Purpose in Life and students' harmonious passion for their studies: A mediating role for self-concordant academic goals?

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Abstract

University students with a sense of purpose in life (PIL) may be more motivated and report higher well-being. However, empirical studies that explain this link are lacking. Therefore, a better understanding of this relationship is essential for developing interventions that aim to increase motivation and well-being. To shed light on this relationship, this study investigated academic self-concordance as a potential mediator between PIL and harmonious passion, a construct strongly related to both. We conducted a cross-sectional survey with a sample of 193 first-year psychology students. The data were analyzed using classical and PROCESS-software-based mediation analysis. We found that PIL predicts higher levels of harmonious passion, which is partially mediated through self-concordance. We concluded that students who have a sense of purpose in life set goals that align more closely with their values. Because of this, these students are more intrinsically motivated, which leads to harmonious passion for their studies. This implies that interventions that foster PIL to achieve harmonious passion for studying should include strategies for self-concordant goal setting. However, further studies are needed to investigate other potential mediators, thereby increasing our understanding of this relationship and aiding in the development of more effective interventions.

Keywords: Purpose in Life, Academic Self-Concordance, Harmonious Passion

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35.9% of university students in the Netherlands report moderate to severe depressive symptoms, and 21.8% moderate to severe anxiety complaints (Caring Universities, 2023). Additionally, a substantial number of students experience various other well-being issues (Douwes et al., 2023). The transition to university requires a variety of adaptations from students, who face financial, social, and organisational challenges (Duffy et al., 2020). These mental health issues not only cause significant distress but also impair academic performance and increase dropout rates (Lipson & Eisenberg, 2018). Since the treatment for mental disorders is expensive and the mental health care system is overburdened (Van Os et al., 2023), identifying psychological factors that protect students from mental illness and increase well-being may be beneficial, as knowledge about such a factor can guide the development of preventive mental health interventions in the university setting (Duffy et al., 2020). Having a purpose in life (PIL) might be such a protective factor, as studies have shown that it correlates negatively with both anxiety and depression levels (Boreham & Schutte, 2023), while it is positively associated with all parts of psychological well-being and students' academic motivation (Kim et al., 2021; Wei et al., 2024). PIL is defined as a "central, self-organizing life aim that organizes and stimulates goals, manages behaviors, and provides a sense of meaning" (McKnight & Kashdan, 2009, p. 242). However, it is still unclear how PIL exerts its positive impact (Burrow et al., 2024). With this in mind, this study aims to examine whether academic self-concordant goal striving (ASC) mediates the influence PIL has on harmonious passion (HP), a variable positively associated with student academic motivation and well-being (Sverdlik et al., 2021; Stoeber et al., 2011). It can be

predicted that students with a high sense of purpose in life will experience more academic self-concordance, which subsequently increases the harmonious passion for their studies.

Purpose in Life and Academic Self-Concordance

A student's sense of purpose may relate to academic self-concordance through their shared foundation in identity and core personal values. A central, self-organizing life aim, called PIL, manages behaviors by choosing and sustaining goals that move individuals closer to their life aim (Lewis, 2020). Furthermore, goals that align with one's own PIL are seen as concordant with one's own identity and central values (Kashdan et al., 2023; Kashdan & McKnight, 2009). Academic self-concordance is viewed as an optimal goal-striving process, whereby academic goals are chosen based on their alignment with one's own central values and identity, rather than external pressures (Sheldon, 2004). Thus, purpose-concordant goals can be seen as self-concordant, since they are based on central values and one's identity rather than external pressures. Furthermore, self-concordance is marked by an internal locus of causality; thus, it is based on intrinsic and identified motivation, rather than introjected and external motivation (Sheldon & Elliot, 1999; Deci & Ryan, 2000). According to Self-Determination Theory (SDT), an internal locus of causality is evoked when an activity is autonomously chosen and therefore fulfills the basic need of autonomy (Deci & Ryan, 2000). Therefore, self-concordance arises if the goals are freely endorsed. Because goals that are organized by the students' purpose are freely chosen based on their own values and identity, PIL's goal management is likely self-concordant. To illustrate, having a purpose in life creates a hierarchical goal structure, with the PIL as a superordinate long-term goal that chooses and sustains the pursuit of sub-goals (Lewis, 2020). Subsequently, these subgoals lead to further subgoals. For example a student that has the PIL "I want to help people" chooses the subgoal of "I want to become a psychotherapist", which

leads to the short-term goal of "I want to pass my diagnostics exam" and lastly to the daily goal of "I want to study one chapter today". As each of the goals aligns with the PIL that is based on on the own central values and identity, the goal pursuit will be self-concordant

Moreover, having a PIL may buffer academic stressors and their autonomy-threatening effects. For example, when facing an upcoming exam, a student with a clear sense of purpose may view studying as a purposeful action aligned with their long-term goals. This perspective enables him to approach the task with a sense of volition, rather than feeling driven by external demands such as performance pressure or parental expectations, thereby preserving self-concordant motivation even under stress (Burrow et al., 2024).

In summary, a PIL aligns students' goals with their own values, leading to more autonomy and autonomous motivation. Thus, we predict that with increasing sense of purpose in life, students are more likely to choose self-concordant academic goals. Having examined the relationship between purpose in life and academic self-concordance, we now turn to the second part of the mediation pathway: the link between academic self-concordance and harmonious passion.

