.2 | Procedures

The study was based on the first and second wave of the data collected from a research project that investigated the interaction between different psychological variables and student achievement. Both waves of data were collected 12 months apart. Students were invited to complete a paper-and-pencil survey on academic motivation, self-concept, and learning strategies. Instruments were administered in Chinese after careful attention was given to translation through the appropriate and recommended procedures. The English version of the survey items was translated to Chinese by a trained research assistant and then back-translated to English by another trained research assistant. The two English versions of the items were cross-checked by the authors to make sure the items were consistent in meanings. Students were given the option of completing the survey in Chinese or English. In all, 10 students chose to complete the survey in English.

Apart from the survey, students were also requested to complete a standardized achievement test in English and Mathematics. Each achievement test took 30 min to complete. Students completed the English achievement test in English at all schools. Students had the choice of completing the Mathematics achievement test in Chinese or English. Ten students chose to complete the achievement test in English.

The survey and standardized achievement tests were groups administered by the teachers in classrooms on normal school days. The order of administration of the measures was the same across all schools and across both Time 1 and Time 2. It was within the discretion of individual schools to administer the survey and achievement tests on the same day or different days, but all the schools were requested to complete the whole set of tasks according to the schedule set by the research team. To ensure accuracy in data entry, all the student responses were scanned by the scanning machine for subsequent data analysis. Informed consent was obtained from all the participating schools, parents, and students. All the parties were given information on the project, including the purpose of the research and the tasks students were required to complete. Students were assured that all information provided would be kept confidential and would be used for research purposes only. No ethical problems were raised by any parties during the study (refer to McNerney, Cheng, Mok, & Lam, 2012).

## 5.3 | Measures

### 5.3.1 | Future goals

Future goals were measured through the 15-item future goals questionnaire (FGQ) (Lee et al., 2010), that tapped five distinctive future goals (a) fame-oriented future goal (e.g., "I want to become a famous person in my society"); (b) wealth-oriented future goal (e.g., "I want to make a lot of money"); (c) family-oriented future goal (e.g., "I want to support my future family"); (d) career-oriented future goal (e.g., "I want to get a good career") and (e) society-oriented future goal (e.g., "I want to make a contribution to my society"). The questionnaire was rated on a 4-point Likert scale (1 = strongly disagree; 4 = strongly agree). According to Lee et al. (2010), the FGQ possesses high internal consistency with the Cronbach's alpha values of the subscales ranging from 0.80 to 0.90. Similarly, the FGQ has high internal consistency in the present study as reflected by the McDonald's omega values ranging from 0.92 to 0.96 (see Table 1).

### 5.3.2 | Self-control

Self-control was measured through the 5-item self-control subscale (e.g., "I always finish my duties before giving time to fun and game") from the Assessment Program for Affective and Social Outcomes (2nd Version) (APASO-II) (Education Bureau, Government of the Hong Kong Special Administrative Region, 2015). The items were rated on a 4-point Likert scale (1 = strongly disagree; 4 = strongly agree). The scale has satisfactory internal consistency with a McDonald's omega value of 0.78 in this study (see Table 1).

### 5.3.3 | Affect to school

Affect to school was measured through the Affect to School subscale (e.g., "I like working at school") of the Facilitating Conditions Questionnaire (McNerney, Dowson, & Yeung, 2005). Specifically, the 4-item Affect to School subscale measures how much students like schooling. Higher scores reflect more liking and interest in school and schooling. The items were rated on a 4-point Likert scale (1 = strongly disagree; 4 = strongly agree). The

**TABLE 1** Internal consistency for future goals questionnaire, self-control scale and affect to school subscales

| Subscales        | Fame-oriented future goal | Wealth-oriented future goal | Family-oriented future goal | Career-oriented future goal | Society-oriented future goal | Self-control | Affect to School |
|------------------|---------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|--------------|------------------|
| McDonald's omega | 0.93                      | 0.92                        | 0.96                        | 0.96                        | 0.92                         | 0.78         | 0.71             |

internal consistency of the scale was satisfactory with a Cronbach alpha value of 0.73 (McInerney et al., 2005). A similar result was found in this study with a McDonald's omega value of 0.71 (see Table 1).

### 5.3.4 | Academic achievement

Standardized achievement tests were used to assess students' academic achievement in English and Mathematics. English achievement was assessed by the English Language Ability Calibrated (ELAC) scale developed by Lee (2009, October). Mathematics achievement was assessed by the Mathematics vertical scale developed by Lau, Mok, and Yan (2009). Items for the tests were constructed having consulted school teachers of the sampled schools to ensure adequate coverage of and appropriate grade-alignment with the schools' curriculum. Both scales were calibrated using Rasch measurement method (Bond & Fox, 2007). The ELAC was validated with a representative sample of more than 15,000 Primary 1 (Grade 1) to Secondary 3 (Grade 9) students in Hong Kong. The Mathematics vertical scale was validated with a representative sample of 9,300 Primary 2 (Grade 2) to Secondary 4 (Grade 10) students in Hong Kong. The scores from the English and Mathematics achievement tests were combined to form an aggregate academic achievement score.

## 5.4 | Data analyses

Structural equation modeling (SEM; AMOS 24.0) was performed to conduct measurement and structural analyses. Before testing the structural model, confirmatory factor analyses (CFA) were conducted to validate the factor structure of the measurement scales used in this study. Internal consistency of the scales was assessed by McDonald's omega coefficient, which refers to a ratio of the estimated true score variance to the total variance (McDonald, 1999). Compared with Cronbach's alpha coefficient, which is by far the most common reliability estimate used in psychological research, McDonald's omega produces more precise estimates of reliability as it captures all contributions among heterogeneous indicators within each latent variable and is not limited by correlated error variances (Geldhof, Preacher, & Zyphur, 2014).

Next, we compared the hypothesized model with an alternative model, in which all other relationships were held constant across the two models except that in the alternative model, the path was from self-control to the different future goals and hence, the future goals became the mediating variables between self-control and the learning outcomes. The alternative model was suggested, as children with higher self-control tend to have higher self-efficacy to solve difficult life challenges and climb the ladder of success, which, in turn, may affect their future goal orientation (Olasupo & Idemudia, 2016).

Then, multi-group analyses were conducted to determine whether the finalized model was invariant across genders and grades of students (i.e., Secondary 1 vs. Secondary 3 students). Pairwise tests of path coefficients were further conducted to compare all the paths within and between the comparison models if model invariance was not established.

