

Different Major, Different Goals:
University Students Studying Economics Differ in Life Aspirations
and Achievement Goal Orientations From Social Science Students

Stefan Janke^a & Oliver Dickhäuser^a

^aDepartment of Psychology, University of Mannheim, D-68131 Mannheim, Germany

Correspondence concerning this article should be addressed to Stefan Janke (Phone: +49 (0)621 181 1936; Fax: +49 (0)621 181 2206; e-mail: stefan.janke@uni-mannheim.de).

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Abstract

In the presented study, we investigated whether university students enrolled in economic sciences report stronger extrinsic life aspirations (striving for wealth) than social science students and whether such group differences align with group differences in achievement motivation. We questioned 327 German university students in economic science ($n = 142$) and social science programs ($n = 185$). Students enrolled in economic sciences reported stronger extrinsic and weaker intrinsic life aspirations (striving for personal growth) than students enrolled in social sciences. Extrinsic life aspirations were negatively predictive for students' performance approach goal orientation and intrinsic life aspirations were positively predictive for students' learning goal orientation leading to group differences in achievement goal orientations. Further analyses showed that extrinsic life aspirations also negatively predicted students' learning goal orientations when intrinsic life aspirations were low. The results highlight the importance of life aspirations as a potential foundation of achievement goal striving at university.

Keywords: Achievement goals; Life Aspirations; Goal Orientations; Self-Determination Theory

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1 Introduction

Different study programs provide different prospects for university students. While a major in economic sciences (e.g., business administration or economics) may provide students with a deep understanding of economic principles, it also offers high personal value for acquiring jobs in free enterprises (e.g. for the German job market see Staufenbiel Institut, 2016). A major in social sciences (e.g., sociology, political science), however, has supposedly less personal value for attaining a well-paid job (Vansteenkiste, Duriez, Simons, & Soenens, 2006; Yu & Levesque-Bristol, 2018). Thus, it is likely that students enrolled in economic sciences consider financial gains to a stronger degree when choosing their major than students enrolled in social sciences. Past research suggests that basing life-shaping decisions (like the choice of university majors) on such *extrinsic life aspirations* (i.e., the striving for wealth and fame) can diminish personal well-being (Dittmar, Bond, Hurst, & Kasser, 2014; Kasser & Ryan, 1993, 1996). In contrast, a personal focus on *intrinsic life aspirations* (e.g., personal growth, contributing to one's community) elevates personal well-being over time (Lekes, Gingras, Philippe, Koestner, & Fang, 2010). Here, we suspect that life aspirations also influence goal-setting processes in university students: We assume that extrinsic life aspirations are associated with a performance goal orientation (i.e. striving for competence demonstration) because the display of competence through good grades increases students' ability to compete on the job market. In contrast, we assume that intrinsic life aspirations are associated with a learning goal orientation (i.e., striving to enhance one's competencies) because this goal orientation is supposedly instrumental for deep-learning and growth. Taken together, students enrolled in economic sciences should report a stronger performance (approach and avoidance) goal orientation but should not differ in their learning goal

orientation when compared to students enrolled in social science programs as a direct function of group differences in extrinsic life aspirations.

2 On the Importance of Life Aspirations at University

Humans can come to very different conclusions when they think about their ultimate aims in life. While this may seem arbitrary at first, it becomes very important when we consider that life aspirations are not created equal regarding their ties to fundamental aspects of the self. Some people may find inherent merit in the striving for self-actualization, interpersonal relationships and community. Such life aspirations can be classified as intrinsic life aspirations in the terminology of *Self-Determination Theory*, which means that they are directly tied to personal growth in humans' basic psychological needs for *autonomy*, *competence* and *relatedness* (Deci & Ryan, 2000; Kasser & Ryan, 1993, 1996). However, it is also possible that individuals assign strong merit to rewards like fame or wealth which are unrelated to the self and thus often labeled as extrinsic life aspirations (Kasser & Ryan, 1993, 1996). Individual differences in life aspirations have a critical impact on self-appraisals, psychological disorders and life satisfaction in general with an overarching negative effect of extrinsic life aspirations on these variables (for recent reviews and meta-analyses see Dittmar et al., 2014; Kasser, 2016). These findings can be interpreted as evidence for the assumption that extrinsic life aspirations obstruct individuals from seeing the importance of attaining true autonomy, competence and relatedness, which are supposedly essential for human well-being.

Nevertheless, individuals act upon extrinsic life aspirations (Niemi, Ryan, & Deci, 2009) and likely rely on them when making important life decisions such as the choice of university majors. This is very much in line with Person-Environment Fit Theory, which suggests that university applicants search for the best fit between their personal characteristics and their (educational) environment (Pawlowska, Westerman, Bergman, & Huelsman, 2014). In other words, students with strong extrinsic life aspirations should be more likely to choose majors that have high utility value for the attainment of these extrinsic aspirations such as the

acquisition of money through high salaries. Economic sciences are often perceived to align well with such a focus on the attainment of wealth (Ramm, Multrus, Bargel, & Schmidt, 2014), which in turn might be a reason for the elevated level of extrinsic life aspirations among business students (Vansteenkiste et al., 2006). However, the supposed heightened level of extrinsic life aspirations does not neglect the notion that students can choose economic majors based on their intrinsic life aspirations such as the striving for a deeper understanding of economic principles or the wish to contribute to one's community through the acquisition of such knowledge. Here, we merely assume that students within economic majors assign higher merit to extrinsic life aspirations than students enrolled in study programs that have a lower utility value for the attainment of such aspirations, which can have severe consequences for their well-being and motivation.

2.1 Life Aspirations, Students' Well-Being and Engagement in Learning

Past research has already delivered evidence for the fact that valuing extrinsic life aspirations over intrinsic life aspirations has severe consequences for university students' well-being. Sheldon and Krieger (2004) found that deteriorations in the well-being of law students covaried with changes in life aspirations over time. Additional studies showed similar effects for business students, who reported lower well-being and more substance abuse, compared to students of study programs with lower utility value for the attainment of extrinsic rewards (Kasser & Ahuvia, 2002; Vansteenkiste et al., 2006). These group differences in well-being were directly tied to group differences in life aspirations. As a result, researchers have claimed that extrinsic life aspirations (also often labeled as materialism) can reduce well-being even when the learning environment corresponds to the personal values of students as it is the case for law and business students (Vansteenkiste et al., 2006).

