

## **Entrepreneurial Envy:**

### A Study on the Role of Envy in Venture Performance and Venture Goal Progress

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## List of Abbreviations

CE	Coefficient of Equivalence
CES	Coefficient of Equivalence and Stability
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Confidence Interval
CMV	Common Method Variance
df	Degrees of Freedom
DV	Dependent Variable
Inv	Invitation to Survey
IV	Independent Variable
LR	Likelihood Ratio Test
Max	Maximum
Min	Minimum
No	Number
Obs	Observations
Part	Participation Rate
Ph.D.	Doctor of Philosophy
RMSEA	Root Mean Square Error of Approximation
SD	Standard Deviation
SEM	Structural Equation Modeling
T1	First-Round Questionnaire
T2	Second-Round Questionnaire
TLI	Tucker-Lewis Index
TUM	Technical University of Munich
Vs	Versus

## **Abstract**

Envy is an unpleasant mix of feelings characterized by inferiority and caused by social comparison with someone else who possesses something desired. While founders are likely to engage in upward social comparison processes, envy and its consequences have not sufficiently been considered in entrepreneurship literature. Given that envy can inspire or prevent individuals from taking action, it seems important to understand how a founder's envy shapes their venture performance and their venture goal progress. Moreover, building on social comparison theory, I theorize about important contingencies in this relationship, specifically the founder's entrepreneurial experience and the dynamism of the venture's environment. After analyzing data from 156 founders across 118 new ventures within a university incubator in Germany and conducting two surveys with a three-month time interval, I do not find a significant relationship between envy and venture performance, nor between envy and venture goal progress. However, consistent with my theorizing, I find that the relationship between envy and both entrepreneurial outcomes is contingent on entrepreneurial experience and environmental dynamism in opposing ways. Specifically, my findings show that under the condition of high entrepreneurial experience, the relationship between envy and venture performance or envy and venture goal progress is less negative and even positive. In contrast, when a founder's venture environment is highly dynamic, higher levels of envy are associated with lower levels of venture performance and lower levels of venture goal progress. My study offers theoretical implications for entrepreneurship research and social comparison theory, alongside implications for practice.

**Keywords:** envy; entrepreneurial experience; environmental dynamism; social comparison; venture performance; venture goal progress

## **Zusammenfassung**

Neid ist eine Mischung von Gefühlen, die durch sozialen Vergleich mit anderen und einem damit einhergehenden Minderwertigkeitsgefühl verursacht wird. Da Menschen sich insbesondere dann vergleichen, wenn objektiv messbare Kriterien fehlen, scheint der Entrepreneurship-Bereich prädestiniert für die Erfahrung von Neid, da hier meist noch objektive Kriterien wie Umsatz- oder Gewinnzahlen fehlen. Zudem sehen sich Gründer häufig sozialen Kontexten, wie Accelerator-Programmen, Inkubations-Programmen oder Pitch-Wettbewerben ausgesetzt und verfolgen die individuellen Lebensläufe von anderen Gründern auf sozialen Medien. Obwohl Neid und sozialer Vergleich im Gründungsprozess nicht nur wahrscheinlich, sondern gleichzeitig hoch relevant zu sein scheinen, wurden Neid und seine Folgen in der Entrepreneurship-Literatur bisher nur sehr sporadisch berücksichtigt. In Anbetracht der Tatsache, dass Neid und seine Folgen sowohl motivierend als auch demotivierend sein können, ist es wichtig zu verstehen, wie der durch Vergleich mit anderen Gründern ausgelöste Neid die wahrgenommene unternehmerische Leistung als auch die Erreichung der Unternehmensziele beeinflusst. Auf Basis der Theorie des sozialen Vergleichs entwickle ich in dieser Dissertation neue theoretische Argumente über wichtige Faktoren, die diesen Zusammenhang beeinflussen, nämlich die unternehmerische Erfahrung des Gründers und die Dynamik des Unternehmensumfelds. Auf der Grundlage einer Studie mit 156 Gründern aus 118 frühphasigen Neugründungen eines universitären Inkubators in Deutschland, die sich auf zwei Datenerhebungen mit einer Zeitverzögerung von drei Monaten stützt, zeigt diese Dissertation, dass Neid bei Gründern nur in bestimmten Situationen eine wesentliche Rolle spielt. In Übereinstimmung mit der Theorie konnte ich feststellen, dass unternehmerische Erfahrung und die Dynamik des Unternehmensumfelds die Beziehung zwischen Neid und der wahrgenommenen unternehmerischen Leistung sowie Neid und dem Fortschritt der Unternehmensziele in beiden Fällen gegenteilig beeinflusst. Während ein höheres Maß an

unternehmerischer Erfahrung die negativen Beziehungen abschwächt, verstärkt ein höheres Maß an Dynamik die negativen Beziehungen. Meine Dissertation leistet hiermit wichtige theoretische Implikationen für die Entrepreneurship-Forschung und die Theorie des sozialen Vergleichs, sowie Implikationen für die Praxis.

**Schlüsselwörter:** Neid; unternehmerische Erfahrung; Umweltdynamik; sozialer Vergleich; unternehmerische Leistung; Zielerreichung

# 1 Introduction

*“Don’t compare yourself with anyone in this world.*

*If you do so, you are insulting yourself.”*

- Bill Gates, Co-Founder of Microsoft<sup>1</sup>

Entrepreneurship is a social process (Dimov, 2007). Founders are likely aware of other founders in their environment and will likely observe the progression of their peer’s ventures. For example, founders are likely to observe other founders at networking events (Cohen et al., 2019), in incubation and acceleration programs where they participate together with other ventures (Cohen et al., 2019), and they may follow the stories of other founders on social media (Olanrewaju et al., 2020). While founders can benefit from observing their peers in the form of learning from them (Bosma et al., 2012), increased creativity (Zozimo et al., 2017), and encouragement and motivation (Ahmed & Harrison, 2022), observing peers in entrepreneurship can also trigger social comparison processes.

Bill Gates’ reminder to refrain from such comparison with others seems especially significant in the context of entrepreneurship, where success stories frequently merge with narratives of ambition (Levie et al., 2015), aspiration (Farmer et al., 2011), and competition (Kirzner, 2015). Indeed, in environments where objective performance measures are hardly available, as is often the case in entrepreneurial environments (Chandler & Hanks, 1993; McMullen & Shepherd, 2006) – new ventures might not have generated any sales and might not be profitable yet (Murphy et al., 1996) – individuals are particularly prone to orient themselves towards their peers for understanding their progress (Festinger, 1954; Lyubomirsky & Ross, 1997).

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<sup>1</sup> Retrieved from <https://ca.news.yahoo.com/bill-gates-65th-birthday-witty-020506095.html> on October 12, 2023.

However, individuals differ in their reactions to social comparison, and in particular in their reactions to experiencing envy (Smith & Kim, 2007) – the “unpleasant and often painful blend of feelings characterized by inferiority, hostility, and resentment caused by a comparison with a person or group of persons who possess something we desire” (Smith & Kim, 2007, p. 49).

Understanding envy’s role in entrepreneurial settings is particularly relevant because its consequences can be substantive. For example, envy may motivate individuals to exert more effort in order to attain what others possess (Foster, 1972; Lange & Crusius, 2015). Simultaneously, feelings of envy are often associated with choices that lack rational judgment (Beckman et al., 2002), reduced cooperation between people (Parks et al., 2002), diminished job performance (Lee et al., 2018), or interpersonal harm-doing (Cohen-Charash & Mueller, 2007; Duffy et al., 2021). Hence, in entrepreneurship, where achieving success is not only a personal aspiration but also serves as a marker of societal success and impact (e.g., Angel et al., 2018), it is crucial to analyze the influence that envy exerts.

### **1.1 Motivation for Research on Entrepreneurial Envy**

While the role of envy for the individual founder and the entrepreneurial context in general is thus far not researched, scholars do agree that envy in general, as a result of self-relevant upward social comparisons (Crusius et al., 2020), is a predictor for distinct behavioral, emotional and cognitive dynamics: First, envy can have multifaceted consequences on individual behavior and interpersonal dynamics. In the behavioral realm of envy’s consequences, both constructive and destructive behaviors have been identified across literature. On the one hand, envy has been identified as a powerful motivational force, compelling individuals to strive for more significant achievements and success (Lange & Crusius, 2015; van de Ven et al., 2011). Envy can also catalyze self-improvement, prompting individuals to engage in reflective processes and actively seek personal growth (Kwon et al., 2017). The inherent competitiveness of envy has also been

identified as a catalyst for enhancing work dedication (Kim et al., 2020), increased job engagement (Erdil & Muceldili, 2014), or striving behavior (Yang & Tang, 2021). On the other hand, the repercussions of envy extend beyond purely constructive behavioral outcomes. Envy has also been linked to irrational decision-making (Beckman et al., 2002), highlighting the potentially detrimental impact on individuals' choices and judgment. In social contexts, envy can contribute to reduced cooperation among people (Parks et al., 2002), leading to strained relationships and hindered collaborative efforts. This negative influence has been found to extend into the professional realm, where envy is associated with diminished job performance (Lee et al., 2018), moral disengagement (Moore et al., 2012), or counterproductive work behavior (Braun et al., 2018). Also, envy's capacity for interpersonal harm-doing (e.g., Cohen-Charash & Mueller, 2007) further underscores its potential to disrupt social harmony and damage relationships in the workplace.

Second, envy is connected to emotional outcomes, primarily characterizing negative wellbeing with a spectrum of consequences ranging from negative moods to even more severe outcomes (Cohen-Charash, 2009). While the relation of envy with negative mood (Cohen-Charash, 2009) already demonstrates the negative potential of envy, there is even a link between envy and depression (Xiang et al., 2020). It has been found that persistent feelings of inadequacy or resentment, often associated with envy, can contribute to the development or exacerbation of depressive symptoms (Xiang et al., 2020). Envy's connection to anxiety (Cohen-Charash, 2009) further underscores its detrimental and significant potential impact on emotional wellbeing. In the same vein, further research on the emotional consequences of envy identified connections to destructive emotional outcomes, such as shame (Foster, 1972), resentment (Smith & Kim, 2007), or hostility (Smith & Kim, 2007), respectively. Specifically, envy, when experienced, can evoke a sense of shame related to one's perceived inadequacies compared to others' successes (Foster, 1972). Similarly, resentment can arise due to unfulfilled desires or



aspirations, with envy acting as a catalyst for harboring negative feelings towards those perceived as more fortunate (Smith & Kim, 2007). Lastly, hostility can arise “as a defense against the withering implications of blameworthy inferiority” (Smith & Kim, 2007, p. 54).

Third, envy’s impact extends beyond behavioral and emotional dimensions, influencing cognitive outcomes that can shape individuals’ perceptions and self-regulation. For example, one cognitive consequence of envy is devaluation (De Vries, 1992). When individuals experience envy, they tend to devalue the achievements or possessions of the envied person as a coping mechanism to alleviate their feelings of inadequacy. Furthermore, other research highlights the connection between envy and implicit attitudes (Chan & Sengupta, 2013). Envious individuals may develop implicit biases or attitudes that influence their judgments and interactions with others. Even further research delves into the cognitive aspects of envy by examining its impact on attention and self-regulation (Hill et al., 2011). Envy can lead to heightened attention toward the envied person’s advantages, magnifying the perceived disparities between oneself and others. Experiencing envy can simultaneously drain an individual’s self-regulatory resources, resulting in a diminished capacity or willingness to commit cognitive effort to persist in other, unrelated tasks (Hill et al., 2011). This depletion can manifest as a reduced ability to control impulses or make reasoned decisions (Hill et al., 2011). Moreover, withdrawal is identified as another cognitive outcome of envy (De Vries, 1992). This withdrawal, for example, involves a psychological distancing from the envied person or the situation that evokes envy.

Hence, taking the diverse set of consequences of envy on the behavioral, emotional, and cognitive level into account, underlines the high relevance of envy in general and opens the question of why envy has not received attention in the entrepreneurial realm. Thus far, envy, its antecedents, and consequences have broadly been neglected in entrepreneurship research, and only a few studies have included envy in entrepreneurial contexts. For instance, Biniari (2012)

found that when corporate entrepreneurs engage in entrepreneurial activities, they are less accepted by other organizational members high in envy. On the other hand, Brooks et al. (2019) identified that founders can manage the adverse effects of envy from others by openly disclosing their own past failures.

Due to the scarcity of entrepreneurship research focusing on the role of envy, there is an insufficient understanding of how envy might shape founders and their work on their ventures. Specifically, as envy can motivate individuals to or discourage them from taking action (e.g., Lange & Crusius, 2015), it will be instructive to examine the role of envy in founders' progress toward venture goals, the role of envy in their venture performance, and the circumstances that may influence this relationship.

By studying founders' envy towards other founders and their ventures, I do not only expand the list of potentially negative affect impacting founders' behavior (e.g., stress (White & Gupta, 2020), anxiety (Thompson et al., 2020), fear (Cacciotti & Hayton, 2015)) but also gain an enhanced understanding of how negative affect potentially arises from the founders' social environment. Specifically, drawing on social comparison theory (Crusius et al., 2022; Festinger, 1954), I suggest that founders' envy can shape their own venture's performance and progress. Furthermore, as the outcomes of social comparison mechanisms depend significantly on how individuals assess their present circumstances (Crusius et al., 2022; Festinger, 1954; Suls & Wheeler, 2000), which depends on both individual (Wheeler, 2000) and contextual parameters (Levine & Moreland, 1987), I also take essential contingencies of this relationship into account. Hence, this dissertation pursues the following research question:

### **Overarching Research Question**

To what extent does a founder's envy shape their venture performance and their venture goal progress, and what contingencies affect these relationships?

## 1.2 Overview of Findings

Overall, my findings show that there is neither a significant main effect of envy on venture performance nor on venture goal progress. However, my findings do illustrate that there are important contingencies that affect the envy-venture performance and envy-venture goal progress relationship. More specifically, my analysis shows that the relationship between envy and both entrepreneurial outcomes is contingent on entrepreneurial experience and environmental dynamism.

My findings indicate that under the condition of high entrepreneurial experience, the relationship between envy and venture performance or envy and venture goal progress shifts from less negative to even positive. As for the theorizing behind this finding, I argue that a founder's prior entrepreneurial experience, as indicated by the number of ventures founded before the current one, provides founders with more (objective) reference points for comparison. I argue that this experience can reduce the intensity of social comparisons with others that stem from envy by shifting the focus towards their own venture's objectives. Even more, I argue that it not only decreases the negative consequences of envy, such as resentment (Smith & Kim, 2007) or hostility (Lange & Crusius, 2015), but also bears the potential to bring out the beneficial consequences of comparisons with others, such as inspiration or motivation (Corcoran et al., 2011; Crusius et al., 2022).

In contrast, I found that when a founder's venture environment is highly dynamic, higher levels of envy are associated with lower levels of venture performance and lower levels of venture goal progress. I argue that dynamic venture environments increase founders' tendency for social comparison, particularly among those high in envy. This may be due to less available, fast-changing objective measures, which, in turn, increase founder's dependence on social information for self-evaluation.

### **1.3 Overview of Contributions and Implications**

By analyzing the influence of envy on two different entrepreneurial outcome variables and simultaneously examining the influence of different moderators on the relationships, I unveil unprecedented insights that enable crucial theoretical and practical contributions to the literature and practice of entrepreneurship. This chapter briefly outlines my academic contributions, which are described in detail in Chapter 5.

First, I offer a novel perspective to research on the role of peers in entrepreneurship. Thus far, the entrepreneurship literature has predominantly focused on the advantageous aspects of founders' social ties (Ahmed & Harrison, 2022; Bosma et al., 2012; Zozimo et al., 2017). Even more, research on entrepreneurial support organizations, such as accelerators and incubators, underscores the recurrent emphasis on the positive outcomes derived from peer-to-peer learning (Bergman & McMullen, 2022), particularly facilitated through the close physical proximity and interaction of founding peers (Bouncken & Aslam, 2019). In contrast to the prevailing consensus lauding the predominantly constructive and functional attributes associated with proximity to other founders and ventures (Bouncken & Aslam, 2019), my findings challenge this paradigm of peers' positive importance and relevance. My findings demonstrate that peers in the entrepreneurial sphere yield not only positive and utilitarian outcomes, but potentially also have detrimental and dysfunctional effects on individuals. Crucially, my research illustrates that exposure to fellow founders can create envy, trigger social comparison processes, and subsequently trigger behavioral responses that have a significant (negative) impact on entrepreneurial outcome.

Second, I contribute to research on the role of negative affect in the entrepreneurial process. A widespread postulation and agreement in entrepreneurship literature on affect is that negative affect mostly leads to undesirable, destructive consequences and positive affect mostly leads to desirable, beneficial consequences (Bernoster et al., 2020). My findings, however, challenge

this current, seemingly simple understanding and shed light on the far more complex role of negative affect in entrepreneurship. In particular, my results show that the previous consensus that negative affect has only undesirable and negative consequences does not hold across all circumstances. With envy as the exemplary representation of negative affect, I show that it can certainly have a destructive impact on entrepreneurial outcome, represented by venture performance or venture goal progress, being especially true in dynamic environments, where objective standards are absent and hence the comparison with others seems to become more prominent. More importantly however, my findings also show that negative affect, and more specifically envy, can also positively influence entrepreneurial outcomes, such as venture performance and venture goal progress, especially for founders with high levels of prior entrepreneurial experience. I argue that this is because prior experience serves as a reference point, reducing the importance of comparison with others and potentially emphasizing the beneficial consequences of comparisons, such as inspiration or motivation (Corcoran et al., 2011; Crusius et al., 2022).

Third, my findings provide a nuanced understanding for the positive role of entrepreneurial experience for entrepreneurial outcome. Current literature discusses whether entrepreneurial experience, signified by the number of ventures founded, positively or negatively relates to entrepreneurial success. Several authors suggest a positive relationship, however, other authors do find none (Sandberg & Hofer, 1987) or even a negative relationship (Gottschalk et al., 2014; Toft-Kehler et al., 2014; Van de Ven et al., 1984). My results may reconcile these findings by pointing to the role of entrepreneurial experience as a contingency factor. More specifically, my findings suggest that entrepreneurial experience determines founders' ability to channel their negative affect and the corresponding outcome.

Moreover, I point to the importance of considering the context in which a venture operates in, especially the dynamism of the venture environment, when assessing the impact of affect (in

this case: envy) on entrepreneurial outcomes. There is wide agreement that context plays a crucial role in influencing the entrepreneurial process (Audretsch, 2020; Lumpkin & Dess, 2001; Onwe et al., 2020; Yang & Wang, 2014; Zahra & Garvis, 2000) and environmental dynamism has already been identified. My findings, however, introduce a novel perspective for the effect and role of environmental dynamism in entrepreneurship. Specifically, I enlarge the current perspective by demonstrating that environmental dynamism provides a contingency factor for consequences of negative affect, in my case envy, on entrepreneurial outcomes. My findings show that in dynamic environments, founders high in envy are more likely to rely on comparison with others and thus suffer from the detrimental consequences of their comparison-induced distraction on venture success. Conversely, in more stable environments, the intensity of comparison seems to be reduced for founders high in envy, which favors their focus on their own goals and thus positively impacts their entrepreneurial success.

Fourth, I contribute to social comparison theory. Thus far, social comparison theory delineates how individuals evaluate themselves and their abilities by comparing themselves to others. The theory suggests that people have a natural tendency to assess themselves in relation to others as a way to understand their own abilities, opinions, and social standing (Festinger, 1954; Lyubomirsky & Ross, 1997). My study provides a new perspective into the current understanding by suggesting that personal experience may shape the occurrence of social comparison. Specifically, I argue that the consequences of social comparison may be weakened by higher personal entrepreneurial experience, suggesting that as individuals gather an increased number of experiences (i.e., through founding previous ventures) serving as comparison points, they are more able to derive their self-evaluation from these experience(s) rather than from comparison with others.

Lastly, I contribute to contextual contingencies of social comparison theory. More specifically, I challenge the current, static understanding by introducing a new dimension as a contingency

for social comparison processes: the stability of the environment over time. Existing research has revealed different conditions under which social comparison is more likely to occur, such as contexts where objective comparison standards are lacking (Festinger, 1954; Lyubomirsky & Ross, 1997), or the accessibility of comparison standards is high (Mussweiler, 2003). Even further, certain cultural aspects have been identified to exacerbate social comparison processes (Guimond et al., 2007; White & Lehman, 2005), arguing that social comparison might be more prominent in collectivistic, interdependent cultures than in individualistic, independent cultures (White & Lehman, 2005). My research challenges the prevailing static understanding of the factors that affect the extent of social comparison by introducing the dynamism of the environment as a novel dimension that takes the change over time into consideration.

#### **1.4 Structure of Dissertation**

In addressing the research question, my dissertation adheres to a conventional format comprising five chapters. In the second chapter, the theoretical foundations of social comparison, envy and the corresponding hypotheses are explained. I describe the fundamentals of social comparison theory, how envy and social comparison theory are related, and how the main conceptualizations of envy in the scientific literature differ. I also provide an overview of the antecedents and consequences of envy in order to derive a definition and conceptualization to be used in this dissertation.

In the third chapter, I expound upon the methodological framework underpinning the study, beginning with an exposition of the overarching research design, particularly emphasizing the cross-sectional sequential approach adopted. This design was strategically selected to probe into the dynamics of envy within the entrepreneurial process. The methodology encompassed the execution of two quantitative online surveys, surveying 156 founders of 118 new ventures of one university incubator in Germany. To enhance the rigor of the data analysis, the surveys

were conducted with a time lag interval of three months, thereby allowing to control for the baseline level of my dependent variable, measured at both times. The chapter proceeds to delineate the recruitment strategy for survey participants, elucidating the criteria for both eligibility and selection. Subsequently, the document includes a granular explanation of my data collection, wherein I illustrate the pivotal milestones of the online survey research. The demographic composition and characteristic attributes of the research sample are presented in a comprehensive manner. Subsequently, I describe the array of measures deployed in my research, with a specific focus on the primary constructs, including the independent and dependent variables, the moderating variables, and the control variables. The chapter concludes with an overview of the statistical analysis methodology employed, with particular emphasis on the Ordinary Least Square regression methodology, the process of mean centering, and the control for potential biases within the statistical framework.

In the fourth chapter, I present the results of my linear regression modeling, focusing first on the overall descriptive statistics. In the second step, I present the results for Model A (venture performance) and Model B (venture goal progress) in two separate chapters, accompanied by the respective robustness checks.

Finally, in chapter five, I present an analysis of my dissertation's findings in the context of existing literature on peer influence, entrepreneurial outcomes, negative affect, and social comparison theory. Even further, I outline the practical implications of my findings and present the limitations and avenues for future research. Finally, I end with a conclusion of my dissertation.

I presented the (preliminary) results of this dissertation at three conferences. First, I presented the preliminary findings at the Journal of Business Venturing Insights (JBVI) Entrepreneurship Academy in Durham, United Kingdom, in September 2023. Second, I presented "The Role of



Envy in Entrepreneurial Goal Progress” at the 26th Annual Interdisciplinary Conference on Entrepreneurship, Innovation and SMEs (G-Forum) in Darmstadt in September 2023. Third, I presented “The Role of Envy in Venture Goal Progress” at the RENT 2023 Conference in Gdansk, Poland, in November 2023. Finally, my work was accepted for presentation at the 44th Babson College Entrepreneurship Research Conference, which will take place in Munich in June 2024.

## **2 Theoretical Foundations**

The following chapter focuses on the theoretical underpinnings of my dissertation. First, I present a theoretical elucidation on social comparison theory in order to provide the fundamental theoretical understanding for the main construct at hand – envy (Chapter 2.1). Subsequently I derive the definition and conceptualization of envy used in this dissertation by outlining the theoretical fundamentals of envy across literature (Chapter 2.2). Next, I outline the relevant theories underlying the main models, namely the relationship between envy and venture performance (Chapter 2.3), and envy and venture goal progress (Chapter 2.4).

### **2.1 Social Comparison Theory**

Because envy is defined as a consequence of a frustrated upward social comparison (Smith & Kim, 2007), social comparison theory is pivotal in elucidating the understanding the antecedents, consequences, and general dynamics of envy. Hence, in the following chapter I give an overview of the main propositions of social comparison theory, its trajectory since its origins by Festinger (1954), its consequences and fields of applications, as well as its limitations.

#### **2.1.1 Origins of Social Comparison Theory**

Social comparison theory goes back to Festinger (1954) and finds its origin in research on communication processes within groups (Festinger, 1950), where he focused on two main research areas: One area focused on the factors influencing group members' aspirations regarding their performance levels in tasks related to abilities. It specifically examined how group standards influenced individual aspiration levels. The second area emphasized research illustrating that individuals often pursue agreement in opinions within groups, using this consensus as a foundation for constructing a social interpretation of reality, against which they can corroborate their own viewpoints (Festinger, 1950; Goethals & Darley, 1987).

While having its roots in considerations concerning group processes, Festinger (1954) clearly focused his theory on the individual level, particularly on the individual engaged in self-evaluation. By shifting from the group toward the individual level of analysis, Festinger (1954) made a significant impact to experimental social psychology (Goethals & Darley, 1987). As a consequence, subsequent research focused more on studying the processes on an individual, interpersonal rather than a group level (Goethals & Darley, 1987). This general history of the emergence of social comparison theory is important to acknowledge, as the theory itself exists at the individual level, but – due to its history – bears consequences and implications for group processes, too (Goethals & Darley, 1987).

### **2.1.2 Basic Assumptions**

Two interrelated assertions form what many scholars consider to be the essence of the foundational theory of social comparison processes: First, individuals evaluate themselves by comparing themselves with others. Second, for the purpose of this comparison, they opt for comparisons with others who are similar to themselves (Goethals & Darley, 1987).

Social comparison theory claims that it is an essential part of the human experience to constantly (Corcoran et al., 2011; Mussweiler, 2003) and automatically (Mussweiler et al., 2004) engage in comparisons between the self and others (Festinger, 1954) and that these comparisons are fundamentally important for influencing their judgement, experience and behavior (Crusius et al., 2022). Following Festinger's (1950) initial reasoning in his research on opinion formation, he stresses the importance of others in the emergence of one's opinion by outlining that communication promotes agreements in groups (Crusius et al., 2022). This is due to two reasons: First, in order to ensure group cooperation and achievement, group members need to hold similar opinions (Festinger, 1950). Second, serving the need for a shared social reality, group consensus validates the opinion of the individual (Crusius et al., 2022; Festinger, 1950).

Festinger's (1954) theory on social comparison processes, is grounded in nine key foundational hypotheses (see Table 1), in which the origins in his work on opinions is apparent but also extend to the field of abilities (Crusius et al., 2022):

<b>No.</b>	<b>Hypothesis</b>
I	There exists, in the human organism, a drive to evaluate his opinions and his abilities.
II	To the extent that objective, non-social means are not available, people evaluate their opinions and abilities by comparison respectively with the opinions and abilities of others.
III	The tendency to compare oneself with some other specific person decreases as the difference between his opinion or ability and one's own increases.
IV	There is a unidirectional drive upward in the case of abilities which is largely absent in opinions.
V	There are non-social restraints which make it difficult or even impossible to change one's ability. These non-social restraints are largely absent for opinions.
VI	The cessation of comparison with others is accompanied by hostility or derogation to the extent that continued comparison with those persons implies unpleasant consequences.
VII	Any factors which increase the importance of some particular group as a comparison group for some particular opinion or ability will increase the pressure toward uniformity concerning that ability or opinion within that group.
VIII	If persons who are very divergent from one's own opinion or ability are perceived as different from oneself on attributes consistent with the divergence, the tendency to narrow the range of comparability becomes stronger.
IX	When there is a range of opinion or ability in a group, the relative strength of the three manifestations of pressures toward uniformity will be different for those who are close to the mode of the group than those who are distant from the mode. Specifically, those close to the mode of the group will have stronger tendencies to change the positions of others, relatively weaker tendencies to narrow the range of comparison and much weaker tendencies to change their position compared to those who are distant from the mode of the group.

**Table 1: Hypotheses of the Theory of Social Comparison Processes** (Source: Festinger, 1954, pp. 117–135)

With formulating these nine hypotheses, Festinger (1954) gives answers to the following questions that have centrally guided the academic discussion and later research on social comparison: “why, with whom and with what effect?” (Suls et al., 2002, p. 1) or, put differently, “Why do people engage in social comparisons? To whom do they compare themselves? How do social comparisons influence the self?” (Crusius et al., 2022, p. 1):

*Why?* Specifically, Hypotheses I and II propose that erroneous beliefs or flawed assessments of one’s competencies can lead to adverse outcomes (Crusius et al., 2022; Festinger, 1954), thereby prompting individuals to engage in comparisons with others – offering explanations to the question of “why?”.

*With whom?* Hypotheses III, IV, and VIII underscore Festinger’s perspective that individuals are inclined to compare themselves with others of similar status or those slightly superior, as comparisons with extreme differences yield less valuable insights (Crusius et al., 2022; Festinger, 1954) – therewith providing answers to “with whom?”.

*With what effect?* And finally, Hypotheses V, VI, VII, and IX delve into the outcomes of social comparisons, highlighting the possibility of alterations in personal opinions or capabilities and the fostering of conformity. Festinger (1950, 1954) posits that the extent of such change is contingent on the relevance and appeal of the comparison group, and the failure to attain uniformity can be experienced as discomfoting (Crusius et al., 2022; Festinger, 1954) – therewith providing answers to “with what effect?”.

As research around social comparison theory has emerged over time, current theory will be discussed in the remainder of this chapter, following the same structure – reasons for engaging in social comparison (i.e., “why?”, Chapter 2.1.3), targets of social comparison (i.e., “with whom?”, Chapter 2.1.4) and consequences of social comparison (i.e., “with what effect?”, Chapter 2.1.5).

### **2.1.3 Reasons for Social Comparison**

The reasons why people compare themselves to others are manifold and have been weighted differently by several authors over time (e.g., Festinger, 1954; Taylor et al., 1996; Taylor & Lobel, 1989; Wills, 1981). The current body of knowledge around social comparison theory research can be divided into three main areas for reasons:

First, people engage in social comparison with others to satisfy their own important needs, ranging from evaluating, enhancing or improving oneself (Crusius et al., 2022; Festinger, 1954; Taylor & Lobel, 1989; Wills, 1981). This reasoning – also the initial reasoning outlined by Festinger (1954) – asserts that individuals possess a fundamental desire to maintain an accurate and stable perception of themselves. As a consequence, people are prone to seek “informative feedback” (Crusius et al., 2022, p. 4) about their characteristics and abilities. For this purpose, Festinger (1954) argues that people do usually and primarily rely on objective evaluation standards. However, as such objective measures are not always available, people use comparisons with others to evaluate themselves instead (see Hypothesis II) (Crusius et al., 2022).

Following the same logic, Wills (1981) argues that people do however not only use social comparisons to evaluate themselves accurately. He suggests that individuals often do not solely pursue precise feedback about themselves but rather, they attempt to construct, improve, and uphold a favorable self-image (Crusius et al., 2022; Wills, 1981). Engaging in social comparison by contrasting oneself with others who are less fortunate, known as downward comparisons, offers an additional motive for participating in these processes and safeguarding one’s self-image (Wills, 1981).

However, in the same vein, other authors add the opposite argument to the discussion, by stating that social comparison also serves the need to improve oneself (Taylor & Lobel, 1989). In

particular, people might compare themselves to gain information on how to obtain, advance and improve themselves to an upward comparison level, represented by other people who seem to be better-off (Crusius et al., 2022; Taylor & Lobel, 1989).

Second, people engage in social comparison processes for the purpose of communicating successfully with others (Crusius et al., 2022; Huttenlocher et al., 1971; Schwarz, 1994). Especially following the reasoning of social psychology, people do also use social comparison to process or exchange information (Biernat & Manis, 1994; Grice, 1975). Specifically, Crusius et al. (2022) reason that information about characteristics or abilities often regard attributes that are defined on a relative basis, such as how intelligent, athletic or attractive someone is. Describing someone as athletic or intelligent also implies that this person – in a relative, social comparison sense – is more athletic or respectively more intelligent than others (Crusius et al., 2022; Huttenlocher et al., 1971).

Third, social comparisons serve as an effective cognitive mechanism to obtain insight about oneself while not binding too many cognitive resources (Corcoran & Mussweiler, 2010; Crusius et al., 2022; Keil et al., 2006; Mussweiler & Epstude, 2009). Individuals have to be efficient in their selection decision (Mussweiler & Rüter, 2003), forcing them to ultimately apply myriad strategies to simplify the complexity (Corcoran et al., 2011). As people are limited in their cognitive resources (Taylor, 1981), social comparison offers a more efficient way of processing information compared to absolute methods of information processing (Crusius et al., 2022).

#### **2.1.4 Targets of Social Comparison**

In the realm of social comparison, the multitude of potential reference points for each comparison is virtually boundless (Crusius et al., 2022). As a result, a significant amount of research has emerged focusing on analyzing the selection of comparison targets by individuals and the complex methodology they use to identify the suitable benchmark for comparison.

Various authors have posited several factors contributing to this selection process (e.g., Festinger, 1954; Mussweiler, 2003; Tesser, 1988). Nevertheless, it is noteworthy that the same motivations proposed to explain why individuals engage in social comparisons are also utilized to elucidate the criteria they choose for their comparison standards (Crusius et al., 2022).

When the primary motive is the pursuit of accurate self-knowledge (see self-evaluation), individuals tend to gravitate toward comparisons with similar others possessing comparable characteristics. This selection is driven by the understanding that only comparable standards furnish adequate “diagnostic information” (Crusius et al., 2022, p. 7) for evaluating oneself (Festinger, 1954). Building on Festinger’s (1954) foundational reasoning, the fundamental assumption is that people choose comparison standards within their “critical dimension” (Crusius et al., 2022; Festinger, 1954). This choice is driven by the understanding that only analogous comparison standards yield sufficient information for self-assessment (Festinger, 1954). Opting for dissimilar standards would only introduce ambiguity into the comparison process (Crusius et al., 2022; Festinger, 1954). Later research on the hypothesis that the comparison standard needs to be similar on the critical dimension (Festinger, 1954; Wheeler, 1966) argues that similarity is much more important on related attributes (Goethals & Darley 1977), meaning that the selected diagnostic standards need to be more closely aligned in related attributes than in the critical dimension itself (Goethals & Darley, 1987). Crusius et al. (2022) provide an example that illustrates the disparity at hand: If, for instance, one engages in an athletic competition with a significantly older individual and surpasses them, it may not necessarily reflect one’s exceptional athletic superiority as the age gap (“related attributes”) could easily account for the respective performance disparity (“critical dimension”). However, when one’s competitor would be of the same age (“related attributes”), one’s triumph would more explicitly underscore the superior athletic abilities (“critical dimension”).



Therefore, it becomes necessary to choose comparison standards that are alike in related attributes. Otherwise, discrepancies in performance are apt to be attributed to variations in associated characteristics (such as age), rather than to differences in proficiency in the key area (like athletic ability) (Crusius et al., 2022). Consequently, the pursuit of precise self-evaluation may guide individuals toward opting for standards that are similar to themselves. There is ample empirical evidence to support the proposition that similarity, both in the critical dimension (Crusius et al., 2022; Gruder, 1971; Wheeler, 1966) and in the related attributes (Crusius et al., 2022; Miller, 1982; Suls et al., 1978; Wheeler et al., 1982; Zanna et al., 1975), significantly influences the process of standard selection.

Conversely, in the pursuit of self-enhancement, research agrees that individuals opt for comparisons with inferior others in order to maintain a positive view on themselves (Crusius et al., 2022; Wills, 1981). This strategic choice is driven by the inherent positive bias resulting from downward comparison, making the self appear more favorable (Crusius et al., 2022). As downward comparisons could potentially serve as a protection of the view on oneself, the motive for choosing inferior comparison standards is especially true for people that have an endangered self-view (Wills, 1981). Following Wills' (1981) downward-comparison theory, threatened people are more inclined towards comparing themselves with those worse off than with those better off and by doing so, enhance subjective well-being (Suls et al., 2002). This motive and selection process can frequently be observed in health-contexts in which patients seem to derive benefits from comparing themselves to others that are worse off. One example can be found in the study that was conducted by Wood, Taylor and Lichtman (1985) in which breast cancer patients appeared to derive benefits from purposeful downward comparisons.

Finally, when motivated by the desire for self-improvement, individuals lean towards comparisons with superior others. This selection is guided by the belief that upward comparison

sets a motivating and instructive standard that inspires and guides the individual to better oneself (Crusius et al., 2022).

Despite the above logic and notion that the search for comparison standards is purely defined by the motivation of the individual, Crusius et al.'s (2022) recent review of social comparison research emphasizes that the archetypes of selecting comparison standards mentioned above – self-evaluation, self-enhancement and self-improvement – may not always be applicable to explain the comparison standards. As an infinite amount of potential comparison standards could be taken into account and the assessment of it would include many different related attributes, “people are inclined to save cognitive resources” (Crusius et al., 2022, p. 8) and take heuristic routes for selection. One example for these heuristics is the application of routines (Corcoran et al., 2011), in which people simply compare themselves with those standards which they are using habitually.

### **2.1.5 Consequences of Social Comparison**

Building upon the discussed aspects of the reasons and objectives underlying social comparison processes, the third focal point in social comparison research revolves around elucidating the outcomes of these comparisons and their impact on the self. Studies focusing on the consequences of social comparison are manifold and take different approaches. On the one hand, consequences are studied from a model perspective, intending to explain broader patterns of comparison processes and their respective influences on the self (Mussweiler, 2003; Tesser, 1988). On the other hand, other authors take a more affective and emotional perspective and study specific affects or emotions arising from social comparison, such as pride (Dickens & Robins, 2022; Webster et al., 2003), admiration (Algoe & Haidt, 2009; van de Ven et al., 2011), shame (Wiklander et al., 2003), schadenfreude (Smith et al., 1996, 2009), jealousy (Parrott & Smith, 1993; Salovey & Rodin, 1984; Vecchio, 2007), or envy (Smith & Kim, 2007). In the

following I describe two centrally established models, explaining the peculiarities of social comparison processes and further touch upon affective and emotional consequences considering the overarching topic of this dissertation – envy as an affective consequence of social comparison.