Academic Self-Concordance and Harmonious Passion for studies

Academic self-concordant goal pursuit may promote harmonious passion for studying by fostering a sense of autonomy and self-determination. Passion is defined as a strong inclination or deep enthusiasm toward a particular activity or interest. (Vallerand, 2015). According to the Dualistic Model of Passion, two subtypes of passion exist (Vallerand, 2015). While Obsessive passion arises when an individual engages in an activity due to external pressures or contingencies, harmonious passion (HP) arises when the activity is performed autonomously, driven by a sense of personal choice, because it is considered meaningful and enjoyable, leading

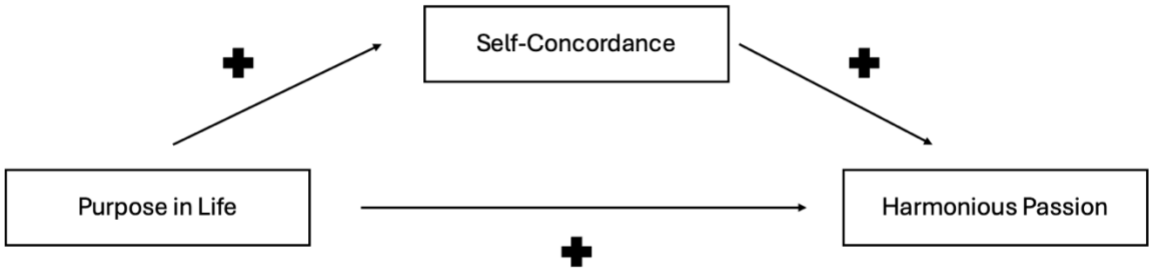
to a deep engagement and dedication of time and effort (Vallerand et al., 2003). ASC may foster harmonious passion by enhancing self-determination, the psychological state from which harmonious passion emerges. To illustrate, SDT posits that through an organismic integration process, which refers to an innate self-regulation process aimed at self-growth, external behaviors and values are integrated into the self-concept, leading to self-determination (Deci & Ryan, 2000). For this process to occur, the psychological basic needs, especially the need for autonomy, must be fulfilled. HP would arise when an activity is autonomously internalized, meaning that through the organismic integration process, the activity is fully integrated into one's own identity (Vallerand, 2003). Thus, a passion is considered harmonious when engagement in the activity is autonomously endorsed. Academic self-concordance goal striving is characterized by a free choice and authentic interest in pursuing a specific goal, based on one's own values (Sheldon, 2004). Thus, the students' need for autonomy is likely fulfilled during academic self-concordant activities (Sheldon & Elliot, 1999). Therefore, students who are pursuing self-concordant academic goals have a satiated need for autonomy, which creates the base for the presence of Harmonious Passion for studying. Thus, students who pursue academic self-concordant goals are more likely to develop a harmonious passion for their studies. To conclude, due to the connection between ASCs and HPs through self-determination and autonomy, we predict that with higher levels of academic self-concordance, students are more likely to develop a harmonious passion for their studies.

To summarize, this study examines whether academic self-concordance mediates the relationship between purpose in life and harmonious passion for studying. PIL is expected to be associated with academic self-concordance because students with a strong sense of purpose tend to choose and sustain academic goals that reflect their core values, making these goals

autonomously chosen, academic self-concordant goals. Moreover, academic self-concordance is expected to be positively associated with harmonious passion for studying, as ASC goals provide the foundation for the autonomous internalization of study-related activities, the process that creates a harmonious passion. Thus, we expect that students with higher levels of PIL are more likely to endorse self-concordant academic goals and subsequently are more likely to experience harmonious passion during their study activities.

Figure 1

Research model explaining the relationship between purpose in life, academic self-concordance and harmonious passion for studies



Methods

Participants

Of the 222 students from the University of Groningen who participated in the study, 22 responses were excluded from the analysis due to not completing the questionnaire and seven were excluded because participants were not psychology students taking the Academic Skills course. The final sample consisted of 193 participants, including 134 women, 52 men, two participants who identified as another gender, three who preferred not to disclose their gender, and two who did not fill out this category. Participants ranged in age from 17 to 35 years (M =

19.8, *SD* = 1.95). The majority of participants were from the Netherlands, totalling 126 individuals, followed by 18 participants from Germany and 49 from other countries.

Measures

Purpose in life

Purpose in life was operationalized using a four-item subscale developed by Hill and colleagues (2016). Examples of items are "There is a direction in my life" and "My life is guided by a set of clear commitments." Items were rated on a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores on the subscale indicated a stronger sense of purpose in life. Previous research using this scale found a Cronbach's alpha of 0.84 (Hill et al., 2016). In this study, the internal reliability was high ($\alpha = .92$).

Academic Self-concordance

To measure self-concordance, participants were asked to report three academic goals and rate the extent to which they pursued each of them for external, introjected, identified, or intrinsic reasons, respectively. The items were based on Sheldon and Elliot's (1999) goal self-concordance model, with each item measuring a different type of motivation. For example, the item measuring external motivation read "Because somebody else wants you to, or because you will get something if you do". In contrast, the intrinsic motivation item read "Because of the fun and enjoyment which the goal will provide you - the primary reason is simply your interest in the experience itself." Items were rated on a 7-point Likert-type scale, ranging from 1 (not at all for this reason) to 7 (completely for this reason). In analysis, external and introjected motivation items were combined to represent non-concordance, while identified and intrinsic motivation items together made up concordance. A previous study using this scale reported a Cronbach's alpha of 0.65 for non-concordant goal pursuit, and 0.69 for concordant goal pursuit (Zhang & Fu,

2025). Similarly, in this study, Cronbach's alpha for non-concordant goal-pursuit was 0.73. For concordant goal pursuit Cronbach's alpha was 0.70.

Harmonious Passion

A subscale of the Passion Scale (Vallerand & Rahimi, 2022), specifically responsible for operationalizing harmonious passion, was used in this study. The subscale consisted of seven items (e.g., "My university studies reflect the qualities I like about myself"). Items are rated on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree).In previous research, the internal reliability of this measure was $\alpha = .79$ (Vallerand & Rahimi, 2022). In this study, the internal reliability was $\alpha = 0.85$.

Procedure

The study fulfilled the criteria for the fast track submission procedure of the Ethical Committee for Psychology at the University of Groningen. The survey was an online self-report questionnaire conducted using the Qualtrics platform. It was available to the first-year psychology students through the Sona System, which links undergraduate students to either research students or researchers to obtain participants. In exchange for participation, students received SONA credits, which are a part of a university course. Before participating in the study, participants were informed about the study's topic, expected questions, and estimated duration, and then provided their informed consent. The questionnaire contained demographic information (i.e., gender, nationality, and age), as well as measures of purpose in life, self-concordance, academic satisfaction, positive affect, intellectual risk-taking, and harmonious passion.