However, it should be noted that a substantial amount of the associations between life aspirations and well-being that are reported in the literature cannot be clearly tied to extrinsic life aspirations but could also be a result of weakly developed intrinsic life aspirations in the

respective class of students. This cannot be ruled out because the authors of most studies used a composite index that reflected the relative dominance of extrinsic life aspirations over intrinsic life aspiration to investigate the impact of life aspirations on students' well-being (see Dittmar et al., 2014 for an overview on different ways to assess 'materialism'). While early reports on the associations between intrinsic and extrinsic life aspirations vary between low (Kasser & Ryan, 1993) to high correlation coefficients (Vansteenkiste et al., 2006), more recent research has shown that these associations are minimal to non-existent in such diverse samples as university students, teachers, athletes and scientists (Janke & Dickhäuser, 2018, 2019). This suggests that an integration into one index could hinder true understanding of effects of intrinsic and extrinsic life aspirations as well as of their interactions.

It is noteworthy, though, that some contemporary studies have focused on the absolute level of extrinsic aspirations (rather than on its' relative strength). The authors of these research works have shown that extrinsic life aspirations are associated with reduced engagement in learning (King, 2018; King & Datu, 2017) and the personal standpoint that education is a source of distress (Henderson-King & Mitchell, 2011). We think that these interesting relationships between extrinsic life aspirations and engagement in learning could reflect general influences of life aspirations on the goals that (university) students set themselves when engaging with their learning material.

2.2 Life Aspirations and Goal Setting Processes

While an individual can actively endorse a certain life aspiration, it is often difficult to find the optimal pathways that lead to the eventual fulfillment of these goals. This makes it necessary to set oneself more intermediate and concrete goals that are instrumental for the long-term goal attainment (Janke & Dickhäuser, 2018, 2019). Such intermediate goals can manifest themselves as *achievement goal orientations* in educational contexts. While life aspirations may influence which achievement-related context individuals choose (i.e., university major), achievement goal orientations supposedly influence how individuals try to

attain a feeling of competence in this context (Murayama, Elliot, & Friedman, 2012; Payne, Youngcourt, & Beaubien, 2007).

Achievement goal researchers mostly agree that we can distinguish at least two achievement goal orientations, which are a mastery or *learning goal orientation* (i.e., striving to develop one's competencies) and a *performance goal orientation* (i.e., striving to demonstrate competence by outperforming others; Dweck, 1986; Elliott & Dweck, 1988; Pintrich, 2000). Furthermore, performance goal orientations are very often further distinguished alongside their respective regulatory focus into approach (focus on acquiring a positive outcome) or avoidance goal orientations (focus on preventing a negative outcome; Elliot & Covington, 2001). While this trichotomous model of achievement goal striving consisting of learning, performance approach and performance avoidance goal orientations serves as common core of achievement goal research, theorists have argued for supplementing it with additional goal classes such as learning avoidance goal orientation (Elliot & McGregor, 2001) and task (approach and avoidance) goal orientation (striving to master the task at hand; Elliot, Murayama, & Pekrun, 2011). However, especially the relevance of a learning avoidance goal orientation for psychological functioning remains a strongly debated topic in motivational research (Hulleman, Schragar, Bodmann, & Harackiewicz, 2010; Lee & Bong, 2016; Lüftenegger, Tran, Bardach, Schober, & Spiel, 2017). While this goal orientation might be relevant for older people who strive to hinder the decline of cognitive functions (Senko & Freund, 2015), they seem to be less salient and important for young students (Lee & Bong, 2016) and we do not think that they align strongly with the life aspirations of university students. Which is why we did not include learning avoidance goals in our analysis. We also did not include task goal orientations in our further reflections because it is unclear to us (and likely highly situational) whether these goals align with intrinsic or extrinsic life aspirations.

We assume that life aspirations affect university students' learning as well as their performance avoidance and approach goal orientations very directly. More specifically and in

line with Elliot et al. (2011), we assume that a learning (approach) goal orientation is bound to the development of the self, whereas performance avoidance and approach goal orientations are bound to external rewards such as praise by others. This should make both classes of goal orientations highly instrumental for overarching life aspirations. For example, if individuals want to have a good chance in a highly competitive race for jobs with high salary, they may feel the need to outperform other students at university to get better grades than their competitors. In contrast, individuals who strive for personal growth may feel the need to engage in deep reflections of the subject matter during their time at university in order to make progress in their striving for self-actualization. In sum, we postulate that university students' achievement goal orientations partly reflect their overarching life aspirations. More specifically, intrinsic life aspirations should be associated with a learning goal orientation at university, whereas extrinsic life aspirations should be associated with a performance goal orientation.

Furthermore, we assume that extrinsic life aspirations should facilitate both performance approach as well as performance avoidance goal orientations. While intrinsic as well as extrinsic life aspirations are commonly conceptualized as approach rather than avoidance goals (Dittmar et al., 2014; Kasser & Ryan, 1996), the possibility of failure is likely more accessible for extrinsic life aspirations because they are clearer in their definition of goal attainment (e.g., acquisition of money or fame). Consequently, extrinsic life aspirations may strengthen a performance avoidance goal orientation as individuals become more interested in avoiding critical failures in achievement contexts (e.g., getting a bad grade in an important test) that could hinder them in acquiring the aspired ultimate external rewards. Nevertheless, we still assume that life aspirations characterized by an approach valence are more likely to induce achievement goal orientations that are characterized by an approach valence than achievement goal orientations characterized by an avoidance valence.

Some empirical studies have already investigated associations of extrinsic life aspirations with achievement goal orientation within school children and adolescents (Ku, Dittmar, & Banerjee, 2012, 2014). These studies have obtained evidence that extrinsic life aspirations are positively linked to both performance goal orientations (in line with our assumption) but also negatively with a learning goal orientation. However, these pioneer works are strongly limited to the materialism component of extrinsic life aspirations (i.e. striving for wealth) albeit the striving for fame and praise for one's beauty are also often discussed as important negative aspects of extrinsic life aspirations (Gountas, Gountas, Reeves, & Moran, 2012; Klusmann, Trautwein, & Lüdtke, 2005; Unanue, Vignoles, Dittmar, & Vansteenkiste, 2016). Moreover, research that includes the associations of intrinsic life aspirations with achievement goal orientations is only just emerging. The few research works that focused on both life aspirations and omitted the use of integrative indices supported the assumption that extrinsic life aspirations are linked to performance approach and avoidance goal orientations and that intrinsic life aspirations are associated with a learning goal orientation (Janke & Dickhäuser, 2018, 2019).