### ***Selective Accessibility Model Explaining Determinants of Assimilation and Contrast***

While social comparison not only influences self-evaluation and the resulting behavior but also influences affect and motivation (Mussweiler, 2003; Taylor et al., 1996; Wood, 1989), an essential question persists: whether the outcomes of social comparison are primarily assimilative (i.e., perceiving oneself as similar to the comparison target) or contrastive (i.e., perceiving oneself as different from the comparison target)?

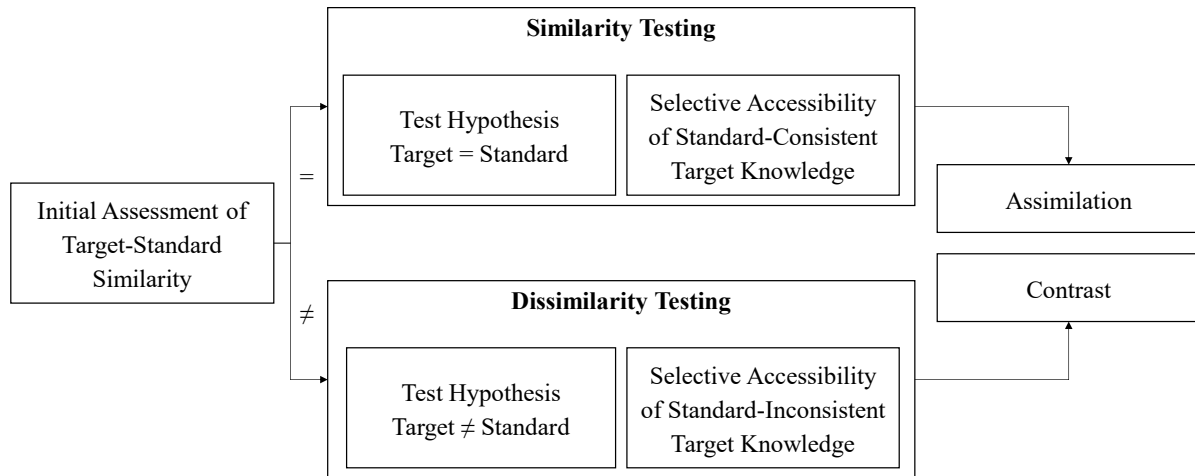
According to Mussweiler et al. (2003) diverging consequences of social comparison, namely either assimilation or contrast, can be explained by changes in accessible self-knowledge. Fundamentally, the assessment of oneself following a comparison is guided by the implications of the knowledge pertinent to the judgment that is accessible at the time the judgment is made (Crusius et al., 2022; Higgins, 1996). Hence, the self-evaluation happening post comparison is affected by social comparisons as they influence the accessibility of available knowledge which is subsequently used as a basis for the evaluation (Crusius et al., 2022).

In their Selective Accessibility Model (see Figure 1), Mussweiler et al. (2003) reason that people need to first gather information about the self and the comparison target in order to evaluate both persons relative to each other (Crusius et al., 2022). This process of active-search information collection is conducted following a hypotheses testing approach in which one single hypothesis is evaluated by searching for relevant information (Mussweiler, 2003) – all guided by the efficiency principle (Corcoran & Mussweiler, 2009). This means that in social comparison, individuals begin by formulating hypotheses and selectively seek information that

aligns with the formulated hypothesis, aiming for efficiency in information gathering (Corcoran & Mussweiler, 2009).

Specifically, the primary focus for collecting information will be guided by one of two theoretical propositions: the proposition that posits an individual's similarity to a benchmark standard, or the alternative proposition that suggests the individual's divergence from that benchmark standard (Mussweiler, 2003). Choosing the suitable hypothesis involves performing an initial evaluation of the similarity between the comparison target and the comparison standard, considering only a limited number of attributes. As one of the hypotheses is selected, the comparing person is likely to only selectively search for information that is consistent with the selected hypothesis. This means that the active-search for information is focused on finding only hypothesis consistent evidence (Crusius et al., 2022; Klayman & Ha, 1987; Snyder & Swann, 1978; Trope & Liberman, 1996). When the hypothesis adopted is that one resembles the standard, the individual engaged in comparison solely seeks information consistent with the standard, suggesting that they are similar to the comparison benchmark. If the hypothesis is that one differs from the standard, the person making the comparison will only look for information that contradicts the standard, signifying that they are distinct from the comparison benchmark (Crusius et al., 2022).

In consequence, when evaluating oneself, the choice of self-knowledge that is relevant to making judgments has a significant impact on which aspects of self-knowledge are more readily available during this self-evaluation process. Specifically, when assessing for similarities, knowledge that aligns with one's standards becomes more accessible. Conversely, when assessing for dissimilarities, knowledge that does not conform to one's standards becomes more accessible (Mussweiler, 2003).



**Figure 1: The Selective Accessibility Mechanism** (Source: Mussweiler, 2003, p. 475)

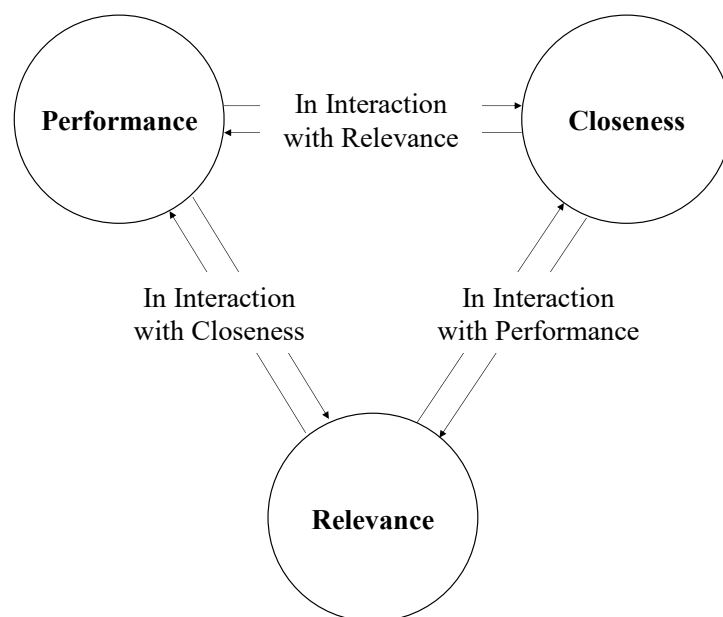
Regarding self-assessment, it relies solely on the self-awareness present at the time of comparison. Hence, grounding self-evaluation in juxtapositions with knowledge consistent with the standard leads to a process of assimilation (Mussweiler, 2003). Opposingly, the consequence for basing self-evaluation on comparison with standard-inconsistent knowledge will be contrast (Crusius et al., 2022; Suls et al., 2002).

While the Selective Accessibility Model (Mussweiler, 2003) describes the basic fundamentals of the social comparison process and its outcomes for the self, it is also widely accepted up until today (Crusius et al., 2022). However, one question still remains and is still part of the scientific dissensus today, which outcome of comparisons is more dominant – assimilation or contrast. Several authors have argued that especially due to the diagnosticity (Festinger, 1954; Goethals & Darley, 1987) people prefer similar targets and should therewith also be more likely to be exposed to others in their social environment (McPherson et al., 2001). Also, cognitive comparison theories argue that a basic requirement for comparison is to match pairs of comparison objects with regard to alignable features (Gentner & Markman, 1994), and similarity comparisons might be more efficient (Corcoran et al., 2011).

However, only recent research using experimental designs has emphasized the contradicting perspective, namely that contrast is the dominating outcome (Gerber et al., 2018). By suggesting that contrastive comparisons may practically play a more important role than initially derived in theory, the discussion remains unresolved until today (Crusius et al., 2022).

### ***Self-Evaluation Maintenance Model Explaining Affective and Motivational Outcomes***

While Mussweiler's Selective Accessibility Model (2003) primarily concentrates on elucidating the judgmental outcomes of social comparison, the Self-Evaluation Maintenance model by Tesser (1988) (see Figure 2), focuses on explaining emotional and affective consequences of social comparison. Initially stemming from Tesser (1988), the Self-Evaluation Maintenance model intends to explain the antecedents and consequences of social comparison that is upward and simultaneously threatening to the image of oneself (Crusius et al., 2022; Gerber et al., 2018). It anticipates how individuals uphold their self-assessment within the interplay of three interdependent variables: one's performance compared to the performance of one other, one's psychological proximity to one other, and the importance of the comparison dimension to their self-concept (Gerber et al., 2018).



**Figure 2: Systemic Nature of the Self-Evaluation Maintenance Model** (Source: Tesser, 1988, p. 48)

The Self-Evaluation Maintenance model operates on the principle that individuals behave in manners that either preserve or improve their self-appraisal. This model emphasizes the substantial impact of interpersonal relationships on one's self-evaluation. It incorporates two key dynamic processes that govern this interaction: the reflection and the comparison process (Tesser, 1988). On the one hand, Tesser (1988) argues that self-evaluation can be raised "to the extent that a close [...] other performs very well on some activity" (p. 49). Hence, gaining self-evaluation is enhanced by enjoying the positive attention or recognition that comes from being associated with someone who has performed well (Tesser, 1988). Tesser (1988) calls this the reflection process. Conversely, self-evaluation may suffer when one compares oneself unfavorably with the exceptional accomplishments of someone close to them (Tesser, 1988). The Self-Evaluation Maintenance model describes this phenomenon as the comparison process, suggesting that the greater the performance of the other person and the closer the psychological bond with them, the more significant the potential decrease in one's self-evaluation (Tesser, 1988).

Thus, while the processes of reflection and comparison depend on the same pair of factors, they produce opposing impacts on an individual's self-assessment. When an individual perceives both significant proximity to and notable accomplishments by another person, the reflection process can potentially enhance self-evaluation (Tesser, 1988). However, concurrently, the comparison process may pose a threat to reducing self-evaluation (Tesser, 1988). In the Self-Evaluation Maintenance model, the degree to which another individual's performance influences one's self-concept determines the respective significance of the reflection and comparison processes in self-evaluation (Tesser, 1988). Integrating the Self-Evaluation Maintenance model with the core principles of social comparison theory (Festinger, 1954), the performance of another person becomes pertinent to an individual's self-evaluation if it resonates with a dimension that is significant to that individual. Additionally, this relevance is

contingent on the other's performance not being excessively superior or inferior, as such extremes make comparisons difficult (Tesser, 1988). Consequently, the comparison process gains relative importance, if the other's performance holds high relevance, potentially leading to a diminished self-evaluation when compared with a close other's superior performance. Conversely though, the reflection process gains relative importance if the other's performance is less relevant, offering the opportunity to increase self-evaluation by "basking in the reflected glory of a close other's better performance" (Tesser, 1988, p. 50).

By introducing this way of conceptualization, Tesser (1988) also argues that even though self-evaluation maintenance cannot objectively be measured, the described processes are real and manifest themselves in "more unobtrusive measures of change in affect and arousal" (p. 50). He contends that a threat to self-assessment should consequently induce negative affect, while improvements to self-assessment are expected to generate positive affect (Tesser, 1988). More specifically, the most negative affect is associated with the highest threat to self-evaluation, as proposed by the model. For example, when one person helps the other, the person who receives the help is implicitly classified as inferior to the other. When the help further takes places on a dimension that is highly relevant to the help-receiver's self-definition and the help is received by someone who is psychologically very close, the greater the likelihood for a threat to self-evaluation and the greater the likelihood for negative affect (Tesser, 1988).

### ***Specific Emotional and Affective Outcomes***

While the Selective Accessibility Model (Mussweiler, 2003) and the Self-Evaluation Maintenance Model (Tesser, 1988) are depicting a processual view on the consequences of social comparison, another research avenue has been to study the consequences by research on specific emotions that are elicited through the comparison (Crusius et al., 2022). The current research landscape spans across a variety of different emotions and affects where social comparison is used as an explanatory mechanism. All these outcomes have in common that



they are resulting from different patterns of assimilative or contrastive upward and downward comparison (Crusius et al., 2022; Fiske, 2010; Smith, 2000). This research includes but is not limited to the following (see Table 2):

<b>Emotion/ Affect</b>	<b>Definition</b>	<b>Sample Papers</b>
Admiration	“Admiration is a feeling of delighted approval of the accomplishment or character of another person and is argued to have inspiration as its motivational output.” (van de Ven et al., 2011, p. 784)	Algoe and Haidt (2009); van de Ven et al. (2011)
Contempt	“Contempt is the feeling when one judges another person as an inferior human being, and is typically expressed through social exclusion.” (Trnka et al., 2011, p. 77)	Trnka et al. (2011)
Envy	“[E]nvy is an unpleasant and often painful blend of feelings characterized by inferiority, hostility, and resentment caused by a comparison with a person or group of persons who possess something we desire. This seems a reasonable working definition.” (Smith & Kim, 2007, p. 49)	Smith and Kim (2007)
Guilt	“Guilt is an emotion naturally suited to exploitation in the service of social influence, by virtue of its action-motivating aspects and its ability to be aroused by relationally significant others.” (O’Keefe, 2000, p. 67)	O’Keefe (2000)
Hostility	“[N]egative attitude toward one or more people that is reflected in a decidedly unfavorable judgment of the target.” (Berkowitz, 1993, p. 21)	Smith and Kim (2007); Berkowitz (1993); Eckhardt et al. (2004)
Jealousy	“Jealousy [...] involves apprehension, anxiety, suspicion, or mistrust concerning the loss of a highly valued possession or of affection and love.” (Salovey & Rodin, 1984, p. 1100)	Salovey and Rodin (1984)
Pride	“Pride is a complex construct, at times conceptualized positively (as a positive emotional reaction to a personal	Webster et al. (2003);

<b>Emotion/ Affect</b>	<b>Definition</b>	<b>Sample Papers</b>
	success) and at other times defined negatively (as exhibiting arrogant or conceited feelings and beliefs).” (Dickens & Robins, 2022, p. 1071)	Dickens and Robins (2022)
Regret	“Regret is a negative, cognitively based emotion that we experience when realizing or imagining that our present situation would have been better, had we decided differently.” (Zeelenberg, 1999)	Bauer et al. (2008); Zeelenberg (1999)
Resentment	“[R]esentment is an emotion whose object is the defiant reaffirmation of one’s rank and value in the face of treatment, calling them into question in one’s own mind.” (Murphy & Hampton, 1988, pp. 59–60)	Smith and Kim (2007); Murphy and Hampton (1988)
Schadenfreude	“Pleasure at another’s suffering” (Smith et al., 1996, p. 158)	Smith and Kim (2007)
Shame	“Shame is a dysphoric affective state, where the individuals experience themselves as small, inadequate or unworthy.” (Wiklander et al., 2003, p. 293)	Wiklander et al. (2003)

**Table 2: Overview of Emotional and Affective Outcomes of Social Comparison** (Own illustration)

### 2.1.6 Application of Social Comparison Theory

As detailed in earlier chapters, since its inception by Festinger in 1954, social comparison theory has impacted numerous research areas and has become a fundamental element in elucidating phenomena in applied contexts, spanning psychological functioning and everyday life (Crusius et al., 2022). The magnitude of the evolved research body around social comparisons, its implications and consequences as an explanatory phenomenon testifies the usefulness of its existence and simultaneously implies that an overview of its application can only be attempted by highlighting examples (Crusius et al., 2022):

In general, social comparison theory is not limited to the realm of psychology but extends to a variety of different fields. However, it seems to be the case that especially the health context

(e.g., Reis-Bergan, 1997), the business and work context (e.g., Fischer et al., 2009) and the social context (e.g., Turner, 1975) have established as the major broad areas of application.

In the realm of work and business, social comparison theory is, for example, used to unravel the intricacies of information transmission dynamics (Fischer et al., 2009), explaining the quality of relative leader-member exchanges (Hu & Liden, 2013), and how idealized advertising causes dissatisfaction with the self (Richins, 1991). Furthermore, it sheds light on the dynamics of undermining behavior in the workplace (Duffy et al., 2006).

Moreover, its applications extend into the health domain (Crusius et al., 2022), offering insights into the peculiarities of burnout (Schaufeli, 1996), motivation for exercise and healthy dietary behaviors (Yun & Silk, 2011), the recognition of symptoms (Sheffer, 2015), perceptions of health and illness (Reis-Bergan, 1997), stress dynamics (Ybema, 1997), and the realm of comparisons among cancer patients (VanderZee, 1997).

Within the social realm, social comparison theory plays an important role in explaining the complexities of social identity formation (Turner, 1975), in explaining the relationship between media exposure and contemporary motherhood (Chae, 2015), in elucidating its positive and negative role in shaping self-esteem (Blanton et al., 2000), and in contributing to the understanding of subjective well-being (Diener & Fujita, 1997). Beyond these, it proves instrumental in studying body satisfaction (Sun et al., 2023), in analyzing the effects of nudging strategies (Allcott & Kessler, 2019), and in unraveling its implications for consumer buying behavior (Gao et al., 2023).

While the above-mentioned areas and examples are only a selection as an attempt of classifying and illustrating the wide variety of different areas of application for social comparison theory, I had to consciously neglect other, seemingly smaller areas. For example, social comparison is also emerging to explain the consequences and dynamics of social media – for example, the

effects of social media on wellbeing (Reer et al., 2019) or the role of social (media) comparison on social anxiety (Jiang & Ngien, 2020).

### **2.1.7 Limitations of Social Comparison Theory**

Social comparison theory has established as an explanatory framework across a magnitude of disciplines, applied context of psychological function and in daily lives. However, while being considered a useful concept for theorizing on social dynamics, processes and outcomes, its limitations are inherent.

First, social comparison theory states that people constantly (Corcoran et al., 2011; Mussweiler, 2003) and automatically (Mussweiler et al., 2004) tend to compare themselves to others to evaluate the self (Festinger, 1954). However, comparing oneself may be very subjective and people may selectively choose whom to compare themselves with and what meaning they give to the information, influenced by their very subjective pre-existing beliefs and self-conceptions. While the Self-Evaluation Maintenance Model (Tesser, 1988) or the Selective Accessibility Model (Mussweiler, 2003) provide theoretical elucidation, ambiguity in the process still remains.

Second, in the same vein, individuals vary in their propensities to participate in social comparison (Festinger, 1954). Some might be more prone to compare themselves to upward standards, while others may engage more in downward social comparison. Consequently, some individuals may be more prone to comparing themselves with those they view as better off, while others might more frequently compare themselves to those, they consider less advantaged. While social comparison theory partially addresses these individual differences by introducing the role of individual personality traits, such as self-esteem (Yu et al., 2018), the theory does however not fully account for these individual differences.

Third, social comparison theory offers propositions on general dynamics in social contexts. However, it might not be universally applicable across different cultures as those might place varying importance on individualism, collectivism (Hofstede, 2011), and ultimately social comparison. Therefore, the applicability of these concepts to varied cultural contexts represents a key limitation that must be thoughtfully considered when applying the principles of social comparison theory.

Finally, having its origins in 1954, social comparison theory is based on societal norms of several decades ago. Although it has undergone evolution and adjustments over time, shifts in societal norms, communication patterns, and the emergence of social media have transformed the opportunities for both upward and downward social comparisons. Consequently, the effects of these comparisons on individuals may significantly diverge from the original theories, a divergence not yet fully encapsulated in the primary theoretical frameworks.

## **2.2 Envy**

Envy is a complex and powerful “tendency to respond to upward status comparisons with behavior directed at leveling the difference towards [...] superior others” (Lange, Blatz, et al., 2018, p. 425). Researchers concur that envy stems from self-relevant, upward social comparisons (Crusius et al., 2020) and is furthermore a predictor for distinct motivational and behavioral dynamics (Lange & Crusius, 2015). Given its complexity, this chapter delves into the underlying theoretical fundamentals of envy. It highlights the connection between envy and social comparison theory, explores various conceptualizations and definitions of envy, and examines its specific antecedents and consequences. Building on these insights, I derive a definition and conceptualization for envy in the context of my dissertation.

### **2.2.1 Envy and Social Comparison Theory**

Scholars agree that envy is a consequence of a frustration of an upward social comparison (Lange & Crusius, 2015; Smith & Kim, 2007) and is therefore widely considered a negative reaction to the superiority of another individual (Lange & Crusius, 2015). A central element in experiencing envy is usually described as the elicitation of the motivation to level the differences between the compared target and the self (Lange, Blatz, et al., 2018). Based on research findings, this can manifest as either the desire to attain the same advantage enjoyed by the other individual or as the wish for the other person to lose that advantage (Parrott & Smith, 1993). Dorothy Sayers (1943), an English essayist wrote that “envy is the great leveler: if it cannot level things up, it will level them down” (van de Ven et al., 2009, p. 1). Indeed, according to Smith and Kim (2007), envy is a result of the coming together of similarity, high self-relevance, and low control:

#### ***Similarity***

The presence of commonalities between the person who envies and the one being envied is crucial. In the absence of these similarities, social comparisons might appear irrelevant, leading to reactions that are indifferent and detached (Smith & Kim, 2007). In line with social comparison theory (Festinger, 1954), one criterion for envy to manifest is, that the envier seeks out and is affected by social comparisons with people who share comparison-related attributes (Goethals & Darley, 1987; Suls et al., 1978), such as gender, age, and social class (Goethals & Darley, 1987). This implies that individuals experience envy only upon observing a benefit possessed by another person or group, who are alike in almost every aspect except for the specific advantage in question (Smith & Kim, 2007).

### ***Self-Relevance***

Moreover, for envy to manifest, the comparative domain where the other individual holds an advantage must be of significance to the person experiencing envy (Salovey & Rodin, 1984; Silver & Sabini, 1978; Tesser, 1991). This means that the dimension on which the comparison takes place happens on a dimension that is important to the envying and comparing person. This goes hand in hand with similarity as otherwise the reactions may be indifferent and detached (Smith & Kim, 2007).

### ***Low Control***

On top of the similarity and self-relevance, research on envy agrees that the outcomes of this comparison process do further depend on the level of perceived control. Specifically, there is a consensus that perceived control, or the extent to which individuals believe they can acquire the desired attribute, is a crucial factor influencing envy (Smith & Kim, 2007; Vecchio, 2007).

Smith and Kim (2007) argue that the role of perceived control in the dynamics of envy is, however, multifaceted. On the one hand, perceived control is closely connected to the perceived similarity. Emotions tend to be stronger when people can easily imagine different outcomes in a situation that stirs up these feelings (Smith & Kim, 2007). Specifically for envy, this means being able to think up a realistic scenario where one acquires what they envy in someone else (Elster, 2003). Nonetheless, the perception of this particular possibility is more theoretical than tangible and is seen as an unfulfilled longing. In this scenario, the envious individual is more inclined to think “it could have been me” instead of “it will be me” (Elster, 2003).

On the other hand, perceived control can be explained by research on relative deprivation (Smith & Kim, 2007). A fundamental condition for experiencing relative deprivation is the belief that the other person’s advantage is unmerited. As a result, envy is frequently intertwined with sentiments of unfairness (Smith & Kim, 2007). However, research on relative deprivation

and perceived control is inconsistent regarding the degree of feasibility (e.g., Crosby, 1976; Folger, 1987). Smith and Kim (2007) conclude that envy arises under conditions where there is a low sense of control, yet the desired outcome is conceivable, and judgments of deservingness are more subjective than objective.

### **2.2.2 Conceptualizations of Envy**

Traditionally, envy has mostly been considered to motivate hostile and rather negative reactions on a cognitive, behavioral, and emotional level. This encompasses actions that may harm the envied person or the coveted resource, among other possible behaviors (Smith & Kim, 2007). Conversely, a growing segment within the envy research community acknowledges that envy can also lead to more positive, non-hostile responses, like heightened efforts towards self-improvement (Crusius et al., 2020). This duality in reactions, positive and negative or socially desirable and socially undesirable, has led to a wider discussion regarding the origin in either *one* (e.g., Cohen-Charash & Larson, 2017; Smith & Kim, 2007) or in *different* types of envy (e.g., Cohen-Charash & Larson, 2017; Crusius et al., 2020). While the aroused debate around the origin of envy does still exist and despite some unifying efforts no consensus has been found yet, literature is also in discord about the forms of envy. While some researchers suggest that envy is a rather stable dispositional personality trait (e.g., Gold, 1996; Lange, Blatz, et al., 2018; Smith et al., 1999; Smith & Kim, 2007), others claim that envy rather occurs in specific situations or episodically (e.g., Cohen-Charash, 2009; Duffy et al., 2021; van de Ven et al., 2009), respectively.

#### ***Unitary vs. Dual Approach***

*Unitary Approach.* Historically, envy is considered by applying a unitary approach (e.g., Cohen-Charash & Larson, 2017; Crusius et al., 2020; Miceli & Castelfranchi, 2007; Silver & Sabini, 1978), initially inspired from its characterization as a deadly sin (e.g., Veselka et al.,



2014). Most of the traditional and initial research on envy is based on this unitary way of characterization and interpretation (Lange, Blatz, et al., 2018; Smith & Kim, 2007). With this perspective, envy involves both “pain and hostile feelings [...] designed to alarm people to their relatively inferior position and to motivate behaviors designed to eliminate [...] inferiority and the pain it entails” (Crusius et al., 2020, p. 3). Arguing that pain and hostile feelings are central to the experience of envy (Castelfranchi & Miceli, 2009; Crusius et al., 2020; Takahashi et al., 2009), authors suggest that experiencing the psychological pain stems from a variety of reasons: First, the resource that is desired from the other person and therewith highly relevant to oneself, is lacking (Parrott & Smith, 1993; Tesser, 1988). Second, the feeling of perceiving oneself being inferior to the envied person on that particular domain hurts one’s self-concept (Parrott & Smith, 1993; Smith et al., 1994; Tai et al., 2012). And lastly, the perceived reality differs from the expected reality and is therewith perceived as a threat (Crusius et al., 2020; Tai et al., 2012).

The reason, however, for experiencing not only pain but also hostile feelings, stems from other various sources. One trigger for envy might be the sense of unfairness in relation to another’s relative advantage or one’s own perceived inferiority (Smith, 1991). Additionally, linking one’s own inferiority to the existence of the envied person, or desiring the elimination of the disparity in status with them (Castelfranchi & Miceli, 2009), can provoke hostile emotions, which are a core aspect of envy. According to Crusius et al. (2020), envy is therefore a “compound of unpleasant emotions” (p. 4), that includes but is not limited to anger (e.g., Leach, 2008), depression (e.g., Xiang et al., 2020), disapproval (e.g., Smith & Kim, 2007), guilt (e.g., Polman & Ruttan, 2012), inferiority (e.g., Leach, 2008), resentment (e.g., Caze, 2001), shame (e.g., Berke, 1986), or unhappiness (e.g., Hamman, 2015).

While these hostile feelings towards the envied may be perceived, the experience of envy does not necessarily imply a malicious motivation and action tendency in the unitary perspective. According to Cohen-Charash and Gonzalez (Crusius et al., 2020), hostile reactions do not depict

an inherent outcome of envy because envious individuals can reduce the pain and eliminate the inferiority gap in several different ways (Smith & Kim, 2007). While several of these reactions might be non-hostile (such as increased motivation (Lazarus, 1994; Leach, 2008)), this represents a significant distinction between the unitary and dual approaches to conceptualizing envy (Crusius et al., 2020).

*Dual Approach.* While many authors have also ever since acknowledged that upward social comparison can result in two distinct forms of envy (Parrott & Smith, 1993), empirical research around the dual conceptualization has only begun a few years ago (Lange & Crusius, 2015).

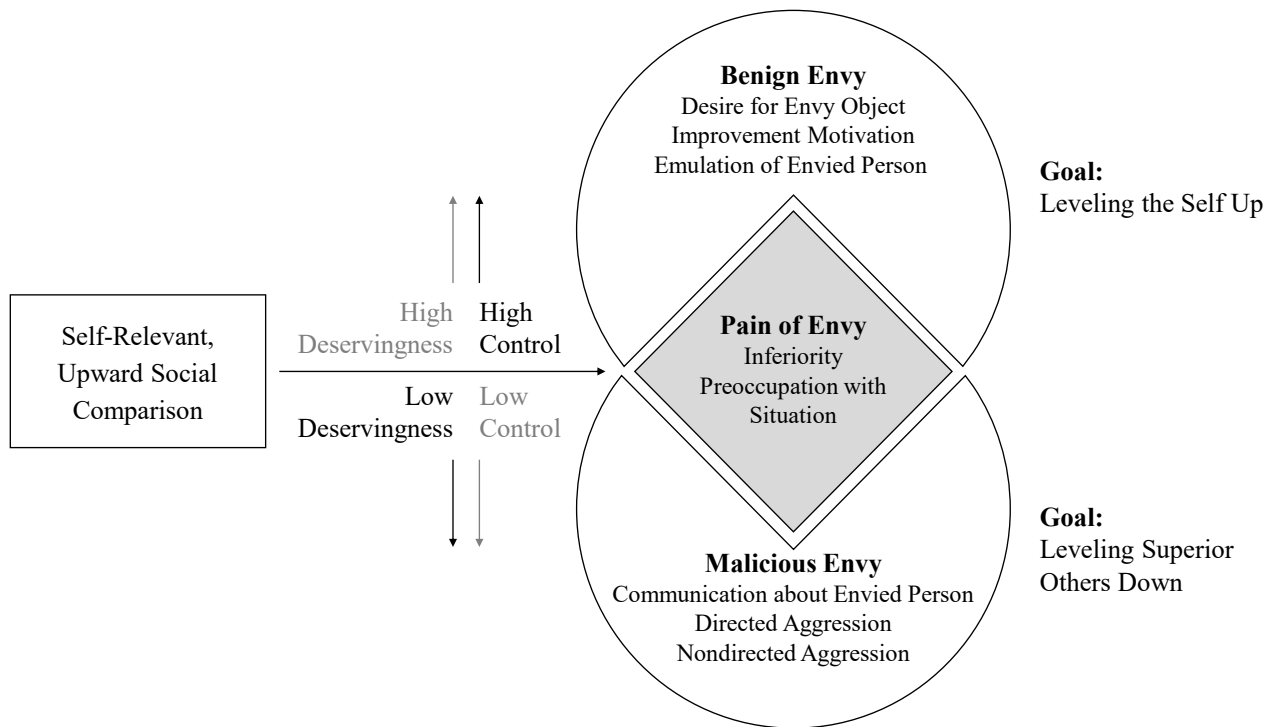
In general, the dual approach of conceptualizing envy is based on the main proposition that envy consists of *two distinct* different forms, including partly independent elements (Lange, Weidman, et al., 2018) and involving different thoughts, feelings, motivations and action tendencies (Lange & Crusius, 2015). Even further, the dual approach perspective clearly contradicts the perspective of a unitary conceptualization, especially by taking two research insights into account: First, authors of the dual approach focused on distinct words that reflect the above-mentioned differentiation between benign and malicious envy. Tested in several languages (Crusius & Lange, 2014; van de Ven et al., 2009)<sup>2</sup>, studies revealed that when asked to recall situations of benign and malicious episodes, words of benign envy rather involved “higher appraisals of control, more positive thoughts about others, wishing to improve and upward action tendencies” (Crusius et al., 2020, p. 5). Whereas malicious envy involved rather “lower appraisals of the other’s deservingness and hostile thoughts, feelings, and action tendencies” (Crusius et al., 2020, p. 5).

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<sup>2</sup> Crusius and Lange (2014) used the German words “beneiden” and “missgönnen” as direct translation of envy. While they used “missgönnen” to elicit malicious envy, they used “beneiden” to elicit benign envy. Van de Ven et al. (2009) did the same for Dutch words, namely “afgunst” for malicious envy and “benijden” for benign envy.

Second, researchers argue for two different forms of envy by factor-analyzing responses to envy measures (Crusius et al., 2020). Studies have proven that systematic variation in the relation between envy components exists and therewith confirms the assumption that envy comprises distinct constructs (e.g., Çırpan & Özdoğru, 2017; Kwiatkowska et al., 2022; Sterling et al., 2016) and that benign and malicious envy are largely distinct and independent (e.g., Lange & Crusius, 2015; van de Ven et al., 2011).

In essence, these findings have led to the development of various theoretical frameworks (Lange, Weidman, et al., 2018). One of the most prominent one is the Pain-driven Dual Envy Theory by Lange et al. (2018) (see Figure 3). In summary, the concept of envy is described as encompassing two distinct forms: Benign envy encompasses the motivation for self-enhancement and the aspiration to emulate the envied individual in order to enhance one's own standing (Lange, Weidman, et al., 2018). Opposingly, malicious envy is characterized by hostility with the intent of diminishing the other's status (Lange, Weidman, et al., 2018). Both types of envy exhibit a negative correlation (Lange, Weidman, et al., 2018) and share a central component of experiencing distressing feelings of inferiority (Crusius et al., 2020).



**Figure 3: Pain-driven Dual Envy Theory by Lange et al. (2018)** (Source: Crusius et al., 2020, p. 6)

The dual conceptualization does therewith contradict the unitary conceptualization by stating that envy entails multiple elements that are even partly independent (Crusius et al., 2020). While both benign and malicious envy involve similar appraisals and a sense of painful inferiority, they differ in their associated emotions, motivations, thoughts, and behaviors (Crusius et al., 2020).

It can be seen that the discourse between the two approaches continues, as some authors still criticize the dual approach. For example, authors of the unitary approach argue that conceptualizing envy in a dual approach (e.g., Lange, Weidman, et al., 2018) is “erroneous” (Crusius et al., 2020, p. 5), as it misses to provide the complexity of the construct and inherent interdependency between emotions (e.g., Cohen-Charash & Larson, 2017; Foster, 1972), cognitions (e.g., De Vries, 1992) and behaviors (e.g., Yang & Tang, 2021; Yu et al., 2018). Cohen-Charash and Gonzales argue that the dual approach, which analyzes the components separately, offers an incomplete and inaccurate portrayal of envy (Crusius et al., 2020).

### ***Dispositional vs. Situational (Episodic) Envy***

The classification of envy into two approaches, single and dual, like described above, is one way of pointing out the major differences of research perspectives on envy. Another way of classifying the concept of envy joins the discussion whether envy is rather trait or state. Although the conceptualization, characteristics, and consequences of envy are subjects of intense debate, there is no consensus regarding whether envy constitutes a stable dispositional personality trait and is experienced independently from situations and circumstances (Smith & Kim, 2007), or if it is more situational (van de Ven et al., 2009) or episodic (Cohen-Charash, 2009) and primarily arises due to particular situations and circumstances. Duffy et al. (2012) summarize current envy research by citing that envy can be conceptualized in three related ways: (1) as dispositional (e.g., Smith et al., 1999), (2) as situational (e.g., Duffy & Shaw, 2000) and (3) as episodic (e.g., Cohen-Charash, 2009).

*Dispositional Envy.* First, one streams of literature argues that envy is a stable dispositional trait and refers to a general tendency to experience envy across various situations and contexts (Duffy et al., 2012; Gold, 1996; Smith et al., 1999). Because of this, people high in dispositional envy are likely to experience it regardless of the circumstances (Smith et al., 1999). Moreover, the envious personality is often characterized by enduring feelings of inadequacy (Cohen-Charash, 2009), persistent resentment towards those who are more fortunate and ongoing dissatisfaction with one's own circumstances (Gold, 1996). This type of envy is also thought to be influenced by further underlying personality factors, such as low self-esteem, narcissism, or a general disposition toward negative emotions and affects (Lange, Blatz, et al., 2018).

*Situational Envy.* Second, another stream of literature argues that envy is rather situational and refers to a temporary, situation-specific envy (van de Ven et al., 2009) that often occurs in environments such as work or team contexts (Duffy & Shaw, 2000). Authors do refer to this type of envy as an “emotional reaction to a specific event” (Duffy et al., 2012, p. 645) and

underscore the notion that envy arises in reaction to particular events or situations (Cohen-Charash, 2009). This body of literature suggests that even individuals not typically prone to envy can experience it under certain circumstances, such as external triggers like social comparisons, which can provoke feelings of envy (Cohen-Charash, 2009). In the situational domain, researchers discuss that envy can manifest either in response to individual comparators – often termed episodic envy (Cohen-Charash, 2009) – or in response to multiple comparators (Dineen et al., 2017; Duffy et al., 2012), involving more than one reference point (Duffy et al., 2021).