Statistical Analysis

To increase the confidence in our results, we conducted a mediation analysis based on the rationales of both Baron & Kenny (1986) and Hayes (2022). Both approaches assessed whether

ASC mediates the relationship between PIL and HP. Following Baron & Kenny's rationale, two models were assessed. A reduced model that only assesses whether purpose in life (PIL) influences harmonious passion and a full model that assesses whether PIL and ASC influence harmonious passion. The presence of a significant mediation of ASC was evaluated by the R^2 change between the reduced and full model, and by the effect sizes and statistical significance of their respective pathways (Baron & Kenny, 1986). Furthermore, following the guidelines provided by Hayes (2022) and Selker (2017), we conducted a bootstrapping procedure with 5,000 resamples. This model corresponds to Model 4 in Hayes's (2022) framework and was used to assess whether PIL affects harmonious passion through ASC. The mediation was evaluated by analyzing both the effect size and the statistical significance of the direct and indirect effects. The models were estimated using the statistical software jamovi (Version 2.6.26) along with the medmod extension (Selker, 2017).

Results

Assumption Checks

A casewise diagnostic identified no observations with standardized residuals exceeding ±3 SD, indicating no influential outliers. Thus, the final sample for analysis comprised 193 participants. Figure C suggests an approximately normal distribution of standardized residuals, based indicated by visual inspection. This is supported by Figures A1–A4, where the Q-Q plots show residuals aligning closely with the expected normal line. Considering the robustness of linear regression to slight departures from normality in larger samples, the normality assumption is deemed fulfilled (Ernst & Albers, 2017). Visual inspection of the standardized residuals versus standardized predicted values (Figure B) shows a random, homogenous spread around the horizontal axis, with no evident curvature, indicating that the assumption of linearity is met.

Also, homoscedasticity of the residuals was assessed using residual plots (See Figure B-B3). Also, the homoscedasticity assumption is met. According to Ernst and Albers (2017), homoscedasticity is present when the variance of residuals remains constant across all levels of the independent variables, while heteroscedasticity is indicated by unequal dispersion around the regression line. Visual inspection of Figures B–B3 reveals that the residuals are evenly and randomly distributed around the horizontal axis, with no indication of increasing or decreasing spread. Thus, the assumption of homoscedasticity is satisfied. The independence of residuals was assessed using the Durbin-Watson test, which evaluates whether residuals from different observations are uncorrelated (Ernst & Albers, 2017; Chatfield, 2014). This statistic ranges from 0 to 4, with values around 2 indicating no autocorrelation. The obtained value of 2.037 is sufficiently close to 2, suggesting that the assumption of independent residuals is met.
None of the correlations exceeds .70 (Table 2), and the Variance Inflation Factor (VIF) of 1.13 is well below the commonly accepted threshold of 10, indicating no evidence of multicollinearity (Marcoulides & Raykov, 2019). Taken together, the assumption checks indicate that the data meet the necessary statistical criteria for conducting a mediation analysis.

Descriptives and correlational analysis

Pearson's correlations, means, and standard deviations were calculated for all examined variables (see Table 2). As predicted, a highly significant correlation between PIL and HP was found. Moreover, as expected through the mediation hypothesis, a highly significant correlation was found between PIL and SC and between SC and HP. Thus, the correlational findings point towards the presence of a mediation pathway.

Table 2

Descriptives and Correlation of the examined variables

		1	2	3	M	SD
1.	Purpose in Life	-			3.48	.80
2.	Self-Concordance	.34*	-		2.71	.49
3.	Harmonious Passion	.35*	.33*	-	4.70	.91

Note: Level of significance: * p<0.001

Mediation Analysis

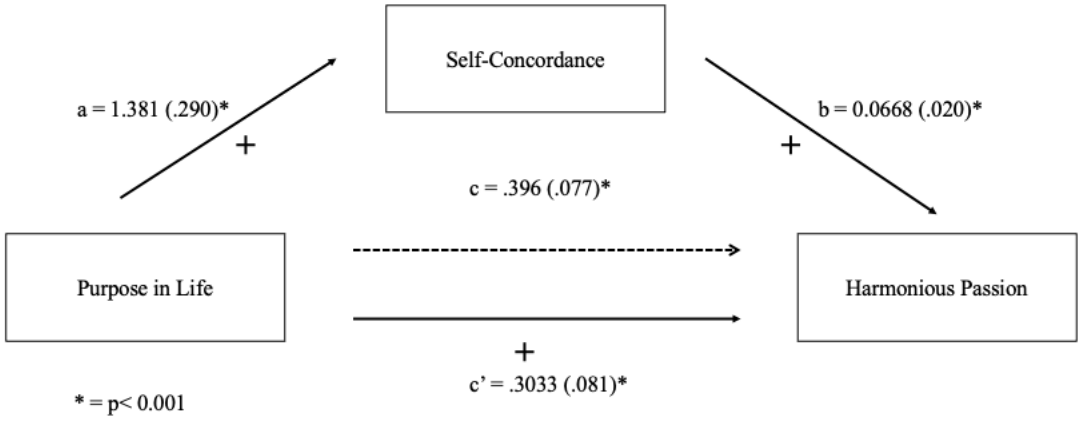
Baron and Kenny's approach

A mediation analysis was performed to understand the effect of Self-Concordance on the relationship between Purpose in Life and Harmonious Passion. Firstly, the linear regression between PIL and HP yields a significant positive effect (B = .40; *SE* = .08, 95% CI = [.24, .55]. Secondly, a significant effect was found between higher levels of PIL and SC (B = 1.38; *SE* = .28, 95% CI = [.84, 1.93]). Also, the Path from SC to HP was significant (B = .067; *SE* = .020, 95% CI = [.03, .11]), yielding evidence of a mediation effect. Thirdly, when controlling for PIL, SC positively correlates with HP (B = .07; *SE* = .02, 95% CI = [.028, .11]). Moreover, PIL remains a significant predictor for HP when controlling for SC (B = .30; *SE* = .08, 95% CI = [.15, .46]). Since both SC and PIL stay significant predictors of HP when controlled for the other, a partial mediation is present. Moreover, the increment in explained variance of the overall model versus the reduced model is 5%. Also, the overall model was significant, $F(2, 190) = 19.4$; $p < .001$, with 16.9% of the variance explained. Since self-concordance does not mediate the relationship between PIL and HP completely, we examined a Sobel test to investigate the significance of the mediation effect (Sobel, 1982). The results indicated a significant indirect effect, $z = 2.75$, $p < .01$, indicating a significant mediating effect of ASC. Additionally, the effect

size of the indirect effect is calculated by multiplying the a-path (PIL to SC, B = 1.38) and b-path (SC to HP, B = 0.07), then dividing by the c-path (PIL to HP, B = 0.40), yielding B = 0.23.