Taking into account the large sample size in this study and the sensitivity of the conventional  $\chi^2$  test to sample size, leading to models with large samples being rejected (Browne & Cudeck, 1993), a number of fit-statistics were employed to assess the model fit, including comparative fit index (CFI), goodness of fit index (GFI), and root mean square error of approximation (RMSEA). According to Hu and Bentler (1999), values of CFI and GFI should be over 0.90 and 0.95 to be considered as an acceptable and good fit, respectively (Bentler & Bonett, 1980). As to the RMSEA, a value of 0.05 or less indicates a close model fit while a value below 0.08 is still regarded as acceptable (MacCallum, Browne, & Sugawara, 1996). To compare the models, in addition to all the model fit statistics aforementioned, we also took into account Akaike information criterion (AIC) and Bayesian information criterion (BIC) with smaller values of them indicate a better model in term of model fit and parsimony (Loehlin, 2004).

For the structural model,  $\beta$  coefficient was interpreted based on the practice as adopted by Fryer, Ginns, and Walker (2014), in line with Hattie's (2009) guidelines for educational effect sizes. It was interpreted as a small

effect size for  $\beta = .05$ , moderate effect size for  $\beta = .15$  and large effect size for  $\beta \geq .24$ . Moreover, based on 1,000 bootstrap samples, we examined whether self-control played a mediating role in the relationship between future goals and the distal learning outcomes.

## 6 | RESULTS

### 6.1 | Preliminary analyses

#### 6.1.1 | Descriptive statistics

As shown in Table 2, among all the future goals, career-oriented future goal ( $M = 3.62$ ,  $SD = .50$ ) and family-oriented future goal ( $M = 3.53$ ,  $SD = .57$ ) were the two goals most highly endorsed by students. These two goals were then followed by wealth-oriented future goal ( $M = 3.36$ ,  $SD = .63$ ). Fame-oriented future goal ( $M = 2.71$ ,  $SD = .81$ ) and society-oriented future goal ( $M = 3.14$ ,  $SD = .65$ ) were the two least endorsed goals.

#### 6.1.2 | Correlations among latent constructs and academic achievement

As expected, all the intrinsic future goals were positively correlated with academic achievement and affect to school in the second year of the study ( $r = .05$ – $.34$ ,  $p < .005$  or  $p < .05$ ). The two extrinsic future goals had either nonsignificant or small negative correlations ( $r = -.03$ ,  $p < .05$ ) with academic achievement, notwithstanding their positive correlations with affect to school at Time 2 ( $r = .05$ – $.22$ ,  $p < .005$  or  $p < .05$ ). Self-control, having the highest correlation with society-oriented future goal ( $r = .45$ ,  $p < .05$ ), was positively correlated with academic achievement ( $r = .11$ ,  $p < .005$ ) and affect to school ( $r = .38$ ,  $p < .05$ ).

### 6.2 | Measurement model

CFA was conducted to test the five-factor model of the FGQ as well as the one-factor model for the Self-control scale and the Affect to School subscale. All the fit indexes indicated a good fit of the data to the measurement models tested (see Table 3).

### 6.3 | Model comparison

Results of the SEM supported the hypothesized model as tenable (see Table 4). Comparing the hypothesized model with the alternative model, the former was a better model than the latter one as indicated by the various fit-statistics, including better values of CFI, GFI, and RMSEA. Moreover, the hypothesized model had the lowest value of both AIC and BIC, indicating the superiority of the hypothesized model.

### 6.4 | Structural model: Relationships among future goals, self-control, and distal learning outcomes

SEM results on the relationships among future goals, self-control, and distal learning outcomes are illustrated in Figure 1. To better delineate the relationships among the study constructs, the direct, indirect, and total effects of the various future goals and self-control on the distal student learning outcomes of affect to school and academic achievement are presented in Table 5.

As expected, all intrinsic future goals were positively associated with self-control with the society-oriented future goal having the strongest association ( $\beta = .33$ ,  $p < .005$ ), followed by career-oriented future



**TABLE 2** Descriptive statistics, *t* test results comparing gender differences, and correlations among latent constructs and academic achievement at Time 1 and Time 2

| Variables                            | All   |        | Male  |        | Female |        | <i>t</i> Test   | Time 1 |       |       |       |       |       |       |   | Time 2 |  |  |  |
|--------------------------------------|-------|--------|-------|--------|--------|--------|-----------------|--------|-------|-------|-------|-------|-------|-------|---|--------|--|--|--|
|                                      | Mean  | (SD)   | Mean  | (SD)   | Mean   | (SD)   |                 | 1      | 2     | 3     | 4     | 5     | 6     | 7     | 8 |        |  |  |  |
|                                      |       |        |       |        |        |        |                 |        |       |       |       |       |       |       |   |        |  |  |  |
| 1. Fame-oriented future goal (T1)    | 2.71  | (.81)  | 2.74  | (.84)  | 2.67   | (.77)  | <i>p</i> < .001 | -      |       |       |       |       |       |       |   |        |  |  |  |
| 2. Wealth-oriented future goal (T1)  | 3.36  | (.63)  | 3.37  | (.65)  | 3.36   | (.60)  | n.s.            | .43**  | -     |       |       |       |       |       |   |        |  |  |  |
| 3. Family-oriented future goal (T1)  | 3.53  | (.57)  | 3.54  | (.60)  | 3.51   | (.53)  | <i>p</i> < .05  | .32*   | .46** | -     |       |       |       |       |   |        |  |  |  |
| 4. Career-oriented future goal (T1)  | 3.62  | (.50)  | 3.57  | (.54)  | 3.68   | (.45)  | <i>p</i> < .001 | .35**  | .60** | .66** | -     |       |       |       |   |        |  |  |  |
| 5. Society-oriented future goal (T1) | 3.14  | (.65)  | 3.12  | (.70)  | 3.17   | (.58)  | <i>p</i> < .001 | .54**  | .28** | .57   | .48** | -     |       |       |   |        |  |  |  |
| 6. Self-control (T1)                 | 2.77  | (.50)  | 2.74  | (.52)  | 2.81   | (.46)  | <i>p</i> < .001 | .29*   | .05*  | .28*  | .26** | .45*  | -     |       |   |        |  |  |  |
| 7. Academic achievement (T2)         | 48.95 | (8.57) | 47.89 | (8.79) | 50.20  | (8.12) | <i>p</i> < .001 | -.03*  | .00   | .05*  | .08** | .08** | .11** | -     |   |        |  |  |  |
| 8. Affect to school (T2)             | 2.95  | (.50)  | 2.92  | (.51)  | 2.97   | (.48)  | <i>p</i> < .001 | .22**  | .05** | .22*  | .20** | .34*  | .38*  | .23** | - |        |  |  |  |

Abbreviation: SD, standard deviation.

