Disentangling the Relationship Between Purpose in Life, Academic Self-concordance, and Self-reflection on Academic Satisfaction: A Moderated-Mediation Analysis

Remko Joostens

S4677285

Department of Psychology, University of Groningen

PSB3E-BT15: Bachelor Thesis

Group number: 23

Supervisor: Dr. Simon Dalley

Second evaluator: Dr. Laura Ballato

In collaboration with: Floris Durivou, Johannes Humpf, Lycke de Jong, Ioannes Peristianes and Eliza Brickenden.

July 07, 2024

A thesis is an aptitude test for students. The approval of the thesis is proof that the student has sufficient research and reporting skills to graduate, but does not guarantee the quality of the research and the results of the research as such, and the thesis is therefore not necessarily suitable to be used as an academic source to refer to. If you would like to know more about the research discussed in this thesis and any publications based on it, to which you could refer, please contact the supervisor mentioned

Abstract

This study attempts to disentangle the relationship between purpose in life and academic satisfaction in first-year's university students. Specifically, it was proposed that the ability to set academically self-concordant goals, would mediate the relationship between purpose in life and academic satisfaction, so that with more purpose in life there would be more academic self-concordance leading to more academic satisfaction amongst students. Further, this paper hypothesized that the student's ability to self-reflect would moderate the relationship between purpose in life and academic self-concordance, such that the mediation pathway would be stronger for those students higher in self-reflection. An online survey was carried using a convenience sample of 184 university students who completed measures of purpose in life, academic self-concordance, academic satisfaction and self-reflection. A bootstrap analysis using PROCESS (Hayes, 2022) found no support for the hypothesized moderated mediation model. However, significant effects were found for follow-up mediation analysis where purpose in life and self-reflection each independently enhance academic satisfaction through academic self-concordant goal setting. Findings add to the current knowledge by further explaining the role self-concordance plays in the academic setting to promote academic satisfaction amongst university students. The findings highlight the importance of targeting students with a low sense purpose in life and self-reflection by implementing extracurricular activities focusing on enhancing the awareness of the student's purpose in life and increasing student's self-reflection.

Keywords: Purpose in Life, Academic Self-Concordance, Academic Satisfaction, Self-Reflection, Mindfulness, Self-determination Theory

Disentangling the Relationship Between Purpose in Life, Academic Self-Concordance, and Self-Reflection on Academic Satisfaction: A Moderated-Mediation Analysis

There is no shortage of mental health problems among university students. In 2023, 44% of higher educated Dutch students experienced impairing mental health problems such as depressed mood, anxiety related problems or stress (Trimbos-Institute, 2023). While the COVID-19 pandemic is largely at bay, the negative effects linger and impact some domains, including mood and study delays (Maastricht-University, 2024). Unfortunately, these mental health problems can negatively impact across multiple domains including social, work, and the academic domains. (Trimbos-Institute, 2023). For example, mental health problems have the possibility of derailing students out of university, predict student drop-out and have the possibility of lowering the students' GPA (Hysenbegasi & Rowland, 2005; Kirsh et al., 2014). Lastly, investigating the academic domain and its relationship with mental well-being is important because there is growing evidence suggesting that mental health problems amongst students have their first arise while dealing with stressors in the academic context (Blanco et al., 2008; Pedrelli et al., 2014).

It is for the above mentioned reasons important to identify factors that facilitate the development of student well being in the form of student academic satisfaction, a concept that is closely linked to student well being (Amholt et al., 2020; Tran et al., 2022). This study does this by placing the concept academic satisfaction in a theoretical framework of purpose in life, since it has been linked to a variety of positive and mental health protective outcomes (Lewis, 2020). However, there is a little research examining the mechanism through which purpose in life can exert its influence (Lewis, 2020). Literature suggests that one mechanism through which purpose in life exerts its benefits is through academic self-concordance (Kashdan et al., 2023; Lewis, 2020). With this in mind, the primary aim of this study is to examine whether with increasing purpose in life there is an increase academic self-

concordance and following this an increase in student academic satisfaction. A secondary aim of this study is to examine whether self-reflection, a construct theoretically and empirically related to greater academic self-concordance (Smyth et al., 2020; Warren et al., 2018), enhances the relationship between purpose in life and academic self-concordance.

Research over the last decade has suggested that a key component of student well-being is purpose in life (Kashdan et al., 2023; Lewis, 2020). Here, purpose in life acts and is defined as having a central and self-organizing life aim. This purpose in life is a long term commitment that the individual has central in their life which has a self-organizing function (e.g., purposeful students allocate more resources to goals in line with purpose-related progress, creating a positive feedback loop) (Kashdan et al., 2023). Having a purpose in life is suggested to have multiple benefits on student's physical and mental well-being (e.g., more happiness, life-satisfaction, and confidence (French & Joseph, 1999)) (Kashdan et al., 2023; Lewis, 2020), but also on academic satisfaction (Lewis, 2020). Purposeful individuals engage in better preventative health behaviors (e.g., sleep hygiene, healthier food intake) which in turn could have a positive effect on the academic life of students (Kashdan et al., 2023). Further, Lewis (2020) put forward that individuals equipped with a purpose in life are better at withstanding temptations and have higher executive functioning scores. The capacity and ability to withstand temptations might especially be useful in the academic setting to achieve the goals set by students and in turn increase the level of academic satisfaction. Kashdan and colleagues (2023) propose that the mechanism of action to create these positive physical and mental effects is through the purposeful students' better ability to cope with stressful situations eminent in the academic setting. Lastly, purpose in life has a self-organizing role were it motivates students to allocate resources to certain goals and away from other goals (e.g., there is more motivation to dedicate time and energy to goals closely aligning with one's purpose in life compared to goals further away from one's purpose in life) (Kashdan et

al., 2023). Illustrative, Hill (2013) compared purpose in life with a lighthouse, guiding the individual through a sometimes turbulent and stressful academic life. It is suggested that purpose in life with its self-organizing property, exerts its benefits through academic self-concordance (Lewis, 2020; Wan et al., 2021).