The proposed mechanisms that link life aspirations to achievement goal orientations should be valid for students regardless of the study program. However, we assume that this mechanism could also lead to group differences in achievement motivation between different study programs. If students choose their major at least partly due to their life aspirations, it should be possible to observe group differences in these life aspirations that reflect this choice. More concretely, students enrolled in economic sciences should report a higher magnitude of extrinsic life aspirations than students enrolled in social sciences, which could directly translate to group differences in performance approach and avoidance goal orientations. The observation of such group differences could help us to get a better understanding of the importance of life aspirations for goal setting processes at university and

an investigation into this matter could also provide critical empirical evidence for additional open research questions.

3 Open Research Questions

While we have presented a clear reasoning for the assumed associations between life aspirations and achievement goal orientations, there is currently a critical discourse on this issue within the scientific community. Contrary to our assumption that achievement goal orientations directly align to overarching intrinsic or extrinsic goals, other researchers have postulated that both learning as well as performance goals can be adopted due to intrinsic or extrinsic reasons (Vansteenkiste, Lens, Elliot, Soenens, & Mouratidis, 2014). While there may be some ambiguity regarding the alignment of goal content and reasons/overarching goal structures, empirical evidence also suggests that learning goals are more likely to be adopted due to intrinsic reasons (Gaudreau, 2012) and performance goals align closer to extrinsic reasons (Michou, Vansteenkiste, Mouratidis, & Lens, 2014). These associations seem to be even closer when focusing on stable preferences (achievement goal orientations) rather than on situated achievement goals (Janke & Dickhäuser, 2019), with the latter being more ambiguous in their alignment to different reasons (Vansteenkiste, Mouratidis, Van Riet, & Lens, 2014). Further evidence that supports the hypotheses that intrinsic or extrinsic life aspirations show clear and distinct links to either performance goal orientations or a learning goal orientation would be a critical puzzle piece for the ongoing debate on the alignment of achievement goal orientations with the self.

Another yet unresolved research question addresses the interplay of intrinsic and extrinsic life aspirations. As we have discussed before, researchers have either integrated both life aspirations into one composite score or focused on their main effects when investigating the impact of life aspirations in general. While the latter method neglects interactions between the two life aspirations altogether, we do not think that the former method (aggregation in composite scores) is an ideal way to investigate true interactions either as it ultimately

confounds main with interaction effects. This makes it difficult to investigate the assumption that the interplay of different life aspirations is of higher interest for the understanding of psychological functioning than the actual strength of the singular aspiration as some researchers suggested (Dittmar et al., 2014; Schmuck, Kasser, & Ryan, 2000). We think that it would be most appropriate to test this assumption by computing a score that reflects the interaction (centered product of intrinsic and extrinsic life aspiration; Hayes, 2013) in the respective analyses, which could then be entered in the equation alongside scores that reflect the unique influence of either intrinsic and extrinsic life aspirations.

In sum, we aim for addressing three research questions: First, we want to show that life aspirations are related to personal choices of major. If this was the case, we should find group differences in life aspirations that reflect the (presumed) value of a major for certain life aspirations. More specifically, university students enrolled in economic sciences should be more likely to report extrinsic aspirations than students enrolled in social sciences. Second, we want to show that life aspirations are meaningfully associated with achievement goal orientations of university students. Thereby, we adopt the standpoint that extrinsic life aspirations should be positively associated with performance approach and performance avoidance goal orientations. This association should account for group differences in performance goal orientations between study programs that have relatively high or relatively low utility value for extrinsic life aspirations. Thus, we expect that university students enrolled in economic sciences report higher degrees of performance goal orientations compared to students enrolled in social sciences. These group differences are expected to have their origin in group differences in life aspirations, which means that group membership should indirectly determine performance goal orientations via extrinsic life aspirations. Although we do not expect group differences in learning goal orientations, we still expect that the positive relationship between intrinsic life aspirations and a learning goal orientation is universal to different study programs. The same should be true for the relationship between

extrinsic life aspirations and performance goal orientations. Meaning that even though students enrolled in the social sciences may report lower magnitudes of extrinsic life aspirations and performance goal orientations, we still expect that both variables are positively associated with each other. As a third (and rather exploratory) research question, we were interested whether any interplay between intrinsic and extrinsic life aspirations had an effect on the relationship between life aspirations and the achievement goal orientation of university students.

4 Method

4.1 Participants and Procedure

We questioned 327 German students (70.6% female, mean age of 23.3 years; $SD = 3.75$ years) enrolled in $k = 47$ German universities using an online survey that was distributed via student newsgroups and mailing lists. The participants had studied for 4 to 5 semesters on average ($M = 4.7$ semesters; $SD = 2.66$ semesters) and were either aspiring a bachelor's (47.1%) or a master's degree (11.6%; 41.3% did not indicate the respective aspired degree). They were enrolled in economic science programs (i.e., business administration or economics; $n = 142$; 43.4 percent of the sample) or social science programs (i.e., psychology, sociology or political science ($n = 185$; 56.6 percent of the sample)). Participants were assured that their responses would remain confidential and would be used for scientific purposes only. The study was conducted in full accordance with the Ethical Guidelines of the German Association of Psychologists (DGPs) and the American Psychological Association (APA). By the time the data was acquired, it was neither customary at the respective university, nor at most other German universities, to seek ethics approval for survey studies on personal motivation. The study exclusively makes use of anonymous questionnaires. We had no reasons to assume that our survey would induce any negative states in the participants.