Figure 2

Model with effect sizes of the Baron and Kenny analysis



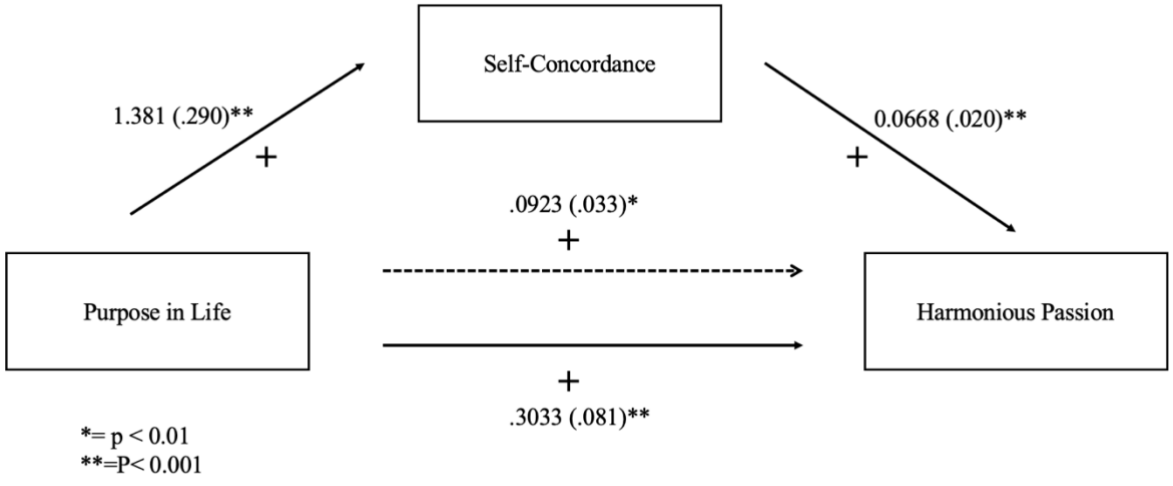
Although Baron and Kenny's (1986) framework remains a valuable tool for conceptualizing mediation, contemporary methodological standards recommend complementing it with Hayes' PROCESS approach, which offers greater statistical robustness. Baron and Kenny's structured, step-by-step approach facilitates the clear identification of mediation pathways, making it particularly well-suited for theoretical development and effective communication of mediation processes. However, the approach has faced criticism due to its low statistical power and its focus on testing individual path coefficients, which may obscure the identification of indirect effects within the mediation model (MacKinnon, Fairchild, & Fritz, 2007; Zhao, Lynch, & Chen, 2010). Consequently, Rucker et al. (2011) advocated for an integrative approach: employing Baron and Kenny's framework to ensure conceptual clarity, while utilizing Hayes' PROCESS procedure for rigorous statistical testing of mediation effects.

Hayes' approach

The analysis through Hayes' PROCESS Model 4 and jamovi medmod supports the prior evidence of a partial mediation. The overall model was significant, $F(2, 190) = 19.4$; $p < .001$, with 16.9% of the variance explained. The total effect (B = .3956; *SE* = .083, 95% CI [.231, .556] and the direct effect (B = .30; *SE* = .08, 95% CI [.14, .46] were significant. Also, the indirect was significant (B = .09; *SE* = .03, 95% CI [.03, .16]. Furthermore, PIL positively relates with higher levels of SC (B = 1.38; *SE* = .28, 95% CI = [.84, 1.93]) and SC predicts higher levels of HP. B = .07; *SE* = .020, 95% CI = [.03, .11]). Since both direct and indirect effects are significant, the mediation effect of SC is not strong enough to make the direct effect insignificant. Thus leading to a partial mediation effect of self-concordance.

Figure 3

Hayes' mediation model with effect sizes of each pathway



Note. The dotted line represents the indirect effect

To summarize, both analyses based on Hayes' and Baron & Kenny's frameworks indicate a significant effect of Purpose in Life and ASC on harmonious passion for studying. Thus,

Academic Self-Concordance may only partially mediate the relationship between Purpose in Life and Harmonious Passion.

Discussion

Approximately 35.9% of university students in the Netherlands experience moderate to severe symptoms of depression, while 21.8% report moderate to severe anxiety (Caring Universities, 2023). Additionally, a substantial number of students encounter a range of other well-being issues (Douwes et al., 2023). The transition to university involves numerous adaptations and exposes students to diverse financial, social, and organizational stressors (Duffy et al., 2020). These well-being challenges not only lead to significant distress among students but also negatively impact their academic performance, increasing the risk of dropout (Lipson & Eisenberg, 2018). Considering the high cost associated with mental health treatment and the strain currently placed on mental health services (Van Os et al., 2023), identifying psychological factors that mitigate mental health issues and enhance student well-being could be highly beneficial. Insights gained from such factors may inform the development of preventive mental health strategies tailored to university contexts (Duffy et al., 2020). A sense of purpose in life might be such a protective factor, as it positively impacts psychological well-being, anxiety and depression levels and academic motivation (Kim et al., 2022; Boreham & Schutte, 2023; Wei et al., 2024). However, the underlying mechanisms of this relationship are not widely understood yet (Burrow et al., 2024). Hence, this study examined the relationship between the level of purpose in life (PIL) of first-year university students and their level of harmonious passion (HP) for their studies, specifically, by investigating academic self-concordance (SC) as a potential mediator. Our model predicted higher levels of PIL to be positively related to HP. Moreover, we predicted that with increasing levels of PIL, students would experience greater academic self-

concordance and, following this, possess higher HP. Our results were in line with these predictions.