*Situational Episodic Envy.* The third stream of literature depicts envy as the experience that involves a specific individual (Duffy et al., 2012) or event as a referent (Cohen-Charash, 2009). According to this stream of literature which is part of the situational view, envy is also even experienced by people who are not predisposed to experience envy because “of a specific social comparison in which they fare badly relative to another” (Cohen-Charash, 2009, p. 2128) “in a domain central to one’s self-concept” (Cohen-Charash & Mueller, 2007, p. 666). This stream is suggesting envy to be rather state than trait and occurs temporary and situation-specific (Cohen-Charash, 2009). Table 3 summarizes the main perspectives on envy and its conceptualization or definition:

<b>Author</b>	<b>Definition</b>	<b>Uni/Dual<sup>3</sup></b>	<b>Disp/Sit<sup>4</sup></b>
Bedeian (1995)	“[E]nvy is an emotion that occurs when a person begrudges another for having or receiving something that he or she does not have and perceives with displeasure the other’s prosperity or advantage.” (Bedeian, 1995, p. 50)	U	S
Cohen-Charash (2009)	“[E]pisodic envy includes both the negative feeling itself and the social comparison component that can cause this feeling. Envy is considered an emotional reaction to a specific	U	S

<b>Author</b>	<b>Definition</b>	<b>Uni/Dual<sup>3</sup></b>	<b>Disp/Sit<sup>4</sup></b>
	event triggered by upward social comparison. In this comparison, the envious person feels inferior to the envied person due to not having what the envied person has.” (Zurriaga et al., 2020, p. 1251)		
Duffy et al. (2012)	“The experience of envy has been conceptualized in three related ways: as situational – that is, as a general envy of others in an environment, typically a work context or team, involving multiple referents or comparators (e.g., Duffy & Shaw, 2000; ); as dispositional (e.g., Smith, Parrott, Diener, Hoyle, & Kim, 1999); and as specific and episodic, involving a specific individual as a referent (e.g., Cohen-Charash, 2009).” (Duffy et al., 2012, p. 645)	U	D/S
Kim and Glomb (2014)	“[E]nvy – an affective manifestation of unfavorable upward comparison – that underlies the relationship between task performance and victimization.” (Kim & Glomb, 2014, p. 620)	U	S
Lange and Crusius (2015)	“Envy is defined as a negative emotional response to another person’s superior quality, achievement, or possession, in which the envier either desires the advantage or wishes that the envied person lacks it. [...] In summary, dispositional envy is a comparison-based emotional trait that leads to frustration when people are confronted with an upward standard.” (Lange & Crusius, 2015, p. 284)	D	D
Lange, Blatz, et al. (2018)	“Dispositional envy describes individuals’ stable tendency to respond to upward status comparisons with behavior directed at leveling the difference	D	D

<b>Author</b>	<b>Definition</b>	<b>Uni/Dual<sup>3</sup></b>	<b>Disp/Sit<sup>4</sup></b>
	toward these superior others.” (Lange, Blatz, et al., 2018, p. 425)		
Parrot and Smith (1993)	“Envy is the painful emotion that can occur when people lack another’s superior quality, achievement, or possession, eliciting a desire to also obtain the advantage or a wish that the other loses it (Parrott and Smith, 1993).” (Lange, Blatz, et al., 2018, p. 424)	U	S
Smith and Kim (2007)	“[E]nvy is an unpleasant and often painful blend of feelings characterized by inferiority, hostility, and resentment caused by a comparison with a person or group of persons who possess something we desire.” (Smith & Kim, 2007, p. 49)	U	S
Tai et al. (2012)	“[E]nvy as a homeostatic emotion characterized by pain at another’s good fortune that activates threat- and challenge-oriented action tendencies, we address the implications of envy for behavior.” (Tai et al., 2012, p. 110)	U	S
Van de Ven et al. (2009)	“Envy is the painful emotion caused by the good fortune of others.” (van de Ven et al., 2009, p. 419)	U	S
Vecchio (2000)	“Envy can be defined formally as a pattern of thoughts, emotions, and behaviors that results from an employee’s loss of self-esteem in response to a referent other’s obtainment of outcomes that one strongly desires.” (Vecchio, 2000, p. 162)	U	S

**Table 3: Overview of Selected Envy Conceptualizations** (Own illustration); <sup>3</sup> U = unitary approach; D = dual approach; <sup>4</sup> D = dispositional envy; S = situational or episodic envy.



### 2.2.3 Measures of Envy

As described in the previous chapter, envy has been assessed and defined through various lenses. On the one hand, envy is considered through the lens of a stable dispositional tendency (e.g., Lange, Blatz, et al., 2018; Rentzsch & Gross, 2015; Smith & Kim, 2007). Another stream of literature defines envy as situational, occurring situationally (e.g., Cohen-Charash, 2009; Duffy et al., 2021; Schaubroeck & Lam, 2004; Vecchio, 2000). Both streams of literature have developed individual scales to measure envy (see Table 4 for the most prominent scales) (see also Casu, 2015):

#### *Dispositional Envy Scales*

Dispositional envy is predominantly measured using scales that adopt a retrospective perspective, requiring respondents to self-evaluate their feelings of envy and related emotions towards others in a range of diverse situations (Smith et al., 1999). The most cited and frequently used scales in this regard are Gold's (1996) 20-item York Enviousness Scale, Smith et al.'s (1999) 8-item Dispositional Envy Scale and Veselka et al.'s (2014) 10-item Vices and Virtues Scale (Lange & Crusius, 2015). All of these scales measure envy as a trait and conceptualize envy as a single dimension, focusing on envy as a personality trait, by emphasizing ill will, resentment, inferiority or perceptions of injustice (Lange & Crusius, 2015). For instance, Smith and Kim (2007) evaluate the trait of envy by focusing on the frequency and intensity of envious feelings, with items like "*Feelings of envy constantly torment me.*" and "*I feel envy everyday.*". They also consider the affective aspects of inferiority (e.g., "*The bitter truth is that I generally feel inferior to others.*"), alongside frustration (e.g., "*It is so frustrating to see some people succeed so easily.*"), and elements of resentment and perceived injustice (e.g., "*It somehow doesn't seem fair that some people seem to have all the talent.*"). Conversely, Gold (1996) defines envy as a collection of cognitive processes characterized by feelings of dissatisfaction (e.g., "*I wouldn't want to trade places with anyone.*"), pain (e.g., "*It pains me to*

*think of the success of my friends.*”), hostility (e.g., *“I dislike seeing others enjoying themselves.”*), longing (e.g., *“I think a lot about what others have that I would like.”*), anger (e.g., *“I feel angry when others succeed.”*), and resentment (e.g., *“It makes me feel good to rain on someone’s parade.”*). And lastly, Veselka et al. (2014) designed the Vices and Virtues scale to measure the individuals dispositional tendency to commit deadly sins, while in the envy subscale focusing on resentment (e.g., *“When someone excels at a task that I have always wanted to master, I cannot help but feel a sense of resentment toward them.”*) and annoyance (e.g., *“I am annoyed when I see people who buy things that I cannot have.”*) (Casu, 2015).

In the dispositional regard, Crusius and Lange (2015) introduced a new kind of scale to the envy literature, conceptualizing envy as a dual disposition having “benign” and “malicious” forms. They include items focusing on the malicious part of envy (e.g., *“I feel ill will toward people I envy.”*, *“Seeing other people’s achievements makes me resent them.”*) as well as items focusing on the benign part of envy (e.g., *“Envyng others motivates me to accomplish my goals.”*, *“I strive to reach other people’s superior achievements.”*).

### ***Situational Envy Scales***

Another stream of literature has developed scales to measure envy situationally. For example, Schaubroeck and Lam (2004) and Vecchio (1995) measure envy as occurrence in specific contexts, particularly work settings. Vecchio’s (1995) 5-item scale assesses the cognitive and affective component of envy (Casu, 2015), focusing on the sense of inferiority (e.g., *“Most of my co-workers have it better than I do.”*), helplessness (e.g., *“I don’t imagine I’ll ever have a job as good as some that I’ve seen.”*) and discontent (e.g., *“It is somewhat annoying to see others have all the luck in getting the best assignments.”*). Schaubroeck and Lam (2004) adapted the Smith and Kim (1999) envy scale to the workplace setting and assess the frequency of experiencing envy (e.g., *“Feelings of envy constantly torment me.”*), the intensity of envy

towards others (e.g., “*I generally feel inferior to his/her success.*”) and also resentment (e.g., “*Frankly, his/her success makes me resent him/her.*”) (Casu, 2015).

Another sub-stream of authors arguing for situational envy propose that envy can also be characterized as “episodic”, only occurring towards a particular person within a specific social-comparison situation (Cohen-Charash, 2009). One example for a scale from this categorization is Cohen-Charash’s (2009) 10-item episodic envy scale. To provoke episodic envy, participants are prompted to remember a previous experience of envy in the workplace. They are given precise instructions that include a definition of envy. The scale requires participants to evaluate a 6-item component that describes feelings of anger (e.g., “*hatred*”, “*rancor*”, and “*gall*”) and also a 4-item component centered on social comparison (e.g., “*Feeling lacking some of the things X has.*”) and desire (e.g., “*A desire to have what X has.*”).

Scale	Author	# Items	Work specific	Citations <sup>5</sup>	Alpha	Sample Papers Using Measure	Categorization	Table No. Appendix
Benign and Malicious Envy Scale	Lange and Crusius (2015)	10	no	447	.84 – .90	Braun et al. (2018); Brooks et al. (2019)	Dispositional	Table 45
Benign and Malicious Envy Scale	Van de Ven et al. (2009)	8	no	839	.72-.88	Braun et al. (2018); Lin et al. (2018)	Situational	Table 46
Dispositional Envy Scale	Smith et al. (1999)	8	no	588	.83 – .86	Dineen et al. (2017); Kim and Glomb (2014); Lee and Duffy (2019); Schaubroeck and Lam (2004)	Dispositional	Table 47
Domain-Specific Envy Scale	Rentzsch and Gross (2015)	15	no	65	.92	Erz and Rentzsch (2022)	Dispositional	Table 48
Envy Scale	Schaubroeck and Lam (2004)	4	no	409	.88	Cheng et al. (2023)	Dispositional	Table 49
Envy Scale	Parrot and Smith (1993)	18	no	1098	<i>n/a</i>	Anaya (2016); Parks et al. (2002)	Situational	Table 50
Episodic Envy Scale	Cohen-Charash (2009)	9	no	358	.81	Khan et al. (2014); Shu and Lazatkhan (2017); Tariq et al. (2021); Thiel et al. (2021); Yu et al. (2018)	Situational	Table 51
Facebook Envy Scale	Tandoc (2015)	8	no	905	.78	Yuen et al. (2019)	Dispositional	Table 52
Materialism Scale	Belk (1984)	8	no	1533	.64	Ger and Belk (1996)	Dispositional	Table 53
Vices and Virtues Scale	Veselka et al. (2014)	10	yes	147	.85	Brud and Ciecuch (2020)	Dispositional	Table 54
Workplace Envy Scale	Vecchio (1995)	5	yes	470	.75	Demirtas et al. (2017); Duffy and Shaw (2000); Eissa and Wyland (2016); Koopman et al. (2019); Navarro-Carillo et al. (2018); Ogunfowora et al. (2021);	Dispositional	Table 55
York Enviousness Scale	Gold (1996)	20	no	125	.91	Neufeld and Johnson (2016)	Dispositional	Table 56

**Table 4: Overview of Envy Scales** (Own illustration); <sup>5</sup> number of citations are based on Google Scholar (status as of July 2022); see Appendix for full scales.

#### **2.2.4 Consequences and Outcomes of Envy**

Envy can increase the motivation to mitigate the pain and to eradicate the inferiority-causing gap with the envied (Crusius et al., 2020). In order to achieve this ultimate, higher goal, myriad strategies are applied that motivate behavioral as well as emotional outcomes (Crusius et al., 2020). The consequences of envy however are discussed by researchers across several contexts and no overarching classification or categorization does exist.

##### ***Behavioral Outcomes***

Social comparison theory suggests that the outcomes of comparisons can lead to either assimilation or contrast effects (Mussweiler et al., 2004; Smith, 2000). Although researchers have examined the behavioral consequences of envy through various lenses, the prevailing view is that envy entails either efforts to enhance oneself (i.e., assimilation through self-improvement) or efforts to diminish the envied party (i.e., contrast through leveling-down), aiming to mitigate the perceived disparities (Crusius et al., 2020; Smith & Kim, 2007).

While numerous different consequences of envy have been explored and analyzed across literature (Crusius et al., 2020; Smith & Kim, 2007), there are also several different reasonings for envy having behavioral consequences. Lange et al. (2018) argue that behavioral consequences of envy are usually attributed to the fact that status evolves from the social consensus that prestige and dominance lead to social influence. Therefore, envy is regarded as manifesting in observable behaviors that are aimed at altering others' perceptions of the envier as either successful or intimidating, depending on the context (Lange, Blatz, et al., 2018).

Duffy and Shaw (2000) as well as Salovey and Rodin (1984) also argue that social status plays a bigger role for the behavioral consequences of envy and complement this perspective by stating that repairing damaged self-esteem is another further reason. Indeed, envy can drive a

range of responses, which some scholars categorize as either constructive and destructive (e.g., Tai et al., 2012) or as hostile and non-hostile (e.g., Parrott & Smith, 1993), respectively.

On the one hand, the person experiencing envy may seek to elevate their own status to match the level of the comparison referent. Exemplary behaviors in this context include seeking assistance, engaging in learning activities, and pursuing other forms of self-improvement (e.g., Yu et al., 2018). Also, increased work effort (Sterling et al., 2016), working harder (e.g., Crusius et al., 2020; Khan et al., 2017) or reappraising the situation (Crusius et al., 2020) are further examples for positive behavioral consequences of envy.

On the other hand, to diminish or counter the disparity with the comparison reference, the envious individual might engage in negative behaviors. Examples of negative behavioral outcomes encompass distancing oneself from the target or undertaking harmful actions to offset one's own perceived inferiority (Greco et al., 2019) or counterproductive work behaviors that violate significant organizational norms (Bennett & Robinson, 2000). Also, ostracism (Ferris et al., 2008), abusive supervision (Tepper, 2000), social undermining (Duffy et al., 2012) or incivility behaviors (Blau & Andersson, 2005) are further behavioral examples for consequences of envy. Table 5 summarizes the most prominent examples of the envy literature on behavioral outcomes.

<b>Behavioral Outcome</b>	<b>Description</b>	<b>Sample Papers</b>
Abusive Supervision	“The theory we propose conceptualizes abusive supervision as a calculated strategy that is designed to accomplish the specific objective of redressing envy-induced self-esteem threats (i.e., of “leveling-down” envied subordinates; Tepper, Duffy, & Breaux-Soignet, 2012) and that operates alongside alternative strategies – self-improvement.” (Yu et al., 2018, p. 2298)	Yu et al. (2018)

<b>Behavioral Outcome</b>	<b>Description</b>	<b>Sample Papers</b>
Aggressive Behavior	“We named it striving tendency and aggressive tendency, the intention to improve oneself or degrade others.” (Yang & Tang, 2021, p. 4)	Yang and Tang (2021)
Avoidance Oriented Behavior	“[A]voidance is a common emotion regulation strategy to evade pain (Berman, 2007; Kashdan et al., 2006). In organizational life, avoidance behaviors include skipping work; this initial, temporary withdrawal often deteriorates such that avoidance eventually takes the form of turnover, with employees permanently leaving their place of employment (Grandey, 2000; Harrison et al., 2006).” (Tussing et al., 2021, p. 2)	Tussing et al. (2021)
Counterproductive Work Behavior	“[C]ounterproductive work behavior (CWB) represents ‘voluntary, potentially destructive or detrimental acts that hurt colleagues or organizations’ (Spector and Fox 2002, p. 270).” (Braun et al., 2018, p. 725)	Abdul Kader Jilani et al. (2019); Braun et al. (2018)
Impression Management	“Impression management is a process in which people try to control others to form an impression on themselves (Rosenfeld, 1995).” (Abdul Kader Jilani et al., 2019, p. 709)	Abdul Kader Jilani et al. (2019)
Incivility	“[S]howing disregard and mistreatment for fellow workers, and it is defined as “low-intensity deviant behavior with ambiguous intent to harm the target, in violation of workplace norms for mutual respect.” (Mao et al., 2021, p. 1267)	Mao et al. (2021)
Job Engagement	“[O]pposite of burnout and characterized via three dimensions; vigor, dedication and absorption.” (Erdil & Müceldili, 2014, p. 449)	Erdil and Müceldili (2014)
Moral Disengagement	“[M]oral disengagement mechanisms as a coherent set of cognitive tendencies that influence the way	Moore et al. (2012)

<b>Behavioral Outcome</b>	<b>Description</b>	<b>Sample Papers</b>
	individuals may approach decisions with ethical import.” (Moore et al., 2012, p. 6)	
Motivation	“[M]otivational force that propels people to work harder to get what others already have” (van de Ven et al., 2011, p. 419)	Van de Ven et al. (2011)
Organizational Citizenship Behavior	“When employees engage in OCB, they select different OCBs in that OCB-Individual (OCBI) directly benefits organizational members and in that OCB-Organization (OCBO) directly benefits the organization (Williams and Anderson, 1991).” (Kim et al., 2010, p. 531)	Kim et al. (2010)
Risk-Taking	“[P]eople with a desire for advancement worry little about the negative potentials of risk and are, thus, motivated to take any actions that would provide gain. Therefore, they generally seek risky options because these provide possibilities to advance from the status quo to a better state.” (Kwon et al., 2017, p. 41)	Kwon et al. (2017)
Self-Improvement	“[M]otivation to improve oneself.” (Kwon et al., 2017, p. 39)	Kwon et al. (2017)
Social Undermining	“[B]ehavior intended to hinder the ability of others to establish and maintain positive interpersonal relationships, work-related successes, and favorable reputations.” (Duffy et al., 2012, p. 643)	Duffy et al. (2012)
Striving Behavior	“We named it striving tendency and aggressive tendency, the intention to improve oneself or degrade others.” (Yang & Tang, 2021, p. 4)	Yang and Tang (2021)
Supervisory Leader Self-Improvement	“[Behavior] designed to ‘level up’ against envied subordinates.” (Yu et al., 2018, p. 2298)	Yu et al. (2017)
Unethical Pro-Organizational Behavior	“[B]ehaviors conducted by employees to potentially benefit the organization.” (Umphress et al., 2010, p. 769)	Moore et al. (2012)



<b>Behavioral Outcome</b>	<b>Description</b>	<b>Sample Papers</b>
Work Effort	“[B]ehave in a manner consistent with their positive self-evaluation, such as trying to improve their status.” (Kim et al., 2020, p. 4)	Kim et al. (2020)
Workplace Ostracism	“[S]ocially painful experience of ‘being ignored or excluded’ in the workplace.” (Mao et al., 2021, p. 1267)	Mao et al. (2021)

**Table 5: Summary of Behavioral Outcomes of Envy** (Own illustration)

### *Emotional Outcomes*

Understanding the emotional dynamics of envy involves recognizing that due to its social stigma (Duffy et al., 2012), individuals often conceal their envy from others (Silver & Sabini, 1978) and even from themselves (Smith & Kim, 2007). Consequently, individuals who experience envy might mask it by displaying socially acceptable emotions, such as anger towards or happiness for the other person (Crusius et al., 2020).

Current research agrees that the outcomes of envy do therefore not only manifest in behaviors, but envy can also illicit emotional consequences. Prior meta-analyses have shown that emotional states may either be positive or negative (Howard et al., 2020), and that positive emotions decrease when an individual feeling envy faces unsettling differences between their expectations and the reality they perceive (Buunk & Ybema, 2003).

Upward comparisons can elicit negative emotions in envious individuals because these comparisons pose a threat to their desire for superiority when they see others surpassing them (Crusius et al., 2020; Smith & Kim, 2007). Therefore, current research supports the notion that envy can anticipate emotional reactions that are directed both inwardly and outwardly, including the experience of schadenfreude at the misfortune of the envied individual (e.g.,

Smith et al., 2009), depression (e.g., Salovey & Rodin, 1984) or anxiety (Cohen-Charash, 2009). Table 6 summarizes prominent examples of the envy literature on emotional outcomes.

<b>Emotional Outcome</b>	<b>Description</b>	<b>Sample Papers</b>
Anxiety	“[A]nxiety is considered to be one of unfocused arousal, discomforting to the person involved, and a state to be avoided.” (Dobson, 1985, p. 308)	Cohen-Charash (2009); Li et al. (2022)
Depression	“Depression is an individual’s negative view of the self, the world, and the future, as well as uncontrollable and frequent negative thoughts, characterized by pessimism, self-denial, compliance, and self-accusation.” (Xiang et al., 2020, p. 547)	Li et al. (2022); Xiang et al. (2020)
Group Satisfaction	“Group satisfaction was measured with a three-item scale adapted from a scale developed by Cammann, Fichman, Jenkins, and Klesh (1983). A sample item is, ‘All in all, I am satisfied with my team.’” (Duffy & Shaw, 2000)	Duffy and Shaw (2000)
Hostility	“Envious hostility arises as a defense against the withering implications of blameworthy inferiority. It is shameful to be inferior especially if you are partly to blame, it is shameful to feel hostile toward another person simply because of his or her deserved advantage, and, finally, it is shameful to be a person suffused with shame. It is a demoralizing mixture.” (Smith & Kim, 2007, p. 54)	Smith and Kim (2007)
Negative mood	“[N]egative mood that contain depression or sadness among their elements.” (Carlson & Miller, 1987, p. 93)	Cohen-Charash (2009)
Resentment	“Invidious resentment occurs when the advantage is painful but fair by such objective standards.” (Smith & Kim, 2007, p. 48)	Caze (2001); Smith and Kim (2007)
Schadenfreude	“[T]he pleasure at another’s misfortune.” (Lange, Weidman, et al., 2018, p. 573)	Lange, Weidman, et al. (2018)

<b>Emotional Outcome</b>	<b>Description</b>	<b>Sample Papers</b>
Shame	“Shame may also be different from envy in that it involves a more constant focus on a defective, inferior aspect of the self (e.g., Lewis, 1971; Tangney, 1995; Tangney & Dearing, 2002).” (Smith & Kim, 2007, p. 54)	Foster (1972)

**Table 6: Summary of Emotional Outcomes of Envy** (Own illustration)

### *Cognitive Outcomes*

In the context of potential outcomes of envy, cognitive outcomes refer to the psychological and mental effects that envy can have on an individual’s thought processes, perceptions, and beliefs. Current research has found several cognitive dimensions being impacted by envy (De Vries, 1992). The cognitive consequences of envy can manifest in various ways, such as reassessing the coveted resource as unimportant or viewing the envied individual as incomparable to oneself (De Vries, 1992), forming implicit attitudes towards the envied person (Chan & Sengupta, 2013), or paying more attention to information that aids adaptation (Hill & Buss, 2006), for example. Table 7 summarizes the most prominent examples of the envy literature on cognitive outcomes.

<b>Cognitive Outcome</b>	<b>Description</b>	<b>Sample Papers</b>
Attention	“[A]ttention to [...] advantaged targets.” (Hill et al., 2011, p. 653)	Hill et al. (2011)
Devaluation	“People behaving in this mode are usually guided by vengefulness and bitterness but, at the same time, may experience a sense of moral righteousness and indignation as a way of disguising and justifying their activities.” (De Vries, 1992, p. 52)	De Vries (1992)
Idealization	“Idealization is essentially a way of managing aggressive impulses. It is an effort to prevent a	De Vries (1992)

<b>Cognitive Outcome</b>	<b>Description</b>	<b>Sample Papers</b>
	“good” image from being contaminated by a “bad” one, an attempt to retain some satisfying experiences as a source of inner strength.” (De Vries, 1992, p. 50)	
Implicit Attitudes	“Considerations of the flatterer’s sincerity do lead to a more positive judgment; however, the initial negative reaction stays on as an implicit attitude.” (Chan & Sengupta, 2013, p. 740)	Chan and Sengupta (2013)
Impulsivity	“We propose that social comparisons with better-off others trigger an impulsive envious response that entails a behavioral tendency to strive for their superior good.” (Crusius & Mussweiler, 2012, p. 142)	Crusius and Mussweiler (2012)
Memory	“[M]emory for advantaged targets.” (Hill et al., 2011, p. 653)	Hill et al. (2011)
Self-Esteem	“A sense of inferiority has obvious implications for a person’s overall self-estimation, as the multitude of research on the links between social comparisons and self-evaluation confirms (e.g., Festinger, 1954; Suls & Miller, 1977; Suls & Wills, 1991; Wood, 1991). [...] the dispositionally envious should tend to have low self-esteem because at least one source of self-assessment, upward social comparisons, can often diminish the self.” (Smith et al., 1999, p. 1012)	Smith et al. (1999); Morse and Gergen (1970)
Self-Regulatory Depletion	“[I]ndividuals are less able or willing to dedicate cognitive effort toward persevering on other, unrelated tasks.” (Hill et al., 2011, p. 653)	Hill et al. (2011)
Withdrawal	“Withdrawal becomes an extreme countermeasure. Such a way of acting leads to feelings of helplessness and reactions of dependency.” (De Vries, 1992, p. 51)	De Vries (1992)

**Table 7: Summary of Cognitive Outcomes of Envy** (Own illustration)

### **2.2.5 Definition and Conceptualization of Envy Used in This Dissertation**

In my study and dissertation, I decided to use the situational conceptualization of envy as a unitary affective construct, following the reasoning of established authors (e.g., Cohen-Charash, 2009; Cohen-Charash & Larson, 2017; Duffy et al., 2021; Vecchio, 2000). My decision is informed by several main assumptions (see also Cohen-Charash & Larson, 2017): First, envy can be experienced by any person under certain conditions and in specific situations, irrespective of their inherent disposition (Cohen-Charash, 2009; Cohen-Charash & Larson, 2017; Vecchio, 2000). Second, situational envy differs from its dispositional conceptualization (Cohen-Charash, 2009; Cohen-Charash & Larson, 2017), in that more individuals experience situational envy than those who are naturally predisposed to it (Cohen-Charash & Larson, 2017). This suggests that the experience of envy, along with its behavioral, emotional, and cognitive consequences, is more significant when viewed as a situational response rather than simply as a characteristic of personality (Cohen-Charash & Larson, 2017). Finally, the examination of *benign* and *malicious* envy entails the complication of conflating envy with its respective outcomes (Cohen-Charash & Larson, 2017). This would not only cause confusion but would also impair the understanding of envy, according to authors of the unitary approach (Cohen-Charash & Larson, 2017).

Hence, I follow the line of argumentation that the “distinction between ‘benign’ and ‘malicious’ envy is unwarranted” (Cohen-Charash & Larson, 2017, p. 174) and therewith conceptualize envy as a unitary, affective construct (Cohen-Charash & Larson, 2017; Vecchio, 2000) that can result in a broad spectrum of outcomes, some of which may be socially desirable and others undesirable (Cohen-Charash & Larson, 2017).

### **2.3 Envy and Venture Performance**

In the following section of my dissertation, I introduce the construct of perceived venture performance as an important indicator of venture success. After that, I elucidate why I hypothesize a negative impact of envy on perceived venture performance.

#### ***Venture Performance***

In the entrepreneurial domain, achieving success does not only seem to be a personal aspiration (Lukes & Laguna, 2010) but also serves as a marker of social success and impact (Angel et al., 2018). However, gauging entrepreneurial performance and therewith evaluating the success as a founder is not straightforward – as historical venture information is limited and objective venture performance data is not readily accessible (Brush & Vanderwerf, 1992). While the success of more established firms can often be measured and compared based on objective financial data (Carton & Hofer, 2006; Chenhall & Langfield-Smith, 2007; Tangen, 2004) – such as sales (Murphy et al., 1996), market share (Chenhall & Langfield-Smith, 2007), or return on investment (Murphy et al., 1996) – using objective performance metrics proves less meaningful for new ventures (Murphy et al., 1996).

For example, one of the main objective performance indicators used in research is venture survival (e.g., Amezcua et al., 2013; Mudambi & Zahra, 2007; Soto-Simeone et al., 2020; Zimmerman & Zeitz, 2002). The extent of its use in entrepreneurship research (e.g., Boden & Nucci, 2000; Bruno et al., 1992; Hyttinen et al., 2015) is evidence for the difficulty in obtaining objective measures within the entrepreneurial realm, reflecting the lack of accurate and objective measures to compare performance and success across stages and industries (De Clercq & Sapienza, 2006). While the concept of survival can be seen as an absolute, objective metric of performance, based on a venture's capacity to sustain its operations independently (Brush & Vanderwerf, 1992; Soto-Simeone et al., 2020), and despite arguments from several scholars

that venture survival is a valid measure of performance (Josefy et al., 2017; Mudambi & Zahra, 2007; Soto-Simeone et al., 2020), it lacks a nuanced scale for assessing the success of a venture. Essentially, it provides only a final, binary measure of performance: success or failure (Dess & Robinson, 1984).

Hence, in order to measure entrepreneurial success, an alternative indicator has been deemed appropriate: perceived venture performance (e.g., De Clercq & Sapienza, 2006; Hai Yap Teoh & See Liang Foo, 1997; Hsu et al., 2016) – the individual satisfaction with the performance of the venture in the dimensions of sales, market share, return on investment and market development (De Clercq & Sapienza, 2005, 2006). This is in line with existing research, where measuring perceptual metrics has been a common practice since many years (e.g., De Clercq & Sapienza, 2006; Hsu et al., 2016; Prieto & Revilla, 2006) – for example, return on investment (Ellinger et al., 2002), time to market (Ellinger et al., 2002), market share (Ellinger et al., 2002), profitability (Tippins & Sohi, 2003), sales growth (Tippins & Sohi, 2003), or customer retention (Tippins & Sohi, 2003). Perceived (venture) performance, in fact, has been linked to important variables in the entrepreneurial process, such as satisfaction (e.g., Burton et al., 2003), learning (e.g., De Clercq & Sapienza, 2005) or capital commitment (e.g., De Clercq & Sapienza, 2006). While one might argue that the perception of performance only represents a biased view of the venture's objective performance, Dess and Robinson (1984) have found that the use of perceptual measures of performance are mostly consistent with objective measures (see also Prieto & Revilla, 2006).

### ***Relation Between Envy and Venture Performance***

Social comparison theory indeed underscores that individuals tend to make comparisons in the absence of objective standards (Festinger, 1954; Lyubomirsky & Ross, 1997). Thus, the entrepreneurial sphere seems to be especially prone for fostering social comparison dynamics. Given this relevance, founders' envy is therefore likely to elicit significantly influential

cognitive (e.g., increased attention towards the envied other (Hill et al., 2011), decreased self-esteem (Morse & Gergen, 1970; Smith et al., 1999)) as well as emotional consequences (e.g., discontent or resentment (Smith & Kim, 2007), anxiety (Cohen-Charash, 2009; Li et al., 2022)), impacting their ability to focus on their own priorities and goals.

I theorize that founders who exhibit high levels of envy are prone to actively participate in social comparison, centering their attention on entrepreneurial peers and their achievements (Festinger, 1954). This cognitive preoccupation can divert their attention and resources (Hill et al., 2011; Vecchio, 2000), impacting their capacity to focus on their venture and their respective work (Roper & Juneja, 2008). For example, distracted founders might not allocate sufficient attention to sound decision-making (Speier et al., 1997), effective communication (Lammers & Becker, 1980), or feedback integration (Treisman, 1964), thus potentially overlooking market developments that would require respective adaptation.

In addition to the cognitive consequences for founders, envy can undermine founders' self-confidence and increase self-doubt (e.g., Morse & Gergen, 1970; Smith et al., 1999; Tesser, 1991) as the resulting higher dependence on comparison with others can reinforce the feeling of being inferior to other founders and their ventures and thus not being as good as the preferred comparison standard (Smith & Kim, 2007). This diminished confidence could even further hinder founders from taking respective actions to advance their own entrepreneurial endeavor, because of the awareness that the other founder enjoys a desired attribute (Smith & Kim, 2007) that one is currently lacking.

Also, envy and the resulting higher dependence on social comparison may also give rise to various emotional or affective states, such as discontent and resentment (Smith & Kim, 2007), or anxiety (Cohen-Charash, 2009; Li et al., 2022). As a consequence, I theorize that founders might have trouble in sustaining the mental clarity required (e.g., Angie et al., 2011; Blanchette



& Richards, 2010; Shepherd & Patzelt, 2018a) to evaluate market trends, pinpoint growth prospects, and adapt their business strategies when impacted by these powerful emotional or affective states. This is likely to impede their entrepreneurial performance because it can divert the founder's focus away from strategic planning and effective problem-solving, including effective opportunity evaluation and exploitation (Grichnik et al., 2010). As a result, I posit that founders who experience heightened levels of envy are inclined to perceive lower levels of venture performance.

***Hypothesis 1 (H1):*** The relationship between envy and venture performance will be negative.

### **2.3.1 Envy, Venture Performance and Entrepreneurial Experience**

Social comparison theory proposes that the engagement in comparison processes depends on individuals' assessments of their present circumstances (Festinger, 1954). In the same vein, I suggest that substantial personal experience in a specific domain can diminish the intensity of these social comparisons by decreasing one's reliance on comparison processes for self-evaluation within that domain. Specifically, I argue that through one's entrepreneurial experience the founder has acquired very individual lessons learned, which help the founder to calibrate his current performance rather than using the external comparison standard of the current performance of others.

Indeed, entrepreneurial experience has been linked to gaining crucial procedural knowledge of the founding process (Dimov, 2010; Shepherd et al., 2016) and therewith "guiding the nascent entrepreneur's efforts towards venture emergence" (Dimov, 2010, p. 1131). For instance, founders who have gathered experience with past venture foundations, regardless of their outcomes, are found to have gained a deeper understanding of the necessary sequence of actions, offering crucial insights for choosing the most effective strategies to engage and attract the appropriate customers, suppliers, and various other stakeholders (Brüderl et al., 1992).

Because of this, I theorize that entrepreneurial experience provides an antithesis to the concurrent availability of social comparison standards in order to evaluate one's own entrepreneurial performance – enabling founders to derive their self-evaluation from integrating and calibrating their current performance into and with their set of entrepreneurial experiences rather than from comparison with others.

Hence, I posit that prior entrepreneurial experience can assist founders in forming expectations for their current venture based on own previous experiences, reducing the need to compare themselves to their peers and therewith turning the comparison inward. By shifting from external comparisons to cultivating a practice of self-comparison, founders get used to gauging their current accomplishments against those of their previous ventures. This shift in focus, centered on personal advancement, diminishes the need for incessant external comparisons.

Conversely, founders who have limited prior entrepreneurial experience lack a foundation upon which to assess their performance. As a result, they are more inclined to rely on comparisons with others, as there are few alternative benchmarks available. This heightened reliance on comparing themselves to their peers can intensify feelings of envy, causing them to become more preoccupied with their peers' achievements and consequently diverting their attention from the pursuit of their venture's objectives. Consequently, I contend that founders with greater entrepreneurial experience are less susceptible to being distracted by envy-induced comparisons with others and are, therefore, less likely to hinder the performance of their ventures. Consequently, I hypothesize that higher levels of experience diminish the potency of envy's adverse impact on venture performance.

***Hypothesis 2 (H2):*** The relationship between envy and venture performance will be less negative for higher levels of entrepreneurial experience compared to lower levels of entrepreneurial experience.

### **2.3.2 Envy, Venture Performance and Environmental Dynamism**

Social comparison theory highlights that in the absence of clear, objective measures, individuals are inclined to make comparisons with others (e.g., Festinger, 1954; Lyubomirsky & Ross, 1997). Hence, the importance of the venture's environment for the effect of envy on venture performance and, simultaneously, for the intensity of the subsequent social comparison processes is inherent. While clear measures might be more available in stable environments, characterized by high certainty, minor technological changes and high predictability, those objective measures might far less be available in environments that are characterized by high dynamism – namely defined by high uncertainty, technological leaps, and market turbulence (Jansen et al., 2006). For example, in low dynamism venture environments, technological innovation cycles, sales figures or the number of product launches might be more predictable and hence objectively measurable and interpretable as they have not significantly changed over the course of a certain period of time (Dess & Beard, 1984). Conversely, in high dynamism venture environments, these exact measures are less predictable and hence less objectively comparable and interpretable as the measures itself, their relevance and interpretation are constantly changing (Jansen et al., 2006). Specifically, in such a dynamic environment, traditional objective measures of success, like stable year-over-year revenue growth or consistent market share, may not capture the venture's success due to several different factors, including the fast pace of technological changes, constantly shifting market needs, importance of research and development, or market valuation based on potential.

Because of the lack of objective measures in high dynamic environments and consistent with social comparison theory (Festinger, 1954; Lyubomirsky & Ross, 1997), I theorize that the reliance on comparison with other founders for evaluating the own venture performance is intensified when environmental dynamism is high (Corcoran et al., 2011; Gerard, 1963). Specifically, I posit that in dynamic landscapes founders tend to rather use others as references

to assess their performance and to grasp how well they perform in the respective environment, heightening their preoccupation and distraction. Consequently, founders high in envy are likely to be more profoundly impacted by the repercussions of envy and the respective social comparisons. As a result, I expect the negative connection between envy and their venture performance to become stronger, through diverting their focus away from their own performance.

Conversely, in less dynamic settings with stable norms and lower technological disruptions (Dess & Beard, 1984; Jansen et al., 2006), the desire for social comparisons recedes (Gerard, 1963). Consequently, they are less prone to fixate intensely on comparing themselves to others (Gerard, 1963) as they can use established and objectively available and interpretable measures instead. In such stable environments, the reduced significance of social comparisons can enable founders to direct their attention toward advancing their ventures, ultimately weakening the negative relation between envy and the venture performance. Consequently, I postulate that the entrepreneurial environment plays a pivotal role in the relationship between envy and venture performance.

***Hypothesis 3 (H3):*** The relationship between envy and venture performance will be more negative for higher levels of environmental dynamism compared to lower levels of environmental dynamism.

### **2.3.3 Summary of Hypotheses for Model A: Venture Performance**

Drawing on Festinger's social comparison theory (1954), I propose a series of hypotheses concerning the interaction between entrepreneurial envy and venture performance. I postulate a direct, negative relationship between entrepreneurial envy and venture performance (H1). Building upon this, I also suggest that the strength of this negative relationship is contingent upon the level of entrepreneurial experience exhibited by the individual founder (H2).

Specifically, I hypothesize that heightened levels of entrepreneurial experience serve to mitigate the adverse impact of envy on venture performance.

Finally, I posit that the negative influence of envy on venture performance is accentuated by the contextual factor of the venture’s environment. In particular, I suggest that the more dynamic the environmental conditions surrounding the venture, the more pronounced is the detrimental direct effect of envy on venture performance (H3). Figure 4 visualizes the hypothesized relationship.

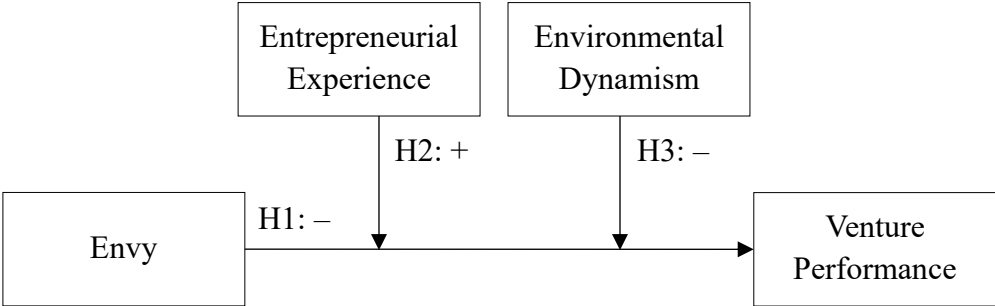


Figure 4: Visualization of Model A (Own illustration)

**2.4 Envy and Venture Goal Progress**

In the subsequent section of my dissertation, I introduce the construct of venture goal progress as an important additional indicator of entrepreneurial success, complementing venture performance (Chapter 2.3). After that, I elucidate why I hypothesize a negative impact of envy on venture goal progress.