One potential mechanism by which purpose in life exerts its benefits is to increase student's ability to set concordant goals; specifically academic self-concordant goals (Kashdan et al., 2023). Here, academic self-concordance is the alignment of student's goals with their interests and values and has its foundation in the self-determination theory (Ryan & Deci, 2017; Wan et al., 2021). Purpose in life might facilitate academic self-concordance through a hierarchical model proposed by Kashdan and colleagues (2023) that states that an individual's purpose in life might guide the goals they choose, and in turn direct the making of sub-goals. Here, a student with a high sense of purpose in life, might set overarching long term goals and short term subgoals that are more in line with the their interests and values and thus create more positive feedback and reward (e.g. students who have goals aligned with their purpose in life experience more resilience and positive emotion upon pursuing their goals). These long term and short term goals that resonate with the student's interests and values are more likely to be intrinsically motivating because these goals are more autonomous and satisfy the psychological need for autonomy and competence that are rooted in the self-determination theory (Kashdan et al., 2023; Ryan & Deci, 2017). Satisfying the need for autonomy and competence can in turn can lead to student's experiencing greater engagement, persistence and enjoyment in the academic life following these goals. Wan and colleagues (2021) suggest that having a clear purpose in life plays a crucial regulatory role on goal selection. For example, goals students pursue that are not aligned with their purpose in life create less satisfaction in the form of autonomy and competence (Ryan & Deci, 2017), leading students to reconsider their priorities and adjust their goals to better match their

purpose in life. This in turn leads to more autonomous goal setting and increased motivation (Kashdan et al., 2023; Ryan & Deci, 2017). Hence, this paper predicts that an increased sense of purpose in life leads to a greater level of academic self-concordance.

There is a growing body of research suggesting all kinds of positive effects associated with individuals that exhibit more academic self-concordance. First, academic self-concordance is built upon the theory of self-determination (Ryan & Deci, 2017; Wan et al., 2021) which states motivation to be either controlled or autonomous. Autonomous motivation refers to motivations that is closely aligned with the self, where tasks are pursued because they are inherently enjoyable or satisfying, rather than for external rewards. Academically self-concordant goals (e.g., pursued out of autonomous reasons) are more inclined to exert positive effects (e.g., more motivation) on the academic domain compared to goals pursued out of controlled reasons because they satisfy the inherent human need for autonomy and competence (Ryan & Deci, 2017; Sheldon & Elliot, 1999; Wan et al., 2021). For example, academic self-concordant students are more likely to experience academic satisfaction in the form of happiness, sustained academic effort and academic adaptability (Wan et al., 2021). Gaudreau (2012) adds that students pursuing academic self-concordant goals orient themselves more towards tasks relevant behavior relevant to their study, creating more positive feedback and more academically satisfied students. Furthermore, Sheldon and Elliot (1999) found that pursuing academic self-concordant goals lead to more sustained effort and willpower to follow through on these set goals compared to goals set out of non self-concordant reasons, leading to more academic satisfaction because they enable students to navigate the long-term, challenging, and often complex nature of academic work (Datu, 2021). The positive effects that these academic self-concordant goals postulate can lead to a positive feedback spiral, where in turn future academic goal setting will be more academically self-concordant and in turn create more academic satisfaction (Sheldon &

Elliot, 1999; Wan et al., 2021). The importance of self-concordant goal setting amongst student's lie not only in its motivational properties but also in its relationship with student-wellbeing. Here, autonomous goal setting in the student's academic life not only predicts more academic satisfaction, but also less mental health problems (e.g., depression, anxiety, and stress) (Barbosa-Camacho et al. 2022; Franzen et al., 2021). Furthermore, higher levels of academic satisfaction acts as a buffer to problems regarding mental health by promoting academic engagement and lowering academic burnout, shielding the student from these negative effects (Shin & Hwang, 2020). Santisi and colleagues (2018) found that more academic satisfaction predicts a better university-to-work transition and more general confidence in the student's abilities to in turn increases the probability of student's finding a meaningful and fulfilling career. Increasing the body of literature on academic satisfaction and its relationship with academic self-concordance is thus important for its mental health and motivational properties (Santisi et al., 2018). As of so far this paper predicted a mediation pathway where academic self-concordance mediates the relationship between purpose in life and academic satisfaction. This means that with increasing student's purpose in life, there will be greater academic self-concordance and following this greater academic satisfaction.

In addition, this paper suggest that this mediation pathway may be stronger for those students who are inclined to engage in self-reflective behavior. Here, Grant and Langford (2002) define self-reflection as the ability to inspect and evaluate one's thoughts, feelings, and behavior. This concept is especially important for the proposed model due to the importance of the ability to introspect in boosting the self-organizing role of purpose in life proposed by Kashdan and colleagues (2023). Next, students with a strong ability to self-reflect show higher levels of academic motivation and self regulation, (Silvia & Phillips, 2010; Silvia, 2021) which are especially important for the academic life. Grant and Langford (2002) propose that self-reflection is crucial for self-regulation: individuals monitor their

goals and create feedback to improve future goal setting. Meaning that students who score higher on self-reflection can generate more effective feedback which in turn enhances the ability to create academically self-concordant goals. The ability to produce such self-reflective feedback varies significantly amongst student's (Grant & Langford, 2002). Self-reflection also significantly influences academic goal setting. This means that students with a deeper self-understanding set more academic self-concordant goals, which means their goals align better with their values and norms in relation to their studies (Burton, 2008; Wan et al., 2021). Therefore, higher self-reflection leads to goal setting that is more in line with one's personal values. Research on the field of mindfulness, which is closely related to the Grant and Langford (2002) definition of self-reflection used in this study, adds to the implication of self-reflection positively impacting the relationship between a sense of purpose in life and academic self-concordance. The mindful student (interchangeably the self-reflective student (Warren et al., 2018)), tends to display higher academic self-concordant goal setting driven by their heightened awareness of their purpose in life. They further recognize and capitalize on value-relevant academic opportunities, detect misalignments between their behaviors and academic values, and correct them accordingly. Research also shows a strong association between mindfulness and conscientiousness, which predicts success in the academic setting leading to a more satisfied student (Warren et al., 2018). It is for this reason that this paper postulates the student's ability to self-reflect strengthens the relationship between the student's purpose in life and their academic self-concordance.