The significant positive association between PIL and ASC confirms recent research and theorizing by Lewis (2020), which suggests that a sense of purpose in life serves as a goal manager that selects and sustains the pursuit of sub-goals, allowing the individual to move closer to their purpose. Furthermore, it aligns with research and theorizing by Sheldon & Elliot (1999) and Deci & Ryan (2000), that self-concordant goals are more autonomously motivating and are therefore chosen over non-concordant goals. Moreover, the significant correlation between Academic self-concordance and harmonious passion aligns with prior research and theorizing by Deci & Ryan (2000) and Sheldon & Elliot (1999), stating that self-concordant goal striving would be better in fulfilling the basic psychological needs, especially the need of autonomy. Furthermore, it aligns with research and theorizing by Vallerand et al. (2003), who suggest that harmonious passion would arise automatically when an individual's basic psychological needs are met. However, this study extends prior research by integrating these findings in a significant mediation framework. After discussing how findings align with previous research, we will now discuss how these results can be explained in the context of students.

PIL has been defined as a central, self-organizing life aim that orders and sustains goals and directs behaviors, based on a subset of central values (McKnight & Kashdan, 2009; Lewis, 2020; Kashdan et al., 2023). Conceptually, it functions as the apex of a pyramid. E.g., the superordinated purpose ("I want to promote mental health in young people") generates mid-level objectives ("I want to qualify as a child psychologist"), which in turn initiate daily sutdy intentions ("Finish the diagnostics chapter tonight"). Because every rung in this hierarchy inherits value-based meaning from the overarching purpose, the student experiences each goal as

self-chosen, identity-expressive, and personally valuable (Reilly et al, 2019, Kashdan et al., 2023), the exact conditions that Self-Concordance Theory labels self-concordant (Sheldon & Elliot, 1999). Self-Determination Theory clarifies the motivational benefits of purpose-concordant goals. Academic self-concordant goals are characterized by an internal locus of causality. Which means they are pursued out of autonomous motivation, including intrinsic and identified motivation (Sheldon & Elliot, 1999; Deci & Ryan, 2000). These types of motivation arise when the pursuit of a goal fulfills the basic psychological needs of autonomy, competence, and relatedness. (Deci & Ryan, 2000). Because goals generated by purpose are freely chosen, they are likely to fulfill the need for autonomy, leading to autonomous motivation and, consequently, academic self-concordance.

Consider a first-year psychology major whose purpose is “to help adolescents thrive”. She chooses the developmental psychology track, volunteers for a peer-mentoring program, and allocates extra time to statistics so she can rigorously evaluate interventions. Because each subordinate goal is explicitly linked to her superordinate purpose and therefore perceived as self-endorsed, these academic goals are experienced as self-concordant. Moreover, PIL can buffer academic stressors that undermine students’ sense of autonomy. For instance, when confronted with an upcoming exam, a student with a strong sense of purpose may reframe the learning process as a meaningful step toward their broader life goals. This perspective enables them to engage with the task out of personal choice rather than external pressures such as grade anxiety or parental expectations, thereby maintaining self-concordance even in challenging circumstances (Burrow et al., 2024). To conclude, PIL creates a hierarchical, value-consistent goal system that channels students toward autonomous academic choices.

While our research presented a link between a Sense of Purpose and ASC, the quantitative study was unable to provide information about the content of the students' specific purpose. Therefore, we were unable to understand exactly how a purpose structures self-concordant goals. Moreover, having a better understanding of the degree to which the purpose is relevant to the academic setting would inform further theorizing. It could be expected that a PIL not relevant to the academic setting may be less related to ASC. Thus, measuring only a sense of purpose in life may obscure the full strength of the association between these variables. Therefore, a qualitative study is needed in which the researcher interviews students explicitly about their life purpose and the academic goals they pursue. Furthermore, these interviews should also ask students about their own perception of how the PIL organizes their academic goals. This knowledge could inform about the degree to which PIL's self-organizing properties are based on conscious choices. After explaining the connection between students' purpose in life and academic self-concordance, the following paragraph will clarify the relationship between ASC and HP.

When students pursue self-concordant academic goals, their goal pursuit is characterized by a sense of autonomy and genuine interest (Sheldon et al., 2004), creating the conditions under which harmonious passion is likely to emerge (Vallerand et al., 2003; Shen, 2024). To clarify, a harmonious passion arises through an organismic integration process, which is defined as the basic tendency of an organism towards self-growth (Deci & Ryan, 2000; Vallerand et al., 2003). This process involves the gradual internalization of external values and regulations into one's own identity (Vallerand, 2003; Deci & Ryan, 2000). HP only arises when the activity satisfies the need for autonomy, repeatedly over time. Because Academic self-concordant goal striving is founded in one's own central values and authentic interests (Sheldon, 2004), self-concordant

study-related activities are likely to fulfill the need for autonomy and encourage students to spend significant amounts of time and effort on this activity (Sheldon & Elliot, 1999). Consequently, the student develops a sense of identification with the study-related activity, leading to a harmonious passion that arises, thereby completing the organismic integration process (Vallerand et al., 2003). A concrete illustration may clarify the mechanism. An undergraduate chooses a research project on sustainable energy because the topic aligns with her long-standing environmental values. Drafting proposals, running experiments, and analysing data all feel self-endorsed, fulfilling her need of autonomy. Over the semester, these feelings accumulate: working on the project becomes something she is rather than something she has to do. She often loses track of time in the lab, but is able to leave when she has a meeting with her friends planned. Thus, ASC may foster HP for studying by satisfying the need for autonomy, which serves as a foundational condition for the development of HP. While our study found a significant effect of ASC on HP, another factor may have suppressed the full scale of the impact.