***Venture Goal Progress***

Evaluating entrepreneurial success solely based on the performance of traditionally used metrics that are also used for established organizations neglects an important aspect: Especially for early-stage ventures, the respective measures can be varying significantly (Beaton, 2010), depending on factors such as their stage and maturity (De Clercq & Sapienza, 2006; Hofer, 1975), industry (De Clercq & Sapienza, 2006; Robinson, 1999), product complexity (Tech,

2018; Wessendorf et al., 2019), funding sources (Tech, 2018), perceived risk (Forlani & Mullins, 2000), labor or capital intensity (Balasubramanian, 2011) or general pursued strategy (see also Porter, 1980). Even further, founders and their ventures may prioritize other goals and objectives rather than maximizing the traditional and established metrics, especially in the early phases. Specifically, founders might prioritize building a functioning and high-performing team (Forster & Jansen, 2010; Klotz et al., 2014) as this is a dimension highly valued by venture capital firms (Hall & Hofer, 1993; Macmillan et al., 1985; Monika & Sharma, 2015). Other founders might prioritize the goal of meeting their self-imposed development milestones (Block & MacMillan, 1985). And even further, others might be focused on their goal of finding pilot customers (Kaulio, 2003; Wouters et al., 2018), filing a patent (Haeussler et al., 2014; Kaulio, 2003; Mann & Sager, 2007), developing a functioning prototype (Block & MacMillan, 1985), or establishing partnerships and collaborations (Eftekhari & Bogers, 2015). For example, deep-tech ventures that emerge from scientific revelations might focus more on the goal of filing a patent for their technology in the early phases, whereas other ventures with a background in online marketing might be more focused on the goal of generating first revenues with initial customers.

Therefore, the success and performance in entrepreneurial settings, especially during the early stages, can be defined in a much broader sense than by simply considering the perception of financial metrics: venture goal progress – achieving the individually defined goals and making progress towards these goals (Fishbach & Dhar, 2005), not limited to only the dimensions of sales, market share, return on investment or market development (see venture performance). Indeed, perceived progress refers to “the self-evaluation or appraisal of an individual’s success in pursuing a particular goal (Brunstein, 1993; Karoly, 1993)” (Uy et al., 2015, p. 3), or more specifically defined as venture goal progress: the “ongoing sense of how one is doing in the pursuit of one’s venture goal” (Uy et al., 2015, p. 1).

### ***Relation Between Envy and Venture Goal Progress***

Assessing one's venture goal progress involves determining how effectively the founder has made strides in advancing or propelling the business venture forward (e.g., Gielnik et al., 2014; Uy et al., 2017). Indeed, goal progress is an important antecedent for subjective well-being (Brunstein, 1993; Pomaki et al., 2009), effort intensity (Uy et al., 2015), and subjective success in the work domain (Wiese & Freund, 2005). In assessing their venture's goal progress, founders are likely to include their peers into their considerations. This is consistent with social comparison theory, suggesting that people are particularly likely to compare themselves to others in the absence of objective standards (Festinger, 1954; Lyubomirsky & Ross, 1997).

While this assessment and comparison is likely to happen constantly (Corcoran et al., 2011; Mussweiler, 2003) and automatically (Mussweiler et al., 2004), I theorize that founders high in envy are likely to be impacted by the detrimental consequences of their envious affect in this comparison. Specifically, I propose that founders who possess high levels of envy frequently and obsessively engage in comparisons with their peers, their ventures, and their accomplishments (Festinger, 1954; Menon & Thompson, 2010). I theorize that this behavior adversely impacts the attainment of their personal objectives and goals. Such constant comparisons not only divert founders from focusing on their own goals (Hill et al., 2011), but also affect the quality of their decisions and the quality of their judgments related to the success of their own ventures (e.g., Speier et al., 1997).

For example, I theorize that compulsive comparison can lead to obsessive monitoring of other founders, closely following their every move, which diverts founder's focus from their own business strategy and venture goals (Hill et al., 2011). Instead of innovating and improving their product or service, they potentially spend excessive time and resources trying to closely monitor their competitor (Hill et al., 2011; Menon & Thompson, 2010), ultimately to the detriment of their own venture's long-term goals. Even further, envy and the resulting comparison can

distract founders from staying true to their venture's core values and mission. They may compromise on their principles or make decisions that contradict their original vision and venture goal, all in an attempt to minimize the perceived inferiority between themselves and the envied other (Smith & Kim, 2007; van de Ven et al., 2009). This can, for example, alienate first loyal customers and harm the ventures competitive advantage instead (Porter, 1980), ultimately hindering founders to make progress towards their own venture's goals.

Lastly, the decision and judgement quality of founders high in envy may be diminished (Crusius & Mussweiler, 2012). For example, I theorize that envy can lead founders to make impulsive decisions about resource allocations in several dimensions (Crusius & Mussweiler, 2012; Wiklund et al., 2018). For instance, if a founder becomes envious of another venture's flashy office space or expensive marketing campaigns, they might divert funds from critical areas like product development or hiring skilled employees to match those superficial aspects, and to ultimately reduce the perceived inferiority between oneself and the envied (van de Ven et al., 2009). This misallocation can harm the overall growth and sustainability of the venture's business. Even further, envious founders may rush to imitate successful competitors (Crusius & Mussweiler, 2012) without a thorough understanding of whether these strategies align with their own business model or target audience. They might adopt a competitor's pricing, features, or marketing tactics without considering whether it makes sense for their unique situation, only to minimize the perceived inferiority between themselves and the envied other founder (van de Ven et al., 2009). As a result, I hypothesize that founders who are high in envy are likely to show lower levels of venture goal progress.

***Hypothesis 4 (H4):*** The relationship between envy and venture goal progress will be negative.



### **2.4.1 Envy, Venture Goal Progress and Entrepreneurial Experience**

Several intrapersonal factors (e.g., self-esteem, regulatory strategies, personality), social identity factors (e.g., race, gender, age, and cultural background), and one's relational self-construal (i.e., the extent of viewing oneself as interdependent or connected with others) have been found to influence the intensity of social comparisons (Lockwood & Matthews, 2007). In a similar vein, I propose that substantial personal experience in a particular domain can decrease the intensity of these social comparisons and reduce the respective reliance on social comparison processes in the same domain. Specifically, I contend that personal entrepreneurial experience causes a shift in the perspective of comparison, turning it inward.

This is especially true as entrepreneurial experience offers founders essential skills to ensure the success of their ongoing entrepreneurial ventures (Dimov, 2010; Shepherd & Patzelt, 2018d). Indeed, scholars found that entrepreneurial experience has a crucial beneficial impact on various aspects of new ventures. This includes a positive relationship with the initial size of the venture (Colombo et al., 2004), venture growth (Brüderl et al., 1992; Colombo & Grilli, 2005), external funding (Chatterji, 2009) or profitability (Bosma et al., 2004). Moreover, entrepreneurial experience is found to endow founders with crucial skills, such as an increased tolerance for uncertainty in decision-making (Dimov, 2010). This is because, through their business ventures, these founders learn how to operate effectively, even when they have limited information or feedback (Dimov, 2010; Domurath et al., 2020).

Because of this, I theorize that specifically in the context of founders, prior entrepreneurial experience can help to evaluate their own progress based on their own experiences, reducing the need to compare themselves to their peers and rather integrating their current progress into their set of experiences made in the past (Shepherd & Patzelt, 2018c). By shifting the focus from external benchmarking to internal self-comparison, founders may cultivate a habit of comparing their present achievements with their past entrepreneurial achievements as well as

failures of their prior venture(s). This shift in perspective diminishes the distraction and prominence of their envy, reducing the preoccupation with the achievements of other founders. Hence, founders high in entrepreneurial experience are less likely to focus on their peers' achievements and they are more likely to evaluate their goal progress of their current venture based on their experiences from previous ventures. This self-referential approach to goal progress assessment is likely to mitigate the concern about peer progress, thereby reducing the founders' frustration stemming from envy and increasing their capacity to work towards their own venture's goals.

In contrast, founders with little prior entrepreneurial experience cannot build on their own prior experience to evaluate their progress. Thus, they are more likely to rely on the comparison with others since alternative benchmarks are scarce (e.g., Festinger, 1954; Lyubomirsky & Ross, 1997). This will increase the intensity of experiencing envy through an increased focus on the achievements of their peers, ultimately increasing their distraction from working towards their own venture's goals. Consequently, I argue that for founders higher in entrepreneurial experience, envy is less likely to distract their focus towards comparison with others and, in turn, is less likely to impede their progress towards their venture's goals.

***Hypothesis 5 (H5):*** The relationship between envy and venture goal progress will be less negative for higher levels of entrepreneurial experience compared to lower levels of entrepreneurial experience.

#### **2.4.2 Envy, Venture Goal Progress and Environmental Dynamism**

Environmental dynamism is an essential measure in my study and a key measure in entrepreneurship (Deng et al., 2021; Ensley et al., 2006; Huang & Wang, 2013) that focuses on how predictable the competitors' behaviors are, the stability of industry players over time, the predictability of product demand and customer needs, and the overall steadiness of the industry

(Green et al., 2008). Specifically, dynamic venture environments are defined through quickly evolving technologies, significant shifts in consumer preferences, and high variations in demand or supply (Jansen et al., 2006). I argue that due to the low stability and high dynamism, measures of objective success are scarce as their relevance, importance and validity is subject to change on a frequent basis. For example, in the case of quickly evolving technologies (Jansen et al., 2006; Sørensen & Stuart, 2000), objective measures might not always be universally and objectively agreed upon: While one day revenue figures represent entrepreneurial success, the other day the number of product users or website visits is more important and relevant (Angel et al., 2018). In line with social comparison theory (Lyubomirsky & Ross, 1997), I argue that the lack of objective measures likely intensifies the relevance of social comparisons in the envy-venture goal progress relationship.

Even more, I theorize that the dynamism of the venture's environment can elicit the feeling of urgency for founders, that causes them to feel pressure to act and act quickly (Jansen et al., 2005). The reason for this is that today's measures of success may no longer be relevant tomorrow and therefore the pressure to exploit today's business while exploring new opportunities is intensified (Jansen et al., 2006, 2005; Shepherd & Patzelt, 2021). With this, I posit that the impact of envy on venture goal progress becomes more pronounced: Because founders try to constantly monitor other founders and their ventures for potential signposts for new opportunities to explore, the comparison with others gets more prominent and therewith intensifies the significance of envy.

Hence, in dynamic environments founders high in envy may be more affected by the consequences of social comparison due to increased reliance and focus on the actions of other founders to evaluate their own entrepreneurial actions and success (e.g., Festinger, 1954; Lyubomirsky & Ross, 1997), compared to low dynamic environments. These processes are likely to increase their preoccupation and distraction based on the comparison with their peers.

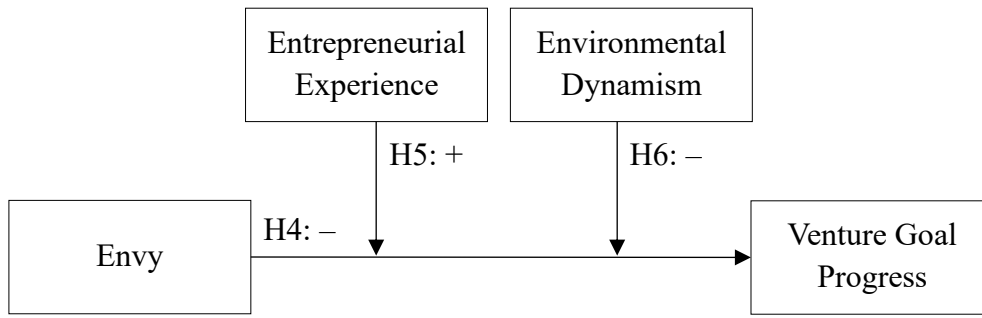
Thus, the relationship between envy and venture goal progress is likely to become more negative.

In contrast, in a venture's environment that is characterized by low dynamism and respectively minor and predictable shifts in the firm's external environment (Dess & Beard, 1984; Jansen et al., 2009), individuals high in envy may experience less need for social comparisons (Gerard, 1963) than in highly dynamic environments. Indeed, individuals with a clearer more predictable understanding of the rules and standards of their environment (Dess & Beard, 1984) are less likely to feel a sense of urgency and are less likely to intensely focus on comparing themselves to others (Gerard, 1963). This reduced prominence of social comparisons can help founders to focus on advancing the goals of their own ventures, decreasing the negative relationship between envy and their venture goal progress.

***Hypothesis 6 (H6):*** The relationship between envy and venture goal progress will be more negative for higher levels of environmental dynamism compared to lower levels of environmental dynamism.

### **2.4.3 Summary of Hypotheses for Model B: Venture Goal Progress**

Based on social comparison theory (Festinger, 1954), I posit that there is a negative direct relationship between envy and venture goal progress (H4). Further, I postulate that this relationship is weaker contingent on the entrepreneurial experience of the individual founder. Specifically, I hypothesize that higher levels of entrepreneurial experience weaken the negative effect of envy on venture goal progress (H5). Finally, I hypothesize that the negative effect of envy on venture goal progress is stronger contingent on the venture's environment. Specifically, I hypothesize that the higher the environmental dynamism of the venture, the stronger the negative direct effect of envy on venture goal progress (H6). Figure 5 visualizes the hypothesized relationship.



**Figure 5: Visualization of Model B** (Own illustration)

### **3 Methodology**

In the upcoming section of my dissertation, I present a detailed breakdown of the research method employed in my analysis. This begins with a thorough explanation of the overall research design (Chapter 3.1), where I discuss the chosen research approach and detail the constructs integrated into my survey. Subsequently, I describe the process of selecting participants for my study and elaborate on the methodologies used for gathering data. Proceeding to data collection specifics (Chapter 3.2), I provide a comprehensive depiction of the demographics, categorizing them into demographics at the venture level and at the individual founder level. Additionally, I offer an overview of the metrics used for the main constructs of my study (Chapter 3.3), which include envy, venture performance, venture goal progress, entrepreneurial experience, environmental dynamism, and various control variables. Following this, I encapsulate my data analysis (Chapter 3.4), focusing on the Ordinary Least Squares (OLS) regression method, the process of mean centering, and strategies to mitigate potential biases.

#### **3.1 Research Design**

The research design of my study is informed by the overarching research question outlined in Chapter 1.1 of this dissertation and represents the general plan on how this research project goes about answering it (Saunders et al., 2019). This study intends to answer to what extent a founder's envy shapes their entrepreneurial success and what contingencies affect this relationship. In this chapter, I outline what research approach I have applied (Chapter 3.1.1), how the recruitment of the survey participants looked like (Chapter 3.1.2) and how data was collected (Chapter 3.1.3).

### 3.1.1 Research Approach

As my overarching objective was to understand the role of envy in the entrepreneurial process, I decided for a cross-sectional sequential design, conducting two quantitative online surveys with approximately 600 founders of a university incubator in Germany with a time lag of approximately three months in between both questionnaires. I decided for this particular research design to allow control over the baseline level of the dependent variable at the point of measuring the independent variables (see also Duffy et al., 2012).

The decision for an online survey is based on several main criteria: Online surveys are recognized for their effectiveness in data collection across various academic disciplines, including the field of entrepreneurship (e.g., Mitchelmore & Rowley, 2013; Stephens et al., 2022; Tacke et al., 2022; Waddingham et al., 2023). Additionally, online surveys offer the advantage of easily accessing a large volume of responses (Wright, 2005; Wu et al., 2022). Even further, online surveys are rather time and cost efficient (Wu et al., 2022) compared to other ways of collecting survey data, such as paper surveys. And lastly, the time required for implementation is shorter, there are fewer transcription errors and the data at hand is easier to analyze (Andrews et al., 2003; Saleh & Bista, 2017).

After delineating the constructs derived from fields like psychology, (organizational) management, and entrepreneurship, I conducted thorough research to identify appropriate scales for assessing these constructs in my study. Multiple criteria were used to ascertain the most suitable scales for quantifying my constructs: First, it was imperative that the content of the scale in use aligned with the research question under consideration. Some scales are not universally applicable across scientific domains, and some may be grounded in varying interpretations of the construct. For example, some scales measure envy with questions regarding romantic partners (e.g., “*It bothers me when others can have every romantic partner that they want.*” (Rentzsch & Gross, 2015, p. 535)), while other scales focus on questions in the

workplace (e.g., “*Most of my co-workers have it better than I do.*” (Vecchio, 1995, p. 169)). Second, it is essential that the scale was not excessively long, as this could burden participants with a lengthy completion process (see also Gogol et al., 2014; Moore et al., 2002). To ensure compliance with this criterion, I chose to incorporate only those scales with a maximum of 13 items. Finally, the scales integrated into the study should be firmly grounded in academia, having a well-established and validated history. To evaluate this aspect, I considered the number of citations they have received on Google Scholar and their historical Cronbach’s alpha values, with a minimum threshold set at .7 or higher (Cortina, 1993; Hair et al., 2010).

The chosen constructs and scales encompass various levels of analysis (as outlined in Table 8). I incorporated constructs and scales pertaining to founder, team, venture, and environmental levels. Whenever possible, I opted for a 7-point Likert scale as the response format, especially due to its demonstrated reliability compared to scales with fewer response categories (Preston & Colman, 2000). In instances where established measures were unavailable for specific constructs, I either devised the items myself or made adaptations to existing scales.

Specifically, I measured the dependent variable for Model A (venture performance) and Model B (venture goal progress) in both questionnaires to be able control for the change between T1 and T2. All independent variables for both models were measured in the first questionnaire: envy, entrepreneurial experience, environmental dynamism, including all control variables (industry, gender, age, social desirability, number of co-founders, number of employees, field of education, highest degree of university, equity ownership, entrepreneurial self-efficacy, venture age). Even more, I included instigated workplace incivility, entrepreneurial effort intensity, exhaustion and stress in both questionnaires as instruments for testing potential endogeneity (see Chapter 3.4.3). For the same purpose, I included cognitive flexibility, passion, resilience, risk propensity, and satisfaction with life in the first round of my survey. Furthermore, I measured meaningfulness at work, collective ownership, individual



psychological ownership, and psychological safety as potential marker variables in both rounds, in order to be able to test for potential Common Method Variance (see Chapter 3.4.3). Also, I included several variables for demographical reasons, such as part-time founder, years of work experience, years of work experience in industry, years of work experience in ventures, part of TUM Venture Labs, salary, novelty, team age, and main source of financing in the first round of my survey. Also, I included benign and malicious envy in the first questionnaire as an alternative scale to my selected primary envy scale. For sampling purposes and potential sample splits, I also included effort (both rounds), and change in team (second round). Lastly, I measured several variables in order to get a better understanding for my sample and the respective environment: environmental hostility in the first round, team satisfaction, thriving, venture satisfaction, work engagement, and work satisfaction in both rounds, and unethical pro-organizational behavior in the second round.

<b>Level</b>	<b>Construct</b>	<b># of Items</b>	<b>Format</b>	<b>T1</b>	<b>T2</b>	<b>Purpose</b>	<b>Source</b>
Environment	Environmental Dynamism	5	Likert 1-7	x		A, B	Green et al. (2008)
Environment	Environmental Hostility	6	Likert 1-7	x		<i>Info</i>	Green et al. (2008)
Founder	Benign and Malicious Envy	10	Likert 1-7	x		<i>Alternative</i>	Lange and Crusius (2015)
Founder	Cognitive Flexibility	12	Likert 1-7	x		<i>Endog</i>	Martin and Rubin (1995)
Founder	Collective Ownership	4	Likert 1-7	x	x	<i>CMV</i>	Gray et al. (2020)
Founder	Effort	1	Number	x	x	<i>Sample</i>	<i>Own wording</i>
Founder	Entrepreneurial Effort Intensity	4	Likert 1-7	x	x	<i>Endog</i>	Uy et al. (2015) and <i>Own wording</i>
Founder	Entrepreneurial Passion	13	Likert 1-7	x		<i>Endog</i>	Cardon et al. (2013)
Founder	Entrepreneurial Self-Efficacy	4	Likert 1-7	x	x	A, B	Zhao et al. (2005)
Founder	Exhaustion	3	Likert 1-7	x	x	<i>Endog</i>	Murnieks et al. (2020)

Level	Construct	# of Items	Format	T1	T2	Purpose	Source
Founder	Field of Education	1	List	x		A, B	<i>Own wording</i>
Founder	Gender	1	List	x		A, B	<i>Own wording</i>
Founder	Highest Degree of Graduation	1	List	x		A, B	<i>Own wording</i>
Founder	Individual Psychological Ownership	3	Likert 1-7	x	x	<i>CMV</i>	Gray et al. (2020)
Founder	Instigated Workplace Incivility	7	Likert 1-7	x	x	<i>Endog</i>	Cortina et al. (2001)
Founder	Meaningfulness at Work	2	Likert 1-7	x	x	<i>CMV</i>	Stephan et al. (2020)
Founder	Entrepreneurial Experience	1	Number	x		A, B	Dimov (2010)
Founder	Part-time Founder	1	Yes/No	x		<i>Demo</i>	<i>Own wording</i>
Founder	Psychological Safety	7	Likert 1-7	x	x	<i>CMV</i>	Edmondson (1999)
Founder	Resilience	10	Likert 1-7	x		<i>Endog</i>	Connor and Davidson (2003)
Founder	Risk Propensity	7	Likert 1-7	x		<i>Endog</i>	Meertens and Lion (2008)
Founder	Satisfaction with Life	5	Likert 1-7	x		<i>Endog</i>	Diener et al. (1985)
Founder	Share/equity Stake	1	Percentage	x	x	A, B	<i>Own wording</i>
Founder	Social Desirability	7	Likert 1-7	x		A, B	Strahan and Gerbasi (1972)
Founder	Stress	2	Likert 1-7	x	x	<i>Endog</i>	Hessels et al. (2017)
Founder	Team Satisfaction	3	Likert 1-7	x	x	<i>Info</i>	Jehn et al. (2010)
Founder	Thriving	10	Likert 1-7	x	x	<i>Info</i>	Portath et al. (2012)
Founder	Unethical Pro-organizational Behavior	6	Likert 1-7		x	<i>Info</i>	Umphress et al. (2010)
Founder	Venture Satisfaction	1	Likert 1-7	x	x	<i>Info</i>	<i>Own wording</i>
Founder	Work Engagement	9	Likert 1-7	x	x	<i>Info</i>	Schaufeli et al. (2011)
Founder	Work Satisfaction	1	Likert 1-7	x	x	<i>Info</i>	Fritsch et al. (2019)

Level	Construct	# of Items	Format	T1	T2	Purpose	Source
Founder	Envy	11	Likert 1-7	x	x	A, B	Vecchio (1995)
Founder	Year of Birth	1	Number	x		A, B	<i>Own wording</i>
Founder	Years of Work Experience	1	Number	x		<i>Demo</i>	<i>Own wording</i>
Founder	Years of Work Experience in Industry	1	Number	x		<i>Demo</i>	<i>Own wording</i>
Founder	Years of Work Experience in Ventures	1	Number	x		<i>Demo</i>	<i>Own wording</i>
Team	Change in Team	1	Number		x	<i>Sample</i>	<i>Own wording</i>
Team	Number of Co-Founders	1	Number	x		A, B	<i>Own wording</i>
Team	Number of Employees	1	Number	x		A, B	<i>Own wording</i>
Team	Team Age	1	Date	x		<i>Demo</i>	<i>Own wording</i>
Venture	Industry	1	List	x	x	A, B	<i>Own wording</i>
Venture	Main Source of Financing	6	List	x		<i>Demo</i>	<i>Own wording</i>
Venture	Novelty	7	Likert 1-7	x		<i>Demo</i>	Amason et al. (2006)
Venture	Part of TUM Venture Labs <sup>6</sup>	1	Yes/No	x		<i>Demo</i>	<i>Own wording</i>
Venture	Venture Performance	8	Likert 1-7	x	x	A	De Clercq and Sapienza (2006); Singh et al (2022)
Venture	Salary	1	Yes/No	x		<i>Demo</i>	<i>Own wording</i>
Venture	Venture Age	1	Date	x	x	A, B	<i>Own wording</i>
Venture	Venture Goal Progress	4	Likert 1-7	x	x	B	Brunstein (1993); Uy et al. (2015)

**Table 8: Overview of Constructs Used in Questionnaires** (Own illustration); T1 = first-round questionnaire; T2 = second-round questionnaire; some scales are used in both rounds of questionnaires but with slightly adjusted phrasing contingent on time frame (e.g., T1: “since start of your venture”; T2: “over the course of the last three months”); A = Model A; B = Model B; CMV = Common Method Variance; Endog = endogeneity; Demo = demographics; Sample = sample reduction or sample split; Info = information or general understanding; <sup>6</sup> As I included ventures from the broader TUM Venture Labs ecosystem, I relied on the shared email lists by the Managing Directors and program heads to decide for inclusion of participants and disregarded this variable.

The entire questionnaire was administered in English in order to maintain uniform comprehension of construct-related terms (such as the word “envy”), consistent with the working language of my selected sample. I formulated the survey with close adherence to Baatard’s (2012) recommendations, specifically aimed at addressing accessibility concerns and mitigating common survey design and implementation issues. For this purpose, each of the two questionnaires commenced with a welcoming page, presenting essential information to the participants, including the expected time commitment, confidentiality assurances, and the guidance to respond intuitively. Additionally, I encouraged participants to complete the questionnaire accurately and provided my contact information for any questions or comments. Both questionnaires were easily accessible, allowing respondents to utilize desktop and mobile devices without the need for specific software. The questionnaire followed a clear structure and offered a progress bar on each page to assist participants in tracking their progress. Both questionnaires concluded with a final page expressing my gratitude to the participants.

### **3.1.2 Recruitment**

My study’s goal was to secure the participation of over 150 founders associated with a single incubator setting and to maintain their involvement across both rounds of my survey. This chapter details the strategies employed for identifying, recruiting, and retaining this sample group, effectively achieving the study’s objectives. The initial phase involved the establishment of precise eligibility criteria that founders needed to meet for inclusion in my study. Subsequently, in the second step, I developed tailored interventions to maximize both completion rates and participation. In the final step, I executed the active recruitment process and managed subsequent follow-up activities.

### ***Selection of Incubator Setting***

Against the backdrop of my overall research goal to understand the role of envy in entrepreneurship, I built upon the foundational definition of envy to especially occur when one compares himself to similar others (Goethals & Darley, 1987; Suls et al., 1978) that are self-relevant (e.g., Salovey & Rodin, 1984; Silver & Sabini, 1978; Tesser, 1991) on a domain that is important to oneself (Smith & Kim, 2007). Hence, I considered an incubator to be the optimal setting to conduct my study. I selected the TUM Venture Labs incubator at the Technical University of Munich as the optimal context to conduct my study. The reasons for this choice are manifold:

*Physical Proximity of Ventures.* Against the backdrop of the theoretical definition of envy, the incubator setting in Munich constitutes a suitable setting as respective ventures are not only part of the same program and are therewith competing for similar and self-relevant resources (e.g., attention of Managing Director, working infrastructure, sponsorship) but are also working very closely besides each other, some even physically sharing office and workshop space.

*Diversity.* At the time of data collection, the selected incubator, TUM Venture Labs, encompassed 11 entities, each one called Venture Lab<sup>7</sup> (see Table 9 for description of every Venture Lab), spanning across several industries and disciplines, containing ventures across different sectors, maturity stages and sizes. In this way, I ensured the validity and generalizability of my results across industries.

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<sup>7</sup> Description of TUM Venture Labs: “A network of Deep Tech & Life Science Incubators to nurture Innovation in emerging domains. We support you to turn your deep tech or life science idea into entrepreneurial impact – across the entire early life-cycle from idea generation to seed-capital for business launch. To do that we combine deep domain expertise with entrepreneurial experience and a large ecosystem. We are a joint initiative by TUM, the top-ranked technical university in the EU, and UnternehmerTUM, Europe’s largest entrepreneurship center. Explore your core domains of interest and the opportunities our cross-functional support provides for your tech and life sciences start-up.” (Retrieved from <https://www.tum-venture-labs.de> on December 4, 2023).

*Accessibility.* Ventures and contact details of the respective founders were available and were possible to be used for research purposes. With this, the likelihood of high participation was ensured.

*Size of Incubator.* With an overarching number of approximately 600 members (founders), the incubator's size was high enough to likely reach my overarching research goal of 150 participants in my study, considering the challenge of usually low rates of responses in online survey research (Wu et al., 2022).

### ***Definition of Selection Criteria***

In the initial step of my recruitment process, I defined specific criteria that founders had to fulfill in order to participate in my study. One part of the criteria catalogue regarded the venture of the founder. The other part of the criteria catalogue regarded the founder and defined personal characteristics and criteria. For the purpose of my study, I outlined the following criteria regarding the venture:

*Member of TUM Venture Labs Incubator Ecosystem.* I stipulated that all of my ventures should be part of one single incubator ecosystem in order to ensure potential similarity between founders and venture teams and to ensure the respective relevance of other ventures on domains that were self-relevant to the individual founders, as these are the identified factors increasing the likelihood for social comparison and envy (e.g., Festinger, 1954; Smith & Kim, 2007). For affiliation, I relied on the list of founders provided by the respective Managing Directors and program heads.

*Venture Age.* In line with established entrepreneurship research, I determined that the ventures included in my study should not be older than 6 years for the most part (Amason et al., 2006; Brush & Vanderwerf, 1992; Robinson & McDougall, 2001). I expanded the criteria to include both older ventures and ventures that were in the proactive stages of incorporation. For instance,

certain venture teams may delay their formal incorporation to qualify for grants (e.g., EXIST Business Start-Up Grant<sup>8</sup>) or to gain assistance from incubation programs, such as the TUM Venture Labs incubator.

*Venture Location.* My study mainly included ventures that had their main operational base in Munich, Germany. This approach was taken to mitigate biases arising from region-specific effects, including cultural (Cacciotti & Hayton, 2017), regulatory (Ardagna & Lusardi, 2008), institutional (Simón-Moya et al., 2014) or economical (Simón-Moya et al., 2014) differences.

I followed the definition of Bygrave and Hofer (1992) defining a founder as “a person who perceives an opportunity and creates an organization to follow it” (p. 14). Consequently, I defined two specific criteria concerning founder characteristics on an individual level that had to be fulfilled:

*Founder.* Consistent with a broad range of entrepreneurship literature (e.g., Debrulle et al., 2023; Hellmann & Wasserman, 2017; Hsu, 2007), I restricted participation in my study exclusively to (co-)founders of ventures. This was done to guarantee findings that are specific to entrepreneurship.

*Founding-Team Member.* I also stipulated that the included founders needed to be part of a founding team instead of being a single founder to ensure comparability as most of the ventures in the incubator were teams rather than individual founders (Breugst & Preller, 2020; Shepherd et al., 2023). I followed the majority of entrepreneurship literature (Patzelt, Preller, et al., 2021; Preller et al., 2020; Shepherd et al., 2023; Ucbasaran et al., 2003), defining founding team as “two or more individuals who pursue a new business idea, are involved in its subsequent

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<sup>8</sup> “The EXIST Business Start-up Grant supports students, graduates and scientists from universities and research institutes who want to turn their business idea into a business plan. The start-up projects should be innovative technology or knowledge based projects with significant unique features and good commercial prospects of success.” (Retrieved from <https://www.exist.de/EXIST/Redaktion/EN/Dossier/Start-up-Funding/Business-Start-up-Grant/EXIST-Business-Start-up-Grant.html> on December 4, 2023).

management” (Lazar et al., 2020, p. 29). However, I consciously excluded equity ownership in my definition, in order to ensure participation of founders of early-stage ventures that have not yet officially been incorporated.

### ***Preparation of Survey Invitation***

For the purpose of ensuring a sufficiently high participation rate, I included a communication of each Venture Lab’s Managing Director and program head to the respective venture teams. I prepared a standardized email, announcing the upcoming study and its respective objectives. I asked every Managing Director and program head to send it to their venture teams shortly before sending out the official invitation (incl., personal URL for participation), asking them to participate in my study. Table 9 contains an overview of invitations and participations (both surveys) per Venture Lab, including the description of each Venture Lab and affiliated program.

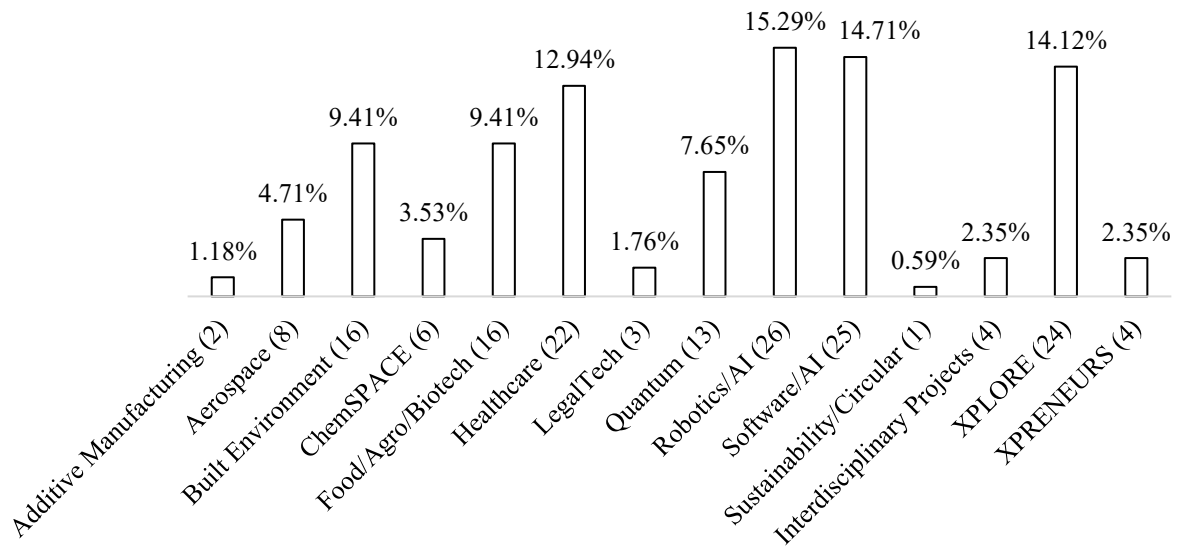
<b>Venture Lab</b>	<b>Description</b>	<b>Inv</b>	<b>Part</b>	<b>Rate</b>
Additive Manufacturing	“We are fostering groundbreaking developments in disruptive materials, shapes and production processes, unlocking the full potential of Additive Manufacturing (AM) and empowering the AM experts and entrepreneurs of tomorrow.”	2	2	100.00 %
Aerospace	“The goal of the Aerospace Venture Lab is to promote and increase innovative and high-quality start-up activities in the fields of Aerospace and Geodesy as well as high-speed transportation systems within the TUM technology ecosystem.”	17	8	47.06%
Built Environment	“We focus on innovative business ideas and scalable deep tech start-ups in the fields of civil and environmental engineering, architecture and design, with societal impact and a special focus on AI in the Built World.”	59	16	27.12%



<b>Venture Lab</b>	<b>Description</b>	<b>Inv</b>	<b>Part</b>	<b>Rate</b>
Chem-SPACE	“We aim to become the leading European Innovation center for business ideas in Drug Design, Protein Assembly, Catalysis, and Energy. We support interdisciplinary innovation in chemistry, biochemistry, and material science, as well as advances in analytical sciences.”	22	6	27.27%
Food/Agro/Biotech	“Join our dynamic ecosystem designed to drive breakthroughs in agriculture, food tech, and biotech. We offer comprehensive support to start-ups, researchers and students. Align with us to redefine food production, amplify sustainability, and shape a brighter future for our planet.”	45	16	35.56%
Healthcare	“The TUM Venture Lab Healthcare supports spin-offs in the fields of biomedicine, medical technology and digital applications in healthcare to improve medical care for patients.”	81	22	27.16%
LegalTech	“At Legal Tech Colab, technology is being created that completely rethinks legal services. Our communities of successful entrepreneurs offer you exactly the environment and mentoring your idea needs.”	9	3	33.33%
Quantum	“We support aspiring entrepreneurs, researchers and students on their journey from idea to the creation of successful deep tech businesses. Whether you work with quantum technologies, photonics, semiconductors or on the next RISC-V processor – we help you to bring your idea to life.”	21	13	61.90%
Robotics/AI	“We are an early-stage incubator based in Munich, Germany, that fosters deep-tech innovation and incubates new startups in robotics and AI.”	63	26	41.27%
Software/AI	“We give software and AI startups the resources they need to build amazing companies.”	71	25	35.21%

<b>Venture Lab</b>	<b>Description</b>	<b>Inv</b>	<b>Part</b>	<b>Rate</b>
Sustainability/ Circular	“We enable the entrepreneurial potential of talents and startups for sustainable environmental impact: We boost the translation of deep tech research into scalable, circular businesses with global reach.”	2	1	50.00%
Interdisciplinary Projects <sup>9</sup>	Interdisciplinary projects offer ventures the opportunity to solve current challenges together with students, including the development of go-to-market strategies, use case exploration and competitor analyses.	36	4	11.11%
XPLORE <sup>10</sup>	“We help founders successfully position their business for the incubation phase. Whether you are entrepreneurial individuals or a start-up team, this is where you get your business ready for the next stage of your journey.” <sup>11</sup>	128	24	18.75%
XPRE- NEURS <sup>10</sup>	“XPRENEURS is a Munich-based tech start-up incubator by UnternehmerTUM. The program accompanies start-ups from Germany and beyond from the initial idea to the market-ready business model within three months.” <sup>11</sup>	14	4	28.57%
<b>Total</b>		<b>570</b>	<b>170</b>	<b>29.82%</b>

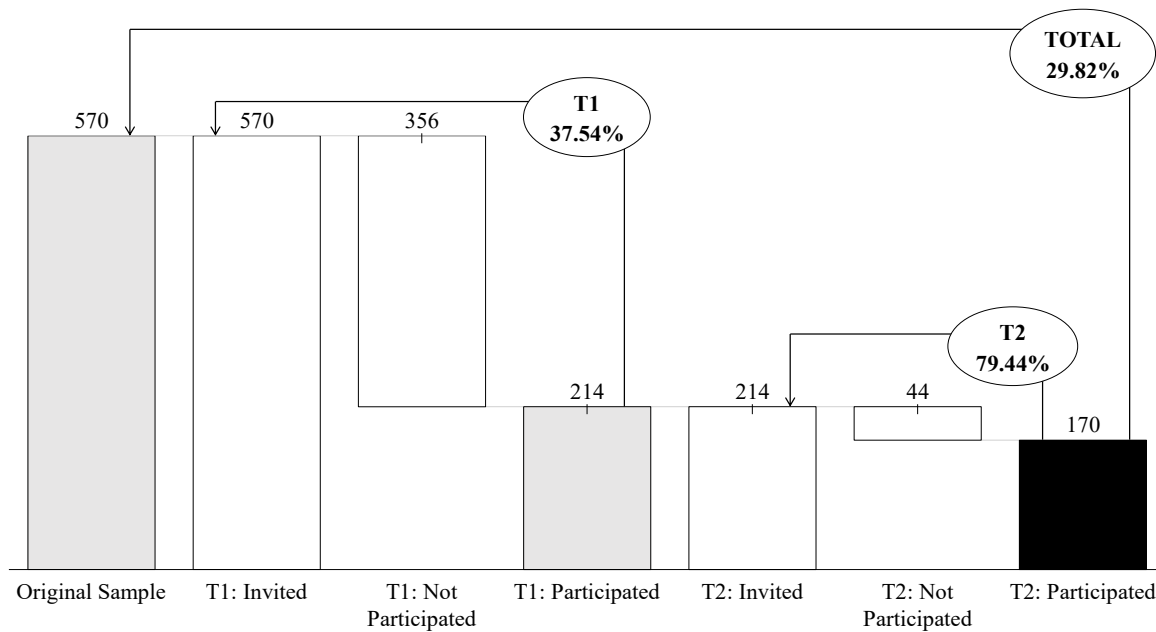
**Table 9: Overview of TUM Venture Labs Context and Respective Sampling** (Own illustration); description of respective Venture Lab was retrieved from <https://www.tum-venture-labs.de/> on September 16, 2023; Inv = invited; Part = participated; Rate = participation rate; mapping of Venture Lab affiliation is based on provided member email list by Managing Director and program heads; <sup>9</sup>Interdisciplinary projects are mainly located in the workspaces of the TUM Venture Labs ecosystem; <sup>10</sup>XPLORE/XPRENEURS are programs in which early-stage ventures sharpen their idea and value proposition, they serve as an entry and are part of the TUM Venture Labs ecosystem; <sup>11</sup>translated from German to English.