\*\**p* < .005.\**p* < .05.

**TABLE 3** CFA results for future goals questionnaire, Self-control, and Affect to School subscales

| Measurements               | $\chi^2$   | df | RMSEA | GFI | CFI | NFI | NNFI |
|----------------------------|------------|----|-------|-----|-----|-----|------|
| Future goals questionnaire | 2,240.81** | 79 | .06   | .96 | .97 | .97 | .97  |
| Self-control scale         | 44.70**    | 4  | .04   | 1   | .99 | .99 | .99  |
| Affect to School subscale  | 11.62**    | 1  | .04   | 1   | 1   | 1   | .98  |

Abbreviations: CFI, comparative fit index; GFI, goodness of fit index; NFI, Normed fit index; NNFI, Non-normed fit index; RMSEA, root mean square error of approximation.

\*\* $p < .001$ .

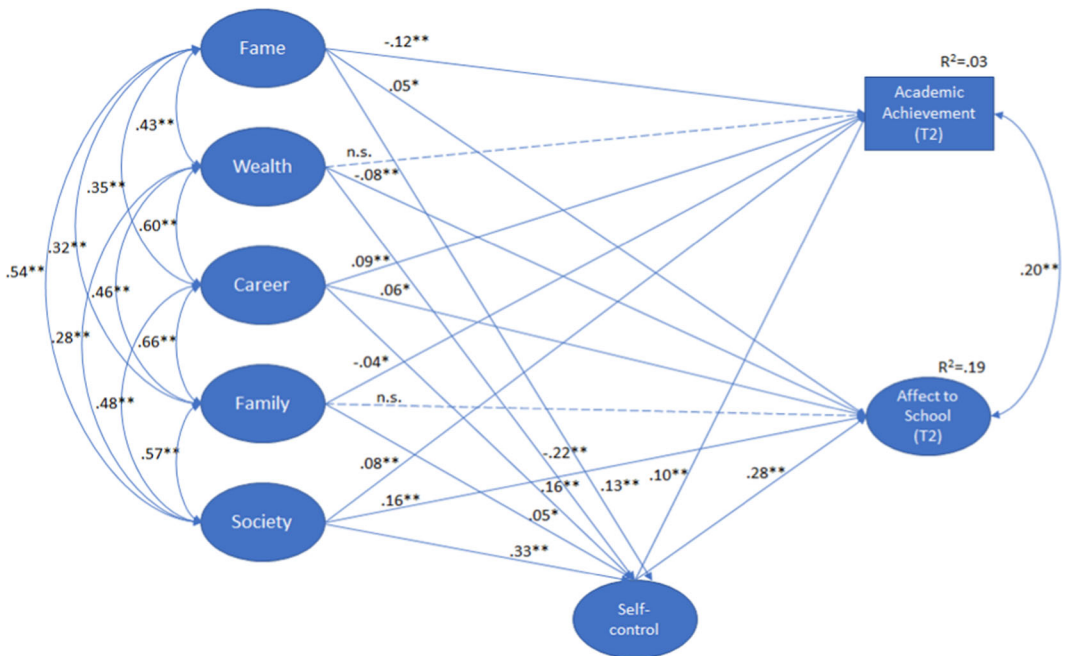
**TABLE 4** Model comparison: hypothesized model versus the alternative model

| Models       | $\chi^2$   | df  | RMSEA | GFI | CFI | NFI | NNFI | AIC      | BIC      |
|--------------|------------|-----|-------|-----|-----|-----|------|----------|----------|
| Hypothesized | 3,498.45** | 240 | .04   | .96 | .97 | .97 | .97  | 3,668.45 | 4,262.69 |
| Alternative  | 6,231.39** | 252 | .05   | .94 | .94 | .94 | .93  | 6,377.39 | 6,887.74 |

Abbreviations: AIC, Akaike information criterion; BIC, Bayesian information criterion; CFI, comparative fit index; GFI, goodness of fit index; NFI, Normed fit index; NNFI, Non-normed fit index; RMSEA, root mean square error of approximation.

\*\* $p < 0.001$ .

goal ( $\beta = .16, p < .005$ ). The association between family-oriented future goal and self-control was relatively small albeit still statistically significant ( $\beta = .05, p < .05$ ). For extrinsic future goals, we found that fame-oriented future goal was positively related to self-control ( $\beta = .13, p < .005$ ). However, there was a negative relationship between wealth-oriented future goal and self-control ( $\beta = -.22, p < .005$ ). In short, all future goals were positively associated with self-control, except for wealth-oriented future goal. Self-control was a



\*\* $p < .005$  \* $p < .05$

**FIGURE 1** Structural equation modeling results on the relationship among the different future goals, self-control and the learning outcomes in the second year of the study

**TABLE 5** Direct, indirect, and total effects of goals and self-control on academic achievement and affect to school

|                  | Self-control |          |        | Affect to school |          |        | Academic achievement |          |         |
|------------------|--------------|----------|--------|------------------|----------|--------|----------------------|----------|---------|
|                  | Direct       | Indirect | Total  | Direct           | Indirect | Total  | Direct               | Indirect | Total   |
| Fame-oriented    | .13**        | -        | .13**  | .05*             | .04**    | .09**  | -0.12**              | .01**    | -0.11** |
| Wealth-oriented  | -.22**       | -        | -.22** | -.08**           | -.06**   | -.14** | -0.01                | -.02**   | -.03    |
| Career-oriented  | .16**        | -        | .16**  | .06*             | .04**    | .10**  | .09**                | .02**    | .11**   |
| Family-oriented  | .05*         | -        | .05*   | .03              | .01*     | .04*   | -.04*                | .01*     | -.03*   |
| Society-oriented | .33**        | -        | .33**  | .16**            | .09**    | .25**  | .08**                | .03**    | .11**   |
| Self-control     | -            | -        | -      | .28**            | -        | .28**  | .10**                | -        | .10**   |

\*\* $p < .005$ .\* $p < .05$ .

positive predictor of affect to school ( $\beta = .28, p < .005$ ) and academic achievement ( $\beta = .10, p < .005$ ) 1 year later. Bootstrapping analyses further showed that self-control partially mediated the relationship between future goals and learning outcomes, although the effect size, in general, was relatively small, that is,  $\beta < .10$ .