Therefore, further research should investigate if obsessive passion (OP) moderates the relationship between ASC goal striving and HP. While harmonious passion leads to beneficial outcomes, like flow, positive affect, and academic motivation, OP may correlate with negative outcomes like burnout or anxiety (Shen, 2024; Vallerand, 2015). Harmonious passion is characterized by a free choice to engage in and be identified with the activity, and therefore being autonomously motivated. Contrastingly, Obsessive passion is characterized by external or internal pressures that lead the individual to lose control over whether they want to engage in the activity, and therefore be controlled motivated (Shen, 2024; Vallerand, 2015). For example, a student who experiences obsessive passion may study for an exam to get validation from others or believe he is a failure if he does not reach a high grade. Furthermore, research has shown that

controlled motivation may decrease the level of autonomous motivation (Deci & Ryan, 2000; Vallerand, 2015). Since Harmonious passion is linked to self-concordance through autonomous motivation, the controlled motivation a student experiences through obsessive passion may lead to motivational conflict. Thus, OP may decrease the impact that self-concordant academic goals have on the development of harmonious passion. To illustrate, a student who has the ASC-goal of studying a chapter about dialogue skills because it aligns with his value of being a good listener, might not experience harmonious passion for the material, if he is simultaneously concerned about not passing the exam. Therefore, further research should investigate obsessive passion as a moderator of the positive correlation between ASC and HP for studying.

While ASC mediates a significant amount of the effect PIL has on HP for the studies, a substantial part remains unexplained. Other mediators may clarify this relationship. Thus, further research should specifically investigate how perceived progress could serve as a mediator. According to Vazeou-Nieuwenhuis et al. (2017), PIL may emerge through locomotion, which is defined as the tendency to initiate and sustain actions towards one's own goals. Furthermore, being able to move closer towards the attainment of lower-order purpose-concordant goals would lead to a feedback loop that reinforces the strength of the purpose while increasing its effect on well-being and emotions. To illustrate, a student with a strong PIL (e.g., “I want to make a difference in people’s lives”) sets a goal (e.g., “train to become a counselor”). He begins coursework, volunteers, and reflects on their growth. If he perceives progress (e.g., “I’m learning and making an impact”), he feels positive, energized, and motivated to keep going. Moreover, harmonious passion arises when an activity is autonomously motivating (Vallerand, 2003). As perceived progress toward one’s PIL fosters positive emotions and enhances well-being, students may become more likely to re-engage in the activity out of personal volition,

thereby strengthening their autonomous motivation to continue with the activity in which they perceived progress (Deci & Ryan, 2000; Vazeou-Nieuwenhuis et al., 2017) Therefore, Harmonious passion may arise as the perceived progress towards the PIL increases the students level of autonomous motivation.

Practical Applications

The outcomes of this study may have practical applications, as their effects can be applied to real-world educational settings. Taking the results of this study into account, fostering a sense of purpose in life and academic self-concordance in students may increase their harmonious passion for their studies. Subsequently increasing students' academic motivation and psychological well-being (Sverdlik et al., 2021; Stoeber et al., 2011). These significant findings suggest the potential utility of interventions that promote a sense of purpose in life among university students. such an intervention should use a multifaceted approach, that combines teaching about purpose, practical experience, reflection exercises, group discussions with other students and guidance by peer mentors and study advisors (Pfund et al., 2020; Friedman et al., 2017; Bronk, 2014; Burrow et al., 2018; Bronk, 2012; Kashdan & McKnight, 2009; Budnick, 2011; Hayes et al., 2006; Schippers & Ziegler, 2019).

First, the intervention should begin at the start of the academic year, teaching students about what a purposeful life entails, the pathways to purpose, and the positive effects it has (Friedman et al., 2017; Pfund et al., 2020). Secondly, students should be assigned to an academic advisor who supports the students in their purpose development. Having connections to older adults outside the family has been shown to increase students' sense of purpose (Bronk, 2012). The advisor could fill out this role. To illustrate, the study advisor can aid in the development of students' purposes by helping them reflect on their own values, strengths, and talents, as well as

their possible future aims (Pfund et al., 2020). Subsequently, based on this insight, he could guide students in choosing curricular and extracurricular activities that may feel purposeful to them (Pfund et al., 2020). Research by Bronk (2014) suggests that PIL arises primarily through the experience of meaningful and self-relevant activities, which can be achieved by letting students try out a variety of different activities until they find something that seems purposeful for them (Kashdan & McKnight, 2009).

Moreover, the strength of the social network is the most important predictor for purpose (Bronk, 2014). This implies that creating classroom settings in which students can connect with one another may be beneficial. More precisely, social connection may also be achieved through a regular purpose seminar. The focus of the intervention sessions should be to give students the opportunity to discuss the curricular and extracurricular activities they have tried out in between sessions, as discussing one's own meaningful activities and purpose with others guides the development and maintenance of PIL (Budnik, 2011; Bronk, 2014). While group discussion about their own PIL and meaningful activities may be one way to achieve higher levels of purpose in students, writing reflection exercises may be another pathway to achieve this outcome (Lewis, 2020). Specifically, an exercise where students reflect on their “ideal future self” has been shown to be effective in guiding the development of PIL (Schippers & Ziegler, 2019). This exercise can be followed up by goal attainment plans, which aim to set self-concordant short- and intermediate-term goals. Lastly, the use of student mentors has been shown to increase the level of purposefulness in students (Bronk, 2014). Since a sense of PIL can develop through social learning (Pfund, 2020), peer mentors could serve as a model for the student by showing what a purposeful living could look like while presenting gateways towards the PIL. Thus, incorporating student mentors into this intervention and general university education may be a

valuable addition, especially if they match the student in terms of background and future aspirations (McCreary & Miller-Perrin, 2019; Pfund, 2020).

To conclude, an implementation of this findings, should be based on the use of student mentors in the general curriculum, session that teach about the meaning of purpose, combined with written reflections about the own purpose, supported by 1 on 1 guidance through a study advisor, the engagement in meaningful activities and group discussion about the students' individual purpose.

Limitations

The study has several limitations that should be acknowledged. First, the cross-sectional design does not allow for causal inferences to be drawn. Since PIL guides and is guided by goal pursuit, the direction of the effect with SC cannot be determined (Lewis, 2020). Thus, a longitudinal investigation is needed to determine the causal relationship of the mediation and direct pathways. Second, the data were collected through self-reports, thus open to social desirability bias. Implementing observational research may counteract this bias. However, observing PIL, SC, and HP may be difficult. Third, the sample is limited to psychology students from a single university. Therefore, the generalizability of the findings might be lacking. Therefore, future studies should include students from a diverse range of majors and universities.