**Figure 6: Participant Distribution across TUM Venture Labs Incubator Ecosystem** (Own illustration); absolute number in parentheses.

### ***Recruitment of Participants***

I conducted research that required me to send two personalized survey invitations to the founders of each venture. To gather the necessary email addresses, I initially relied on the contact lists provided by the Managing Directors of each Venture Lab. However, these lists usually contained only one main point of contact for each venture. To ensure I had the complete list of participants, I supplemented the contacts by gathering additional founding team email addresses. I accomplished this by conducting LinkedIn research, research on venture websites, and personally reaching out to the individual venture teams.

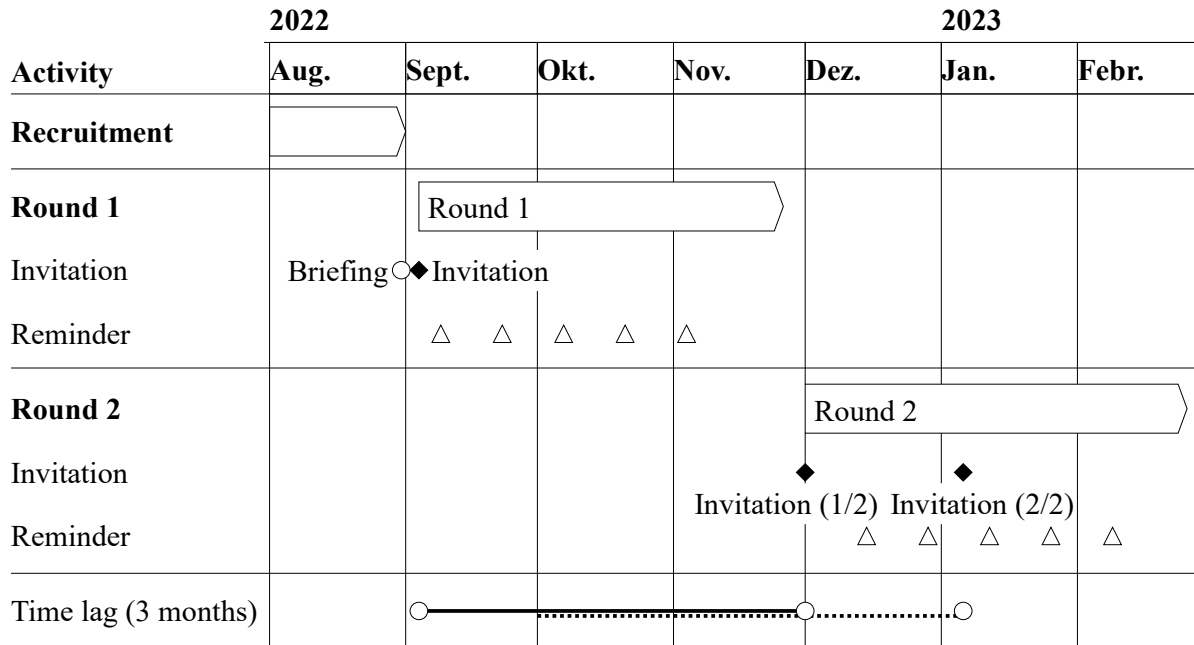


**Figure 7: Overview of Sample** (Own illustration); T1 = first-round questionnaire, T2 = second-round questionnaire; number in oval shape indicates participation rate.

In the first round, I sent personal invitation emails to all the contacts mentioned previously, resulting in a total of 570 founders being contacted. The participation rate for the first round was 37.54%, which means that 214 of the 570 contacted founders participated in the survey. For the second round, I only reached out to the 214 founders who had participated in the first round. The participation rate for the second round was 79.44%, which means that 170 of the 214 founders who were contacted in the second round participated in the survey. Considering both rounds together, the overarching participation rate was calculated to be 29.82%, considering the initially contacted 570 founders and the 170 second round participants.

### 3.1.3 Data Collection

To assess the independent variable, moderators, and control variables separately from the dependent variable and to account for changes in the dependent variable between T1 and T2, I employed a cross-sectional sequential survey design, conducting a two-round survey data collection. For this purpose, I designed two questionnaires and administered those to the participants with a time lag of three months in between (see Figure 8).



**Figure 8: Overview of Data Collection** (Own illustration)

Shortly after the briefing of the respective Managing Director and program head, I sent out the personalized invitations to the participants via email. On a bi-weekly rhythm, I followed up with a formal reminder email while simultaneously contacting the participants via LinkedIn or personally interacting with them. The first round of data collection started in September 2022 and ended at the end of November 2022. The questionnaire of the first round lasted approximately 30 minutes and could be completed in more than one sitting. If the questionnaire had been started but not been progressed for more than a week, I individually followed up with the participants and reminded them personally.

For the second round, I split the sample group of the first round into two groups in order to ensure a time lag of approximately three months based on their participation date in the first round. Therewith, I sent out the first batch invitation at the beginning of December 2022 and the second batch invitation at the beginning of January 2023. Like in the first round, I regularly followed-up with a formal reminder email while simultaneously contacting the participants via LinkedIn or personal interaction. The second-round questionnaire was much shorter than the

questionnaire of the first round and could be completed in approximately 15 minutes. Also, in this second round I followed-up with the participants if the questionnaire had not been edited for more than a week. The second round of data collection ended in the middle of February 2023 and with that completed the data collection phase of my study.

### **3.2 Sample Description**

In the subsequent section, I describe my sample, including the main demographical data. First, I describe my sample on the venture level, including all 118 ventures that the participating founders stemmed from. Second, I describe the sample on the founder level, taking all participating founders into account. The first survey, conducted at Time 1 (T1), collected data on the independent variable (envy), the moderator variables (entrepreneurial experience, environmental dynamism), and the control variables, including the dependent variable as control variable to measure the baseline level of the dependent variable measured in Time 2 (T2). The second survey, conducted at T2, measured the dependent variables (venture performance, venture goal progress). From the 214 participants, I excluded 44 participants who only completed the first survey from my analysis. Even more, I excluded the response of 12 founders as they were single founders without a founding team. I also excluded another participant who reported that they had not invested any time at all in the venture in the time span of three months because I only wanted to include founders who are actively working on their venture. For Model A, I had to exclude 16 more participants, because they had not provided answers for every relevant variable. For Model B, I only had to exclude one further participant for the same reason. This results in a final dataset of 141 [156]<sup>12</sup> founders for Model

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<sup>12</sup>In the following, I describe the sample for both models. Model A will be described in-text, while all corresponding metrics for Model B will be reported in square brackets [...].

A [Model B]. Specifically, in terms of the 570 founders I initially contacted, my overall response rate was thus 24.74% [27.37%].

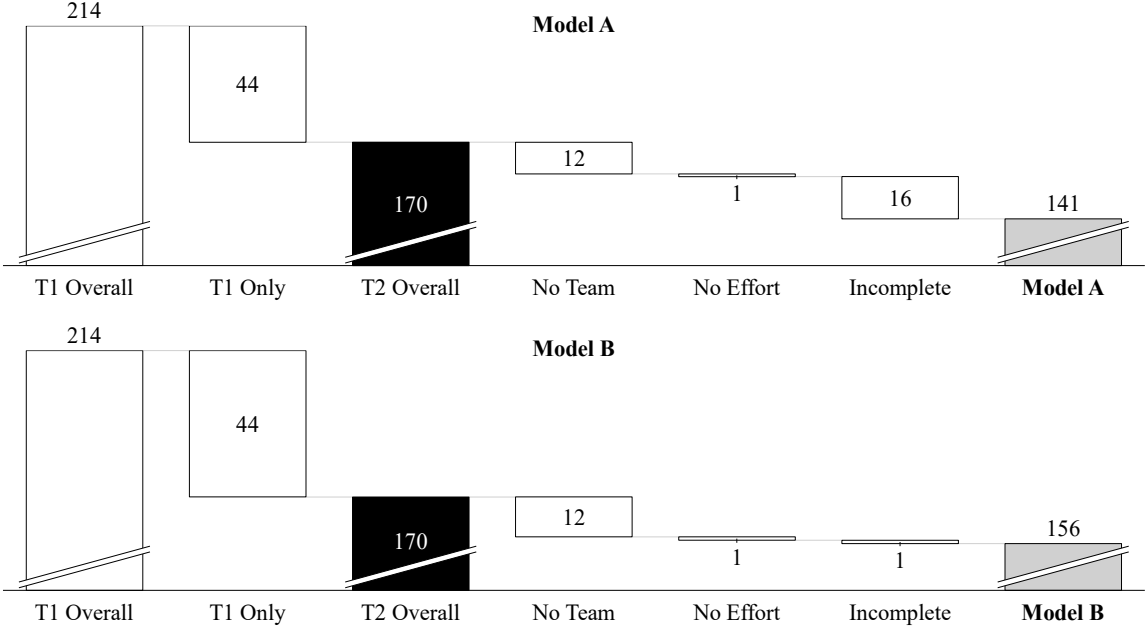
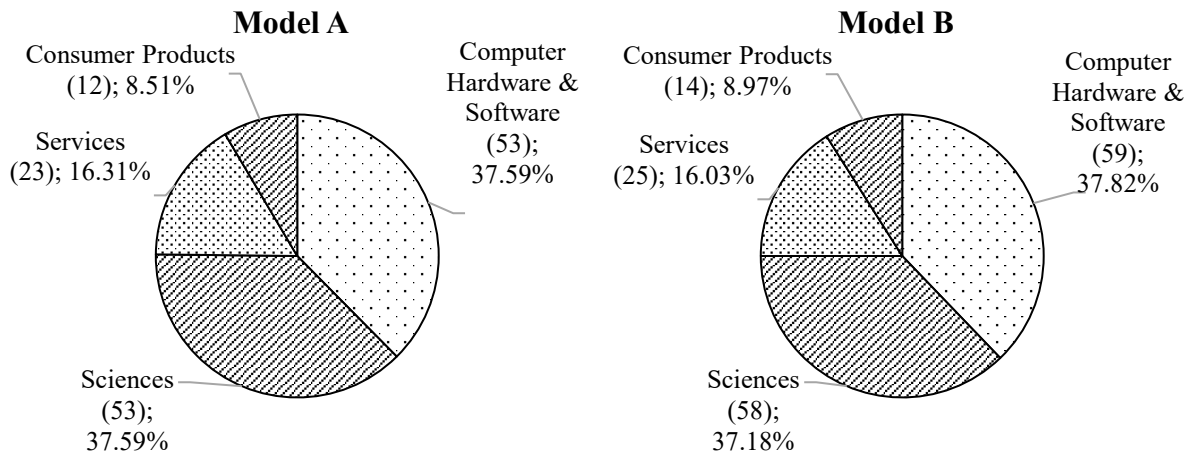


Figure 9: Overview of Sample Reduction (Own illustration)

### 3.2.1 Venture Level

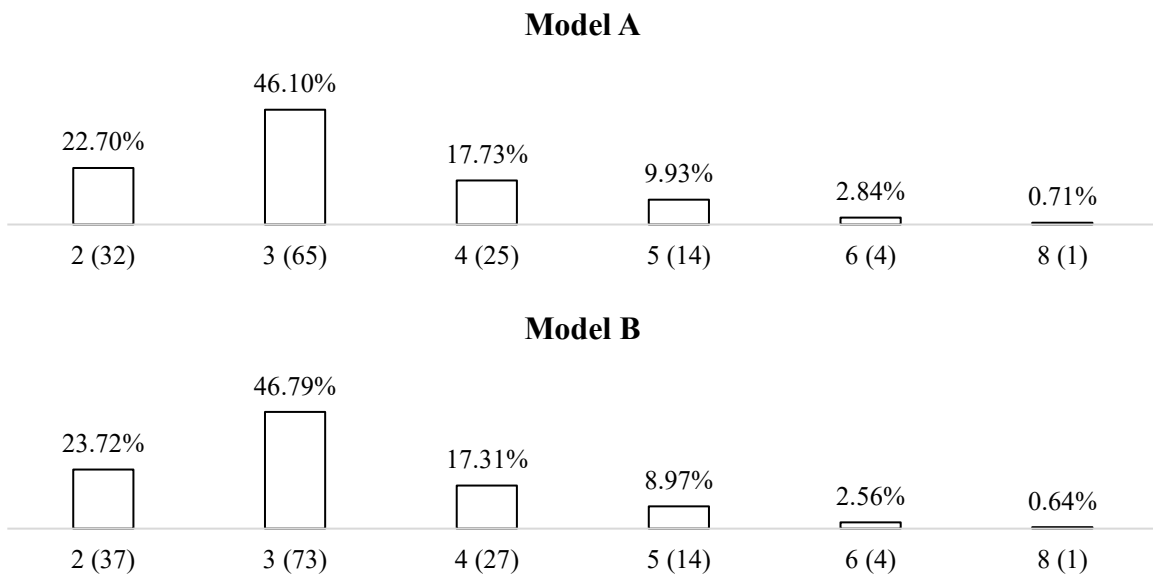
On average, the participating founders’ ventures were 24.69 [24.43] months old (SD = 22.39 [21.65]) at the start of my data collection and consisted of 3.50 [3.38] employees on average (SD = 3.84 [3.70]), ranging from 0 to 28 [0 to 28] members. Concerning industries and sectors, the ventures were diversely distributed, with 37.59% [37.82%] operating in computer hardware and software, 37.59% [37.18%] operating in sciences, 16.31% [16.03%] operating in services, and 8.51% [8.97%] operating in consumer products. Figure 10 provides a visual overview of the represented industries.



**Figure 10: Industries of Ventures** (Own illustration); absolute number in parentheses.

The total number of co-founders per venture team ranged from two to eight [two to eight] co-founders, where 22.70% [23.72%] of the participants were part of a co-founder team of two, 46.10% [46.79%] of a team of three, 17.73% [17.31%] of a team of four, 9.93% [8.97%] of a team of five, 2.84% [2.56%] of a team of six and .71% [.64%] of a team of eight co-founders.

Figure 11 provides a visual overview of the respective founding team size.



**Figure 11: Founding Team Size of Ventures** (Own illustration); absolute number in parentheses.



### 3.2.2 Founder Level

The average age of the founders in my sample was 30.25 [30.13] years old (SD = 6.18 [5.94]), and 24.11% [23.08%] were female (see Figure 12).

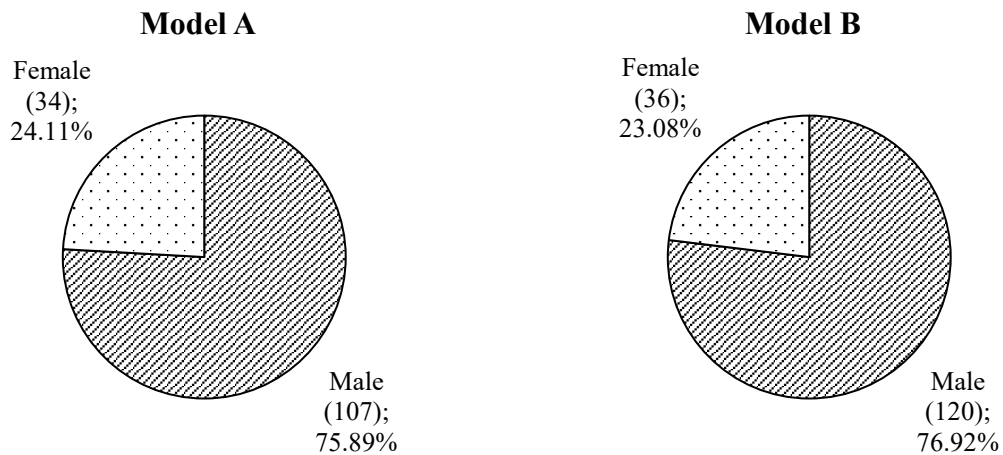


Figure 12: Gender of Founders (Own illustration); absolute number in parentheses.

The educational background of my participants has been diverse: 44.68% [44.23%] had a background in engineering, 27.66% [28.21%] in business or economics, 17.73% [18.59%] in natural sciences or mathematics, 1.42% [1.28%] in medicine, .71% [.64%] in social sciences, .71% [.64%] in law and 7.09% [6.41%] in other fields. Figure 13 provides a visual overview of the distribution of the educational backgrounds.

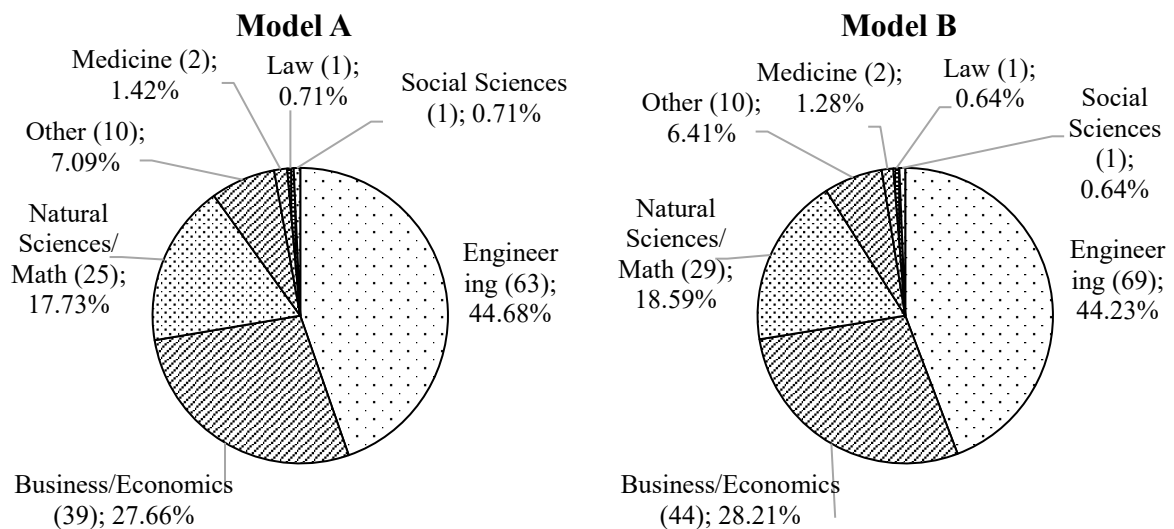
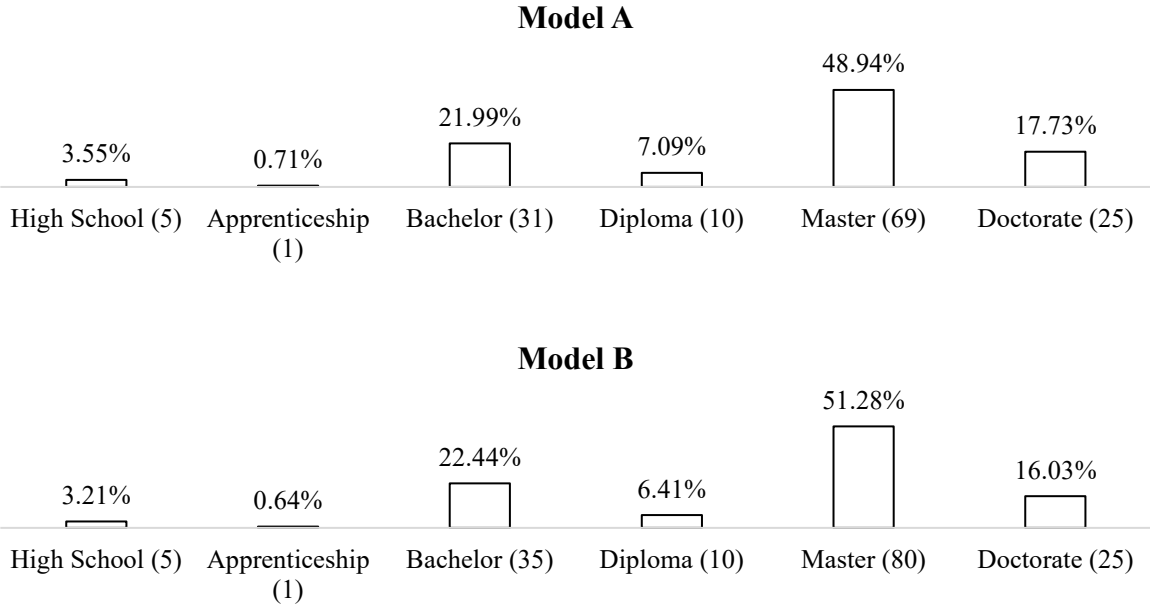


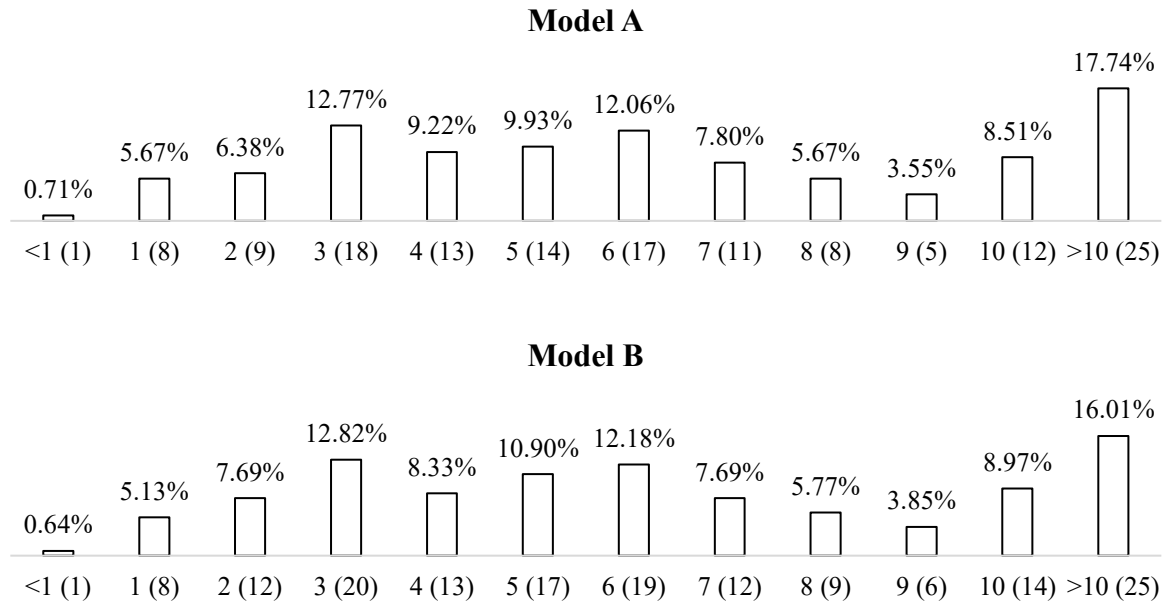
Figure 13: Educational Background of Founders (Own illustration); absolute number in parentheses.

The participants in my study were predominantly highly educated, with 95.74% [96.15%] holding an academic degree (i.e., a bachelor’s degree or higher). Regarding their highest level of education, 3.55% [3.21%] held a high school diploma, .71% [.64%] held an apprenticeship (*German: Ausbildung*), 21.99% [22.44%] held a bachelor’s degree, 56.03% [57.69%] held a master’s degree (or equivalent, such as “*diploma*”), and 17.73% [16.03%] held a doctoral degree. Figure 14 presents a visual representation of the educational backgrounds.



**Figure 14: Highest Educational Level of Founders** (Own illustration); absolute number in parentheses.

While 41.13% [42.31%] were part-time founders and worked on their venture only part-time while having another job, another venture, or actively pursued their Ph.D., the experience level was also diversely distributed. The average work experience, including internships or working student activities, was at 7.13 [6.98] years (SD = 5.21 [5.05]). The founder’s work experience in their respective industry was at 3.64 [3.49] years (SD = 4.52 [4.36]) years, ranging from 0 to 27 [0 to 27] years. On average, the participants have founded 0.33 [0.32] (SD = .63 [.62]) ventures before their current venture. Figure 15 represents a visual representation of the experience levels.



**Figure 15: Work Experience of Founders** (Own illustration); experience in years; absolute number in parentheses.

### 3.3 Measures

For each variable I diligently selected an appropriate scale. I describe the selected measure and its respective reasoning in the following. First, I begin with the independent variable envy, followed by the dependent variables venture performance (Model A) and venture goal progress (Model B). Subsequently, I describe the moderators entrepreneurial experience and environmental dynamism as well as the control variables.

#### 3.3.1 Envy

Building upon my research question and my reasoning for studying the situational, affective conceptualization of envy (see Chapter 2.2), I selected an adjusted version of the Vecchio's (1995) 5-item workplace envy scale (see Table 10) to gauge envy. The reasoning for this choice is based on manifold arguments: First, following my research purpose to understand envy in the entrepreneurial context, I selected the respective scale as it focuses on envy in workplace settings. With only minor adjustments it was possible to adjust the scale to the entrepreneurial context, especially to the described context of measuring envy towards other ventures in the

incubator setting (see Chapter 12). Second, I included Vecchio’s (1995) scale as it focused more on the cognitive and affective component of experiencing envy. Third, Vecchio’s (1995) scale demonstrated a high Cronbach’s alpha, ranging from .71 (Vecchio, 2005) to .75 (Vecchio, 2000), and was even higher in other studies (e.g., .83 in Duffy et al., 2012; .89 in Kim et al., 2010).

<b>Item #</b>	<b>Original Items by Vecchio (1995)</b>
1	Most of my co-workers have it better than I do.
2	My supervisor values the efforts of others more than she/he values my efforts.
3	I don’t imagine I’ll ever have a job as good as some that I’ve seen.
4	I don’t know why, but I usually seem to be the underdog at work.
5	It is somewhat annoying to see others have all the luck in getting the best assignments.

**Table 10: Workplace Envy Scale by Vecchio (1995)** (Source: Vecchio, 2000)

I adjusted the original scale from Vecchio (1995) to even better fit the entrepreneurial venture context. First, I replaced “co-workers” with “ventures” in order to change the objects of comparison. Second, I replaced “supervisor” with “important others” to adjust the scale even more from usual corporate settings to the entrepreneurial sphere. Table 11 shows the final wording of the scale used in my study.

<b>Item #</b>	<b>Adjusted Items by Vecchio (1995)</b>
1	Most of the other ventures have it better than I do.
2	Important others value the efforts of other ventures more than they values my efforts.
3	I don’t imagine I’ll ever have a venture as good as some that I’ve seen.
4	I don’t know why, but I usually seem to be the underdog venture.
5	It is somewhat annoying to see other ventures have all the luck in getting the best support.

**Table 11: Entrepreneurship Adjusted Workplace Envy Scale by Vecchio (1995)** (Adapted from Vecchio, 2000)

In my study I observed a Cronbach's alpha of .81 [.79] for envy, signifying high reliability of the scale (Hair et al., 2010) while surpassing the threshold of .7 (Cortina, 1993). As I conceptualized envy as a situational affect in my study, I calculated the temporal reliability of the scale to measure the stability of envy over time. Therefore, I computed the Coefficient of Equivalence and Stability (CES), following the methodology outlined by Schmidt, Le, and Ilies (2003; see also Tacke, 2021). The CES evaluates three types of error: random response errors, transient errors, and specific factor errors, with its value being diminished by these error sources (Coyne et al., 2005; Schmidt et al., 2003). Random response errors, stemming from variations in attention or distraction, tend to impact shorter scales more than longer ones (Schmidt et al., 2003). Transient errors arise from the respondents' temporary moods, representing longitudinal variations and thus a discrepancy between the measured and true values of a construct (Schmidt et al., 2003). Finally, specific factor errors pertain to inaccuracies at the item and scale levels – errors specific to an item can be minimized by using more items, while errors specific to a scale can be reduced by employing multiple scales for the same construct (Schmidt et al., 2003; Tacke, 2021).

For calculating the CES (see Equation (1) and (2)), I split the envy-scale of T1 and T2 into two halves (i.e., 2 items and 3 items) and calculated the half-scale equivalence coefficient (ce) by calculating the average of the coefficient alphas for the half-scales (see Equation (5) and (6)). Subsequently, I derived the half-scale coefficients of equivalence and stability (ces) from the correlations between the corresponding half-scales administered at T1 and T2 (see Equation (3) and (4)) (Schmidt et al., 2003):

$$CES = \frac{2 ces}{1 + ce} \quad (1)$$

$$CES = \frac{2 \left[ \frac{ces_1 + ces_2}{2} \right]}{1 + \left[ \frac{ce_1 + ce_2}{2} \right]} \quad (2)$$

$$ces_1 = \rho(1a_1, 2a_1) \quad (3)$$

$$ces_2 = \rho(1a_2, 2a_2) \quad (4)$$

$$ce_1 = \rho(1a_1, 2a_1) \quad (5)$$

$$ce_2 = \rho(1a_2, 2a_2) \quad (6)$$

<b>Symbol</b>	<b>Meaning</b>
<i>CES</i>	Coefficient of Equivalence and Stability for Construct Envy
<i>ces<sub>1</sub></i>	Coefficient of Equivalence and Stability for Construct Envy, Measured in T1
<i>ce<sub>1</sub></i>	Coefficient of Equivalence, Measured in T1
$\rho$	Correlation
$1a_1$	First Half ( $a_1$ ) of Envy Scale, Measured in T1 (1)
$2a_1$	First Half ( $a_1$ ) of Envy Scale, Measured in T2 (2)
$1a_2$	Second Half ( $a_2$ ) of Envy Scale, Measured in T1 (1)
$2a_2$	First Half ( $a_2$ ) of Envy Scale, Measured in T2 (2)

**Table 12: Notation Explanation of Symbols Used in CES Calculation** (Own illustration)

For the calculation of the CES, I administered and measured envy in both questionnaires, at T1 and T2. My calculation yields a final CES of .61 [.62], indicating a non-negligible impact of the above error sources. Following the logic of Cortina (1993) regarding Cronbach's alphas, only values of .70 indicate a high reliability. Since the CES values for dispositional personality traits, like the Big Five, varied from .73 to .90 in Schmidt et al.'s (2003) study, the envy's value of .61 [.62] does not warrant a trait classification and therefore supports my approach of studying envy as a situational affect. This also suggests that the stability of the construct over time is affected by the three sources of error mentioned, indicating a rather affective, situational component for envy.

### **3.3.2 Venture Performance**

Venture performance is the dependent variable that I measured in T1 and T2. For this purpose, I have used the well-established perceived performance scale from De Clercq and Sapienza (2005). The scale measures two dimensions, first it measures the satisfaction with the venture's performance on a 1 to 7 Likert scale (1 = "*Not satisfied at all*"; 7 = "*Very satisfied*") rating key performance criteria such as "*Sales*", "*Market Share*" or "*Return on Investment*". And second, it measures the satisfaction with the ventures performance through agreement with statements (e.g., "*So far, I would rate this venture's performance as very poor.*"; "*Market conditions aside, the value of our investment in this venture has greatly increased.*"). The Cronbach's alpha for venture performance is .86 in T2 and .81 in T1, indicating a high level of reliability for the scale (Hair et al., 2010).

I measured this variable in both rounds of the survey, where the first round served as control variable (see Table 13). I instructed the participants to consider the development over the last three months when answering in T2 (see Table 14; e.g., "*Considering the last three months, please indicate how satisfied you are with the venture's progress over the last three months.*").

<b>Item #</b>	<b>Adjusted Items by De Clercq and Sapienza (2005)</b>
1.1	Sales
1.2	Market Share
1.3	Return on investment
1.4	Market development
2.1	We are very satisfied with the progress of this venture.
2.2	So far, I would rate this venture's performance as very poor.
2.3	Considering this venture's stage of development, it has done very well.
2.4	Market conditions aside, the value of our investment in this venture has greatly increased.

**Table 13: Adjusted Venture Performance Scale in T1** (Adapted from De Clercq & Sapienza, 2005, p. 535); measured in first-round questionnaire (T1).

<b>Item #</b>	<b>Adjusted Items by De Clercq and Sapienza (2005)</b>
1.1	Sales
1.2	Market Share
1.3	Return on investment
1.4	Market development
2.1	We are very satisfied with the progress of this venture.
2.2	So far, I would rate this venture's performance as very poor.
2.3	Considering this venture's stage of development, it has done very well.
2.4	Market conditions aside, the value of our investment in this venture has greatly increased.

**Table 14: Adjusted Venture Performance Scale in T2** (Adapted from De Clercq & Sapienza, 2005, p. 535); measured in second-round questionnaire (T2).

### **3.3.3 Venture Goal Progress**

I captured venture goal progress with the four-item scale by Brunstein (1993; see also Uy et al., 2015). Although the scale assesses progress through two dimensions, advancement and



outcome, I made slight adjustments to the scale to better align it with the entrepreneurial and venture context. I specified “goal” by adding “venture goal”, complemented “I” with “I/our founding team”, and added the time dimension in T2 by appending “over the last 3 months” to account for the change between T1 and T2. I captured participant’s agreement with the four statements on a 1 (“Strongly disagree”) to 7 (“Strongly agree”) Likert-type scale. The Cronbach’s alpha for venture goal progress is .86 in T2 and .74 in T1, indicating high reliability of the scale (Hair et al., 2010). I measured this variable in both rounds of the survey, where the first round served as control variable (see Table 15). In the second round, “since the start of our venture” was replaced with “over the last 3 months” (see Table 16).

Item #	Adjusted Items by Brunstein (1993)
1	Since our start, I/our founding team have made a great deal of progress concerning our venture goal.
2	Since our start, I/our founding team have hardly made any progress in the attempt of advancing in our venture goal. (reversed)
3	Since our start, I/our founding team have had quite a lot of success in pursuing our venture goal.
4	Since our start, many of our efforts in carrying out our venture goal have failed. (reversed)

**Table 15: Adjusted Goal Progress Scale in T1** (Adapted from Brunstein, 1993, p. 1063); measured in first-round questionnaire (T1).

Item #	Adjusted Items by Brunstein (1993)
1	Over the last 3 months, I/our founding team have made a great deal of progress concerning our venture goal.
2	Over the last 3 months, I/our founding team have hardly made any progress in the attempt of advancing in our venture goal. (reversed)
3	Over the last 3 months, I/our founding team have had quite a lot of success in pursuing our venture goal.
4	Over the last 3 months, many of our efforts in carrying out our venture goal have failed. (reversed)

**Table 16: Adjusted Goal Progress Scale in T2** (Adapted from Brunstein, 1993, p. 1063); measured in second-round questionnaire (T2).

### 3.3.4 Entrepreneurial Experience

I measured entrepreneurial experience as a moderating variable in the first questionnaire by asking the participants “*How many other businesses have you founded before the current venture?*”. With this question I am following Dimov (2010), however using a slightly other wording that only allows cases in which the individual was the founder and principal of the business (see also Kim & Longest, 2014). I argue that only being fully involved in the founding processes offers experience that has the potential to moderate the envy-success relationship. The participants were able to respond by selecting a dropdown menu containing integer numbers, beginning with 0 ventures, which we coded as 1.

### 3.3.5 Environmental Dynamism

For the moderating variable of environmental dynamism, I relied on the five-item scale by Green, Covin, and Slevin (2008). I captured participants’ agreement with the five statements on a 1 (“*Strongly disagree*”) to 7 (“*Strongly agree*”) Likert-type scale in the first questionnaire (see Table 17). The Cronbach’s alpha for environmental dynamism is .74 [.73], suggesting a high level of reliability for the scale (Hair et al., 2010).