Among all the future goals, society-oriented future goal had a much greater total effect on affect to school ( $\beta = .25, p < .005$ ), compared with the two other future goals which followed, that is, career-oriented future goal ( $\beta = .10, p < .005$ ) and fame-oriented future goal ( $\beta = .09, p < .005$ ). The wealth-oriented future goal, however, had a significant negative effect on affect to school ( $\beta = -.14, p < .005$ ). In other words, students with higher society-oriented future goal tended to like schoolwork more. In contrast, students with higher wealth-oriented future goal tended to have negative attitudes towards schoolwork.

Similarly, society-oriented future goal and the career-oriented future goal had the greatest total effects on academic achievement ( $\beta = .11, p < .005$ ). For the extrinsic future goals, both wealth-oriented ( $\beta = -.03, p < .05$ ) and fame-oriented future goals ( $\beta = -.11, p < .005$ ) had significant negative effects on academic achievement. That said, students with higher society-oriented and career-oriented future goals tend to achieve better academic achievement, while wealth- and fame-oriented future goals affected student outcome adversely.

## 6.5 | Model invariance across genders and grades of students (Secondary 1 versus Secondary 3)

A multi-group SEM was performed so as to evaluate whether the model was invariant across genders and grades of students. As shown in Table 6, although the values of GFI and CFI remain almost unchanged, the results from the model comparison between the constrained and unconstrained models suggest that imposing additional restrictions of equal factor loadings, structural weights and structural covariances across the groups of different genders and grades did result in statistically significant changes in the overall model fits,  $\chi^2(50) = 374.83, p < .005$  (for genders) and  $\chi^2(50) = 163.31, p < .005$  (for grades).

## 6.6 | Pairwise comparison of path coefficients

Given that the model was not invariant across genders and grades, further analyses were conducted to test for pairwise path coefficient differences. The results as shown in Table 7 show that the association between society-oriented future goal and self-control was significantly greater for females ( $\beta = .38$ ) than males ( $\beta = .30$ ),  $p < .005$ . Moreover, the associations of self-control with academic achievement ( $\beta = .00$  [male] vs.

**TABLE 6** Model comparison across gender groups and grades (Secondary 1 versus Secondary 3)

|   |                     | $\chi^2$       | df  | RMSEA   | GFI         | CFI         | NFI       | NNFI      |
|---|---------------------|----------------|-----|---------|-------------|-------------|-----------|-----------|
| Model comparison                        |                     |                |     |         |             |             |           |           |
| Across genders                          | Unconstrained model | 3,815.94       | 480 | .03     | .96         | .97         | .96       | .96       |
|   | Constrained model   | 4,190.77       | 530 | .03     | .96         | .96         | .96       | .96       |
| Across grades                           | Unconstrained model | 2,964.13       | 480 | .03     | .96         | .96         | .96       | .95       |
|   | Constrained model   | 4,190.77       | 530 | .03     | .96         | .96         | .96       | .96       |
| Comparison with the unconstrained model |                     |                |     |         |             |             |           |           |
|   |                     | $\Delta\chi^2$ | df  | p Value | NFI Delta 1 | IFI Delta 2 | RFI Rho 1 | TLI Rho 2 |
| Across genders                          | Constrained model   | 374.83         | 50  | <.005   | .004        | .004        | .000      | .000      |
| Across grades                           | Constrained model   | 163.31         | 50  | <.005   | .002        | .002        | .002      | .003      |

Abbreviations: CFI, comparative fit index; GFI, goodness of fit index; IFI, incremental fit index; NFI, normed fit index; NNFI, non-normed fit index; RFI, relative fit index; RMSEA, root mean square error of approximation.

$\beta = .07$  [female],  $p < .05$ ) and affect to school ( $\beta = .25$  [male] vs.  $\beta = .32$  [female],  $p < .005$ ) were both significantly larger for females than males. As to grades, the associations of career ( $\beta = .14$  [S1] vs.  $\beta = .07$  [S3],  $p < .05$ ) and society-oriented goals ( $\beta = .11$  [S1] vs.  $\beta = .03$  [S3],  $p < .05$ ) with academic achievement were significantly greater for junior (S1) than senior (S3) students. Society-oriented goal has a significantly larger association with affect to school for senior than junior students ( $\beta = .13$  [S1] vs.  $\beta = .23$  [S3],  $p < .005$ ), while affect to school has a significantly greater association with academic achievement for senior than junior students ( $\beta = .14$  [S1] vs.  $\beta = .26$  [S3],  $p < .05$ ).

**TABLE 7** Results of pairwise comparison of path coefficients across genders and grades (Secondary 1 versus Secondary 3)

|                                    | Male  | Female | p Value | S1    | S3    | p Value |
|------------------------------------|-------|--------|---------|-------|-------|---------|
| Goals on Self-control (SC)         |       |        |         |       |       |         |
| Fame-oriented                      | .15   | .11    | ns      | .10   | .10   | ns      |
| Wealth-oriented                    | -.18  | -.25   | ns      | -.24  | -.17  | ns      |
| Career-oriented                    | .14   | .15    | ns      | .21   | .11   | ns      |
| Family-oriented                    | .05   | .06    | ns      | .04   | .03   | ns      |
| Society-oriented                   | .30   | .38    | <.005   | .37   | .34   | ns      |
| Goals on Academic Achievement (AA) |       |        |         |       |       |         |
| Fame-oriented                      | -0.13 | -0.10  | ns      | -0.13 | -0.12 | ns      |
| Wealth-oriented                    | -0.01 | .04    | ns      | -0.03 | -0.05 | ns      |
| Career-oriented                    | .08   | .03    | ns      | .14   | .07   | <.05    |
| Family-oriented                    | -.04  | -.01   | ns      | -.06  | -.05  | ns      |
| Society-oriented                   | .04   | .04    | ns      | .11   | .03   | <.05    |
| Goals on Affect to School (affect) |       |        |         |       |       |         |
| Fame-oriented                      | .08   | .03    | ns      | .09   | .01   | <.05    |
| Wealth-oriented                    | -.09  | -.06   | ns      | -.11  | -.09  | ns      |
| Career-oriented                    | .05   | .06    | ns      | .03   | .07   | ns      |
| Family-oriented                    | .06   | .00    | ns      | .05   | .04   | ns      |
| Society-oriented                   | .18   | .11    | ns      | .13   | .23   | <.005   |
| Other Main Paths                   |       |        |         |       |       |         |
| SC on AA                           | .00   | .07    | <.05    | .08   | .04   | ns      |
| Affect on AA                       | .21   | .23    | ns      | .14   | .26   | <.05    |
| SC on Affect                       | .25   | .32    | <.005   | .29   | .28   | ns      |