4.2 Measures

Life Aspirations were assessed with the German version of the Aspiration Index (Klusmann et al., 2005). This instrument originally consists of seven subscales that reflect either intrinsic or extrinsic life aspirations. The subscales that indicate extrinsic life aspirations are fame, wealth and image. In contrast, the subscales personal growth, relationships, community, as well as health represent intrinsic life aspirations. However, principal component analyses conducted by Klusmann et al. (2005) showed that the subscale measuring personal striving for health could be characterized as an intrinsic as well as an extrinsic life aspiration. We also decided to exclude the subscale for “health goals” from our analyses due to its high ambiguity. Thus, intrinsic life aspirations as well as extrinsic life aspirations were both indicated by three subscales each consisting of five items in our analyses. A sample item for intrinsic life aspirations is “It is an important life goal for me to decide what to do for myself rather than subject myself to the constraints of life”, while “It is an important life goal for me to be rich” is an example for extrinsic life aspirations. The items of the Aspiration Index were measured with a Likert-type scale ranging from 1 (total disagreement) to 7 (total agreement). We were specifically interested in the general factors (intrinsic versus extrinsic life aspirations) rather than in the subscales of the instrument as we had no hypotheses for specific facets of intrinsic or extrinsic life aspirations. This is why we

aggregated the subscales to general scores indicating the general strength of intrinsic life aspirations ($\alpha = .86$) as well as extrinsic life aspirations ($\alpha = .89$)¹.

Achievement goal orientations were measured with an often used and well validated German self-report questionnaire (“Skalen zur Erfassung der Lern- und Leistungsmotivation”; SELLMO; Spinath, Stiensmeier-Pelster, Schöne, & Dickhäuser, 2002), which is commonly used in studies in German populations (e.g., Dinger, Dickhäuser, Spinath, & Steinmayr, 2013; Schwinger & Stiensmeier - Pelster, 2011; Spinath & Steinmayr, 2012). A sample item for a learning goal orientation (assessed with eight items; $\alpha = .82$) is “At university, it is my goal to learn as much as possible”. “At university, it is my goal to show that I am good at something” is a sample item for a performance approach goal orientation (indicated by seven items; $\alpha = .82$) and a sample item for a performance avoidance goal orientation (assessed with eight items; $\alpha = .93$) is “At university, it is my goal to conceal if I know less than others”. The items were measured with the same Likert-type scale that was applied for measuring life aspirations.

4.3 Analytic Strategy

In a first step, we investigated whether the students enrolled in social versus economic sciences differed regarding life aspirations and achievement goal orientations. Before doing so, we tested whether any group differences occurred in age with a t-test and we conducted a

¹ Janke and Dickhäuser (2019) provided empirical evidence that further justifies aggregating the subscales of the Aspiration Index into general scores. More specifically, they found that a bi-factor model fitted the data well. Within this model, each item indicated an overarching (intrinsic versus extrinsic) life aspiration, while simultaneously indicating a facet of that aspiration. The majority of the items had higher loadings on the overarching life aspirations than on the respective facets, which supports the notion that the questionnaire is suitable to assess the general strength of intrinsic and extrinsic life aspirations.

Chi-Square test for distribution equality for group differences in gender. We did so because prior research has shown that women in general report stronger intrinsic life aspirations than men and that age is negatively associated with valuing extrinsic life aspirations (Janke & Dickhäuser, 2019). This means that if the investigated study programs differed regarding these variables, we would have to account for them to avoid interpreting gender or age effects as differences between majors. We also tested for group differences in high-school GPA with an additional t-test because it often serves as a selection criterion that potentially limits personal freedom to choose majors based on personal interests (i.e. intrinsic aspirations). We used those variables that proved to differ between study programs as control variables in the subsequent analyses. Then we tested for group differences between students enrolled in social versus economic study programs in life aspirations or achievement goal orientations by applying multivariate analyses of variance (MANOVA). Afterwards, we investigated whether the obtained group differences were stable when considering control variables with a multivariate analysis of variance with covariates (MANCOVA).

In a second step, we investigated whether group differences in life aspirations would explain obtained group differences in achievement goal orientations between the study programs. To test this potential mediation, we conducted structural equation models using Mplus Version 7.2 (Muthén & Muthén, 1998-2012). We used the robust maximum likelihood estimator (MLR) for our analyses and corrected the standard errors with the `type = complex` command to account for the fact that the university students were clustered in $k = 47$ universities. In the path model, we freed a) all possible direct paths from a group dummy variable (social vs. economic sciences) on life aspirations and achievement goal orientations, b) all possible direct paths from life aspirations on achievement goal orientations and c) undirected correlations between achievement goal orientations. We only included variables into this final model, for which we were able to obtain stable group differences in the first step. We investigated the indirect effect of the group dummy variable via life aspirations on

all included achievement goal orientations. After conducting the first structural equation model, we introduced relevant control variables to investigate whether the found direct and indirect effects were robust. We report a combination of fit indices for the path model in line with the recommendations by Hu and Bentler (1999). Hence, we used the χ^2 -test for model fit in combination with misfit (SRMR, RMSEA) and fit indices (CFI). Our interpretation of these indices relied on the rules of thumb for cut-off values by Schermelleh-Engel, Moosbrugger, and Müller (2003). We distinguished between an acceptable model fit (SRMR \leq .10, RMSEA \leq .08, CFI \geq .95) and a good model fit (SRMR \leq .05, RMSEA \leq .05, CFI \geq .97).

In a third step, we investigated the nature of the obtained direct paths of life aspirations on achievement goal orientations on a deeper level. We were interested in the questions a) whether the balance of intrinsic and extrinsic life aspirations mattered for their effect (moderation analyses), b) whether the postulated relationships between life aspirations and achievement goal orientations were generalizable between study programs and c) whether any time (i.e., semester) effects on life aspirations or achievement goal orientations could be found indicating that the learning content mattered after all. We conducted a new set of structural equation models without the dummy variable but including an interaction term reflecting the interplay of intrinsic and extrinsic life aspirations. Within these models, we regressed all achievement goal orientations (including those for which we had not found stable group differences) on both life aspirations and the interaction term. We then investigated whether the found result pattern could be generalized to both student populations by conducting multi-group analyses. In these analyses, we tested whether the path coefficients between both groups differed significantly by applying a statistical test for the equality of regression coefficients (Paternoster, Brame, Mazerolle, & Piquero, 1998). Finding group differences in the strength of associations between life aspirations and achievement goal orientations would strengthen the argument that personal factors (life aspirations) interact with the study program with regard to their influence on achievement motivation. In these

final analyses, we also included the semester count as a potentially influencing factor for life aspirations and achievement goal orientations to further investigate whether the obtained group differences originated in self-selection (no semester effect) or the interaction with the study content (semester effect).