Item #	Items by Green, Covin, and Slevin (2008)
1	Actions of competitors are generally quite easy to predict. (reversed)
2	The set of competitors in my industry has remained relatively constant over the last 3 years. (reversed)
3	Product demand is easy to forecast. (reversed)
4	Customer requirements / preferences are easy to forecast. (reversed)
5	My industry is very stable with very little change resulting from major economic, technological, social, or political forces. (reversed)

**Table 17: Environmental Dynamism Scale by Green, Covin and Slevin (2008)** (Source: Green et al., 2008, p. 378); measured in first-round questionnaire (T1).

### 3.3.6 Control Variables

To reduce the possibility of confounding effects due to potential bias of omitted variables (Wilms et al., 2021), I incorporated various control variables at different levels: founder, team, and venture. Table 18 offers a comprehensive summary of these variables, detailing the source of measurement, the number of items, and the specific level of measurement. All control variables are part of both models, including the data model with venture performance as well as venture goal progress as a dependent variable, respectively. Besides the following variables, I also controlled for the dependent variable in T1 for both data models (either venture performance in Model A or venture goal progress in Model B).

<b>Variable</b>	<b>Source</b>	<b># of Items</b>	<b>Level</b>
Age	Dimov (2010)	1	Founder
Business Education	<i>Own wording</i>	1	Founder
Equity Ownership	<i>Own wording</i>	1	Founder
Gender	Dimov (2010)	1	Founder
Industry	<i>Own wording</i>	1	Venture
Number of Co-Founders	<i>Own wording</i>	1	Team
Number of Employees	<i>Own wording</i>	1	Team
Self-Efficacy	Zhao et al. (2005)	4	Founder
Social Desirability	Strahan and Gerbasi (1972)	7	Founder
University Education	<i>Own wording</i>	1	Founder
Venture Age	<i>Own wording (calculated from founding date)</i>	1	Venture

**Table 18: Overview of Control Variables** (Own illustration); measured in first-round questionnaire (T1).

**Age:** I controlled for participants' age because it is considered to be associated with venture performance (Gielnik et al., 2012) and therewith likely to be associated with venture performance in Model A and venture goal progress in Model B.

**Business Education:** I controlled for business education as envy may be influenced by social comparisons, feelings of inadequacy, or competitive motivations. However, business education equips individuals with knowledge, skills, and resources necessary for entrepreneurship (Bager, 2011). For this purpose, I coded participants with business background as 1 and others as 0.

**Equity Ownership:** I controlled for equity ownership because equity ownership has been found to be connected to venture success (Leary & DeVaughn, 2009; Weissenböck et al., 2024) and founders' tendency to feel envy may significantly hinge on whether they possess ownership (either partial or full) of their ventures (Breugst et al., 2015). Equity ownership was coded as 1, while the absence of equity ownership was coded as 0.

**Gender:** I controlled for participants' gender because it is considered to be associated with venture performance (Gielnik et al., 2012) and therewith likely to be associated with venture performance in Model A and venture goal progress in Model B.

**Industry:** I controlled for venture industry. Participants were requested to specify the primary industry in which their ventures operated. I incorporated dummy variables for science industries, service industries, and the computer hardware and software industries. For each of these industries, a coding of 1 was assigned, while all other industries were coded as 0.

**Number of Co-Founders:** I incorporated the size of the founding team, as the team's magnitude and the respective founder's experience is found to be connected to venture creation (Li & Dutta, 2018), venture success (Howell et al., 2022) and hence potentially influences venture performance or venture goal progress.

**Number of Employees:** I accounted for the size of the venture, quantified by the number of employees. The size of a venture can have an influence on the availability of resources (Nason & Wiklund, 2018), which in turn can potentially affect the behavior of founders team members (Zimmerman & Zeitz, 2002).

**Entrepreneurial Self-Efficacy:** I incorporated entrepreneurial self-efficacy as a control variable to consider the influence of self-efficacy on founders' inclination to compare their achievements with their peers, as opposed to depending on their own abilities to advance their venture (Suls & Wheeler, 2012). I employed the 4-item scale by Zhao et al. (2005) (Cronbach's alpha = .74 [.72]; see Table 19).

Item #	Original Items by Zhao et al. (2005)
1	I am confident that I can successfully identify new business opportunities.
2	I am confident that I can successfully create new products.
3	I am confident that I can successfully think creatively.
4	I am confident that I can successfully commercialize an idea or new development.

**Table 19: Entrepreneurial Self-Efficacy Scale by Zhao et al. (2005)** (Source: Zhao et al., 2005, p. 1268); measured in first-round questionnaire (T1).

**Social Desirability:** To account for the possibility of participants responding in a socially desirable manner due to impression-management or self-presentation biases, especially when answering questions about their propensity to experience envy (Smith & Kim, 2007), I employed the short form of the Marlowe-Crowne Social Desirability Scale by Strahan and Gerbasi (1972) (Cronbach's alpha = .61 [.60]; see Table 20).

Item #	Original Items by Strahan and Gerbasi (1972)
1	I like to gossip at times. (reversed)
2	There have been occasions when I took advantage of someone. (reversed)

Item #	Original Items by Strahan and Gerbasi (1972)
3	I'm always willing to admit it when I make a mistake.
4	I sometimes try to get even rather than forgive and forget. (reversed)
5	At times I have really insisted on having things my own way. (reversed)
6	I have never been irked when people expressed ideas very different from my own.
7	I have never deliberately said something that hurt someone's feelings.

**Table 20: Social Desirability Scale by Strahan and Gerbasi (1972)** (Source: Strahan & Gerbasi, 1972, p. 192); measured in first-round questionnaire (T1).

**University Education:** I controlled for university degree by coding participants with a bachelor's degree or higher as 1 and others with no university degree as 0. In particular, founders who have a high level of general education are more likely to be successful than founders who have low levels of general education (Stuart & Abetti, 1990; Unger et al., 2011).

**Venture Age:** Additionally, I accounted for the age of the venture, which is determined by the number of months since the team began working on the venture's project. Younger ventures may have not created as many learning opportunities (Toft-Kehler et al., 2014), therefore increasing the need for social comparison and even enhancing the envy-venture performance or envy-venture goal progress relationship.

### 3.4 Data Analysis

The subsequent chapter details the statistical analysis that I carried out. First, I describe the fundamentals of the Ordinary Least Square linear regression analysis (Chapter 3.4.1). Consequently, I further elaborate on mean centering (Chapter 3.4.2) and the reasons behind. Lastly, I describe my procedure for controlling for potential biases, taking potential sources of error into account (Chapter 3.4.3).

### 3.4.1 Ordinary Least Square Linear Regression

My statistical analysis for hypotheses testing was conducted by using OLS linear regressions. The method of least square regressions is one of the most popular methods of regression analysis and has “some very attractive statistical properties” (Gujarati & Porter, 2009, p. 55). OLS regressions are based on the assumption that there is a general linear relationship that is valid for all possible observations from a defined population (Verbeek, 2013). Herewith, the sum of squared residuals is minimized to predict the dependent variable for each observation in the sample (Verbeek, 2013).

Restricting the model to only linear relationships, linear regressions are usually specified as

$$y_i = \beta_0 + \beta_1 x_{i1} + \dots + \beta_K x_{iK} + \varepsilon_i$$

where  $y_i$  and  $x_i$  are observable variables and  $\varepsilon_i$  is unobserved and referred to as an error or disturbance term. The elements in  $\beta$  are unknown population parameters (Verbeek, 2013). This equation assumes a linear relationship between the dependent variable and the independent variables (Verbeek, 2013). In order for to apply OLS correctly, several key assumptions have to hold true, called Gauss-Markov assumptions (Verbeek, 2013):

1. The expected value of the error term is zero for all observations.

$$E\{\varepsilon_i\} = 0, \quad i = 1, \dots, N$$

2. The conditional variance of the error terms is constant and has the same variance (homoscedasticity)

$$V\{\varepsilon_i\} = \sigma^2, \quad i = 1, \dots, N$$

3. There is zero correlation between the error terms and the independent variables (no autocorrelation)

$$\text{cov}\{\varepsilon_i, \varepsilon_j\} = 0, \quad i, j = 1, \dots, N, i \neq j$$

4.  $x$  is uncorrelated with the error term (no endogeneity)

$$\{\varepsilon_1, \dots, \varepsilon_N\} \text{ and } \{x_1, \dots, x_N\} \text{ are independent}$$

Under these assumptions, the OLS estimator  $b$  for  $\beta$  has several desirable properties as it is the best linear unbiased estimator for  $\beta$  in this case (Verbeek, 2013).

<b>Symbol</b>	<b>Meaning</b>
$y_i$	Predicted variable of $i$ th observation
$\varepsilon_i$	Error term or residual of $i$ th observation
$\sigma^2$	Error or residual variance
$\beta_0$	Regression coefficient, intercept
$\beta_1, \beta_2, \dots, \beta_K$	Regression coefficient for explanatory variable $x_1, x_2, \dots, x_K$
$x_{i1}$	Explanatory variable for the $i$ th observation
$i$	Subscript for founder
$j$	Subscript for other founder different than $i$ th observation

**Table 21: Notation Explanation of Symbols Used in OLS Model** (Own illustration)

For my calculations I used the software Stata SE 18. Particularly, I calculated models using robust standard errors in order to take potential heteroscedasticity into account. The use of such standard errors has become a standard practice, because the resulting test statistics are appropriate, no matter whether the errors have a constant variance (Verbeek, 2013).



### 3.4.2 Mean Centering

Before creating the interaction terms, I mean-centered all the independent variables, adhering to the methodology outlined by Aiken and West (1991). Mean-centering is a technique that reduces collinearity between interaction terms and their components and also aids in making the results more interpretable (e.g., Dalal & Zickar, 2012; Echambadi & Hess, 2007). Particularly in regression models that include interaction terms, as is the case in both Model A and Model B, a substantively meaningful zero point is crucial for meaningful interpretations of the coefficients (Dalal & Zickar, 2012). Current literature agrees that for accurate interpretation of regression models, it is more appropriate to employ mean-centered variables instead of uncentered variables (Dalal & Zickar, 2012). Only if a meaningful zero-point “naturally occurs and zero falls within the range of the data” (Dalal & Zickar, 2012, p. 352), mean centering would not bear significant benefits (Dalal & Zickar, 2012). Subsequently, I centered all independent variables to eliminate the challenge that ordinal variables (e.g., Likert-type response format) do not possess a meaningful zero point (Blanton & Jaccard, 2006).

While the use of mean-centered variables instead of uncentered ones in regression analysis does not change the overall findings, it greatly impacts the interpretation of the coefficients, particularly in models incorporating interaction effects (Dalal & Zickar, 2012). In models that apply mean-centered variables, the coefficients show the “effects of each variable at the point where the other variables are at their average values” (Echambadi & Hess, 2007, p. 443). In contrast, coefficients from models using uncentered variables indicate the “effects of each variable when the other variables are set to zero” (Echambadi & Hess, 2007, p. 442).

### 3.4.3 Control for Potential Biases

I controlled for several biases to address potential data issues – including Multicollinearity, Common Method Variance, Nonresponse Bias, and Endogeneity. In the following, I shortly describe each measure and respective remedies.

#### *Multicollinearity*

Table 22 contains summary statistics of my research variables and control variables. I computed the Variance Inflation Factors (VIFs) for both models Model A and Model B. The highest VIF for the essential variables in the model that includes venture performance was recorded at 3.96. The highest VIF for the central variables in the model incorporating venture goal progress was determined to be 3.59. Both values are significantly lower than the threshold value of 10, suggesting that multicollinearity is not likely to pose an issue (Hair et al., 2010).

Variable	Variance Inflation Factors Model A	Variance Inflation Factors Model B
Envy	1.47	1.44
Entrepreneurial Experience	1.15	1.16
Environmental Dynamism	1.15	1.13
Envy x Experience	1.20	1.18
Envy x Dynamism	1.16	1.18
Industry (Sciences)	3.91	3.56
Industry (Services)	3.23	2.67
Industry (Comp. HW & SW)	3.96	3.59
Gender	1.21	1.22
Social Desirability	1.15	1.17
Age	1.39	1.39
Co-Founders	1.26	1.25
Employees	1.28	1.27
Business Education	1.24	1.22
University Degree	1.21	1.21

Variable	Variance Inflation Factors Model A	Variance Inflation Factors Model B
Equity Ownership	1.13	1.19
Entrepreneurial Self-Efficacy	1.46	1.30
Venture Age	1.31	1.30
Venture Performance T1	1.65	
Goal Progress T1		1.47

**Table 22: Variance Inflation Factors** (Own illustration); T1 = first-round questionnaire. Comp. HW & SW = computer hardware and software.

On top of that, I assessed the correlation between the substantive variables of both models. In both models, all correlation coefficients are below the critical threshold value of .7 (Hair et al., 2010). Hence, I do not expect multicollinearity to be a problem for my results (see Table 23 for Model A and Table 24 for Model B).

#	Variable	1	2	3	4	5
1	Venture Performance T2	1				
2	Envy	-.22***	1			
3	Entrepreneurial Experience	-.04	.03	1		
4	Environmental Dynamism	-.11	-.04	.02	1	
5	Venture Performance T1	.54***	-.32***	.10	-.14*	1

**Table 23: Correlation Matrix for Main Constructs (Model A)** (Own illustration); T1 = first-round questionnaire; T2 = second-round questionnaire; \*\*\* p < .01, \*\* p < .05, \* p < .10.

#	Variable	1	2	3	4	5
1	Goal Progress T2	1				
2	Envy	-.15*	1			
3	Entrepreneurial Experience	.11	.03	1		
4	Environmental Dynamism	-.06	-.04	.06	1	
5	Goal Progress T1	.48***	-.34***	.12	-.13	1

**Table 24: Correlation Matrix for Main Constructs (Model B)** (Own illustration); T1 = first-round questionnaire; T2 = second-round questionnaire; \*\*\* p < .01, \*\* p < .05, \* p < .10.

### *Common Method Variance*

Common Method Variance (CMV) is defined as the “variance that is attributable to the measurement method rather than to the constructs the measures represent” (Podsakoff et al., 2003, p. 879) and is considered a potential problem in behavioral research (Podsakoff et al., 2003). In order to tackle the concern of CMV, I adhered to the guidelines suggested by Podsakoff et al. (2003) in my study (see also Simmering et al., 2015):

First, I established a data collection process that involved a three-month time lag between the measurements of the independent variables, moderator variables and the dependent variable. Additionally, I safeguarded the anonymity of respondents and lessened their evaluation apprehension by reassuring them that their responses did not have right or wrong answers, and encouraging them to answer as honestly as possible (Podsakoff et al., 2003). Specifically, envy, entrepreneurial experience, and environmental dynamism were measured in the first questionnaire, while venture performance or venture goal progress was assessed as the dependent variable in the second questionnaire (Podsakoff et al., 2003).

Second, in accordance with the instructions provided by Williams, Hartman, and Cavazotte (2010), I conducted Confirmatory Factor Analysis (CFA) using a marker variable. This approach is an effective means of controlling for the influence of CMV within my model (Lindell & Whitney, 2001; Malhotra et al., 2006; Simmering et al., 2015; Williams & McGonagle, 2016). The marker variable I selected was individual psychological ownership, as measured by a three-item scale reported by Gray, Knight and Baer (2020) (Cronbach’s alpha = .96 [.96]). Individual psychological ownership was chosen as the marker variable because it is theoretically unrelated to the substantial variables, and the correlations between individual psychological ownership and the substantial variables were negligible (e.g.,  $r = .07$  [.09] for envy,  $r = .05$  [ $n/a$ ] for venture performance (T2),  $r = .15$  [ $n/a$ ] for venture performance (T1),  $r = n/a$  [.07] for venture goal progress (T2),  $r = n/a$  [.15] for venture goal progress (T1),  $r = .12$

[.14] for entrepreneurial experience,  $r = -.05$  [-.03] for environmental dynamism) and not statistically significant (e.g.,  $p = .43$  [.28] for envy,  $p = .58$  [n/a] for venture performance (T2),  $p = .58$  [n/a] for venture performance (T1),  $p = .05$  [n/a] for venture goal progress,  $p = n/a$  [.15] for venture goal progress (T1),  $p = .14$  [.09] for entrepreneurial experience,  $p = .58$  [.72] for environmental dynamism). For the purpose of conducting a CFA, I have applied four steps as described by the marker approach by Williams et al. (2010) (see also Simmering et al., 2015):

In the first step, I have created a *CFA Model*, encompassing all five substantive variables along with the marker variable. In the second step, I have created a *Baseline Model* that is identical to the *CFA Model*, but the marker is not allowed to correlate with the substantive variables and are set to zero. Also, all marker item factor loadings and error items are set to the unstandardized values obtained from the *CFA Model*. In the third step, I specify the *Method<sub>C</sub> Model* and the *Method<sub>U</sub> Model*. While both are identical to the baseline model, they only include secondary loadings between the substantive items and the marker construct. While in the *Method<sub>C</sub> Model* these loadings are set to equal one another (“constrained”), they are unconstrained in the *Method<sub>U</sub> Model* (Simmering et al., 2015; Williams et al., 2010). Hence, if the *Method<sub>C</sub> Model* fits significantly better than the baseline, CMV is likely to be present and if *Method<sub>U</sub> Model* fits better than *Method<sub>C</sub> Model*, the identified CMV is likely to be “congeneric” (Simmering et al., 2015, p. 493), being the same for all indicators. In the fourth step, I construct the *Method<sub>R</sub> Model* based on *Method<sub>C</sub> Model* or *Method<sub>U</sub> Model*, depending on which fits better. The *Method<sub>R</sub> Model* is identical to *Method<sub>C</sub> Model* and *Method<sub>U</sub> Model* but constrains the substantive factor correlations to their unstandardized estimates from the CFA model. Only, if the *Method<sub>R</sub> Model* fits statistically significantly different than *Method<sub>C</sub>* or *Method<sub>U</sub> Model*, the CFA analysis postulates that CMV “biases observed substantive relationships” (Simmering et al., 2015, p. 493; see also Tacke, 2021):

<b>Model</b>	<b>Description</b>
CFA	The initial model encompasses all substantive variables along with the marker variable. All factors within the model are correlated, and their variances have been standardized to 1.
Baseline	The model is derived from a CFA model, and it includes the item weights and error variances of the marker variable, which have been fixed to the values obtained from the CFA model's output and sets the covariances between the substantive variables and the marker variable to zero.
<i>Method<sub>C</sub></i>	The "constrained" model, an extension of the Baseline model, incorporates paths from the marker variable to each of the items of the substantive variables, with the requirement that these paths are equal.
<i>Method<sub>U</sub></i>	The "unconstrained" model, an expansion of the <i>Method<sub>C</sub></i> model, does not impose any constraints on the paths from the marker variable to the items of the substantive variables.
<i>Method<sub>R</sub></i>	The "restricted" model is constructed based on either the <i>Method<sub>C</sub></i> or <i>Method<sub>U</sub></i> model, depending on which one exhibits a better fit. After determining the model with superior fit, the factor covariances are then fixed to the values obtained from the Baseline model.

**Table 25: Overview of CFA Models** (Own illustration)

### *Common Method Variance Model A*

Table 26 depicts the results for the CMV analysis for the model including venture performance, indicating that CMV is also unlikely to be a significant issue in my data (see Figure 16 for initial CFA model, see Appendix for remaining models). Evident from the analysis is the absence of significant enhancement in fit exhibited by the *Method<sub>C</sub>* model as compared to the baseline model ( $\Delta\chi^2 = 3.17$ ,  $df = 1$ ,  $p = .07$ , compared to Baseline). This result shows that there is not enough evidence to support the idea that the indicators share a common source of CMV. Also, the results suggest that the *Method<sub>U</sub>* model does not fit significantly better than the *Method<sub>C</sub>* model, which means that the amount of CMV is the same for all indicators. Lastly, the data

does not show any major differences between the *Method<sub>R</sub>* and *Method<sub>C</sub>* models, which means that CMV is not significantly distorting the relationships between my substantial variables.

Model	$\chi^2$ (df)	CFI	TLI	RMSEA (90% CI)	LR of delta $\chi^2$	Model for Comparison
CFA	761.76 (390)	.810	.788	.083 (.074; .091)		
Baseline	770.77 (401)	.811	.795	.081 (.073; .090)		
Method <sub>C</sub>	767.51 (400)	.812	.795	.081 (.072; .090)	3.17, df = 1, p = .07	Baseline
Method <sub>U</sub>	745.62 (374)	.810	.779	.084 (.075; .093)	21.88; df = 26, p = .70	Method <sub>C</sub>
Method <sub>R</sub>	767.55 (410)	.817	.806	.079 (.070; .088)	.05, df = 10, p = 1	Method <sub>C</sub>

**Table 26: CFA Results with Psychological Ownership Marker Variable (Model A)** (Own illustration); CFI = Comparative Factor Index; TLI = Tucker-Lewis Index; df = Degrees of Freedom; LR = Likelihood Ratio Test; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval.

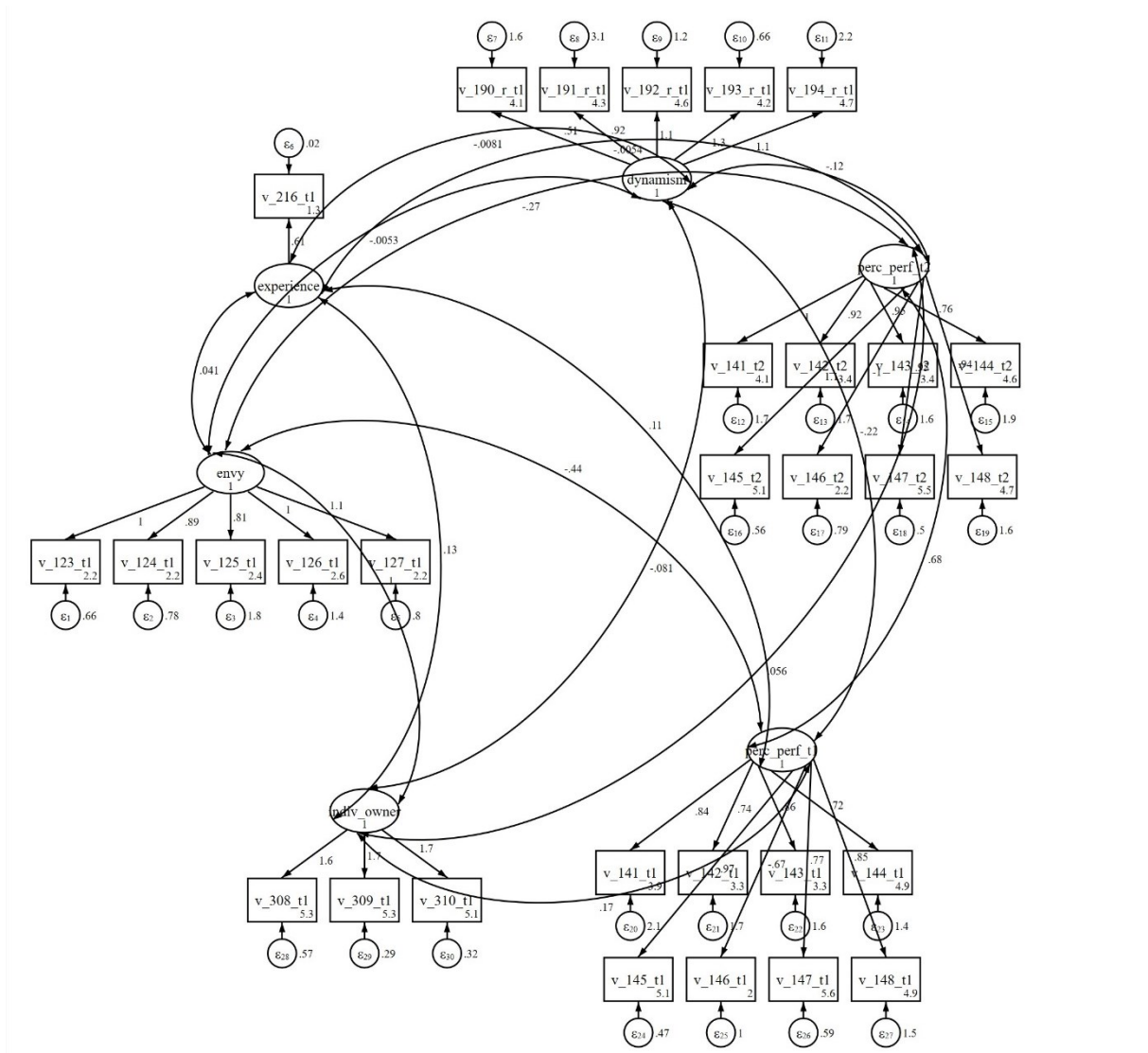


Figure 16: CFA Model (Model A) (Own illustration); Stata export of SEM model of initial CFA model

Common Method Variance Model B

Following the same procedure outlined by Williams et al. (2010), my analysis for the model including venture goal progress indicated that CMV is also unlikely to be a significant issue in my data (see Figure 17 for initial CFA model, see Appendix for remaining models). Specifically, Method<sub>C</sub> fitted statistically better than the Baseline model and therewith indeed indicated presence of CMV ( $\Delta\chi^2 = 4.22$ ,  $df = 1$ ,  $p = .04$ , compared to Baseline). However, Method<sub>U</sub> does not fit significantly better than Method<sub>C</sub>, ( $\Delta\chi^2 = 19.02$ ,  $df = 18$ ,  $p = .39$ , compared to Method<sub>C</sub>), indicating that the presence of CMV method effects is equal (i.e., noncongeneric)



for all indicators (Richardson et al., 2009). Most importantly, as Method<sub>R</sub> is not statistically different than Method<sub>U</sub> ( $\Delta\chi^2 = .13$ ,  $df = 10$ ,  $p = 1$ , compared to Method<sub>U</sub>), the CMV marker analysis suggests that a bias of observed relationships due to CMV cannot be confirmed (Richardson et al., 2009; Simmering et al., 2015). Hence, I conclude that the presence of CMV does not distort the relationships in between the substantive variables in Model B (Williams et al., 2010). Table 27 depicts the findings.

<b>Model</b>	<b><math>\chi^2</math> (df)</b>	<b>CFI</b>	<b>TLI</b>	<b>RMSEA (90% CI)</b>	<b>LR of delta <math>\chi^2</math></b>	<b>Model for Comparison</b>
CFA	275.67 (194)	.946	.935	.052 (.037; .066)		
Baseline	283.85 (205)	.947	.941	.050 (.035; .063)		
Method <sub>C</sub>	279.63 (204)	.9496	.943	.049 (.034; .063)	4.22, $df = 1$ , $p = .04$	Baseline
Method <sub>U</sub>	260.60 (186)	.9503	.938	.051 (.035; .065)	19.02, $df = 18$ , $p = .39$	Method <sub>C</sub>
Method <sub>R</sub>	260.73 (196)	.957	.949	.046 (.030; .060)	.13, $df = 10$ , $p = 1$	Method <sub>U</sub>

**Table 27: CFA Results with Psychological Ownership Marker Variable (Model B)** (Own illustration); CFI = Comparative Factor Index; TLI = Tucker-Lewis Index;  $df$  = Degrees of Freedom; LR = Likelihood Ratio Test; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval.

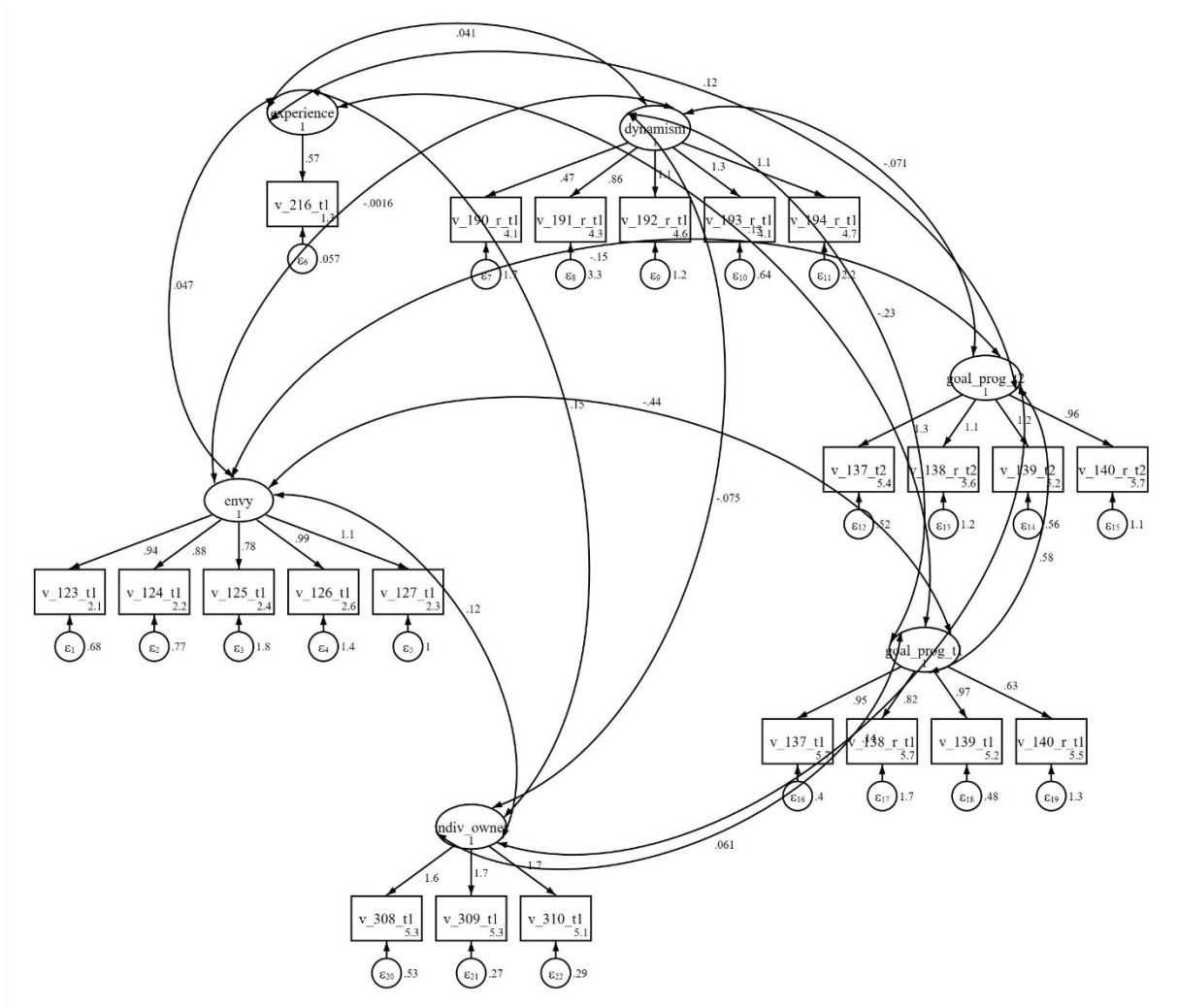


Figure 17: CFA Model (Model B) (Own illustration); Stata export of SEM model of initial CFA model

For illustration purposes, all screenshots of the above-mentioned models can be found in Appendix D. These were taken after the model has been calculated in Stata.

**Nonresponse Bias**

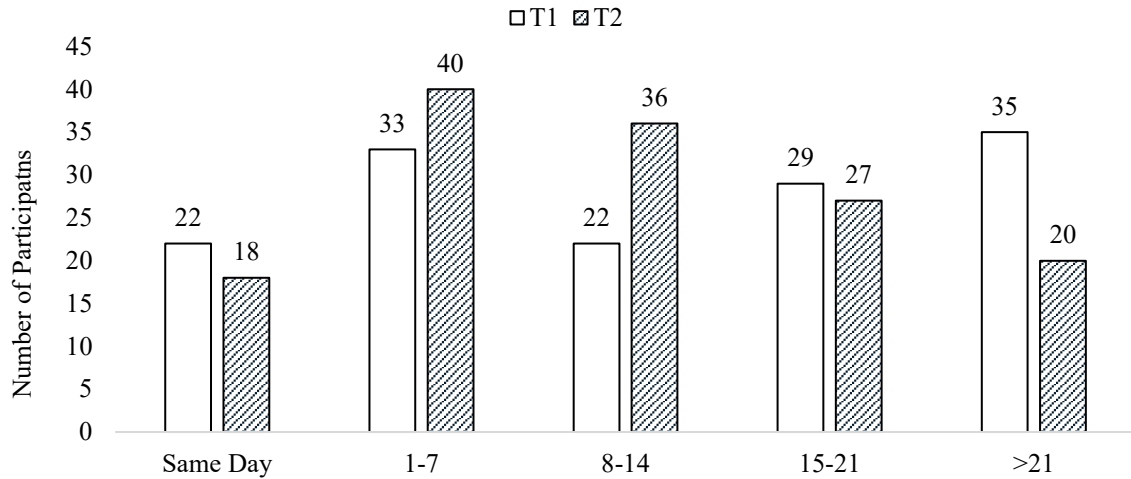
Nonresponse bias refers to “the mistake one expects to make in estimating a population characteristic based on a sample of survey data in which, due to nonresponse, certain types of survey respondents are under-represented” (Berg, 2005, p. 3). To address the critical issue of potential nonresponse bias in my study, I followed the guidelines suggested by Werner et al. (2007) and Rogelberg et al. (2003). According to the authors, there are several ways to test for nonresponse bias. A commonly employed method of analysis involves comparing

nonrespondents with the overall population using archival data or data collected through a subsequent survey (Werner et al., 2007). In the case when nonrespondents data are not available, late and early responders can be compared, referred to as “wave analysis” (Werner et al., 2007). Another form of analysis is looking at response intentions while including statistical approaches (Werner et al., 2007).

For the purpose of testing for nonresponse bias in both of my models, I conducted two analyses. First, I assumed that late respondents would be more similar to nonrespondents (see also Armstrong & Overton, 1977) and compared early versus late respondents (see Table 28). Second, I showed the convergence of this analysis with calculating the significance of differences between respondents of my first survey (see “T1”) and the respondents who have participated in both surveys (see “T1/T2”; see Table 29). With this procedure I am in line with the recommendations by Werner et al. (2007) by using “a number of the procedures and show[ing] convergence” (p. 288).

#### *Nonresponse Bias Model A*

In the first step, I calculated the time between invitation and participation for each participant and split the sample into two groups based on the median time of T2 (median = 10 days). In Figure 18, the number of days between invitation and participation (based on date of completion) are illustrated for Model A.



**Figure 18: Days between Invitation and Participation (Model A)** (Own illustration)

Then, I conducted a t-test to examine the significance of differences in the values of my main variables between the two groups. The results in Table 28 indicate that all values were not significant (all p-values > .05).

Variable	Survey	Mean of Early Respondents	Mean of Late Respondents	Difference between Means	Significance of Difference
Envy	T1	2.29	2.35	.06	.7323
Entrepreneurial Experience	T1	1.24	1.43	.19	.0604
Environmental Dynamism	T1	4.51	4.24	-.27	.1811
Venture Performance	T2	4.58	4.57	-.01	.9510
Venture Performance	T1	4.55	4.67	.12	.4224

**Table 28: T-Test Results for Comparison of Early and Late Respondents (Model A)** (Own illustration)

In the second step, I compared the respondents of both surveys (T1 and T2) versus the group of participants who have only participated in T1 and are nonrespondents of T2 (T1 only) and calculated a t-test for all variables of Model A. Similarly, I do not find a significant p-value (all p-values >.05) for the t-test with the null hypothesis that the differences of the means of the

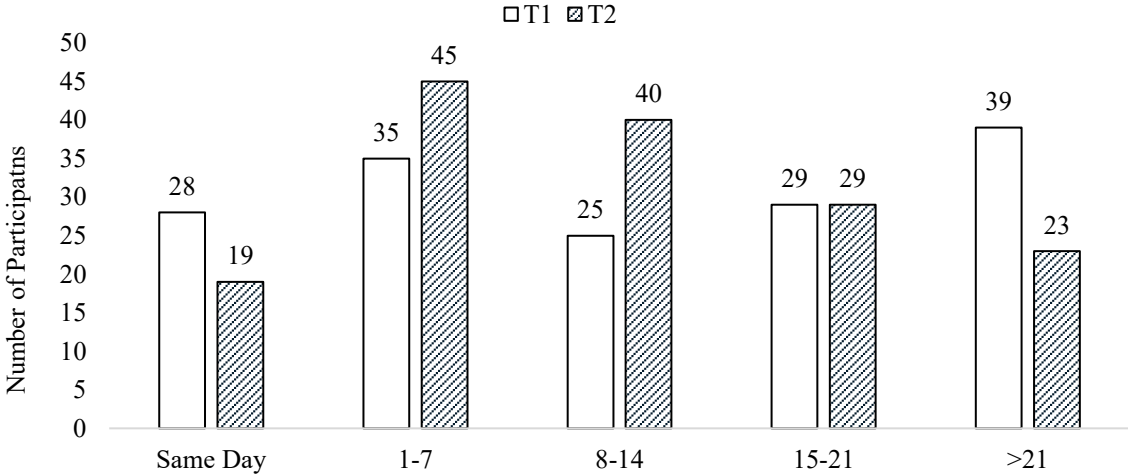
variables are zero (see Table 29). Therefore, I am confident that nonresponse bias did not significantly impact my findings for Model A.

Variable	Survey	Mean of Early Respondents	Mean of Late Respondents	Difference between means	Significance of Difference
Envy	T1	2.27	2.32	.05	.7464
Entrepreneurial Experience	T1	1.25	1.33	.08	.3986
Environmental Dynamism	T1	4.14	4.38	.24	.1883
Venture Performance	T1	4.34	4.61	.27	.1000

**Table 29: T-Test Results for Comparison of Respondents of T1 with T1/T2 (Model A)** (Own illustration)

*Nonresponse Bias Model B*

I followed the same procedure for Model B, distributing all 156 participants into early and late respondents, separated by the median value (median = 10 days). Figure 19 illustrates the number of days between invitation and participation (based on date of completion) for Model B.



**Figure 19: Days between Invitation and Participation (Model B)** (Own illustration)

Subsequently, I conducted a t-test to examine the significance of differences in the values of my main variables between the two groups. The results in Table 30 indicate that all values were not significant (all p-values > .05).