## 7 | DISCUSSION

The aim of the present study was to examine the differential effects of future goals on students' self-control and distal learning outcomes. There are several findings that are worth noting.

First, our results show that secondary school students in Hong Kong considered developing one's career and supporting the family as more important relative to accumulating wealth and material possessions, making a contribution to society or becoming famous in the society. It concurs with the findings not only in the Singaporean contexts (Huan, Yeo, Ang, & Chong, 2008; Lee et al., 2010), but also in Western cultures (e.g., America, Germany, Scotland, Netherland, and Finland; Nurmi, 2005), as future occupation and future family are the top two future concerns of adolescents. In Hong Kong, the importance of career development is greatly promoted through the curriculum of Life Planning Education and career guidance promoted in secondary schools (Education Bureau, Government of the Hong Kong Special Administrative Region, 2014), which may have influenced the values of students. Moreover, given the traditional value on the importance of family in Chinese society (Fan, 2000), many students are influenced to identify with this value and accept it as personally important to support their future families.

Second, in relation to the first and second hypotheses, our study provided evidence that different types of goals are related to self-control and learning outcomes in different ways. In this regard, SDT offers a useful framework for understanding the different regulatory processes underlying the different goal pursuits. Specifically, the wealth-oriented future goal was found to have the greatest negative effect on students' self-control and affect to school, meaning that students higher in wealth-oriented future goal tended to have lower levels of self-control and showed more negative attitudes towards schoolwork. Students with the wealth-oriented future goal are motivated by the external monetary or material rewards, and are less able to exert self-control and develop intrinsic interest towards schoolwork. This result corroborates the numerous studies showing the detrimental impact of materialistic aspirations on learning and achievement (King & Datu, 2017; Ku et al., 2012).

The fame-oriented future goal, however, was found to be positively related to self-control, but negatively related to academic achievement. Given that individuals with the fame-oriented future goal are focused on getting external validation of their self-worth, they tend to have a stronger desire to outperform others so as to gain other's recognition and approval. This may motivate them to increase their effort for self-control. Yet, despite expanded efforts, extrinsically-oriented students tend to show less interest in learning and approach learning activities in an instrumental way, such as the use of a surface learning approach, that may account for the negative academic performance in the long run (Vansteenkiste et al., 2008; Wilding & Andrews, 2006).

Of the three intrinsic goals (i.e., family-, career-, and society-oriented future goals), the society-oriented future goal had the strongest association with self-control and distal learning outcomes. The findings corroborate those of Yeager et al. (2014), who found that students with self-transcendent goals were better learners than those with self-oriented goals. More important, the study provides empirical evidence for the significance of nurturing society-oriented future goals. As explained by Batson (1998), individuals who are prosocially motivated, that is, having the desire to benefit other people are future-focused with the concern of achieving a meaningful outcome upon completing the work. Hence, it is the meaning and purpose of work that drives effort (Grant, 2008). Echoed by Yeager et al. (2014), future goals that involve self-transcendent purpose in life, for example, contributing to other individuals or society, could empower a person to persist and find greater personal meaning in their schoolwork. For this reason, society-oriented future goal enhances student's motivation to learn as it gives young people the belief that their schoolwork is to serve a larger, long-term goal that matters to the world (Yeager & Bundick, 2009).

It is interesting to note that the association between society-oriented goal and self-control was significantly greater among females than males, and self-control was also found to be more strongly associated with academic achievement and affect to school for females. These gender differences may be explained by the socialization process. Because women, in general, are encouraged to be warm, friendly, caring and unselfish, they are expected and socialized to play the roles of nurturer and caretaker, showing affective concern for the welfare of others and

harmony of the group (Marshall & Wijting, 1980; Ngo, Foley, Ji, & Loi, 2014). These social norms can influence adolescent girls to internalize and identify with the value of making a contribution to society, thereby generating greater self-control to achieve the goal (Burn, 1995). Aside from this, the findings also show that the direct effect of career- and society-oriented future goals on academic achievement was significantly greater among junior than senior students, revealing the positive impact on learning by nurturing students with the values and importance of developing their own career and making a contribution to society in their early year of secondary school.

Our third hypothesis was that self-control will mediate the effects of future goals on distal learning-related outcomes. One possible explanation for the relatively smaller effect size was that academic achievement was measured by standardized achievement tests in English and Mathematics instead of internal school marks. As suggested by Duckworth et al. (2012), self-control was a better predictor of school grades as it helps students study, complete homework and behave positively in the classroom. To better understand the effects of self-control, more outcome measures should be included, such as student engagement, self-regulated learning and social relationships (King & Gaerlan, 2014; Moffitt et al., 2011).

The study extends the literature by showing the association of future goals and self-control. Although the relationship of goal pursuit and self-regulatory behavior was also investigated by Vansteenkiste et al. (2004), their focus was on persistence, which is conceptually different from self-control. Persistence refers to the act of continuing to invest effort toward a task or goal (Lucas & Nordgren, 2015) while self-control is related to the ability to resist short-term temptations and impulses for a higher pursuit (Gutman & Schoon, 2016). While previous studies have mainly shown the associations of self-transcendent goals for learning with self-regulation, deeper learning behavior and academic achievement (Yeager & Bundick, 2009; Yeager et al., 2014), the present study expands the scope of previous research showing the significance of intrinsic future goals on students' self-control and distal learning outcomes.