To summarize, this paper predicts a mediation model such that that academic self-concordance will mediate the relationship between a sense of purpose in life and academic satisfaction. This paper also hypothesizes that this mediation pathway will be stronger for students engaging in self-reflective behavior (see Fig. 1).
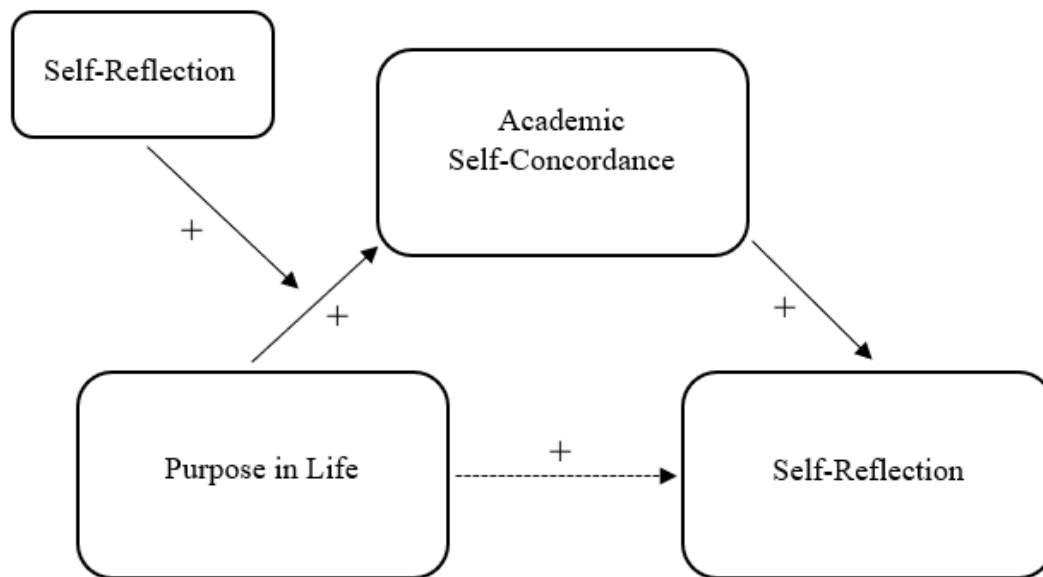
Fig. 1. Proposed moderated mediation model.

Method

Participants

The participants of this study consisted of 203 first-year psychology students studying at the University of Groningen in the Netherlands. The sample consisted of 134 women (66%), 50 men (24.6%) and six participants of undisclosed gender (3.2%). 124 participants were of Dutch nationality (61.1%), 21 participants of German nationality (10.3%) and 47 participants claiming other nationalities (23.2%). The ages of participants ranged from 17 to 35 years old with a median of 19 years old and a mean age of 19.8 ($SD = 2.023$).

Measures

Purpose in life

Purpose in life was measured using Hill and colleagues (2016) Purpose in Life Scale. The scale consists of four items, with two of these items being: "There is a direction in my life" and "My plans for the future match with my true interests and values". Participants rated each item using a five point scale, from 1 (strongly disagree) to 5 (strongly agree). Higher ratings indicated a greater sense of purpose in life. Previous measures of this scale found a Cronbach's alpha of 0.84 (Hill et al., 2016). In the current study the Cronbach's alpha was

0.84.

Academic self-concordance

Academic self-concordance was measured using Sheldon and Elliots's (1999) Self-Concordance Scale which utilizes the relative autonomy index (Howard et al., 2020). The measurement in this context consists of participants listing three academic goals they were currently pursuing (e.g., I want to pass my exams, I want to get my BSA, I want to enjoy the learning material) and then assessing the level of motivation internalization based on self-determination theory. This includes categorizing their motivation as either external, introjected, identity driven, or intrinsically driven (e.g., participants rated their goals based on how much the reason they created the goal corresponded to the distinct reasons which represented each category). To familiarize students with academic goals, short examples of academic goals were given to the students prior to writing down their own academic goals. Controlled reasons were related to external and introjected motivations. The labels corresponding to the different kind of controlled motivation which participants could score themselves on were: "because somebody else wants you to, or because you'll get something from someone if you do" (external) and "because you would feel ashamed if you did not—you feel that you should try to accomplish this goal" (introjected). The labels corresponding to the different kind of autonomous motivation which participants could score themselves on were: "because you believe it is an important goal to have" (identified) and "because of the fun and enjoyment which the goal will provide you—the primary reason is simply your interest in the experience itself" (intrinsic). Goals created were then rated on a scale from 1 (not at all for this reason) to 7 (completely for this reason). A metric for academic self-concordance was determined using the relative autonomy index (Howard et al., 2020) by subtracting the mean of controlled items from the mean of autonomous items for each individual goal. To obtain an overall measure of academic self-concordance, the average of

these self-concordant scores across all goals was calculated. A positive difference shows a concordance between the academic goals and the participant. The higher the value the higher the degree of academic self concordance and thus a greater autonomy of goals. Contrastingly a negative difference relays goal un-self concordance and the higher the negative the higher the level of un-self concordance present in a participant. Previous measures of this scale found a Cronbach's alpha of 0.80 (Sheldon & Elliot, 1999). In the current study the Cronbach's alpha was 0.70.

Academic satisfaction

Academic satisfaction was measured using the subscale academic satisfaction from Renshaw and Bolognino's (2014) College Student Subjective Wellbeing Scale. The subscale on academic satisfaction contains four items, two of these items were: ''I have had a great academic experience at this college" and "I am happy with how I've done in my classes''. These items were rated by participants in terms of their personal level of agreement to the statements using a Likert scale from 1 (strongly disagree) to 7 (strongly agree). Summation of the item responses creates the scale scores. Higher scores show greater levels of academic satisfaction. Previous measures of this scale found a Cronbach's alpha of 0.88 (Renshaw & Bolognino, 2014). In the current study the Cronbach's alpha was 0.88.