5 Results

--- Insert Table 1 about here ---

Descriptives and the initial zero-order correlations of life aspirations and achievement goal orientations are depicted in *table 1*. Our initial analyses showed group differences in age (students enrolled in social sciences were slightly older); $t(323.40) = 4.42, p < .001, d = 0.49$, but not in high-school GPA; $t(280.39) = 1.05, p = .297$. Furthermore, a Chi-Square test for equal distribution showed that the study programs differed in the distribution of gender with women being stronger represented in the group of social science students (79 %) compared to students enrolled in economic sciences (59.9 %); $\chi^2(1) = 14.05; p < .001$. As a result, we treated age and gender as control variables in the following analyses.

In the conducted MANOVA we found that the student groups (social versus economic) indeed differed in their motivational profile regarding life aspirations as well as achievement goal orientations; *Hotelling's T* = 0.12, $F(5, 321) = 7.58, p < .001, \eta^2 = .11$. Students enrolled in economic sciences reported stronger extrinsic life aspirations as well as a stronger performance approach goal orientation when compared to students enrolled in the social sciences. While this had been expected, we also found that students enrolled in economic sciences reported weaker intrinsic life aspirations as well as a weaker learning goal orientation than those students enrolled in social sciences. Furthermore, we found no differences in the strength of the performance avoidance goal orientation. This result pattern was robust to the introduction of gender and age as control variables into a MANCOVA; *Hotelling's T* = 0.76, F

(5, 315) = 4.76, $p < .001$, $\eta^2 = .07$. The composition of the effect of group membership on aspirations and goal orientations in this MANCOVA is depicted in *table 2*.

--- Insert Table 2 about here ---

We analyzed whether the initially obtained group effects regarding learning goal orientation as well as performance approach goal orientation were indirect effects resulting from group differences in life aspirations. The respective path model with corrected standard errors (for the nested data structure) fitted the data well; $\chi^2(1) = 0.26$, $p = .613$, $SRMR = .01$, $RMSEA = .00$, $CFI = 1.00$. The model is depicted in *figure 1*. In the resulting model, we only obtained statistically significant direct effects of the study program on life aspirations, but not on achievement goal orientations. However, we indeed found indirect effects of the study program on the strength of the performance goal orientation mediated by extrinsic life aspirations ($\beta_{\text{indirect}} = .12$; $p < .001$). Furthermore, we found indirect effects of the study program on the strength of the learning goal orientation mediated by intrinsic life aspirations ($\beta_{\text{indirect}} = -.08$; $p = .012$) as well as by extrinsic life aspirations ($\beta_{\text{indirect}} = -.05$; $p = .012$). These

indirect effects are based on a positive direct effect of intrinsic life aspirations and a negative direct effect of extrinsic life aspirations on the learning goal orientation².

The structure of the path model stayed robust after controlling for gender and age of the participants (see also *figure 1* for details). In this second path model; $\chi^2(1) = 0.26, p = .613, SRMR = .01, RMSEA = .00, CFI = 1.00$, we again obtained an indirect effect of the study program on performance approach goal orientation ($\beta_{\text{indirect}} = .09; p = .003$). The indirect effect of study program on learning goal orientation via intrinsic life aspirations was only marginally significant after controlling for age and gender ($\beta_{\text{indirect}} = -.06; p = .051$)³, while the

² It is not possible to account for nested data with `type = complex`, while also using bootstrapping to estimate confidence intervals for indirect effects. Thus, we conducted additional path models with the maximum likelihood estimator and 5000 bootstrap samples but without the `type = complex` command to investigate the robustness of our results. These analyses showed that the reported result pattern is robust and that all effects that reached statistical significance in the `type = complex` model were also characterized by confidence intervals that did not include zero when using bootstrapping. The same was true for the indirect effects under consideration of gender and age if not reported otherwise.

³ It has to be noted that this indirect effect reaches statistical significance when using bootstrapping (see footnote 2) with $\beta_{\text{indirect}} = -.06, p = .03, 95\%CI [-.14;-.02]$.

indirect effect of extrinsic life aspirations on the learning goal orientations was still statistically significant ($\beta_{\text{indirect}} = -.04; p = .026$)⁴.

--- Insert Figure 1 about here ---

After investigating the indirect effect of study programs on achievement goal orientations, we took a closer look at the nature of the relationship between life aspirations and achievement goal orientations by conducting an additional path model including an interaction term reflecting the potential interplay of intrinsic and extrinsic life aspirations. The resulting saturated path model is depicted in *figure 2*. Two aspects of the result pattern are remarkable: First, we found a direct effect of extrinsic life aspirations on performance avoidance goal orientations, which did not manifest in group differences between students enrolled in social and economic sciences beforehand. Second, we found that the negative association between extrinsic life aspirations and the learning goal orientation was moderated by the strength intrinsic life aspirations. Further simple slope analyses show that the significant moderation effect reflects that extrinsic life aspirations lower learning goal orientations merely when intrinsic life aspirations are also low. However, extrinsic life aspirations do not seem to affect the strength of a learning goal orientation when intrinsic life

⁴ Regarding the control variables, we found direct effects of gender on intrinsic life aspirations ($\beta = .22; p = .001$) and extrinsic life aspirations ($\beta = -.11; p = .021$). More into detail, women indicated higher intrinsic and lower extrinsic life aspirations than men. We also found a direct negative effect of age on the strength of extrinsic life aspirations ($\beta = -.16; p = .001$). Neither age nor gender had any effects on the strength of achievement goal orientations.

aspiration are high ($\beta_{SD-1} = -.20$; $p < .001$; $\beta_{SD+1} = -.02$; $p = .700$; see *Figure 3* for a graphical depiction).