A practical implication from this study is that to help students to do well in school, there is a need to cultivate intrinsic over extrinsic goals, in particular emphasizing the importance of societal goals. To meet this end, the school can organize more activities to strengthen students' family relationship, career planning and service education that aims at contributing to society. In addition, studies have also shown the value of facilitating students' self-reflection on their value priorities. As explained by Rogers (1964), individuals tend to take in the value of others and society that lead them to lose touch with their own true values. Hence, through reflection exercises, participants are encouraged to identify personally meaningful intrinsic values and reflect on their importance in their lives and experiences. These can help them to be in touch with their true values and to prioritize intrinsic over extrinsic values (Lekes, Hope, Gouveia, Koestner, & Philippe, 2012). Another method that can help to induce value change is through value self-confrontation, that is, to challenge individuals' value by presenting them with the information on the values, attitudes, and behaviors of a positive reference group. Studies using this method have successfully produced a change in participants' values from more extrinsic to more intrinsic goals (Grube, Mayton, & Ball-Rokeach, 1994).

## 7.1 | Limitations and direction of future research

Notwithstanding its strengths, there are several limitations in this study that should be noted. First, although the sample in this study is large, it is representative of the Hong Kong context only, which may limit the generalizability of the findings to other cultural contexts. As such, it would be worthwhile to replicate the study in other cultural settings so as to cross-validate the results. Second, to expand our understanding of future goals, it would be interesting to investigate the antecedents of future goals, for example, academic ability and socioeconomic status of students as well as parental education. Self-report questionnaires are used to measure students' future goals, self-control and affect to school, which may be subject to response biases (Mega, Ronconi, & De Beni, 2014). In future studies, behavioral measures may be employed as well, such as the ability to stay on task and avoid digital distractions (Honken, Ralston, & Tretter, 2016). Last but not least, given the importance of self-control for long-term school success, it would be meaningful for future research to investigate and collect evidence on the

interventions that are effective in promoting students' self-control in academic settings. Rather than seeing self-control as a personal trait, self-control should be investigated as a construct that can be strengthened with practice (Wilson & Buttrick, 2016).

## 8 | CONCLUSIONS

To summarize, this study expands the extant literature by demonstrating the differential effects of future goals on self-control, which in turn, is associated with students' affect to school and academic achievement. The study is based on a large and representative longitudinal sample. The findings of this study highlight the significance of helping students develop intrinsic future goals that are focused on making contributions to society.

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## REFERENCES

- Batson, C. D. (1998). Altruism and prosocial behavior. In Gilbert, D. T., Fiske, S. T., & Lindzey, G. (Eds.), *The handbook of social psychology* (2, 4th, pp. 282–316). New York City, NY: McGraw Hill.
- Bauer, I. M., & Baumeister, R. F. (2011). Self-regulatory strength. In Vohs, K. D., & Baumeister, R. F. (Eds.), *Handbook of self-regulation research, theory, and applications* (pp. 64–82). New York City, NY: Guilford Press.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, *88*, 588–606.
- Bond, T. G., & Fox, C. M. (2007). *Applying the Rasch model: Fundamental measurement in the human sciences* (2nd.). Mahwah, NJ: Lawrence Erlbaum.
- Brdar, I., Rijavec, M., & Miljkovic, D. (2009). Approaches to happiness, life goals and wellbeing. In Frieire, T. (Ed.), *Understanding positive life: Research and practice on positive psychology* (pp. 45–64). Lisbon, Portugal: Climepsi Editores.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen, & J. S. Long (Eds.), *Testing structural equation models* (pp. 132–162). Newbury Park, CA: Sage.
- Burn, S. M. (1995). *The social psychology of gender*. New York City, NY: McGraw Hill.
- Carroll, A., Durkin, K., Hattie, J., & Houghton, S. (1997). Goal setting among adolescents: A comparison of delinquent, at-risk, and not-at-risk youth. *Journal of Educational Psychology*, *89*(3), 441–450.
- Deci, E., & Ryan, R. (2000). What is the self in self-directed learning? In Straka, G. A. (Ed.), *Conceptions of self-directed learning: Theoretical and conceptual considerations* (pp. 75–92). New York City, NY: Waxman.
- Duckworth, A. L., Quinn, P. D., & Tsukayama, E. (2012). What no child left behind leaves behind: The roles of IQ and self-control in predicting standardized achievement test scores and report card grades. *Journal of Educational Psychology*, *104*(2), 439–451.
- Education Bureau of the Government of the HKSAR. (2014). Guide on Life Planning Education and Career Guidance for secondary schools. Retrieved from [https://careerguidance.edb.hkedcity.net/edb/export/sites/default/lifeplanning/.pdf/about-careers-guidance/CLP-Guide\\_E\\_r3.pdf](https://careerguidance.edb.hkedcity.net/edb/export/sites/default/lifeplanning/.pdf/about-careers-guidance/CLP-Guide_E_r3.pdf)
- Education Bureau of the Government of the HKSAR. (2015). Assessment program for affective and social outcomes (2nd Version) (APASO-II). Retrieved from <http://www.edb.gov.hk/en/sch-admin/sch-quality-assurance/performance-indicators/apaso2/index.html>
- Fan, Y. (2000). A classification of Chinese culture. *Cross Cultural Management*, *7*(2), 3–10.
- Fishbach, A., Friedman, R. S., & Kruglanski, A. W. (2003). Leading us not into temptation: Momentary allurements elicit overriding goal activation. *Journal of Personality and Social Psychology*, *84*, 296–309.