Self-reflection

Self-reflection was measured using the Short Reflection Scale from Silvia (2021). This short scale consists of six items, with three of these being: ''I frequently examine my feelings'', ''I frequently take time to reflect on my thoughts'' and ''I often think about the way I feel about things''. The participants rated each item using a five point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The level of self-reflection was calculated using the cumulative score on these items. A higher score indicates a higher level

of self-reflection. Previous measures of this scale found a Cronbach's alpha of 0.87 (Silvia, 2021). In the current study the Cronbach's alpha was 0.91.

Procedure and design

The conducted study was approved by The Ethics Commission of the Faculty of Behavioral and Social Sciences at the University of Groningen. The survey was available to the first-year psychology students through Sona Systems (Sona-Systems, 2024) which connects undergraduate students to either research students or researchers as a way of obtaining participants. The students participating earned course credits as a reward and incentive for filling out the questionnaire. Starting the survey participants where digitally informed about the ethics of the study. To regulate inflow of data confirming only first-year psychology students studying at the university of Groningen respond to the questionnaire, participants first were asked if they participated in a first-year bachelor psychology course. The survey was a self report questionnaire administered online via the Qualtrics platform. First, demographic information (e.g., age, gender, nationality) were asked, followed by the remainder of the questionnaire to examine the different scales concerning a variety of subjects. The different subject's participants were presented with consisted of variables used for this research paper as well as questions used for other research purposes. Any completed questionnaires with missing or invalid data were excluded from the statistical analysis.

Statistical Analysis

The hypothesized moderated-mediation model was examined using the PROCESS macro for SPSS (version 28) which utilizes a 5000 bootstrap re-sampling method. Following Hayes (2022), a moderation-mediation analysis (model 7 (Hayes, 2022)) that estimated all parameters simultaneously was conducted. This analysis provided information about the direct and indirect effects and effects of the moderator on the model. Significance was determined based on 95% confidence intervals of the moderated mediation index. The model

tested (model 7 (Hayes, 2022)) included purpose in life as the predictor variable, self-reflection as a moderator, academic self-concordance as a mediator, and academic satisfaction as the outcome variable.

Results

Preliminary analysis

Observation of the dataset containing $N = 203$ participants showed a total of 19 incomplete or missing data which were manually removed. A standardized residual plot showed no serious violation of homoscedasticity and a casewise diagnostic ($> \pm 3$ SD) was carried out finding no influential outliers. Next, visual inspection of both the scatterplot and residual plot for the proposed pathways showed no violation of linearity. Normality was checked with the use of Q-Q plots for each variable showing no serious violations of normality (Ernst & Albers, 2017). The final dataset used for statistical analysis consists of $N = 184$ participants. Since the bootstrapping method used in Hayes (2022) model showed to be a robust test yielding reliable results, no further corrective assessment was done (Alfons et al., 2021). The descriptive statistics and the correlations between variables are shown in table 1.

Table 1

Pearson correlations, means and standard deviations for analyzed variables.

	1	2	3	4
1. PiL	-			
2. SC	.33**	-		

3. SR	.28**	.22**	-
4. AS	.21**	.27**	.21**	-
Mean	3.49	1.36	5.53	4.72
SD	0.79	1.59	0.95	1.19

Note. PIL: Purpose in Life; SC: Self-Concordance; SR: Self-Reflection; AS: Academic Satisfaction.

** *p* < .01.

Moderated Mediation Analysis

A moderated mediation analysis was carried out using Hayes (2022) model 7. The moderated mediation index was not significant leading to no support for the hypothesized model (*B* = -0.015, *SE* = 0.023, 95% *CI* [-0.063, 0.032]. Self-reflection did therefore not significantly moderate the mediation pathway where purpose in life increases academic satisfaction through academic self-concordance. The hypothesis that the disposition to self-reflect increases the mediation pathway where with higher purpose in life, there will be more academic self-concordance, and following this increased student academic satisfaction, is hence rejected.

However, the correlation matrix showed significant correlations between variables indicating that self-reflection and purpose in life might each independently influence
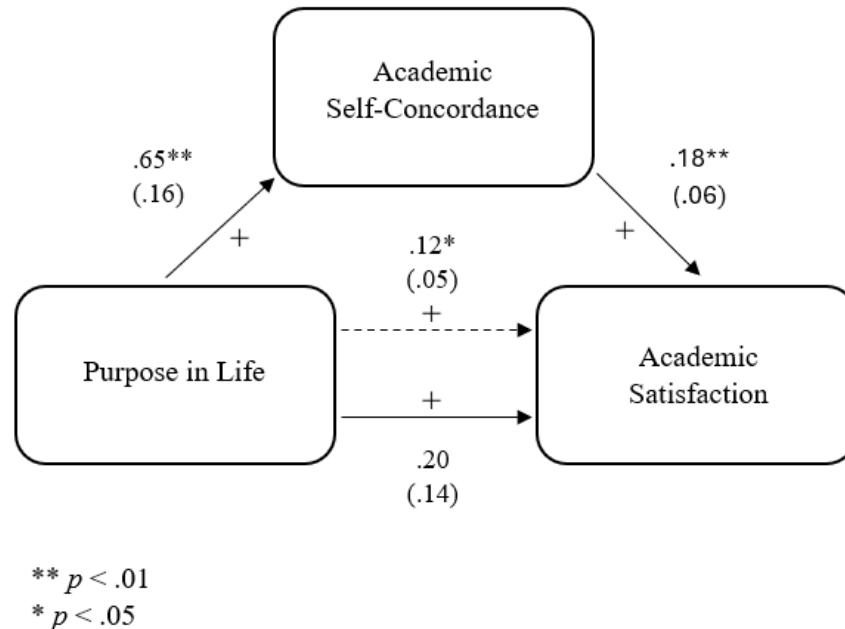
academic satisfaction through academic self-concordance. Following this, the first mediation pathway assesses whether with a higher sense of purpose in life there will be more academic self-concordance and following this, more student academic satisfaction. The second mediation pathway assesses whether with an increase of self-reflection there will be more academic self-concordance and following this, more student academic satisfaction. To examine these follow-up hypothesis, two mediation pathways using Hayes SPSS macro (2022) model four were carried out.