--- Insert Figure 2 & Figure 3 about here ---

Finally, we conducted a saturated multi-group model to investigate whether the obtained associations as well as the moderation effect were generalizable to both investigated study programs. In the model, we also assessed possible time effects by introducing the semester count as a predictor for life aspirations and achievement goal orientations. We found that the direct effect of extrinsic life aspirations on the strength of both performance goal orientations as well as the direct effect of intrinsic aspirations on the strength of the learning goal orientation did not significantly differ in magnitude between the compared groups (all $p > .169$). The same was true for the interaction effect ($z = -0.31$, $p = .754$). However, we found that the unexpected negative main effect of extrinsic life aspirations on the learning goal orientation was only present in students enrolled in social sciences ($\beta = -.26$, $p = .002$) and not in those enrolled in economic sciences ($\beta = -.01$, $p = .865$; $z = -2.01$, $p = .045$). In this subgroup, the effect was fully moderated. Finally, we found no direct effects of semester count on either life aspirations or achievement goal orientations (all $p > .290$).

6 Discussion

We aimed to answer three important research questions with our data: First, we wanted to investigate group differences in life aspirations that hint on the possibility that the choice of major is impacted by life aspirations. Second, we aimed on delivering further evidence on the nature of the association between life aspirations and achievement goal orientations. In line with contemporary assumptions regarding goal hierarchies (Janke & Dickhäuser, 2019), we assumed that achievement goal orientations were clearly linked to life aspirations, which led

us to the conclusion that differences between study programs in life aspirations of the enrolled students should also lead to group differences in achievement goal orientations. Third, we investigated whether meaningful interactions emerged when investigating the relationships between life aspirations and achievement goal orientations.

In a nutshell, we found that students who are enrolled in economic science programs are characterized by higher extrinsic life aspirations and a stronger performance approach goal orientation than students enrolled in study programs that are less instrumental for the acquisition of personal wealth (i.e. social sciences). The group difference in the performance approach goal orientation was a direct function of group differences in life aspirations. Positive associations between extrinsic life aspirations and performance (approach and avoidance) goal orientations were generalizable between both study programs. This was also true for the positive association between intrinsic life aspirations and the learning goal orientation. We also obtained group differences in intrinsic life aspirations that corresponded with a higher learning goal orientation in social science students compared to students enrolled in economic sciences. Unexpectedly, we also found that extrinsic life aspirations were negatively associated with students' learning goal orientation. However, this association only emerged when intrinsic life aspirations were low but not when individuals have high intrinsic and high extrinsic life aspirations. The duration of one's time at university did not affect life aspirations in either study program, meaning that the obtained group differences were more likely the result of self-selection than effects of the continuing exposure to materialistic study topics. Taken together, our results deliver a first glance on the relevance of life aspirations for personal choice of academic paths and potential consequences for achievement motivation.

6.1 Theoretical Implications of the Study

Even though our data is correlational, the obtained result pattern once again shows an alignment between the supposed value of a study program and students' life aspirations. These

results align well with prior research that has shown group differences in life aspirations between students of study programs with lower utility value for the attainment of extrinsic rewards (Kasser & Ahuvia, 2002; Vansteenkiste et al., 2006). However, the absence of semester effects also highlights that it would be too easy to attribute these group differences to the learning context itself. More specifically, it seems more likely to us that life aspirations are influential personal characteristics that can influence which major university applicants choose. This means that we would not conclude that the instructors in economic sciences are to blame for encouraging their students' pursuit of extrinsic life aspirations but rather that those study programs likely attract students with strong extrinsic life aspirations in the first place.

Furthermore, we showed extrinsic life aspirations are closely tied to performance (approach and avoidance) goal orientations. This could mean that life aspirations act as filters that drive attention towards interesting outcomes with potential importance for personal progress in the overarching aspiration. For extrinsic life aspirations, this means that personal accomplishment and performance becomes crucial in achievement situations given the high importance of performance for achieving the ultimate goal of personal wealth and success in competitive societies. Research that does not consider this potential mechanism could easily conclude that economic sciences foster competitiveness or that social sciences make students more sociable even if the obtained group differences in achievement goal orientations are a function of individual differences in personal life aspirations. These findings also provide further evidence on the notion that achievement goal orientations can be defined as goal types that align with underlying intrinsic or extrinsic aspirations, which is an important contribution to the contemporary debate on whether achievement goals can be adopted for intrinsic or extrinsic reasons regardless of their goal content (Vansteenkiste, Lens, et al., 2014).

The potential impact of extrinsic life aspirations on achievement goal orientations is somewhat troublesome when considering that performance goal orientations promote

outcome-centered surface learning strategies (Elliot, McGregor, & Gable, 1999) and can evoke test anxiety (Huang, 2011; Janke et al., 2016). Thus, our results contribute to the rich tapestry of troubling effects of extrinsic aspirations (Dittmar et al., 2014; Kasser, 2016). However, it is also important to note that students enrolled in economic sciences only reported an enhanced performance approach goal orientation, which could mean that they are not stronger affected by the negative effects of a performance avoidance goal orientation (Elliot, 1999; Elliot & Church, 1997; Murayama, Elliot, & Yamagata, 2011) than students enrolled in social sciences. Maybe this could mean that students who founded the decision for their major in extrinsic life aspirations see normative comparisons and competitions as rules of a game that they rather approach than avoid.

Moreover, our results also suggest that the choice of a major that has strong personal value for extrinsic goal striving does not condemn individuals to suffer under the negative effects of extrinsic life aspirations on achievement goal orientations. While students enrolled in economic sciences reported reduced intrinsic life aspirations when compared to students enrolled in social sciences, they still reported a higher degree of intrinsic life aspirations when compared to the magnitude of their extrinsic life aspirations (almost two scale points). We found the same positive associations between intrinsic life aspirations and the learning goal orientation for both student groups. In combination with the finding that intrinsic life aspirations are the dominant class of aspirations in both groups, this can be considered good news because a learning goal orientation promotes deep learning (Elliot et al., 1999) and intrinsic motivation (Dickhäuser, Dinger, Janke, Spinath, & Steinmayr, 2016; Rawsthorne & Elliot, 1999). Nevertheless, our results also include some surprising patterns that further highlight unexpected side effects of extrinsic aspirations.