- Fishbach, A., & Shah, J. Y. (2006). Self-control in action: Implicit dispositions toward goals and away from temptations. *Journal of Personality and Social Psychology, 90*(5), 820–832.
- Frey, B. S., & Oberholzer-Gee, F. (1997). The cost of price incentives: An empirical analysis of motivation crowding-out. *American Economic Review, 87*, 746–755.
- Froh, J. J., Emmons, R. A., Card, N. A., Bono, G., & Wilson, J. A. (2011). Gratitude and the reduced costs of materialism in adolescents. *Journal of Happiness Studies, 12*, 289–302.
- Fryer, L. K., Ginns, P., & Walker, R. (2014). Between students' instrumental goals and how they learn: Goal content is the gap to mind. *British Journal of Educational Psychology, 84*, 612–630. <https://doi.org/10.1111/bjep.12052>
- Galla, B. M., Plummer, B. D., White, R. E., Meketon, D., D'Mello, S. K., & Duckworth, A. L. (2014). The Academic Diligence Task (ADT): Assessing individual differences in effort on tedious but important schoolwork. *Contemporary Educational Psychology, 39*(4), 314–325. <https://doi.org/10.1177/1088868311411165>
- Geldhof, G. J., Preacher, K. J., & Zyphur, M. J. (2014). Reliability estimation in a multilevel confirmatory factor analysis framework. *Psychological Methods, 19*, 72–91.
- Goldberg, M. E., Gorn, G. J., Peracchio, L. A., & Bamossy, G. (2003). Understanding materialism among youth. *Journal of Consumer Psychology, 13*, 278–288.
- Gordinier, J. (2009). *X saves the world*. New York City, NY: Penguin.
- Grant, A. M. (2008). Does intrinsic motivation fuel the prosocial fire? Motivational synergy in predicting persistence, performance and productivity. *Journal of Applied Psychology, 93*(1), 48–58. <https://doi.org/10.1037/0021-9010.93.1.48>
- Grube, J. W., Mayton, D. M., & Ball-Rokeach, S. J. (1994). Inducing change in values, attitudes, and behaviors: Belief system theory and the method of value self-confrontation. *Journal of Social Issues, 50*, 153–173.
- Gutman, L. M., & Schoon, I. (2016). A synthesis of causal evidence linking non-cognitive skills to later outcomes for children and adolescents. In Khine, M. S., & Areepattamannil, S. (Eds.), *Non-cognitive skills and factors in educational attainment* (pp. 171–198). Boston, MA: Sense Publishers.
- Hattie, J. C. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York City, NY: Routledge.
- Hofer, M., Kuhnle, C., Kilian, B., & Fries, S. (2012). Cognitive ability and personality variables as predictors of school grades and test scores in adolescents. *Learning and Instruction, 22*(5), 368–375.
- Honken, N., Ralston, P. A., & Tretter, T. R. (2016). Self-control and academic performance in engineering. *American Journal of Engineering Education, 7*(2), 47–57.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Huan, V. S. L., Yeo, L. S., Ang, R. P. H., & Chong, W. H. (2008). The impacts of adolescent concerns on their academic stress. *Educational Review, 60*, 191–211.
- Kasser, T. (2016). Materialistic values and goals. *Annual Review of Psychology, 67*, 489–514.
- Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology, 65*(2), 410–422. <https://doi.org/10.1037/0022-3514.65.2.410>
- Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin, 22*, 280–287. <https://doi.org/10.1177/0146167296223006>
- King, R. B. (2018). Materialism is detrimental to academic engagement: Evidence from self-report surveys and linguistic analysis. *Current Psychology*, <https://doi.org/10.1007/s12144-018-9843-5>. Advance online publication.
- King, R. B., & Datu, J. A. D. (2017). Materialism does not pay: Materialistic students have lower motivation, engagement and achievement. *Contemporary Educational Psychology, 49*, 289–301. <https://doi.org/10.1016/j.cedpsych.2017.03.003>
- King, R. B., & Gaerlan, M. J. M. (2014). High self-control predicts more positive emotions, better engagement, and higher achievement in school. *European Journal of Psychology of Education, 29*, 81–100.
- Ku, L. (2016). Materialism and achievement motivation: How Chinese primary school children, secondary school teenagers, and university students are similar. In King, R. B., & Bernardo, A. B. I. (Eds.), *The psychology of Asian learners*. Singapore: Springer.
- Ku, L., Dittmar, H., & Banerjee, R. (2012). Are materialistic teenagers less motivated to learn? Cross-sectional and longitudinal evidence from the United Kingdom and Hong Kong. *Journal of Educational Psychology, 104*(1), 74–86. <https://doi.org/10.1037/a0025489>
- Ku, L., Dittmar, H., & Banerjee, R. (2014). To have or to learn? The effects of materialism on British and Chinese children's learning. *Journal of Personality and Social Psychology, 106*, 803–821.
- Lau, D. C. H., Mok, M. M. C., & Yan, Z. (2009). *An Assessment Scale for Measuring Primary and Secondary Mathematics Achievement*. Paper presented at the International Conference on Primary Education 2009, The Hong Kong Institute of Education, Hong Kong.