Summary and Conclusion

In conclusion, this study investigated the mediation between the independent variable, purpose in life, the mediator, academic self-concordance, and the dependent variable, harmonious passion. We found a mediation effect of academic self-concordance for the positive correlation between higher levels of students' sense of purpose in life and harmonious passion for their studies. This study supports the theoretical perspective proposed by Lewis (2020),

which suggests that a sense of purpose in life structures behavior and goal-setting. Accordingly, students with a stronger sense of purpose are more likely to set and maintain self-concordant academic goals. It also aligns with the theory that self-concordant academic goals are more autonomously motivating and the idea that harmonious passion arises when autonomous motivation is present (Vallerand, 2015; Deci & Ryan, 200; Sheldon et al., 2004). Moreover, sense of purpose-inducing interventions that also address the setting of self-concordant academic goals may increase the level of students' harmonious passion for their studies. Further research is needed to investigate other potential mediators of the relationship between PIL and HP. Also, qualitative research should investigate the content of students' PIL.

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Appendix A

Figure A1

Q-Q Plot of Harmonious Passion Scale

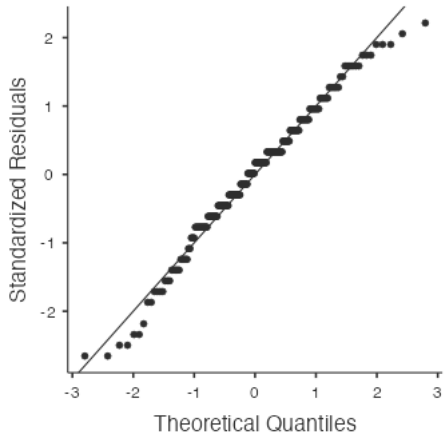


Figure A2

Q-Q Plot of the Purpose in life Scale

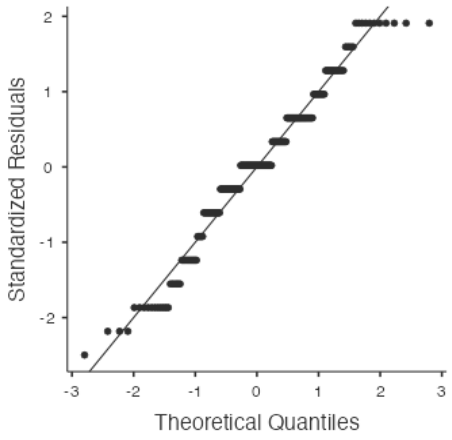


Figure A3

Q-Q Plot of the Self-Concordance Scale

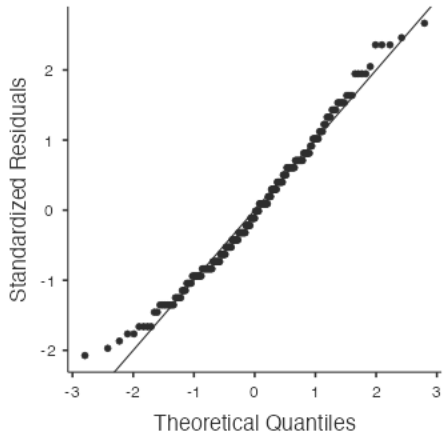
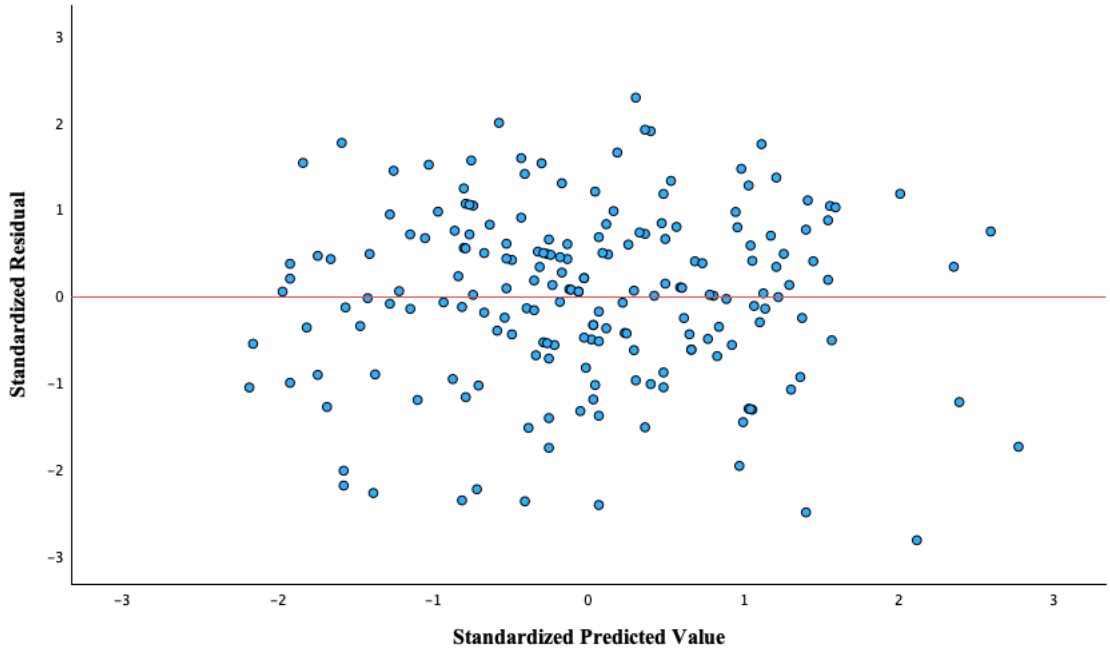