6.2 Unexpected Findings: The Sting of Extrinsic Life Aspirations

Our analyses allow for a deep view into the nature of the relationship between life aspirations and achievement goal orientations in the different study programs. While we

largely obtained the associations that we had initially hypothesized, we also found some interesting associations outside of our initial considerations. One of these findings is that the (unexpected) group difference in the learning goal orientation is associated to group differences in extrinsic life aspirations (similarly to findings obtained by Ku et al., 2012, 2014). This signals that extrinsic life aspirations could indeed have further side effects in the way that they shift the personal attention away from considering achievement situations as learning opportunities. Further analyses suggest that this is especially true when intrinsic life aspirations are low but not when individuals have high intrinsic and high extrinsic life aspirations. We found this moderation effect in both study programs. However, we also found an unmoderated negative association between extrinsic life aspirations and the learning goal orientation for university students enrolled in social sciences. Extrinsic life aspirations diminished the learning goal orientation in this group of students to a substantial degree. This could mean that extrinsic life aspirations especially undermine the development of a learning goal orientation when the learning content has a low utility for achieving these goals and students, thus, experience a low fit between learning content and their personal values.

6.3 Practical Implications

Our analyses confirm that intrinsic aspirations and extrinsic aspirations are not mutually exclusive but can co-exist in university students (the correlation between both classes of life aspirations were statistically non-significant different from zero; see also Janke & Dickhäuser, 2019). On the one hand, this means that researchers are likely well advised to investigate the influence of both life aspirations as distinct constructs. On the other hand, this also means that it could be possible to reap the benefits of intrinsic life aspirations on achievement goal orientations in individuals that have chosen their major in line with extrinsic life aspirations without diminishing the experienced personal fit of their students. However, whether this is true must be put to the test within naturalistic intervention studies as our study only provides first correlative evidence. We think that it is a challenge to foster a growth-

oriented way of thinking in individuals who normally filter their learning environment for information that is merely helpful to achieve extrinsic life aspirations. Nevertheless, we also think that it is an important endeavor because a combination of performance approach goals with learning goals can lead to optimal learning alongside optimal performance (Pintrich, 2000).

6.4 Limitations and Future Research

The conducted research raises some additional questions for future investigations. First, it may be interesting to investigate whether life aspirations indirectly affect anxiety and intrinsic motivation via achievement goal orientations as we previously suggested. The investigation of such processes may in turn advance our understanding with regard to the negative role that extrinsic aspirations supposedly play for the path to university drop-out (Heublein, 2014). Second, while we think that individuals most often construe personal performance as the best way to reach extrinsic life aspirations, there may be exceptions to this line of thinking. More specifically, it is possible that some university students believe that personal learning is a key to becoming a successful expert and, thus, earning a high income. We think that a deeper investigation into subjective theories on the utility of performance and learning can extend our understanding of life aspirations' impact on achievement motivation. Third, our research has not yet clarified under which conditions extrinsic life aspirations rather lead to performance avoidance than to approach goal orientations as both performance goal orientations were associated with extrinsic life aspirations. Prior research has suggested that performance avoidance goal orientations are more strongly adopted when individuals doubt their ability to outperform others as indicated by low self-ascribed competencies (Cury, Elliot, Da Fonseca, & Moller, 2006). Thus, perceived competence could be of high interest as a potential moderator of the relationship between extrinsic life aspirations and performance approach and avoidance goal orientations in future research. Forth, even though our study does not yield associations between intrinsic and extrinsic life aspirations and the time spent

in certain learning environments, we still cannot rule out that these effects exist. Comparative longitudinal studies would allow for further insights on the question whether life aspirations are susceptible to change through environmental cues like norms and shared values at university.

When it comes to further limitations of our findings, we must note that our research has been conducted in a German population. This is a critical information with regard to the fact that we did not find any associations between intrinsic and extrinsic life aspirations, which is in line with other research in German samples (Janke & Dickhäuser, 2018, 2019) but not necessarily with research conducted within other countries such as Belgium (Vansteenkiste et al., 2006) or the United States (Kasser & Ryan, 1993). Albeit cross-cultural research on the impact of life aspirations on university students' psychological functioning has provided evidence that findings from one culture can be transferred to another (at least for Germany and the US; see Schmuck et al., 2000), we cannot rule out that culture influences whether individuals perceive striving for intrinsic and extrinsic life aspirations as combinable or conflicting. A broader overview (potentially in form of a meta-analysis) would be helpful to understand whether observed associations between intrinsic and extrinsic life aspirations are a matter of cultural context, research design or of the inventories used to assess life aspirations.

7 Conclusion

Our research shows that group differences in life aspirations between students of different majors have a direct impact on achievement motivation. The take-away message for researchers is that the content of broader life aspirations transcends to lower-order achievement goal orientations. This also means that teaching practitioners in higher education are well advised to try to trigger intrinsic aspirations of their students in order to facilitate an optimal focus on personal learning in their courses.

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Table 1. Descriptives and zero order correlations.

	<i>M</i>	<i>SD</i>	(1)	(2)	(3)	(4)
(1) Intrinsic life aspirations	5.78	0.66				
(2) Extrinsic life aspirations	3.57	0.87	-.09			
(3) Learning goal orientation	5.85	0.68	.42**	-.21**		
(4) Performance approach goal orientation	4.41	1.03	-.02	.48**	.06	
(5) Performance avoidance goal orientation	3.30	1.37	-.05	.35**	-.11*	.57**

** $p < .01$

Table 2. Decomposition of the overall effect of the conducted MANCOVA

	M_{So}	M_{Ec}	$F(1, 323)$	p	η_p^2
Intrinsic life aspirations	5.89	5.64	5.65	.018	.02
Extrinsic life aspirations	3.38	3.81	11.38	.001	.03
Learning goal orientation	5.93	5.75	4.11	.044	.01
Performance approach goal orientation	4.28	4.42	5.48	.020	.02
Performance avoidance goal orientation	3.28	3.33	0.03	.872	.00

Note. M_{So} indicates the mean score for students enrolled in social sciences, while M_{Ec} indicates the mean scores for the students enrolled in economic sciences.