Mediation Analyses

The first mediation analysis following Hayes (2022) model four tests whether purpose in life has an indirect effect on academic satisfaction through academic self-concordance. A significant model was found ($F(2, 181) = 6.094$, $p < .05$), with 30% of the variance in academic satisfaction explained by the predictor variables. Significant direct effects were found for purpose in life on academic self-concordance ($B = 0.658$, $SE = 0.156$, 95% CI [0.351, 0.966], $p < .001$) and Academic Satisfaction on Self-Concordance ($B = 0.176$, $SE = 0.065$, 95% CI [0.048, 0.304], $p < .05$). The direct effect of purpose in life on academic satisfaction was non-significant ($B = 0.196$, $SE = 0.138$, 95% CI [-0.076, 0.468], $p = .16$) while the indirect effect of purpose in life on academic satisfaction was significant ($B = 0.116$, $SE = 0.047$, 95% CI [0.033, 0.217]. The significance of the indirect effect and the non-significance of the direct effect support the hypothesis that purpose in life does not directly influence academic satisfaction but only through academic self-concordance. Summarized, purpose in life fully influences academic satisfaction through academic self-concordance (see figure 2).

Figure 2

Mediated pathway of the relationship between Purpose in Life on Academic Satisfaction mediated by Academic Self-Concordance
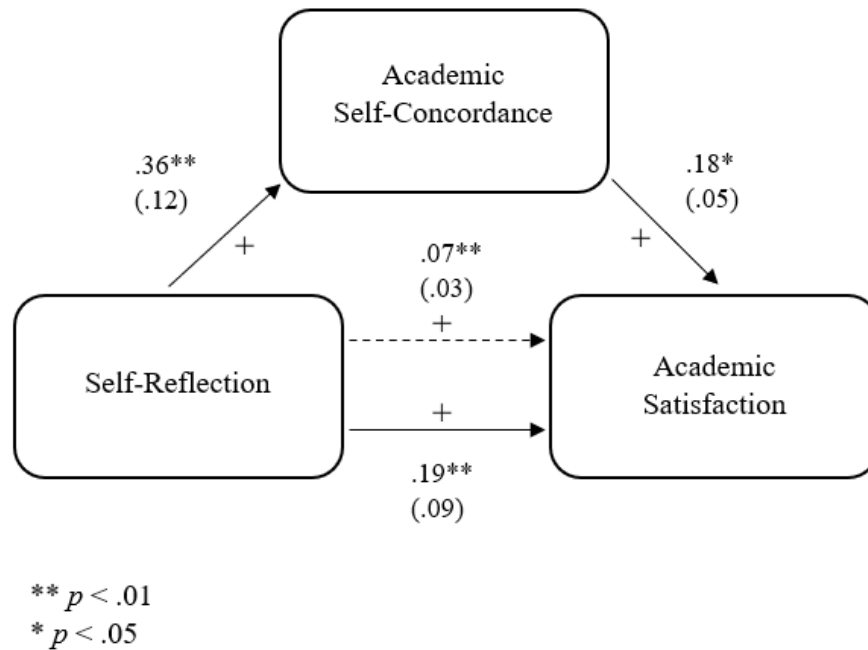

Note. The indirect effect is displayed by the dashed line.

The second mediation analysis using Hayes (2022) model four tests whether self-reflection has an indirect effect on academic satisfaction through academic self-concordance. A significant model was found ($F(2, 181) = 7.146$, $p < .01$), with 31% of the variance in academic satisfaction explained by the predictor variables. Significant direct effects were found for self-reflection on academic self-concordance ($B = 0.364$, $SE = 0.120$, 95% *CI* [0.127, 0.600], $p < .01$) and academic satisfaction on academic self-concordance ($B = 0.180$, $SE = 0.055$, 95% *CI* [0.072, 0.287], $p < .05$). Both the indirect ($B = 0.065$, $SE = 0.031$, 95% *CI* [0.014, 0.137], and the direct effect of self-reflection on academic satisfaction ($B = 0.194$, $SE = 0.091$, 95% *CI* [0.072, 0.287], $p < .01$) were also significant. The significance of the indirect and the direct effect support the hypothesis that self-reflection directly influences academic satisfaction and indirectly influence academic satisfaction through academic self-

concordance. Summarized, self-reflection directly influences academic satisfaction and indirectly influences academic satisfaction through academic self-concordance (see figure 3).

Figure 3

Mediated pathway of the relationship between Self-Reflection on Academic Satisfaction mediated by Self-Concordance

Note. The indirect effect is displayed by the dashed line.

Summary

The proposed moderated mediation model where self-reflection moderates the mediation pathway from purpose in life through academic self-concordance on to academic satisfaction, was not significant and thus not supported. However, support was found for the two mediated pathways where both purpose in life and self-reflection each independently increase student academic satisfaction through an increase in academic self-concordance.

Discussion

This paper predicted a moderated mediation pathway such that with a greater sense of purpose in life there will be more academic self-concordance leading to more academic satisfaction. Secondly, this paper also predicted that this model would be stronger for students higher in self-reflection. Unfortunately, no support was found for this model. However, based on significant correlations among key variables, this paper next tested two mediation pathways. The first mediation pathway predicted that with a greater sense of purpose in life there will be a higher level of academic self-concordance, which in turn results in increased student academic satisfaction. The second mediation pathway predicted that with higher levels of self-reflection there will be a higher level of academic self-concordance, which in turn results in increased student academic satisfaction. Support was found in favor for both mediation pathways.

The predicted moderated mediation model was found to be non-significant. This result could be attributed to the role of self-reflection in the proposed model. While previous research has identified mindfulness (interchangeable with self-reflection (Warren et al., 2018)) being a moderator for the relationship between purpose in life and academic self-concordance (Smyth et al., 2020; Warren et al., 2018), self-reflection alone may not capture the full scope of the variable mindfulness and therefore lead to the non-significance of the moderated mediation model. Although strong correlations were found between self-reflection and key variables, it was not strong enough to significantly impact the proposed mediated moderation model. Following this, it is possible that a more comprehensive self-reflection scale, which encapsulates a more complex construct of mindfulness, could yield different results. Future research should consider using a mindfulness scale that includes more constructs other than self-reflection. One such construct could be attention regulation, which could be a predictor of the organization of autonomous goal setting in student's (Warren et al., 2018).