Figure B

Scatterplot of the standardized residuals and the standardized predicted values



Note. Harmonious Passion is the dependent variable, SC and PIL are the predictor

Figure B1

Residuals plot of the linear regression between PIL and SC

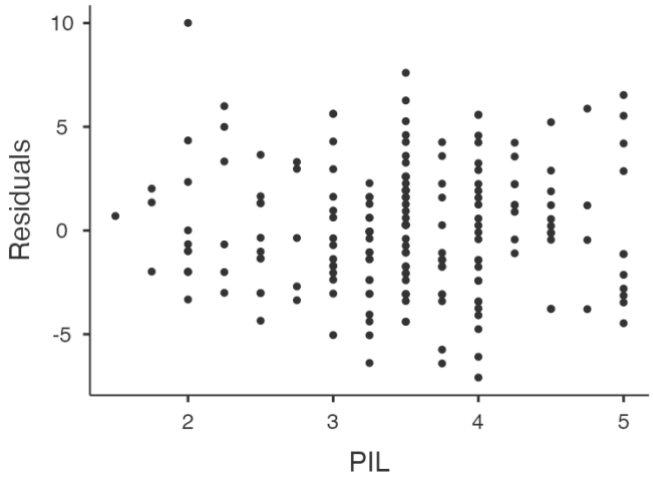


Figure B2

Residuals plot of the linear regression between PIL and HP

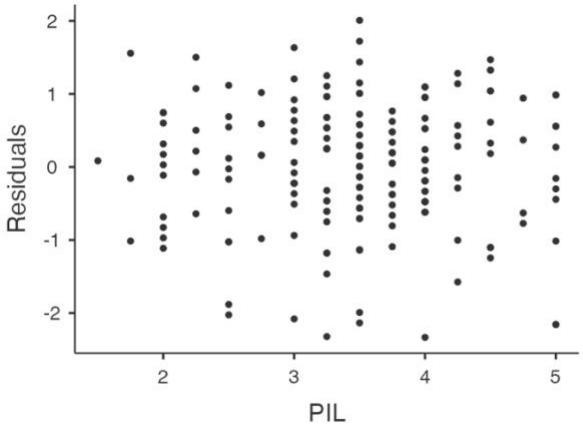


Figure B3

Residuals plot of the linear regression between SC and HP

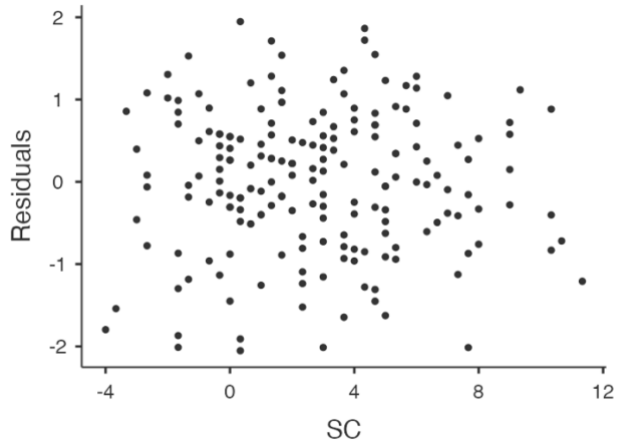
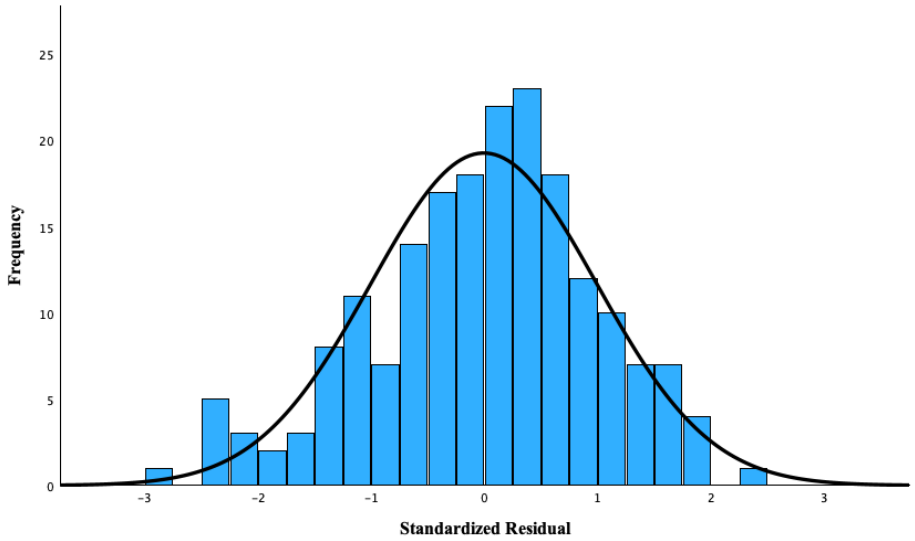


Figure C

Normality Plot of the Standardized Residuals



Note. HP is the Outcome Variable, while PIL and SC are the Independent Variables

Declaration of AI-use

Hereby I declare the use of AI, specifically ChatGPT, for the following purposes:

Literature Search

Example prompt. “Give me a list of 5 relevant scientific journal articles from the latest 2020 that discuss the concept of harmonious passion.”

To exclude hallucinations, when examining the output, I first checked if the DOI link works and if the article's heading matches the one ChatGPT provided.

Feedback on paragraphs

Example prompt. “This paragraph is part of my introduction and aims to introduce the concepts of Purpose in life and academic self-concordance, while linking these concepts. However, the different sentences seem disjointed, leading to a bad reading flow and obscuring the link between the two variables. What could I do to improve the flow of the paragraph, in terms of structure, lengths of senteces and tone. Please only provide general guidelines for academic writing and structurin, because I have to write each paragraph by myself.”

Word use

Example prompt. “I realized that I often use the same words over and over again, could you give me a list of synomyms for the following words: “However”; “Thus”; “describe”; “investigate”.

While I used AI for the purposes mentioned above, all reasoning, argumentation, and writing are done by me.

Proof reading

Example prompt. “I want to make sure that my sentences are grammatically correct and no spelling mistakes are present, or words with wrong or arbitrary meaning are used. Please review the following sentences and identify any potential errors and ambiguities. However, do not provide an improved version, but instead just give a list with possible improvements, so that I can decide myself if I want to implement the change or not.

Here are the sentences:

35.9% of university students in the netherlands report moderate to severe depressive symptoms and 21.8% moderate to severe anxiety complaints (Caring Universities, 2023). Also a significant number of students struggles with a variety of other well-being complaints (Douwes et al., 2023). Going to university, demands a variety of adapations from the students, while facing finacial, social and organisational challenges (Duffy et al., 2020).”

Generally, I made sure to only use prompts that allow me to double check it and decide myself, if I want to include it in my writing or not.