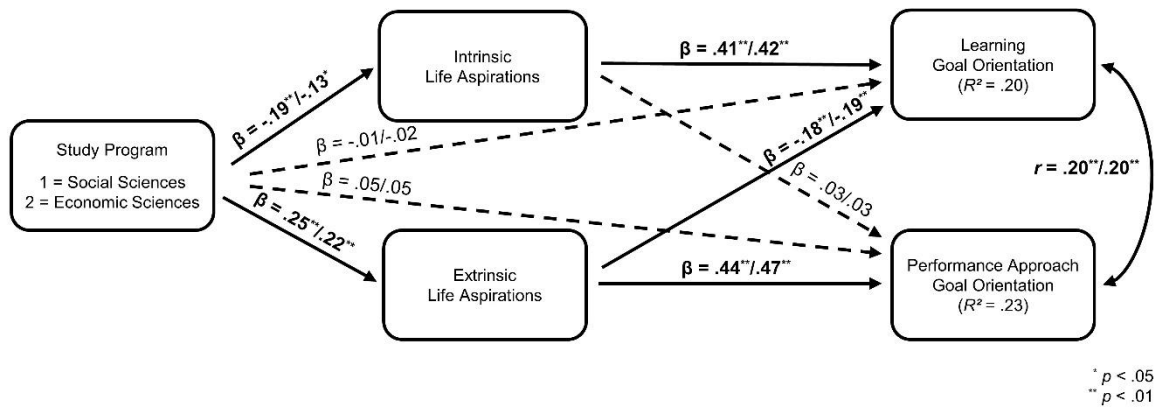


Figure 1. Conducted path models. Undashed lines indicate significant direct paths, bold numbers indicate significant path coefficients. The first numbers indicate results obtained from the initial path model and the second numbers indicate results obtained from the path model under control of age and gender.

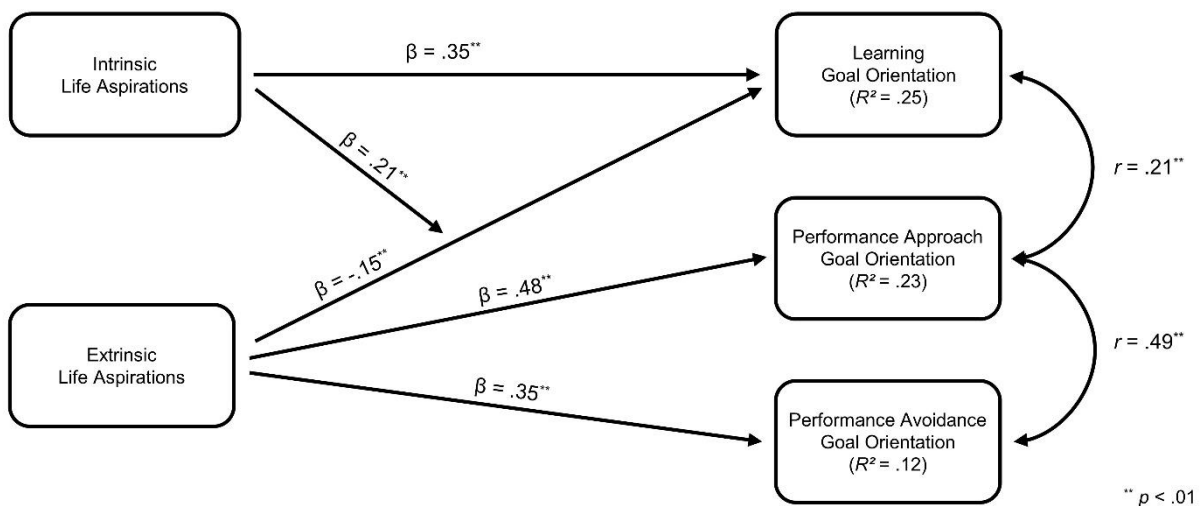


Figure 2. Conducted moderation analysis. Only statistical significant paths are displayed for better comprehensibility.

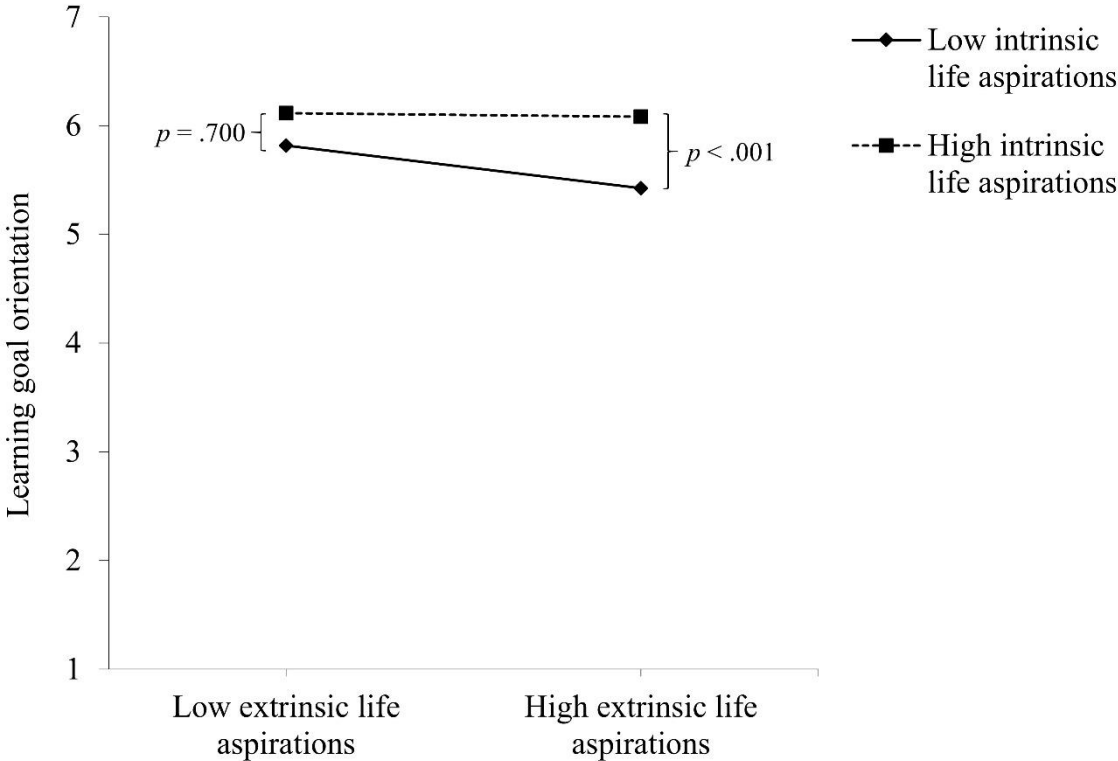


Figure 3. Depiction of the moderation effect of intrinsic life aspirations on the relationship between extrinsic life aspirations and learning goal orientation.