The first mediation pathway proposing purpose in life indirectly influencing academic satisfaction through academic self-concordant goal setting, was found significant and in line with existing evidence (Kashdan et al., 2023). Here, students having a high sense of purpose in life are more inclined to set academic goals in line with their studies. According to contemporary self-determination theory (Lewis, 2020; Ryan & Deci, 2017), a high sense of purpose in life fosters the selection of more autonomous goals, which are inherently more aligned with the student's personal values and interests compared to its controlled counterpart. This function of purpose in life supports the notion proposed by Kashan and colleagues (2023), which suggests purpose in life acting as a framework, guiding the selection of long term and short term academic goals. These autonomous goals pursued by the student having a high sense of purpose in life, have the benefit of enhancing intrinsic motivation in the academic life (Lewis, 2020; Ryan & Deci, 2017). These autonomous forms of motivation are linked to more sustained effort, willpower and navigate the often challenging and complex nature of the academic life, leading to more academic satisfaction (Datu, 2021; Gaudreau, 2012; Sheldon & Elliot, 1999; Wan et al., 2020). Further, academic satisfaction is closely linked to student well-being (Amholt et al., 2020; Toan Tran et al., 2022). Consequently, selecting more autonomous goals, which are driven by internal motivation, can yield benefits for student well-being. For example, students pursuing academic self-concordant goals and thus being driven by autonomous forms of motivation, experience more well-being in the form of reduced stress, psychological flexibility, and increased resilience. (Kashdan et al., 2023; Ryan & Deci, 2017; Wan et al., 2021)

The second mediated pathway proposing self-reflection indirectly influencing academic satisfaction through academic self-concordant goal setting, was also significant and in line with existing evidence (Burton, 2008; Wan et al., 2021; Warren et al., 2018). Here, students that are more self-reflective spend more time introspecting and reflecting on one's

core values in life and their behavior. Warren and colleagues (2018) propose that more self-reflection enables students to think about what they want and do not want to be doing in their academic life. The students higher in the ability to self-reflect, thus spending more time thinking about their core values in general, are more likely to identify and prioritize goals that are aligned with their intrinsic values (e.g., positively influences the creation of self-concordant academic goals) (Burton, 2008; Silvia & Phillips, 2010; Silvia, 2021; Wan et al., 2021). The vital role of the ability to self-reflect in the student life lay on its self-regulating properties (Warren et al., 2018). Here, students high in self-reflection monitor their goals more closely with the application to create stronger feedback. This in turn shapes short and long-term goal setting more in line with what the student truly wants, leading to the selection of more autonomous goals in the academic setting (Ryan & Deci, 2017). Students who pursue more autonomous goals as a product of the ability to introspect, benefit from increased academic satisfaction in their academic life (e.g., students pursuing and achieving desired, self set goals, benefit from more academic satisfaction) (Wan et al., 2021). The advantage of selecting more autonomous goals further has implications for student well-being, a construct closely related to academic satisfaction (Amholt et al., 2020; Toan Tran et al., 2022). Here, selecting autonomous goals as a result of a greater ability to self-reflect can enhance student well-being in the form of reduced stress, greater psychological flexibility and increased resilience (Kashdan et al., 2023; Ryan & Deci, 2017; Wan et al., 2021).

The findings of the proposed mediation models suggest that fostering academic self-concordance among students can significantly enhance their academic satisfaction and, potentially, the subjective well-being of students. Precisely, it does this in a framework where purpose in life and self-reflection both independently influence this relationship. Therefore, positive benefits can be elicited by building on both purpose in life and self-reflection amongst students scoring low on these areas. Possibilities arise foremost in the academic

domain. Here, interventions and strategies aimed at improving purpose in life and encouraging self-reflection could be important. Hill and colleagues (2016) propose that the enhancement of student purpose in life could be achieved by providing an educational environment (e.g., incorporating purpose related subjects into university programs) to emphasize finding a meaningful and purpose-driven career path. Yates and Youniss (1996) found that participation in volunteer work positively influences students' sense of purpose in life. This suggests a purpose related educational environment and stimulating the participation of volunteer work could both enhance students' alignment of their academic pursuits with their life goals. Enhancing students' self-reflection could be achieved by offering programs that promote mindfulness and self-awareness, such as meditation sessions or mindfulness workshops. These interventions showed to elicit positive benefits on student well-being through their increase in self-reflective habits (Zhang et al., 2021). Hughes and colleagues (2019) showed the possibility of increasing student self-reflection through reflective journaling. Here, self-reflective journaling led to better academic satisfaction through better goal setting. Not only do the findings of this study imply applications in the academic domain, but it also highlights the importance of fostering environments that support purpose in life and self-reflection (e.g., include policies that make the allocation for funding these (extra) programs and career counseling possible).

Several limitations of this research should be acknowledged. First, this study was cross-sectional, meaning that there is limited information on the interaction between variables regarding the temporal dimension (Morling, 2020). Future research should implement a longitudinal design, measuring participants at different time intervals. Second, this study was correlational in design. This brings with it a directional problem where results cannot be interpreted casually because of the bi-directional possibility (Morling, 2020). To address this limitation, future research should include an experimental design to control for possible two-

way relationships for making causal interpretations. Third, the current study was conducted using a convenience sample surveying only students studying at the university of Groningen. Although useful conclusions can be drawn from current research, the findings may not be generalizable to students at other universities or in different educational contexts. This limitation may undermine the external validity of the results, and future research should aim to include a more diverse sample from various institutions to enhance generalizability (Morling, 2020).