Second, I compared the group of respondents of both surveys (T1 and T2) versus the group of participants who have only participated in T1 and are nonrespondents of T2 (T1 only), calculating a t-test for the differences in my main variables. I do not find a significant p-value (all p-values >.05) for the t-test with the null hypothesis that the difference in the means of the variables is zero (see Table 31). Therefore, I am confident that nonresponse bias did not significantly impact my findings of Model B.

<b>Variable</b>	<b>Survey</b>	<b>Mean of Early respondents</b>	<b>Mean of Late Respondents</b>	<b>Difference between Means</b>	<b>Significance of Difference</b>
Envy	T1	2.26	2.36	.10	.5318
Entrepreneurial Experience	T1	1.25	1.40	.15	.1250
Environmental Dynamism	T1	4.47	4.19	-.28	.1316
Venture Goal Progress	T2	5.37	5.55	.18	.3631
Venture Goal Progress	T1	5.46	5.54	.08	.6397

**Table 30: T-Test Results for Comparison of Early and Late Respondents (Model B)** (Own illustration)

<b>Variable</b>	<b>Survey</b>	<b>Mean of Early Respondents</b>	<b>Mean of Late Respondents</b>	<b>Difference between Means</b>	<b>Significance of Difference</b>
Envy	T1	2.31	2.31	.00	.9940
Entrepreneurial Experience	T1	1.30	1.32	.02	.8293
Environmental Dynamism	T1	4.25	4.34	.09	.6554
Venture Goal Progress	T1	5.22	5.50	.28	.1065

**Table 31: T-Test Results for Comparison of Respondents of T1 with T1/T2 (Model B)** (Own illustration)

### ***Endogeneity***

In general, “endogeneity occurs when a predictor (independent variable, explanatory variable, regressor) correlates with the unexplained residual (disturbance, error term) of the outcome (dependent variable) in a predictive model” (Hill et al., 2021, p. 106). The pernicious nature of

endogeneity lies in its unpredictability, as the bias cannot be anticipated solely through methods. The coefficients are equally prone to overestimation as they are to underestimation. Consequently, endogeneity is frequently recognized as a significant threat to management and entrepreneurship researchers to accurately define models and assert causal relationships (Hill et al., 2021). Against this backdrop, I took steps to ensure that my findings are not affected by endogeneity issues, such as simultaneity or selection biases (Baum, 2006; Clougherty et al., 2016). I identified potential factors as instruments for envy.

First, I utilized a two-item scale developed by Hessels, Rietveld, Cornelius and Griffin (2017) to capture the perceived stress by founders, which included statements such as “*Working on my venture is more stressful than I had ever imagined*” and “*I fear that the amount of stress in my job will make me physically ill*” (Cronbach’s alpha = .61 [.59]). Further, I employed a seven-item scale that measured participants’ tendency to engage in incivility behavior, defined as behavior that intentionally inflicts psychological mistreatment (Cortina et al., 2001). The scale asked questions about whether the participant has exhibited behaviors that were focused on, for example, putting down others or making rude comments (Cortina et al., 2001) (Cronbach’s alpha = .81 [.80]). Theoretically, both constructs should be associated with envy and envious antecedents and behaviors. Envy is indeed a consequence of social comparison, where individuals compare themselves to others and feel a sense of dissatisfaction or resentment due to perceiving a disadvantage in their own circumstances or possessions compared to those of another person. This upward comparison, where one feels inferior or believes they are missing out on something desirable, can lead to feelings of frustration and hence, stress. Also, as theoretically outlined above, the frustration of the upward social comparison causes behaviors that are focused to either obtain the desired advantage or a “desire to destroy the thing that is desired” (Smith & Kim, 2007, p. 47). Hence, incivility behaviors that are behaviors “with ambiguous intent to harm the target, in violation of workplace norms for mutual respect”

(Cortina et al., 2001, p. 64) are likely to be closely connected. To mitigate the possibility of endogeneity and to demonstrate that both instruments are (1) highly correlated with envy and relevant, and (2) uncorrelated with the error term (Baum, 2006; Tacke et al., 2022), I employed Stata's `ivregress 2sls` command and conducted a two stage regression.

#### *Endogeneity Bias Model A*

To check the first condition, I assessed the suitability of my chosen instruments by evaluating their correlation with envy and venture performance (Baum, 2006). My findings revealed significant correlations between both constructs and envy ( $r = .166$ ,  $p = .049$  for stress and  $r = .264$ ,  $p = .002$  for incivility), coupled with no correlations with venture performance ( $r = .001$ ,  $p = .987$  for stress and  $r = -.040$ ,  $p = .635$  for incivility). Both instruments also significantly predicted envy ( $b = .210$ ,  $p = .038$  for incivility and  $b = .158$ ,  $p = .008$  for stress) in the first stage regression, in which the potentially endogenous variable is regressed on all other exogenous variables in the model, including all instruments. In order to check the second condition, I interpreted the Sargan ( $\chi^2(1) = .055$ ,  $p = .815$ ) and Basman test ( $\chi^2(1) = .047$ ,  $p = .829$ ), which both were not significant and hence indicate that the instruments are uncorrelated with the error term. Consequently, the validity and relevance of both instruments for envy is supported.

To finally test for endogeneity, I interpreted the Durbin ( $\chi^2(1) = .004$ ,  $p = .949$ ) and Wu-Hausman ( $F(1, 120) = .004$ ,  $p = .953$ ) tests, which both were not significant, allowing to accept the null hypothesis that envy can be considered an exogenous variable. Furthermore, I calculated the inverse Mills ratio using both instruments (Tacke et al., 2022): stress (Hessels et al., 2017) and incivility (Cortina et al., 2001). In a two-stage model, I first predicted envy based on founder's stress and incivility values, including all of my control variables of Model A. Using these values, I subsequently computed the inverse Mills ratio (Tacke et al., 2022), which I then included as a control variable in Model 6 – consistent to my original full model. The



inverse Mills ratio is not significant ( $p = .341$ ), and my results stay largely the same – only the level of significance for the interaction of envy and experience changes from the 5% to the 10% level, compared to the full model. Taken together, these outcomes suggest that concerns related to endogeneity are unlikely to significantly affect my results for Model A (Baum, 2006).

#### *Endogeneity Bias Model B*

To test for potential endogeneity issues, I utilized Stata's `ivregress 2sls` command. First, I examined the appropriateness of my instruments by assessing whether they were highly correlated with envy and uncorrelated with the error term in my model (Baum, 2006). I found that both constructs exhibited significant correlations with envy ( $r = .152$ ,  $p = .057$  for stress and  $r = .270$ ,  $p = .001$  for incivility) and no correlations with venture goal progress ( $r = .001$ ,  $p = .989$  for stress and  $r = -.098$ ,  $p = .223$  for incivility). While only stress significantly predicted envy in the first stage regression ( $b = .123$ ;  $p = .029$ ) and incivility was not significant ( $b = .120$ ;  $p = .221$ ), I could however confirm their validity through relying on the Sargan ( $\chi^2(1) = .037$ ,  $p = .848$ ) and Basman ( $\chi^2(1) = .032$ ,  $p = .859$ ) tests, which are both not statistically significant. This suggests that the instruments are exogenous and not correlated with the error term (Baum, 2006).

Finally, to check the second condition for endogeneity, I interpreted the Durbin ( $\chi^2(1) = .174$ ,  $p = .677$ ) and Wu-Hausman ( $F(1, 135) = .151$ ;  $p = .698$ ) tests, which both yielded non-significant results, suggesting that envy is likely to be an exogenous variable. I also relied on calculating the inverse Mills ratio: In a sequential two-stage approach, my initial step involved predicting envy using the founder's stress and incivility values, and simultaneously integrating all control variables from the full Model B. Following this, I computed the inverse Mills ratio using these forecasted values (Tacke et al., 2022), which I then incorporated as a control variable in Model 12, aligning with my comprehensive original model. The inverse Mills ratio turned out to be non-significant ( $p = .889$ ), maintaining the overall consistency of my findings

– only, there was a slight change in the significance level of the interaction between envy and experience, shifting from 5% to 10% when compared to the full model. Overall, these findings indicate that endogeneity is unlikely to be a major concern in my dataset for Model B (Baum, 2006).

## 4 Results

In this part of my dissertation, I detail the findings from my research. Initially, I provide a summary of the descriptive statistical analysis (Chapter 4.1). Following this, I focus on the outcomes of hypotheses testing, accompanied by various robustness checks to validate these findings for both models studied (Chapter 4.2 and Chapter 4.3). For this purpose, I have calculated the following models (see Table 32):

<b>I. Main Models</b>	<b>Model #</b>	<b>Description</b>
<b><i>A Venture Performance</i></b>	Model 1	Only Control Variables
	Model 2	Model 1 + Main Effect
	Model 3	Model 2 + Main Effect of Moderators
	Model 4	Model 3 + Interaction Effect of One Moderator
	Model 5	Model 3 + Interaction Effect of One Moderator
	<b>Model 6</b>	<b>Full Model</b>
<b><i>B Venture Goal Progress</i></b>	Model 7	Only Control Variables
	Model 8	Model 7 + Main Effect
	Model 9	Model 8 + Main Effect of Moderators
	Model 10	Model 9 + Interaction Effect of One Moderator
	Model 11	Model 9 + Interaction Effect of One Moderator
	<b>Model 12</b>	<b>Full Model</b>
<b>II. Robustness Check Models</b>	<b>Model #</b>	<b>Description</b>
<b><i>A Venture Performance</i></b>	Model 13	Model 6 without Control Variables
	Model 14	Model 6 with Only Control Variables on Founder Level
	Model 15	Model 6 with Only Control Variables on Team Level
	Model 16	Model 6 but Only for Five-Year-Old or Younger Ventures
<b><i>B Venture Goal Progress</i></b>	Model 17	Model 12 without Control Variables
	Model 18	Model 12 with Only Control variables on Founder Level
	Model 19	Model 12 with Only Control variables on Team Level
	Model 20	Model 12 but Only for Five-Year-Old or Younger Ventures

**Table 32: Overview of Models** (Own illustration)

## 4.1 Descriptive Statistics

Table 33 and Table 34 show the descriptive statistics for all variables of Model A and Model B, including means, standard deviations, minimum and maximum values, and variable correlations.

First, both tables illustrate the mean (mean = 2.32 [2.31]), standard deviation (SD = 1.07 [1.05]), minimum (min. = 1.00 [1.00]) and maximum (max. = 5.80 [5.80]) of the main independent variable envy. The values of these key metrics are in line with existing research including the measurement of envy using the scale by Vecchio (2000). For example, Duffy et al. (2012) measured envy at two times with the same scale by Vecchio (2000) and found similar mean values (mean<sub>T1</sub> = 3.60; mean<sub>T2</sub> = 2.33) and standard deviations (SD<sub>T1</sub> = .99; SD<sub>T2</sub> = .87). Also, Kim et al. (2010) found similar values in their study (mean = 3.55; SD = 1.70).

Second, founder age and venture age are positively and significantly correlated ( $r = .33$  [.32];  $p < .01$  [.01]). This effect is reasonable as younger founders might just have founded their ventures, while older founders could already be more progressed on their venture's founding journey.

Third, the number of employees is positively and significantly correlated with the number of co-founders ( $r = .25$  [.26];  $p < .01$  [.01]). Also, this relationship seems substantial as a larger founding team might have a wider network, providing more opportunities to recruit talented individuals and expand the workforce. Even further, with more founders the leadership and decision-making capacity is greater which could potentially lead to a more efficient workforce expansion (Shepherd et al., 2015).

Fourth, envy as the main independent construct is negatively and significantly correlated with social desirability ( $r = -.20$  [-.22];  $p < .01$  [.01]). This relationship was expected as founders

who score high in social desirability might be less likely to honestly reveal their envy (Smith & Kim, 2007).

Fifth, venture performance and venture goal progress as the main dependent variables are positively and significantly correlated with social desirability ( $r = .15$  [.21];  $p < .10$  [.01]). Founders may feel a social pressure to present themselves and their ventures in a positive light, leading them to overstate their progress to align with what is socially desirable.

Sixth, in the same vein, social desirability is positively and significantly correlated with entrepreneurial self-efficacy ( $r = .22$  [.24];  $p < .01$  [.01]). This relationship is reasonable as founders may feel a social pressure to present themselves and their self-efficacy in a positive light, leading them to overstate their trust in their own abilities to align with what is socially desirable.

Seventh, entrepreneurial self-efficacy is correlated with both dependent variables ( $r = .40$  [.32];  $p < .01$  [.01]). Several reasons might explain the expected relationship. While founders with high self-efficacy are more likely to set challenging goals (Zimmerman et al., 1992), they might also tend to have a strong belief in their capacity to meet these goals which can become a self-fulfilling prophecy as this confidence drives them towards achieving set targets. And even more, founders with high self-efficacy might be more motivated and driven (Schunk, 1995). Hence, this intrinsic motivation can lead them to persist in the face of obstacles, which directly contributes to both venture performance and venture goal progress.

Eighth, business education and gender are significantly correlated ( $r = -.23$  [-.23];  $p < .01$  [.01]). This is in line with existing research, where female students are found to be the minority in business classes and studies (Kaenzig et al., 2007).

Ninth, university degree and age are correlated ( $r = .23$  [.22];  $p < .01$  [.01]). My sample consists of mainly early-stage and younger founders. Hence older founders are more likely to already have completed university while younger founders are still in the process of their education.

Lastly, self-efficacy is also correlated with the number of co-founders ( $r = .20$  [.19];  $p < .05$  [.05]). Founders with high self-efficacy may be more confident in their ability to attract and convince others to join their venture. This confidence can be compelling and persuasive, leading to the formation of a team with multiple co-founders.

#	Variable	Obs	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9
1	Venture Performance T2	141	4.57	1.07	1.38	7.00	1.00								
2	Envy	141	2.32	1.07	1.00	5.80	-.22***	1.00							
3	Env. Dynamism	141	4.38	1.19	1.40	6.60	-.11	-.04	1.00						
4	Entr. Experience	141	1.33	0.63	1.00	4.00	-.04	.03	.02	1.00					
5	Venture Performance T1	141	4.61	0.92	1.75	7.00	.54***	-.32***	-.14*	.10	1.00				
6	Gender	141	0.76	0.43	0.00	1.00	.11	.10	-.03	.11	.00	1.00			
7	Social Desirability	141	4.58	0.87	1.71	7.00	.15*	-.20**	-.07	.08	.18**	-.06	1.00		
8	Age	141	30.25	6.18	20.00	53.00	.08	-.08	-.04	.14*	.04	.11	-.05	1.00	
9	Numb. of Co-Founders	141	3.27	1.08	2.00	8.00	.12	-.04	-.18**	.00	.14*	.08	.09	.04	1.00
10	Numb. of Employees	141	3.50	3.84	0.00	28.00	.20**	-.05	-.17*	.15*	.13	.20**	.08	.13	.25***
11	Business Education	141	0.07	0.26	0.00	1.00	-.05	-.05	-.03	.12	.10	-.23***	.19**	-.05	-.04
12	University Degree	141	0.96	0.20	0.00	1.00	-.04	.12	.03	.00	.02	-.04	-.10	.23***	.05
13	Equity Owner	141	0.84	0.36	0.00	1.00	.08	-.02	-.05	.01	.05	-.06	.00	-.16*	-.11
14	Entr. Self-Efficacy	141	5.75	0.82	2.00	7.00	.40***	-.29***	-.09	.13	.43***	.06	.22***	.07	.20**
15	Venture Age	141	24.69	22.39	0.00	154.00	-.05	.01	-.16*	.14*	-.06	-.03	.00	.33***	-.10
16	Industry (Sciences)	141	0.38	0.49	0.00	1.00	.03	-.17**	-.01	-.02	.04	-.14*	.05	.21**	.21**
17	Industry (Services)	141	0.16	0.37	0.00	1.00	.05	.19**	.01	.07	.14*	.02	-.12	-.12	-.13
18	Industry (Comp. HW & SW)	141	0.38	0.49	0.00	1.00	.00	.11	.04	-.02	-.05	.13	.04	-.07	-.10

**Table 33: Descriptive Statistics (Model A)** (Own illustration); Obs = observations; Max = maximum; Min = minimum; SD = standard deviation; T1 = first-round questionnaire; T2 = second-round questionnaire; Comp. HW & SW = computer hardware and software; \*\*\* p < .01, \*\* p < .05, \* p < .10.

#	Variable	Obs	Mean	SD	Min	Max	10	11	12	13	14	15	16	17	18
10	Numb. of Employees	141	3.50	3.84	0.00	28.00	1.00								
11	Business Education	141	0.07	0.26	0.00	1.00	-.10	1.00							
12	University Degree	141	0.96	0.20	0.00	1.00	.10	-.22**	1.00						
13	Equity Owner	141	0.84	0.36	0.00	1.00	-.08	-.03	-.09	1.00					
14	Entr. Self-Efficacy	141	5.75	0.82	2.00	7.00	.13	.11	-.10	.11	1.00				
15	Venture Age	141	24.69	22.39	0.00	154.00	.15*	.03	.09	-.02	-.09	1.00			
16	Industry (Sciences)	141	0.38	0.49	0.00	1.00	-.03	.07	.02	.05	.10	.07	1.00		
17	Industry (Services)	141	0.16	0.37	0.00	1.00	-.02	-.12	.09	.08	-.17*	.02	-.34***	1.00	
18	Industry (Comp. HW & SW)	141	0.38	0.49	0.00	1.00	.09	.01	.02	-.07	.02	-.10	-.60***	-.34***	1.00

**Table 33 (continued): Descriptive Statistics (Model A)** (Own illustration); Obs = observations; Max = maximum; Min = minimum; SD = standard deviation; T1 = first-round questionnaire; T2 = second-round questionnaire; Comp. HW & SW = computer hardware and software;

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .10$ .



#	Variable	Obs	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9
1	Goal Progress T2	156	5.46	1.23	1.00	7.00	1.00								
2	Envy	156	2.31	1.05	1.00	5.80	-.15*	1.00							
3	Env. Dynamism	156	4.34	1.18	1.40	6.60	-.06	-.05	1.00						
4	Entr. Experience	156	1.32	0.62	1.00	4.00	.11	.03	.06	1.00					
5	Goal Progress T1	156	5.50	0.98	2.75	7.00	.48***	-.34***	-.13*	.12	1.00				
6	Gender	156	0.77	0.42	0.00	1.00	.03	.13*	-.01	.11	-.06	1.00			
7	Social Desirability	156	4.59	0.85	1.71	7.00	.21***	-.22***	-.06	.06	.23***	-.10	1.00		
8	Age	156	30.13	5.94	20.00	53.00	.14*	-.09	-.03	.14*	.10	.10	-.04	1.00	
9	Numb. of Co-Founders	156	3.22	1.06	2.00	8.00	.10	-.03	-.17**	.02	.11	.06	.07	.03	1.00
10	Numb. of Employees	156	3.38	3.70	0.00	28.00	.14*	-.04	-.15*	.13*	.09	.18**	.08	.12	.26***
11	Business Education	156	0.06	0.25	0.00	1.00	.02	-.04	-.02	.12	.05	-.23***	.18**	-.04	-.03
12	University Degree	156	0.96	0.19	0.00	1.00	-.06	.11	.02	.00	-.14*	-.03	-.10	.22***	.04
13	Equity Owner	156	0.85	0.36	0.00	1.00	.13*	-.01	-.03	.02	.23***	-.06	.01	-.15*	-.11
14	Entr. Self-Efficacy	156	5.75	0.79	2.00	7.00	.32***	-.29***	-.09	.13*	.30***	.03	.24***	.07	.19**
15	Venture Age	156	24.43	21.65	0.00	154.00	.10	.02	-.15*	.12	-.04	-.04	.00	.32***	-.08
16	Industry (Sciences)	156	0.37	0.48	0.00	1.00	.13	-.19**	-.02	-.01	.13*	-.15*	.03	.20**	.21***
17	Industry (Services)	156	0.16	0.37	0.00	1.00	-.02	.15*	.02	.06	-.02	-.01	-.05	-.11	-.13
18	Industry (Comp. HW & SW)	156	0.38	0.49	0.00	1.00	-.06	.15*	.03	.00	-.08	.14*	.00	-.07	-.09

**Table 34: Descriptive Statistics (Model B)** (Own illustration); Obs = observations; Max = maximum; Min = minimum; SD = standard deviation; T1 = first-round questionnaire; T2 = second-round questionnaire; Comp. HW & SW = computer hardware and software; \*\*\* p < .01, \*\* p < .05, \* p < .10.

#	Variable	Obs	Mean	SD	Min	Max	10	11	12	13	14	15	16	17	18
10	Numb. of Employees	156	3.38	3.70	0.00	28.00	1.00								
11	Business Education	156	0.06	0.25	0.00	1.00	-.09	1.00							
12	University Degree	156	0.96	0.19	0.00	1.00	.09	-.22***	1.00						
13	Equity Owner	156	0.85	0.36	0.00	1.00	-.07	-.03	-.09	1.00					
14	Entr. Self-Efficacy	156	5.75	0.79	2.00	7.00	.11	.11	-.09	.12	1.00				
15	Venture Age	156	24.43	21.65	0.00	154.00	.15*	.03	.08	-.04	-.09	1.00			
16	Industry (Sciences)	156	0.37	0.48	0.00	1.00	-.03	.07	.02	.03	.11	.06	1.00		
17	Industry (Services)	156	0.16	0.37	0.00	1.00	-.01	-.11	.09	.09	-.12	.01	-.34***	1.00	
18	Industry (Comp. HW & SW)	156	0.38	0.49	0.00	1.00	.09	.01	.02	-.07	-.02	-.10	-.60***	-.34***	1.00

**Table 34 (continued): Descriptive Statistics (Model B)** (Own illustration); Obs = observations; Max = maximum; Min = minimum; SD = standard deviation; T1 = first-round questionnaire; T2 = second-round questionnaire; Comp. HW & SW = computer hardware and software;

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .10$ .

## **4.2 Results for Model A: Envy and Venture Performance**

In the upcoming chapter, I detail the outcomes of the hypotheses testing conducted for Model A (venture performance). I outline the linear regression outcomes in Chapter 4.2.1 and elaborate the conducted robustness checks in Chapter 4.2.2.

### **4.2.1 Hypotheses Testing for Venture Performance**

Table 35 presents the results of my linear regression analysis for the model in which venture performance serves as the dependent variable. My analysis for venture performance includes a total of six models. Model 1 only includes the control variables. In Model 2, I introduce the primary effect of envy. Model 3 includes not only the primary effect, but also the two moderators and the control variables. Additional models, Model 4, and Model 5, include the incremental addition of an interaction term. Model 6 encompasses all variables and represents the full model with venture performance as the dependent variable.

#### ***Hypothesis 1***

H1 posits that the relationship between envy and venture performance will be negative. Although the coefficient is in the expected direction, contrary to my expectations, I do not find statistical significance in the primary effect of envy on venture performance ( $b = -.073$ ,  $p = .360$  in Model 6).

#### ***Hypothesis 2***

H2 suggests that the relationship between envy and venture performance will be less negative for higher levels of entrepreneurial experience compared to lower levels of entrepreneurial experience. Within Model 6, I find a statistically significant positive coefficient for the interaction between envy and entrepreneurial experience ( $b = .196$ ,  $p = .008$ ).

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Constant	4.401***	(.657)	4.384***	(.654)	4.256***	(.658)	4.091***	(.657)	3.968***	(.652)	3.849***	(.657)
<b>Main effects</b>												
Envy			-.017	(.080)	-.007	(.084)	-.050	(.084)	-.038	(.077)	-.073	(.079)
Entr. Experience					-.242*	(.126)	-.283***	(.099)	-.255**	(.123)	-.290***	(.099)
Env. Dynamism					-.000	(.075)	.010	(.076)	.008	(.070)	.017	(.072)
<b>Controls</b>												
Industry (Sciences)	.082	(.278)	.091	(.284)	.090	(.275)	.146	(.263)	.171	(.277)	.213	(.266)
Industry (Services)	.144	(.307)	.164	(.312)	.205	(.315)	.287	(.308)	.372	(.314)	.430	(.310)
Industry (C. HW & SW)	.089	(.256)	.103	(.275)	.102	(.273)	.159	(.259)	.190	(.264)	.232	(.251)
Gender	.104	(.196)	.109	(.197)	.148	(.196)	.172	(.198)	.121	(.190)	.144	(.193)
Social Desirability	.057	(.097)	.055	(.100)	.064	(.098)	.075	(.098)	.076	(.093)	.085	(.093)
Age	.011	(.014)	.011	(.014)	.014	(.014)	.015	(.014)	.019	(.015)	.020	(.015)
Numb. of Co-Founders	-.009	(.065)	-.007	(.065)	-.012	(.066)	-.008	(.064)	-.026	(.067)	-.022	(.066)
Numb. of Employees	.028	(.023)	.028	(.024)	.032*	(.019)	.042***	(.016)	.031*	(.017)	.039***	(.014)
Business Education	-.482	(.342)	-.476	(.344)	-.391	(.342)	-.351	(.319)	-.471	(.326)	-.429	(.313)
University Degree	-.408	(.365)	-.399	(.368)	-.405	(.371)	-.416	(.371)	-.384	(.358)	-.396	(.364)
Equity Owner	.112	(.303)	.112	(.303)	.122	(.305)	.168	(.307)	.147	(.304)	.185	(.305)
Entr. Self-Efficacy	.250**	(.123)	.248**	(.121)	.267**	(.118)	.263**	(.117)	.251**	(.114)	.248**	(.113)
Venture Age	-.001	(.003)	-.001	(.003)	-.001	(.003)	-.000	(.003)	-.002	(.003)	-.002	(.003)
Vent. Performance T1	.505***	(.124)	.499***	(.128)	.504***	(.135)	.455***	(.140)	.469***	(.131)	.430***	(.135)
<b>Interactions</b>												
Envy x Experience							.226***	(.077)			.196***	(.072)
Envy x Dynamism									-.162***	(.053)	-.148***	(.053)
Observations	141		141		141		141		141		141	
R-squared	.368		.368		.386		.410		.423		.441	

**Table 35: OLS Linear Regression Results (Model A)** (Own illustration); robust standard errors in parentheses; T1 = first-round questionnaire; C. HW & SW = computer hardware and software;

\*\*\* p < .01, \*\* p < .05, \* p < .10.

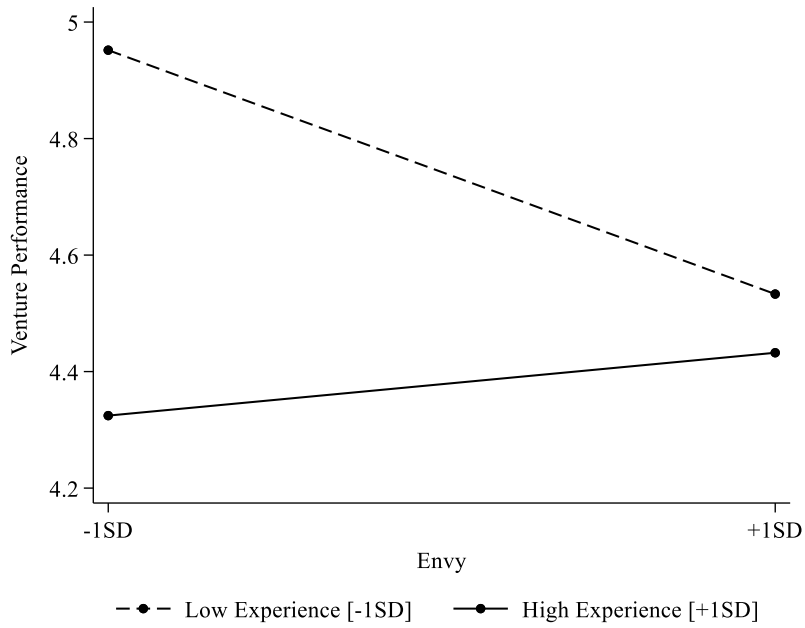
To visualize the interaction effect, Figure 20 illustrates the relationship between envy and venture performance contingent on entrepreneurial experience. It plots the effect of envy on venture performance for founders with high entrepreneurial experience (solid line, 1 SD above the mean) and those with low entrepreneurial experience (dashed line, 1 SD below the mean). I conducted a simple slope analysis (Aiken & West, 1991) to test whether the slopes of the plotted interaction term are significantly different from zero: Table 36 shows that the slope for low entrepreneurial experience is negative and marginally statistically significantly different from zero ( $dy/dx = -.196$ ;  $p = .065$ ). The slope for high entrepreneurial experience is positive and not statistically significantly different from zero ( $dy/dx = .050$ ;  $p = .499$ ).

<b>Entrepreneurial Experience</b>	<b>dy/dx</b>	<b>Std. err.</b>	<b>t</b>	<b>P&gt; t </b>	<b>95% Conf. Interval</b>	
Low (-1SD)	-.196	.105	-1.86	.065	-.404	.013
High (+1SD)	.050	.074	.68	.499	-.097	.198

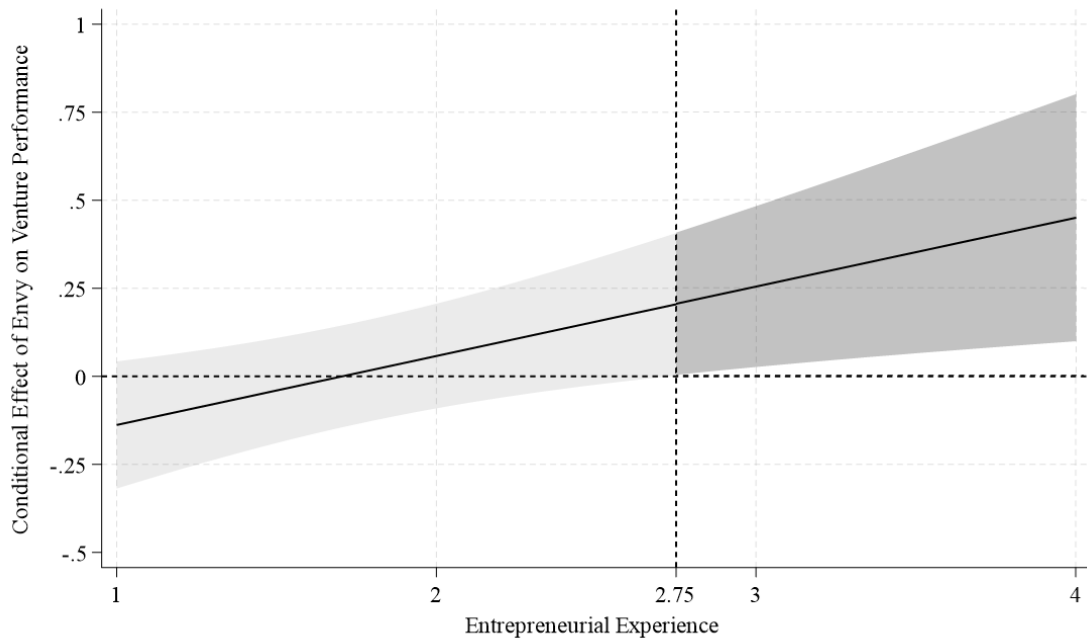
**Table 36: Simple Slope Analysis for Entrepreneurial Experience (Model A)** (Own illustration)

Therefore, to identify the values of entrepreneurial experience for which the relation between envy and venture performance is significant at the 5% level, Figure 21 illustrates the conditional effect of envy on venture performance at different levels of entrepreneurial experience. By using the Johnson-Neyman technique (Johnson & Fay, 1950), I can confirm that the relation between envy and venture performance is significantly positive at levels above 2.75 for entrepreneurial experience (uncentered values).

The results support H2 and suggest that as envy intensifies, founders with higher experience seem to engage less in social comparison, thereby favoring venture performance (see Johnson-Neyman analysis). However, as envy increases, founders with less experience seem to focus more on comparisons with others and become less attentive to their own work, reducing their focus on their own venture and ultimately negatively affecting their venture performance.



**Figure 20: Envy and Venture Performance Contingent on Entrepreneurial Experience (Own illustration)**



**Figure 21: Effect of Envy on Venture Performance at Entrepreneurial Experience Levels (Own illustration);** grey area indicates confidence interval at 95% and only includes observable values of entrepreneurial experience; dark grey indicates area where  $p < .05$  and entrepreneurial experience has statistically significant effect on the envy-venture performance relationship.

### *Hypothesis 3*

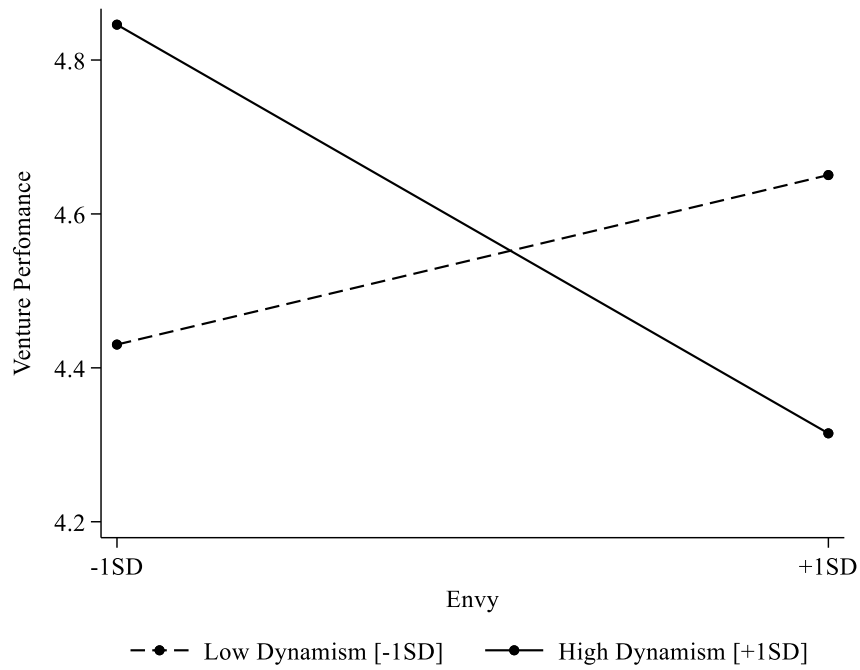
H3 proposes that the relationship between envy and venture performance will be more negative for higher levels of environmental dynamism compared to lower levels of environmental dynamism. In Model 6, I observe a statistically significant and negative interaction between envy and environmental dynamism ( $b = -.148, p = .006$ ).

Figure 22 illustrates the relationship between envy and venture performance contingent on environmental dynamism. It plots the effect of envy on venture performance for founders in highly dynamic environments (solid line, 1 SD above the mean) and those in less dynamic environments (dashed line, 1 SD below the mean). In order to test whether the slopes are statistically significantly different from zero, I conducted a simple slope analysis (Aiken & West, 1991) (see Table 37): The slope for low environmental dynamism values is positive but not statistically significantly different from zero ( $dy/dx = .103; p = .246$ ). However, the slope for high values of environmental dynamism is negative and statistically significantly different from zero ( $dy/dx = -.248; p = .029$ ).

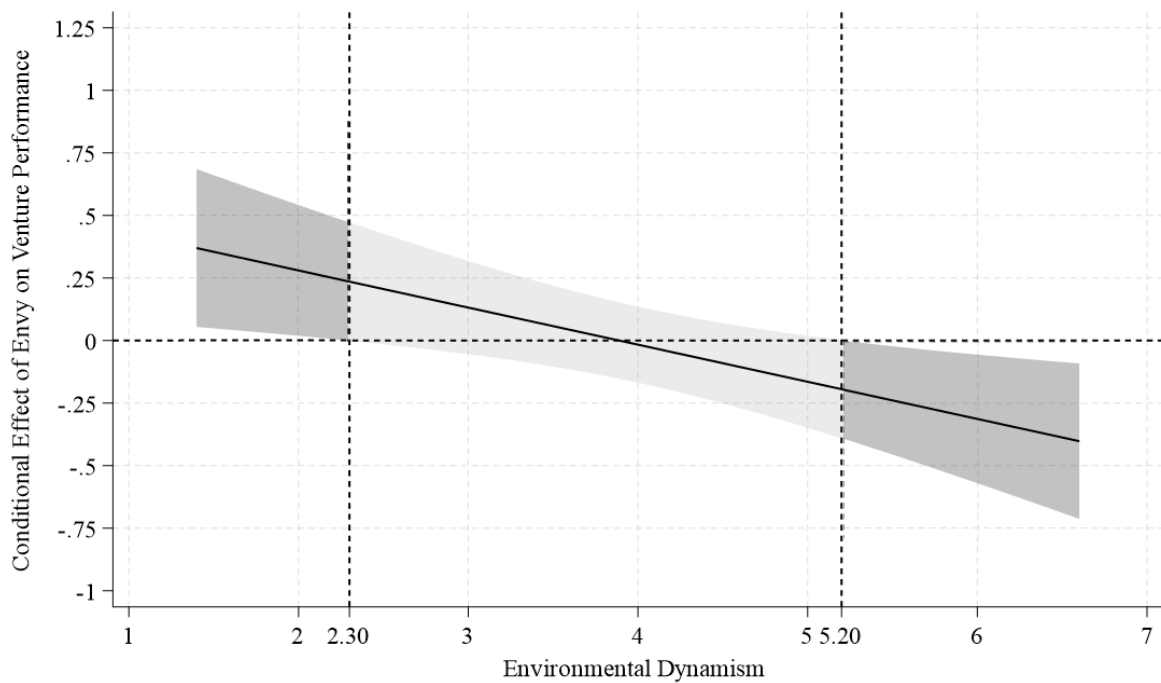
<b>Environmental Dynamism</b>	<b>dy/dx</b>	<b>Std. err.</b>	<b>t</b>	<b>P&gt; t </b>	<b>95% Conf. Interval</b>	
Low (-1SD)	.103	.088	1.17	.246	-.072	.278
High (+1SD)	-.248	.113	-2.20	.029	-.471	-.025

**Table 37: Simple Slope Analysis for Environmental Dynamism (Model A)** (Own illustration)

To identify the range of environmental dynamism values where the relationship between envy and venture performance is significantly different from zero, I again use the Johnson-Neyman technique (Johnson & Fay, 1950; see Figure 23). I can confirm that the relationship is significantly negative for values of environmental dynamism that are exceeding 5.20. Even more, the graph also illustrates that the relationship even becomes significantly positive for values less than 2.30 of environmental dynamism (at the 5% level, uncentered values).