- Lee, J. Q., McInerney, D. M., Liem, G. A. D., & Ortiga, Y. P. (2010). The relationship between future goals and achievement goal orientations: An intrinsic-extrinsic motivation perspective. *Contemporary Educational Psychology, 35*, 264–279. <https://doi.org/10.1016/j.cedpsych.2010.04.004>
- Lee, A. Y. P. (2009, October). The english language ability calibrated (ELAC) Scale. Paper presented to DSEJ, Macao Government, Macao.
- Lekes, N., Gingras, I., Philippe, F. L., Koestner, R., & Fang, J. (2010). Parental autonomy-support, intrinsic life goals, and well-being among adolescents in China and North America. *Journal of Youth and Adolescence, 39*, 858–869. <https://doi.org/10.1007/s10964-009-9451-7>
- Lekes, N., Hope, N. H., Gouveia, L., Koestner, R., & Philippe, F. L. (2012). Influencing value priorities and increasing well-being: The effects of reflecting on intrinsic values. *The Journal of Positive Psychology, 7*(3), 249–261.
- Loehlin, J. C. (2004). *Latent variable models: An introduction to factor, path and structural equation analysis* (4th.). Mahwah, NJ: Lawrence Erlbaum.
- Lucas, B. J., & Nordgren, L. F. (2015). People underestimate the value of persistence for creative performance. *Journal of Personality and Social Psychology, 109*(2), 232–243. <https://doi.org/10.1037/pspa0000030>
- MacCallum, R. C., Browne, W. M., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods, 1*, 130–149. <https://doi.org/10.3102/00028312039003727>
- Marshall, S. J., & Wijting, J. P. (1980). Relationships of achievement motivation and sex-role identity to college women's career orientation. *Journal of Vocational Behavior, 16*, 299–311.
- McDonald, R. P. (1999). *Test theory: A unified treatment*. Mahwah, NJ: Lawrence Erlbaum.
- McInerney, D. M., Cheng, R. W., Mok, M. M. C., & Lam, A. K. H. (2012). Academic self-concept and learning strategies: Direction of effect on student academic achievement. *Journal of Advanced Academics, 23*(3), 249–269.
- McInerney, D. M., Dowson, M., & Yeung, A. S. (2005). Facilitating conditions for school motivation: Construct validity and applicability. *Educational and Psychological Measurement, 65*(6), 1046–1066.
- Mega, C., Ronconi, L., & De Beni, R. (2014). What makes a good student? How emotions, self-regulated learning, and motivation contribute to academic achievement. *Journal of Educational Psychology, 106*(1), 121–131.
- Miller, R. B., & Brickman, S. J. (2004). A model of future-oriented motivation and self-regulation. *Educational Psychology Review, 16*(1), 9–33.
- Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., ... Caspi, A. (2011). A gradient of childhood self-control predicts health, wealth and public safety. *Proceedings of the National Academy of Sciences United States of America, 108*, 2693–2698.
- Morgan, J., & Robinson, O. (2013). Intrinsic aspirations and personal meaning across adulthood: Conceptual interrelations and age/sex differences. *Developmental Psychology, 49*(5), 999–1010. <https://doi.org/10.1037/a0029237>
- Ngo, H. Y., Foley, S., Ji, M. S., & Loi, R. (2014). Linking gender role orientation to subjective career success: The mediating role of psychological capital. *Journal of Career Assessment, 22*(2), 290–303. <https://doi.org/10.1177/1069072713493984>
- Niemiec, C. P., Lynch, M. F., Vansteenkiste, M., Bernstein, J., Deci, E. L., & Ryan, R. M. (2006). The antecedents and consequences of autonomous self-regulation for college: A self-determination theory perspective on socialization. *Journal of Adolescence, 29*, 761–775. <https://doi.org/10.1016/j.adolescence.2005.11.009>
- Nurmi, J. E. (2005). Thinking about and acting upon the future: Development of future orientation across the lifespan. In Strathman, A., & Joireman, J. (Eds.), *Understanding behavior in the context of time: Theory, research and application*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Olasupo, M. O., & Idemudia, E. S. (2016). Influence of age, gender and perceived self-control on future goals of children in adversities. *Child Indicators Research, 10*, 1107–1119. <https://doi.org/10.1007/s12187-016-9439-2>
- Petrides, K. V. (2009). Psychometric properties of the trait emotional intelligence questionnaire (TEIQue). In Parker, J. D. A., Saklofske, D. H., & Stough, C. (Eds.), *Assessing emotional intelligence: Theory, research and applications* (pp. 85–101). New York City, NY: Springer.
- de Ridder, D. T. D., Lensvelt-Mulders, G., Finkenauer, C., Stok, F. M., & Baumeister, R. F. (2012). Taking stock of self-control: A meta-analysis of how trait self-control relates to a wide range of behaviors. *Personality and Social Psychology Review, 16*(1), 76–99.
- Rogers, C. R. (1964). Toward a modern approach to values: The valuing process in the mature person. *The Journal of Abnormal and Social Psychology, 68*, 160–167.
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*, 54–67. <https://doi.org/10.1006/ceps.1999.1020>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development and well-being. *American Psychologist, 55*(1), 68–78. <https://doi.org/10.1037//0003-066X55.1.68>

- Ryan, R. M., & Deci, E. L. (2010). Self-determination theory and the role of basic psychological needs in personality and the organization of behavior. In John, O. P., Robins, R. W., & Pervin, L. A. (Eds.), *Handbook of personality: Theory and research* (pp. 654–678). New York City, NY: Guilford Press.
- Schmuck, P., Kasser, T., & Ryan, R. M. (2000). Intrinsic and extrinsic goals: Their structure and relationship to wellbeing in German and U.S. college students. *Social Indicators Research*, 50, 225–241.
- Simons, J., Dewitte, S., & Lens, W. (2004). The role of different types of instrumentality in motivation, study strategies, and performance: Know why you learn, so you'll know what you learn! *British Journal of Educational Psychology*, 74, 343–360.
- Smith, C., Christoffersen, K., Davidson, H., & Herzog, P. S. (2011). *Lost in transition: The dark side of emerging adulthood*. New York City, NY: Oxford University Press.
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72(2), 271–324.
- Unanue, W., Dittmar, H., Vignoles, V. L., & Vansteenkiste, M. (2014). Materialism and well-being in the UK and Chile: Basic need satisfaction and basic need frustration as underlying psychological processes. *European Journal of Personality*, 28, 569–585. <https://doi.org/10.1002/per.1954>
- Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic Versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist*, 41, 19–31.
- Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology*, 87, 246–260.
- Vansteenkiste, M., Simons, J., Lens, W., Soenens, B., & Matos, L. (2005). Examining the motivational impact of intrinsic versus extrinsic goal framing and autonomy-supportive versus internally controlling communication style on early adolescents' academic achievement. *Child Development*, 76, 483–501. <https://doi.org/10.1111/j.1467-8624.2005.00858.x>
- Vansteenkiste, M., Soenens, B., & Duriez, B. (2008). Presenting a positive alternative to materialistic strivings and the thin-ideal: Understanding the effects of extrinsic relative to intrinsic goal pursuits. In S. J. Lopez (Ed.), *Positive psychology: Exploring the best in people*. Westport, CT: Greenwood Publishing Company.
- Vansteenkiste, M., Zhou, M., Lens, W., & Soenens, B. (2005). Experiences of autonomy and control among Chinese learners: Vitalizing or immobilizing? *Journal of Educational Psychology*, 97, 468–483. <https://doi.org/10.1037/0022-0663.97.3.468>
- Wilding, J., & Andrews, B. (2006). Life goals, approaches to study and performance in an undergraduate cohort. *British Journal of Educational Psychology*, 76, 171–182.
- Wilson, T. D., & Buttrick, N. R. (2016). New directions in social psychological interventions to improve academic achievement. *Journal of Educational Psychology*, 108(3), 392–396. <https://doi.org/10.1037/edu0000111>
- Yeager, D. S., & Bundick, M. J. (2009). The role of purposeful work goals in promoting meaning in life and in schoolwork during adolescence. *Journal of Adolescent Research*, 24(4), 423–452. <https://doi.org/10.1177/0743558409336749>
- Yeager, D. S., Henderson, M. D., Paunesku, D., Walton, G. M., D'Mello, S., Spitzer, B. J., & Duckworth, A. L. (2014). Boring but important: A self-transcendent purpose for learning fosters academic self-regulation. *Journal of Personality and Social Psychology*, 107(4), 559–580. <https://doi.org/10.1037/a0037637>

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