In this study purpose in life was measured based on a 'sense' of purpose in life amongst students instead of their explicit stated purpose in life. Burrow and colleagues (2021) state that the solely relying on the intuitive 'sense' of purpose in life, based on a gut feeling is problematic because it often does not reflect the actual purpose in life the individual has which has deeper roots in the student's values. One way of identifying student's purpose in life based on their values is through the use acceptance and commitment therapy which places special importance on the self-reflection of one's values (Berkout, 2022). Here, acceptance and commitment therapy could be used in the academic setting to unravel the values that underpin student's sense of purpose in life. A construct of purpose in life based upon these identified values have the possibility of making the construct purpose in life even stronger (Berkout, 2022; Burrow et al., 2021). Future studies should therefore use acceptance and commitment therapy as a foundation to explore and clarify student's values, and thereby identifying the values that support their sense of purpose in life.

This study sought to disentangle the relationship between purpose in life on academic satisfaction mediated by academic self-concordance. More precisely, it was hypothesized that students high in self-reflection moderate this effect. From this perspective, purpose in life acts as a framework, guiding the type of academic goals students pursue, and thereby influencing student's academic satisfaction. It was hypothesized that this relationship would

be stronger for students higher in self-reflection. Results showed that the moderated

mediation effect was not significant (e.g., purpose in life influencing academic satisfaction

through academic self-concordance while being moderated by self-reflection). However,

significant results were found for the indirect effects of purpose in life and self-reflection on

academic satisfaction through academic self-concordance. This study suggests interventions

targeting to promote student academic satisfaction, such as implementing mindfulness

practices at the university, focusing on enhancing students' awareness of their purpose in life

or offering self-reflection activities in the form of reflective journaling.

References

Alfons, A., Ateş, N. Y., & Groenen, P. J. F. (2021). A robust Bootstrap test for mediation analysis. *Organizational Research Methods*, *25*(3), 591–617. https://doi.org/10.1177/1094428121999096

Amholt, T. T., Dammeyer, J., Carter, R., & Niclasen, J. (2020). Psychological Well-Being and Academic Achievement among School-Aged Children: a Systematic Review. *Child Indicators Research*, *13*(5), 1523–1548. https://doi.org/10.1007/s12187-020-09725-9

Barbosa-Camacho, F. J., Romero-Limón, O. M., Ibarrola-Peña, J. C., Almanza-Mena, Y. L., Pintor-Belmontes, K. J., Sánchez-López, V. A., Chejfec-Ciociano, J. M., Guzmán-Ramírez, B. G., Sapién-Fernández, J. H., Guzmán-Ruvalcaba, M. J., Nájar-Hinojosa, R., Ochoa-Rodriguez, I., Cueto-Valadez, T. A., Cueto-Valadez, A. E., Fuentes-Orozco, C., Cortés-Flores, A. O., Miranda-Ackerman, R. C., Cervantes-Cardona, G. A., Cervantes-Guevara, G., & González-Ojeda, A. (2022). Depression, anxiety, and academic performance in COVID-19: a cross-sectional study. *BMC Psychiatry*, *22*(1). https://doi.org/10.1186/s12888-022-04062-3

Berkout, O. V. (2022). Working with Values: An overview of approaches and considerations in implementation. *Behavior Analysis in Practice*, *15*(1), 104–114. https://doi.org/10.1007/s40617-021-00589-1

Blanco, C., Okuda, M., Wright, C., Hasin, D. S., Grant, B. F., Liu, S., & Olfson, M. (2008). Mental health of college students and their Non–College-Attending peers. *Archives of General Psychiatry*, *65*(12), 1429. https://doi.org/10.1001/archpsyc.65.12.1429

Burrow, A. L., Agans, J. P., Jeon, H. J., & Creim, M. (2021). Are all purposes worth having? Integrating content and strength in purpose research. *Human Development*, *65*(2), 100–112. https://doi.org/10.1159/000515176

Burton, C. M. (2008). *Gut feelings and goal pursuit : a path to self-concordance*.

https://doi.org/10.32469/10355/7112

Datu, J. a. D. (2021). Beyond Passion and Perseverance: Review and future research

initiatives on the science of grit. *Frontiers in Psychology*, *11*.

https://doi.org/10.3389/fpsyg.2020.545526

Ernst, A. F., & Albers, C. J. (2017). Regression assumptions in clinical psychology research

practice—a systematic review of common misconceptions. *PeerJ*, *5*, e3323.

https://doi.org/10.7717/peerj.3323

French, S., & Joseph, S. (1999). Religiosity and its association with happiness, purpose in

life, and self-actualisation. *Mental Health, Religion & Culture*, *2*(2), 117–120.

https://doi.org/10.1080/13674679908406340

Franzen, J., Jermann, F., Ghisletta, P., Rudaz, S., Bondolfi, G., & Tran, N. T. (2021).

Psychological Distress and Well-Being among Students of Health Disciplines: The

Importance of Academic Satisfaction. *International Journal of*

Environmental Research and Public Health/International Journal of Environmental

Research and Public Health, *18*(4), 2151. https://doi.org/10.3390/ijerph18042151

Gaudreau, P. (2012). Goal self-concordance moderates the relationship between achievement

goals and indicators of academic adjustment. *Learning and Individual Differences*,

22(6), 827–832. https://doi.org/10.1016/j.lindif.2012.06.006

Grant, A. M., Franklin, J., & Langford, P. (2002). THE SELF-REFLECTION AND

INSIGHT SCALE: a NEW MEASURE OF PRIVATE SELF-CONSCIOUSNESS.

Social Behavior and Personality, *30*(8), 821–835.

https://doi.org/10.2224/sbp.2002.30.8.821

Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process*

analysis: A Regression-Based Approach. Guilford Publications.

Hill, P. L., Burrow, A. L., & Sumner, R. (2013). Addressing important questions in the field

    of adolescent purpose. *Child Development Perspectives*, *7*(4), 232–236.

    https://doi.org/10.1111/cdep.12048

Hill, P. L., Edmonds, G. W., Peterson, M., Luyckx, K., & Andrews, J. A. (2016). Purpose in

    life in emerging adulthood: Development and validation of a new brief measure. ˜ *the*

    æ Journal of Positive Psychology, *11*(3), 237–245.

    https://doi.org/10.1080/17439760.2015.1048817

Howard, J. L., Gagné, M., Van Den Broeck, A., Guay, F., Chatzisarantis, N., Ntoumanis, N.,

    & Pelletier, L. G. (2020). A review and empirical comparison of motivation scoring

    methods: An application to self-determination theory. *Motivation and Emotion*, *44*(4),

    534–548. https://doi.org/10.1007/s11031-020-09831-9

Hughes, J. A., Cleven, A. J., Ross, J., Fuentes, D. G., Elbarbry, F., Suzuki, M., Della Paolera,

    M., Carter, N. S., Stamper, B., Low, P., Malhotra, A., & Faro, S. J. E. (2019). A

    comprehensive reflective Journal-Writing Framework for pharmacy students to

    increase Self-Awareness and develop actionable goals. *American Journal of*

    Pharmaceutical Education, *83*(3), 6554. https://doi.org/10.5688/ajpe6554

Hysenbegasi, A., Hass, S. L., & Rowland, C. R. (2005). The impact of depression on the

    academic productivity of university students. *PubMed*, *8*(3), 145–151.

    https://pubmed.ncbi.nlm.nih.gov/16278502

Kashdan, T. B., Goodman, F. R., McKnight, P. E., Brown, B., & Rum, R. (2023). Purpose in

    life: A resolution on the definition, conceptual model, and optimal measurement.

    American Psychologist/˜ the æ American Psychologist.

    https://doi.org/10.1037/amp0001223

Kirsh, B., Friedland, J., Cho, S., Gopalasuntharanathan, N., Orfus, S., Salkovitch, M., Snider,

    K., & Webber, C. (2016). Experiences of university students living with mental health

problems: Interrelations between the self, the social, and the school. *Work*, *53*(2), 325–335. https://doi.org/10.3233/wor-152153

Lewis, N. A. (2020). Purpose in life as a guiding framework for goal engagement and motivation. *Social and Personality Psychology Compass*, *14*(10), 1–11. https://doi.org/10.1111/spc3.12567

Morling, B. (2020). *Research Methods in Psychology: Evaluating a World of Information (Fourth International Student Edition)*.

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. (2014). College Students: Mental health problems and treatment Considerations. *Academic Psychiatry*, *39*(5), 503–511. https://doi.org/10.1007/s40596-014-0205-9

Renshaw, T. L., & Bolognino, S. J. (2014). The College Student Subjective Wellbeing Questionnaire: a brief, multidimensional measure of undergraduate's covitality. *Journal of Happiness Studies*, *17*(2), 463–484. https://doi.org/10.1007/s10902-014-9606-4

Santisi, G., Magnano, P., Platania, S., & Ramaci, T. (2018). Psychological resources, satisfaction, and career identity in the work transition: an outlook on Sicilian college students. *Psychology Research and Behavior Management*, *Volume 11*, 187–195. https://doi.org/10.2147/prbm.s164745

Self-Determination Theory: Basic psychological needs in motivation, development, and wellness. (2017). In *Guilford Press eBooks*. https://doi.org/10.1521/978.14625/28806

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology*, *76*(3), 482–497. https://doi.org/10.1037/0022-3514.76.3.482

Shin, S., & Hwang, E. (2020). The effects of clinical practice stress and resilience on nursing students' academic burnout. *Uihak Gyoyuk Nondan*, *22*(2), 115–121. https://doi.org/10.17496/kmer.2020.22.2.115

Silvia, P. J. (2021). The self-reflection and insight scale: applying item response theory to craft an efficient short form. *Current Psychology*, *41*(12), 8635–8645. https://doi.org/10.1007/s12144-020-01299-7

Silvia, P. J., & Phillips, A. G. (2010). Evaluating self-reflection and insight as self-conscious traits. *Personality and Individual Differences*, *50*(2), 234–237. https://doi.org/10.1016/j.paid.2010.09.035

Smyth, A. P., Werner, K. M., Milyavskaya, M., Holding, A., & Koestner, R. (2020). Do mindful people set better goals? Investigating the relation between trait mindfulness, self-concordance, and goal progress. *Journal of Research in Personality*, *88*, 104015. https://doi.org/10.1016/j.jrp.2020.104015

Sona Systems. (2024, April 2). *Participant Pool Management for universities; SONA Systems*. https://www.sona-systems.com/

The mental well-being of university students in the Netherlands. (2024, June 26). Maastricht University. https://www.maastrichtuniversity.nl/file/bijlage-3-mental-well-being-students-iv-report-caring-universities-110723rapportage-2023pdf

Tran, N. T., Franzen, J., Jermann, F., Rudaz, S., Bondolfi, G., & Ghisletta, P. (2022). Psychological distress and well-being among students of health disciplines in Geneva, Switzerland: The importance of academic satisfaction in the context of academic year-end and COVID-19 stress on their learning experience. *PloS One*, *17*(4), e0266612. https://doi.org/10.1371/journal.pone.0266612

Trimbos-instituut. (2023, February 28). *Mentale gezondheid en middelengebruik studenten hoger onderwijs - Trimbos-instituut*.

https://www.trimbos.nl/aanbod/webwinkel/af2038-mentale-gezondheid-en-middelengebruik-studenten-hoger-onderwijs/

Wan, P., Wen, T., Zhang, Y., Gao, H., & Wang, J. (2021). Goal Self-Concordance Model: What Have We Learned and Where are We Going. ˜ *the œ International Journal of Mental Health Promotion*, *23*(2), 201–219. https://doi.org/10.32604/ijmhp.2021.015759

Warren, M. T., Wray-Lake, L., & Syvertsen, A. K. (2018). Becoming who they want to be: A cross-national examination of value-behavior concordance and mindfulness in adolescence. ˜ *the œ Journal of Positive Psychology*, 1–12. https://doi.org/10.1080/17439760.2017.1350741

Yates, M., & Youniss, J. (1996). Community Service and Political-Moral Identity in Adolescents. *Journal of Research on Adolescence*, *6*(3). https://eric.ed.gov/?id=EJ529839

Zhang, D., Lee, E. K. P., Mak, E. C. W., Ho, C. Y., & Wong, S. Y. S. (2021). Mindfulness-based interventions: an overall review. *British Medical Bulletin*, *138*(1), 41–57. https://doi.org/10.1093/bmb/ldab005