**Figure 22: Envy and Venture Performance Contingent on Environmental Dynamism (Own illustration)**



**Figure 23: Effect of Envy on Venture Performance at Environmental Dynamism Levels (Own illustration);** grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism; dark grey indicates area where  $p < .05$  and environmental dynamism has statistically significant effect on the envy-venture performance relationship.



My results support H3, suggesting that as envy increases, founders in more dynamic environments seem to focus more on comparison with others, distracting them from their own venture goals and negatively impacting their venture performance. Conversely, founders in less dynamic environments can rely more on objectively available measures to evaluate themselves as envy increases, allowing them to focus more on their own work objectives. As a result, their venture performance is less negatively affected by envy – or as shown in Figure 23, even significantly positively affected for low dynamism values.

#### **4.2.2 Robustness Check for Venture Performance**

In the following I present the conducted robustness tests to ensure the reliability of the regression outcomes and the validity of the hypotheses testing. These assessments are designed to minimize any potential impact that may arise from the model's design or inherent biases in the dataset. I followed established scholarly practices (Breugst, Patzelt, et al., 2012). First, I conducted a robustness test that excludes all control variables (Model 13). Second, I calculated the full model but only using individual-level variables as controls (Model 14). Third, I calculated a model with solely team/venture-level variables as controls (Model 15). Lastly, I assessed the model's stability by exclusively incorporating ventures younger than five years, as these ventures constitute the main portion of my study and the sociodynamics within more mature ventures may differ (Model 16). After all, I provide a summary of the robustness tests.

##### ***Results of Hypotheses Testing Without Control Variables (Model 13)***

Drawing on established research (Breugst, Patzelt, et al., 2012; Tacke et al., 2022), I recalculated the full model by excluding all control variables to address potential confounding factors and to address potential critiques related to the inclusion of control variables (e.g., Holtz, Spector, & Brannick, 2011). The outcomes of the hypotheses testing are detailed in Model 13 in Table 38.

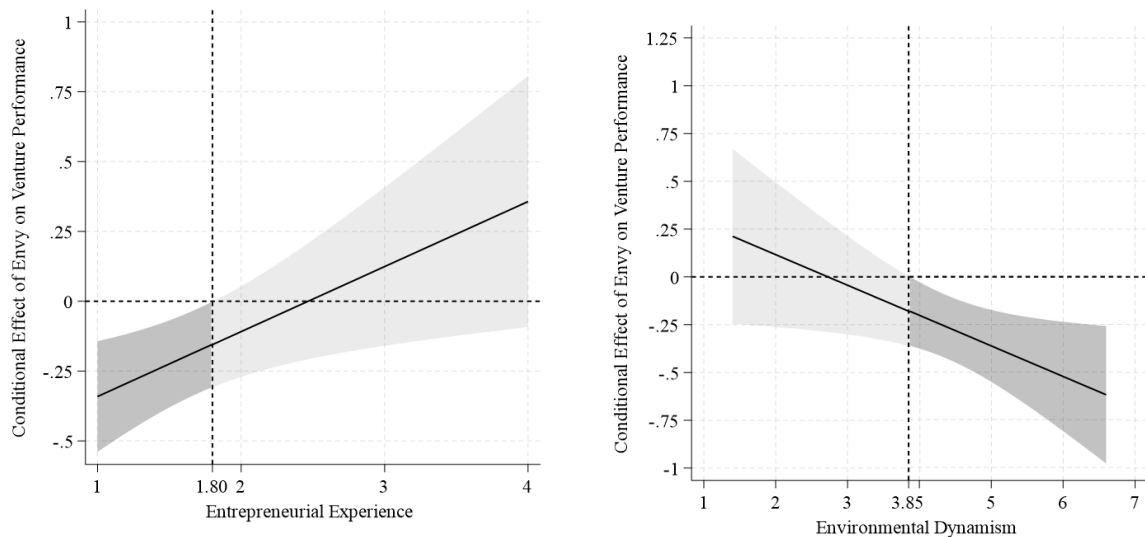
	<b>Model 13</b>		<b>Model 14</b>		<b>Model 15</b>		<b>Model 16</b>	
Constant	4.559***	(.086)	1.745***	(.648)	1.968***	(.581)	1.754**	(.688)
<b>Main effects</b>								
Envy	-.264***	(.084)	-.041	(.071)	-.111	(.079)	-.070	(.081)
Entr. Experience	-.109	(.121)	-.249**	(.104)	-.229**	(.097)	-.281***	(.100)
Env. Dynamism	-.073	(.079)	.012	(.066)	.005	(.075)	.007	(.076)
<b>Controls</b>								
Gender			.199	(.175)			.168	(.199)
Social Desirability			.088	(.091)			.080	(.094)
Age			.018	(.013)			.022	(.016)
Business Education			-.511	(.309)			-.387	(.315)
University Degree			-.282	(.335)			-.387	(.364)
Equity Owner			.180	(.304)			.209	(.326)
Entr. Self-Efficacy			.237**	(.108)			.247**	(.118)
Industry (Sciences)					.206	(.290)	.267	(.264)
Industry (Services)					.286	(.336)	.457	(.325)
Industry (Comp. Hardware and Software)					.208	(.301)	.270	(.262)
Numb. of Co-Founders					-.001	(.068)	-.021	(.065)
Numb. of Employees					.047***	(.015)	.040***	(.015)
Venture Age					-.002	(.003)	-.005	(.004)
Vent. Performance T1			.495***	(.122)	.519***	(.128)	.425***	(.139)
<b>Interactions</b>								
Envy x Experience	.233**	(.093)	.152**	(.070)	.177**	(.074)	.185**	(.072)
Envy x Dynamism	-.160**	(.073)	-.138***	(.051)	-.139**	(.057)	-.150***	(.055)
Observations	141		141		141		137	
R-squared	.140		.416		.374		.444	

**Table 38: OLS Linear Regression Results for Robustness Models (Model A)** (Own illustration); robust standard errors in parentheses; T1 = first-round questionnaire; \*\*\* p < .01, \*\* p < .05, \* p < .10.

The results of the analysis confirm all hypotheses. First, opposite to the main model and even in the absence of any control variables, the derived model significantly validates H1 concerning the primary relationship between envy and venture performance ( $b = -.264, p = .002$ ). This supports the assertion that the relationship between envy and venture performance is negative in nature. Second, Model 13 aligns with H2, confirming that higher entrepreneurial experience mitigates the detrimental effect of envy on venture performance ( $b = .233, p = .013$ ). Third, the outcomes of Model 13 provide strong support for H3 ( $b = -.160, p = .029$ ), underscoring that the negative impact of envy on venture performance is amplified in dynamic settings.

Identifying the areas of significance (at the 5% level) for the conditional effects of envy on venture performance at different levels of environmental dynamism or different levels of entrepreneurial experience, yields further insights (see Figure 24). While the envy-venture performance relation in Model 13 is significantly negative for high values of environmental dynamism (values  $> 3.85$ ; uncentered), entrepreneurial experience only significantly and negatively impacts the relationship at low levels (values  $< 1.80$ ; uncentered).

Taken together, the results of the regression model without control variables mainly confirm the results of the full model, Model 6: The main effect as well as the interaction effect with environmental dynamism and entrepreneurial experience are significant at the 5% level. Only the area of significance for the interaction of envy with entrepreneurial experience is not congruent with the findings of the main model. While the main model finds that only values above 2.75 have a significant positive impact on the relationship between envy and venture performance, Model 13 suggests the opposite, revealing only a significant but negative relationship for values below 1.80 for entrepreneurial experience.



**Figure 24: Conditional Effects without Control Variables (Model A)** (Own illustration); grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism and entrepreneurial experience; dark grey indicates area where  $p < .05$  and the moderator has statistically significant effect on the envy-venture performance relationship.

#### ***Results of Hypotheses Testing with Control Variables on Founder Level (Model 14)***

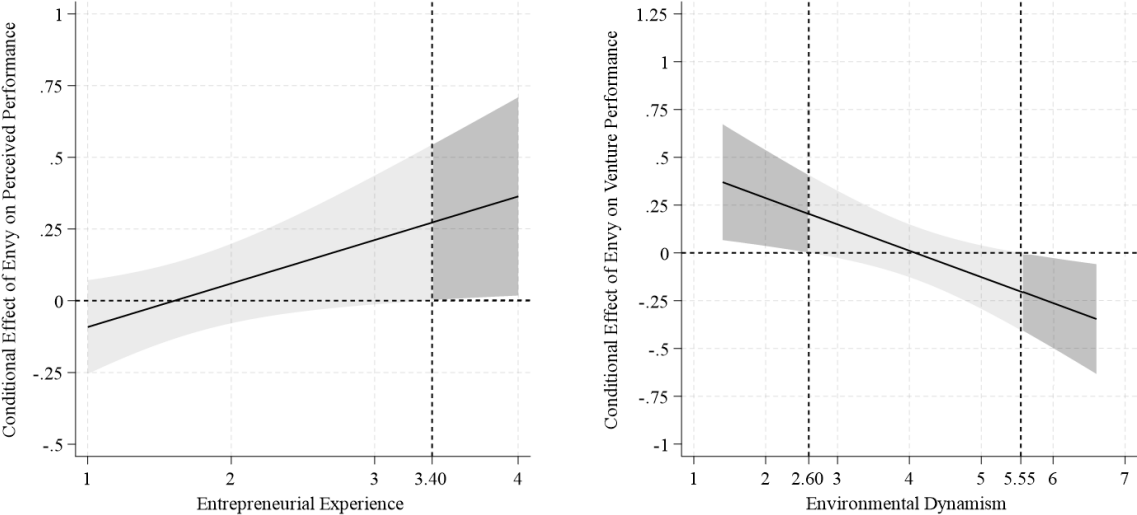
Table 38 presents Model 14, only containing control variables at the individual, single-founder level. These variables are gender, age, social desirability, business education, university degree, equity ownership, and entrepreneurial self-efficacy.

The outcomes offer no support for H1 but corroborate H2 and H3. Because the main effect of envy on venture performance is not significant ( $b = -.041$ ,  $p = .566$ ), Model 14 does not offer support for H1 and is therewith in line with the full Model 6.

Even further, the interaction term between envy and entrepreneurial experience is positively associated with venture performance and significant ( $b = .152$ ,  $p = .033$ ), confirming H2. In contrast, the interaction between envy and environmental dynamism is negatively associated with venture performance, and also significant ( $b = -.138$ ,  $p = .008$ ). This is in line with the Model 6 and confirms H3.

The plot of the areas of significance (5% level) for the interaction terms yields the same results (see Figure 25). While the envy-entrepreneurial experience interaction term gets significant above 3.40, the interaction between envy and environmental dynamism significantly moderates venture performance for levels less than 2.60 or higher than 5.55 of environmental dynamism (uncentered values).

Taken together, the results of the hypotheses testing with the robustness model containing only individual-level control variables are consistent with the results of Model 6, for all hypotheses H1, H2 and H3.



**Figure 25: Conditional Effects with Control Variables on Founder Level (Model A)** (Own illustration); grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism and entrepreneurial experience; dark grey indicates area where  $p < .05$  and the moderator has statistically significant effect on the envy-venture performance relationship.

***Results of Hypotheses Testing with Control Variables on Team/Venture Level (Model 15)***

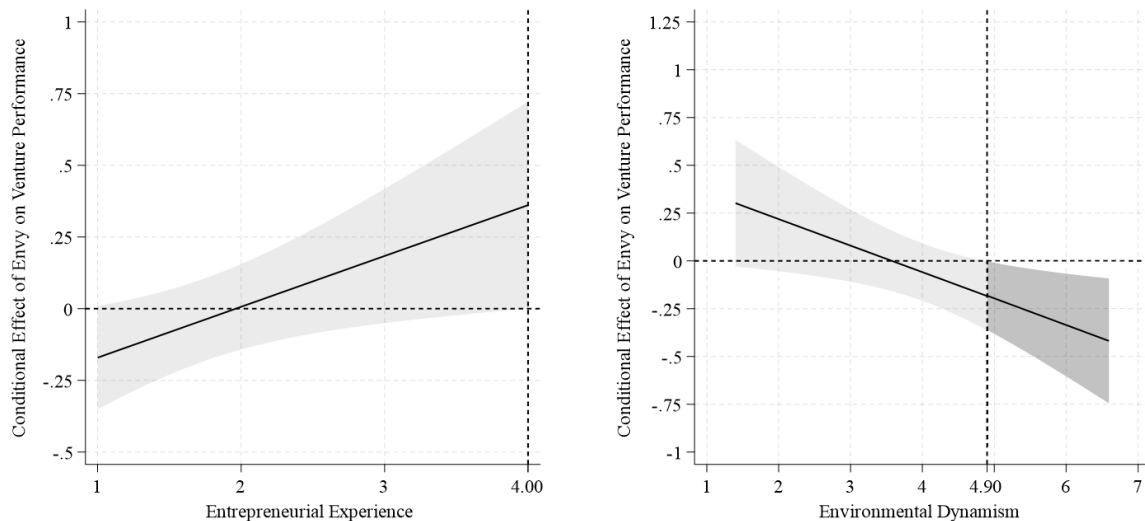
Table 38 encompasses Model 15 and includes only control variables on the team or venture level, respectively. Specifically, these are industry, number of co-founders, number of employees, and venture age.

The results are consistent with my analysis for the full model – Model 6 – providing no support for H1 but do support H2 and H3: the main effect of envy on venture performance is negative

but not significant ( $b = -.111$ ,  $p = .159$ ) and therewith in line with Model 6. The interaction of envy and entrepreneurial experience has a positive coefficient and is significant at the 5% level ( $b = .177$ ,  $p = .018$ ) – in line with Model 6. While the interaction of envy and environmental dynamism has a negative coefficient, it is also statistically significant ( $b = -.139$ ,  $p = .016$ ) and therewith in line with my main model.

However, when plotting the conditional effects of envy on venture performance at different levels of entrepreneurial experience or environmental dynamism (see Figure 26), there is a slight difference to the main model. While the conditional effects of envy on venture performance are not significant at the 5% level for any observable value of entrepreneurial experience (only for values above 4.00 of entrepreneurial experience, maximum observed value in dataset is 4), the effects of envy on venture performance are also only significant for values above 4.90 of environmental dynamism.

In summary, the results of the hypotheses testing for the model including only the control variables on the individual level provide support for the findings of my main analysis: the main effect of envy on venture performance is not significant, the interaction effect of envy and entrepreneurial experience and the interaction effect of envy and environmental dynamism are significant. Hence, the lack of individual level variables only affects the level and areas of significance of both interaction effects.



**Figure 26: Conditional Effects with Control Variables on Team Level (Model A)** (Own illustration); grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism and entrepreneurial experience; dark grey indicates area where  $p < .05$  and the moderator has statistically significant effect on the envy-venture performance relationship.

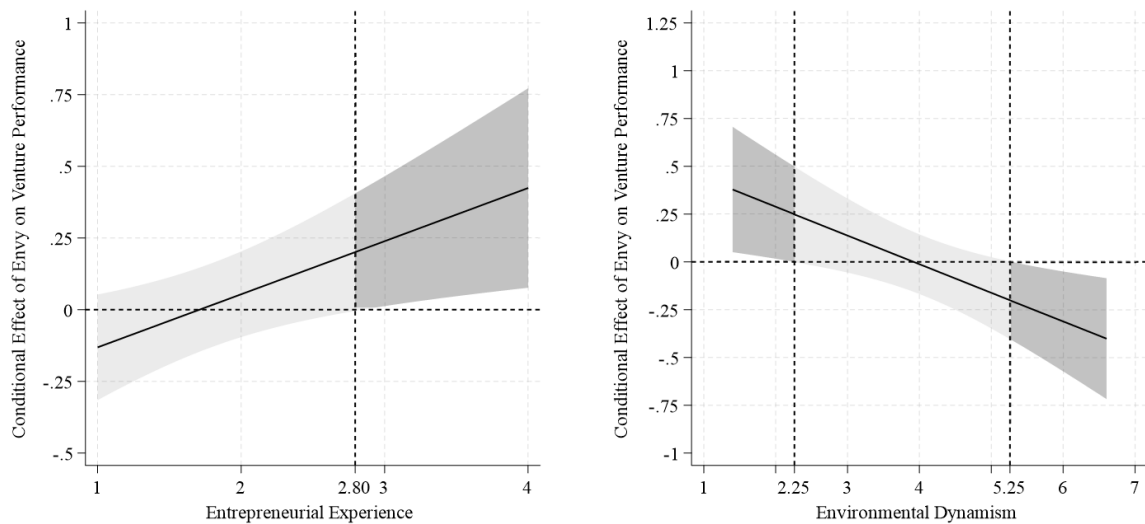
### ***Results of Hypotheses Testing for Five-Year-Old or Younger Ventures (Model 16)***

In my sample, 137 of 141 founders (97%) were part of ventures that were five years old or younger. Hence, only four founders (3%) were part of ventures that were older, namely two founders of a venture being seven years old, one of a venture of nine years, and one founder of a venture of 12 years. As working dynamics and entrepreneurial work differs in younger ventures compared to older ventures (Lumpkin et al., 2006), I computed an additional robustness check that only included ventures that were younger or equal to five years (Model 16).

The outcomes of the hypotheses testing for this robustness check completely corroborate the results of the primary model. Consistent with the main model, H1 is not supported ( $b = -.070$ ,  $p = .386$ ) as the main effect for envy is not significant. H2 is supported as the interaction between envy and entrepreneurial experience has a positive coefficient and is also significant at the 5% level ( $b = .185$ ,  $p = .011$ ). Also, H3 is supported as the interaction between envy and

environmental dynamism has a negative coefficient and is significant at the 1% level ( $b = -.150$ ,  $p = .007$ ).

The same results are revealed in the plots of the conditional effects of envy on venture performance at different levels of entrepreneurial experience or environmental dynamism, respectively (see Figure 27). While the effect of envy on venture performance is significant for values above 2.80 of entrepreneurial experience, the effect is significant for values below 2.25 and above 5.25 of environmental dynamism. This is largely in line with the findings of the main model.



**Figure 27: Conditional Effects for Five-Year-Old or Younger Ventures (Model A)** (Own illustration); grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism and entrepreneurial experience; dark grey indicates area where  $p < .05$  and the moderator has statistically significant effect on the envy-venture performance relationship.

### *Summary of Robustness Checks*

Table 37 contains a summary of the conducted robustness checks in comparison with the full Model 6 for the model containing venture performance as control variable. Despite one exemption, all models indicate the same direction for support of all hypotheses.

All in all, three of the four conducted robustness checks do not provide support for the main effect on the influence of envy on venture performance. I derived and hypothesized a negative



relationship in the theory part of this dissertation but do not find sufficient support in the full model calculations and simple slope analyses conducted in Chapter 4.2.2. Hence, as only the exclusion of all control variables provides support for the main effect, the main effect is not sufficiently supported.

Second, all four conducted robustness tests provide support for Hypothesis 2. However, the model without control variables and the model without control variables on team level, do have an influence on the areas of significance of the interaction effect. Hence, the findings related to Hypothesis 2 can be considered robust but exhibit a degree of sensitivity to the specification of the model.

Lastly, all four conducted robustness tests provide support for Hypothesis 3. Only the model without control variables and the model without control variables on team level, do have an influence on the areas of significance of the interaction effect. Therefore, the results on Hypothesis 3 can be considered robust.

<b>Hypothesis</b>	<b>Model 6 – <i>Full model</i></b>	<b>Model 13 – <i>without control variables</i></b>	<b>Model 14 – <i>with control variables on founder level</i></b>	<b>Model 15 – <i>with control variables on team/venture level</i></b>	<b>Model 16 – <i>only five-year-old or younger ventures</i></b>
<b>Hypothesis 1</b>	No	Yes	No	No	No
<b>Hypothesis 2</b>	Yes	Yes	Yes	Yes	Yes
<b>Hypothesis 3</b>	Yes	Yes	Yes	Yes	Yes

**Table 39: Summary of Hypotheses Testing and Robustness Checks (Model A)** (Own illustration)

### **4.3 Results for Model B: Envy and Venture Goal Progress**

In this chapter I describe the results of testing the hypotheses for Model B (venture goal progress). I outline the linear regression outcomes in Chapter 4.3.1 and elaborate the conducted robustness checks in Chapter 4.3.2, such as testing for potential endogeneity issues.

#### **4.3.1 Hypotheses Testing for Venture Goal Progress**

Table 40 displays the outcomes of my linear regression analysis for the model with venture goal progress as dependent variable. My analysis includes six models. Model 7 comprises the control variables only. In Model 8, I incorporate the main effect of envy. Model 9 encompasses the main effect, both moderators, and the control variables. Model 10 and Model 11 do further include one interaction term at a time, respectively. Model 12 covers the full range of independent variables as well as the interaction effects of envy with entrepreneurial experience and environmental dynamism, respectively.

##### ***Hypothesis 4***

H4 proposes that the relationship between envy and venture goal progress will be negative. Against my initial expectations, I do not find the main effect of envy on venture goal progress to be negative nor statistically significant ( $b = .020$ ,  $p = .849$  in Model 12).

##### ***Hypothesis 5***

H5 suggests the relationship between envy and venture goal progress will be less negative for higher levels of entrepreneurial experience compared to lower levels of entrepreneurial experience. In Model 12, I observe a statistically significant coefficient for the interaction between envy and entrepreneurial experience ( $b = .176$ ,  $p = .045$ ).

	<b>Model 7</b>		<b>Model 8</b>		<b>Model 9</b>		<b>Model 10</b>		<b>Model 11</b>		<b>Model 12</b>	
Constant	4.842***	(.654)	4.913***	(.656)	4.931***	(.665)	4.807***	(.640)	4.640***	(.691)	4.544***	(.677)
<b>Main effects</b>												
Envy			.077	(.098)	.085	(.105)	.051	(.113)	.048	(.098)	.020	(.104)
Entr. Experience					-.013	(.123)	-.048	(.101)	-.019	(.122)	-.050	(.103)
Env. Dynamism					.053	(.098)	.064	(.098)	.062	(.092)	.071	(.092)
<b>Controls</b>												
Industry (Sciences)	.339	(.276)	.315	(.286)	.301	(.295)	.338	(.291)	.376	(.304)	.405	(.298)
Industry (Services)	.313	(.322)	.252	(.329)	.240	(.336)	.265	(.328)	.393	(.345)	.408	(.339)
Industry (C. HW & SW)	.238	(.273)	.186	(.298)	.173	(.310)	.209	(.306)	.245	(.308)	.274	(.302)
Gender	.142	(.257)	.120	(.253)	.121	(.258)	.144	(.258)	.066	(.239)	.089	(.240)
Social Desirability	.132	(.107)	.143	(.107)	.145	(.108)	.153	(.109)	.165	(.106)	.172	(.107)
Age	.009	(.013)	.010	(.014)	.010	(.014)	.011	(.013)	.018	(.015)	.019	(.015)
Numb. of Co-Founders	.014	(.074)	.007	(.076)	.015	(.076)	.019	(.074)	.000	(.077)	.004	(.076)
Numb. of Employees	.013	(.018)	.014	(.018)	.016	(.019)	.024	(.017)	.014	(.018)	.021	(.018)
Business Education	-.114	(.293)	-.134	(.293)	-.127	(.296)	-.106	(.289)	-.245	(.311)	-.222	(.310)
University Degree	-.132	(.442)	-.151	(.455)	-.155	(.452)	-.191	(.440)	-.172	(.488)	-.204	(.480)
Equity Owner	.111	(.257)	.093	(.259)	.096	(.259)	.156	(.262)	.135	(.262)	.186	(.263)
Entr. Self-Efficacy	.267**	(.129)	.285**	(.129)	.290**	(.135)	.276**	(.135)	.264**	(.131)	.253*	(.131)
Venture Age	.007*	(.003)	.007*	(.003)	.007*	(.004)	.008**	(.004)	.005	(.003)	.006*	(.003)
Goal Progress T1	.482***	(.099)	.503***	(.105)	.513***	(.111)	.483***	(.114)	.462***	(.111)	.437***	(.112)
<b>Interactions</b>												
Envy x Experience							.200**	(.085)			.176**	(.087)
Envy x Dynamism									-.182**	(.075)	-.174**	(.077)
Observations	156		156		156		156		156		156	
R-squared	.298		.301		.304		.317		.337		.348	

**Table 40: OLS Linear Regression Results (Model B)** (Own illustration); robust standard errors in parentheses; T1 = first-round questionnaire; C. HW & SW = computer hardware and software;

\*\*\* p < .01, \*\* p < .05, \* p < .10.

To visualize this interaction effect, Figure 28 presents the plotted lines for founders with higher entrepreneurial experience (1 SD above the mean, solid line) and those with lower entrepreneurial experience (1 SD below the mean, dashed line). For this purpose, I have also conducted a simple slope analysis (Aiken & West, 1991), testing whether the slopes are significantly different from zero. The analysis shows that for low levels of entrepreneurial experience the slope is negative and statistically insignificant ( $dy/dx = -.090$ ;  $p = .519$ ). Conversely, for high levels of entrepreneurial experience, the slope is positive but also insignificant ( $dy/dx = .129$ ;  $p = .155$ ) (see Table 41).

<b>Entrepreneurial Experience</b>	<b>dy/dx</b>	<b>Std. err.</b>	<b>t</b>	<b>P&gt; t </b>	<b>95% Conf. Interval</b>	
Low (-1SD)	-.090	.139	-.65	.519	-.365	.185
High (+1SD)	.129	.091	1.43	.155	-.050	-.309

**Table 41: Simple Slope Analysis for Entrepreneurial Experience (Model B)** (Own illustration)

Additionally, I relied on the Johnson-Neyman technique (Johnson & Fay, 1950) to find out for which values of entrepreneurial experience the relationship between envy and venture goal progress is significant. While the relationship was never significantly negative for observed values of entrepreneurial experience, it became significantly positive when entrepreneurial experience was above 2.30 (see Figure 29).

My findings provide support for H5, indicating that as envy increases, founders with higher entrepreneurial experience tend to engage less in social comparison processes and are rather focused on themselves, favoring venture goal progress. Conversely, for founders with lower levels of entrepreneurial experience, they seem to be more focused on the comparison with others and distracted from focusing on their goals, favoring their individual goal progress less.

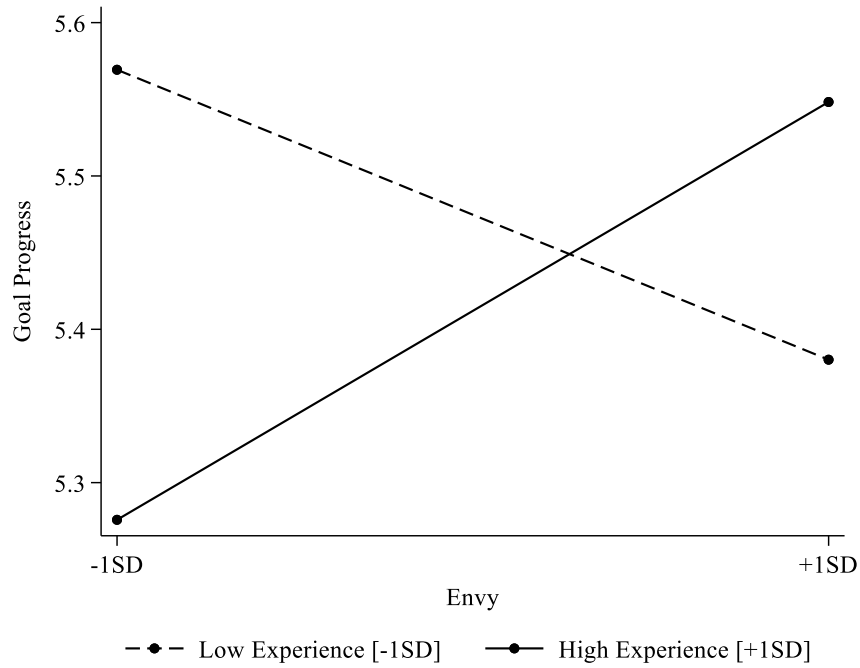


Figure 28: Envy and Goal Progress Contingent on Entrepreneurial Experience (Own illustration)

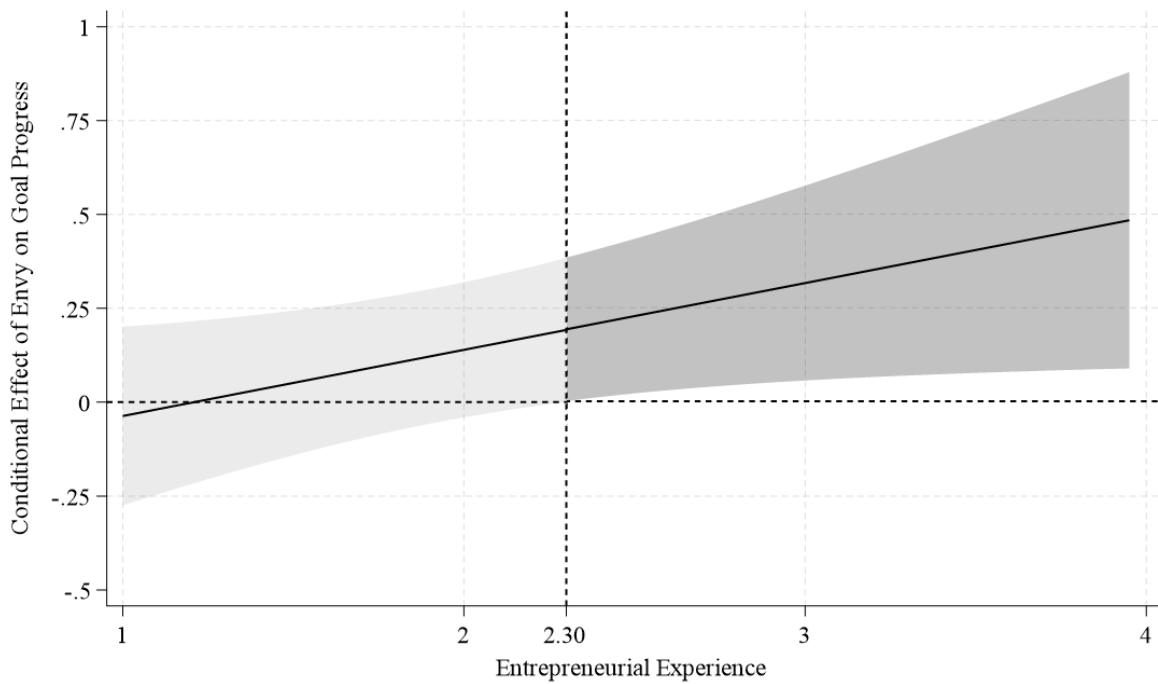


Figure 29: Effect of Envy on Goal Progress at Entrepreneurial Experience Levels (Own illustration); grey area indicates confidence interval at 95% and only includes observable values of entrepreneurial experience; dark grey indicates area where  $p < .05$  and entrepreneurial experience has statistically significant effect on the envy-venture goal progress relationship.

### ***Hypothesis 6***

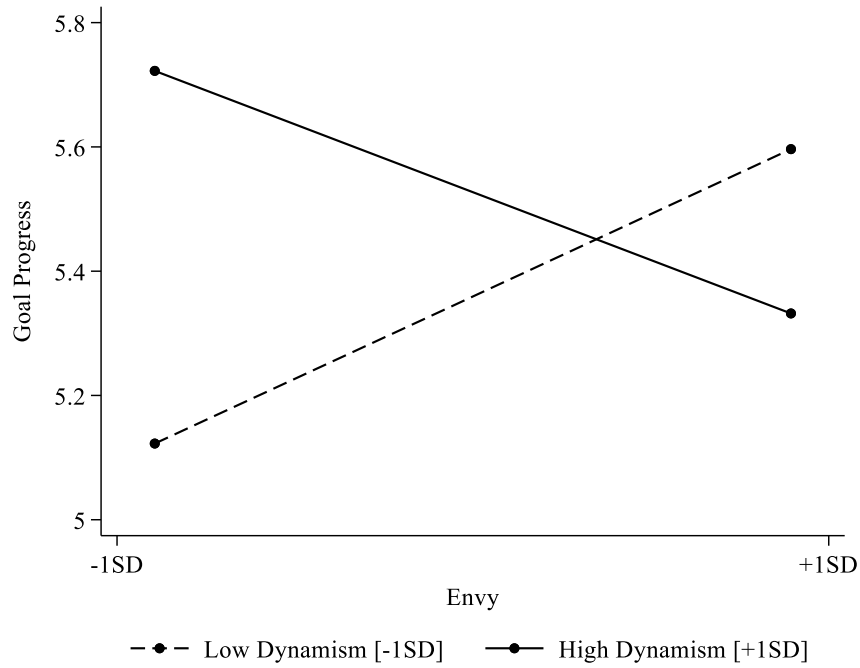
H6 proposes that the relationship between envy and venture goal progress will be more negative for higher levels of environmental dynamism compared to lower levels of environmental dynamism. In Model 12, I find a statistically significant and negative interaction between envy and environmental dynamism ( $b = -.174$ ,  $p = .025$ ).

To visualize this relationship, Figure 30 depicts the plot between founders' experience of envy and their perceived venture goal progress for varying levels of environmental dynamism. The dashed line represents the relationship between envy and venture goal progress under comparatively low dynamism in the venture's environment (1 SD below the mean, dashed line), while the solid line represents the relationship under comparatively high levels of dynamism in the venture's environment (1 SD above the mean, solid line). I conducted a simple slope analysis (Aiken & West, 1991) to test whether the slopes are statistically significantly different from zero. I find that the slope for low levels of environmental dynamism is positive, but statistically insignificant ( $dy/dx = .225$ ;  $p = .136$ ). For high levels of environmental dynamism, the slope is negative and also statistically insignificant ( $dy/dx = -.186$ ;  $p = .140$ ) (see Table 42).

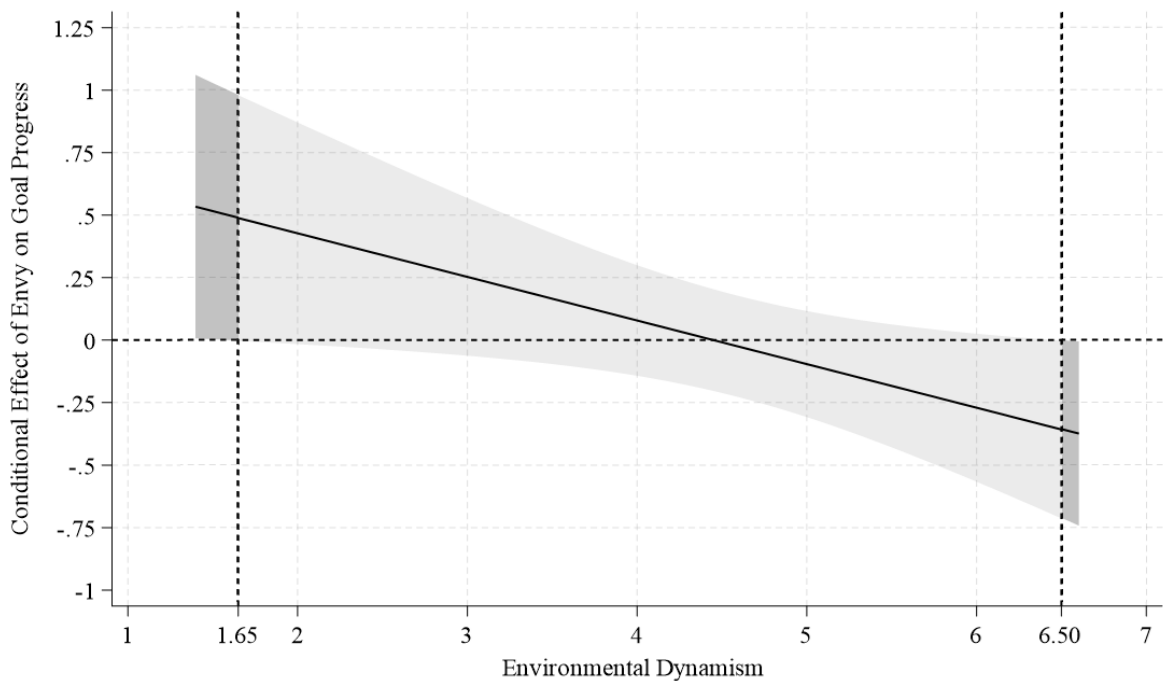
<b>Environmental Dynamism</b>	<b>dy/dx</b>	<b>Std. err.</b>	<b>t</b>	<b>P&gt; t </b>	<b>95% Conf. Interval</b>	
Low (-1SD)	.225	.150	1.50	.136	-.072	.522
High (+1SD)	-.186	.125	-1.49	.140	-.433	.062

**Table 42: Simple Slope Analysis for Environmental Dynamism (Model B)** (Own illustration)

To identify the range of environmental dynamism values for which the relationship between envy and venture goal progress is significantly different from zero, I again employed the Johnson-Neyman technique (Johnson & Fay, 1950). The relationship is negative and significant for (uncentered) values of environmental dynamism below 1.65 and above 6.50 (see Figure 31).



**Figure 30: Envy and Goal Progress Contingent on Environmental Dynamism (Own illustration)**



**Figure 31: Effect of Envy on Goal Progress at Environmental Dynamism Levels (Own illustration);** grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism; dark grey indicates area where  $p < .05$  and environmental dynamism has statistically significant effect on the envy-venture goal progress relationship.

These findings support H6, indicating that with rising levels of envy, founders in highly dynamic environments seem to focus more on comparing themselves with others. This focus seems to divert their attention from their own venture objectives, adversely affecting their progress toward their venture's goals. On the other hand, founders in less dynamic settings seem to be more able to use more objective metrics for self-evaluation as envy grows. This enables them to maintain a stronger focus on their own objectives, leading to a lesser negative, and even positive impact on their progress toward their venture's goals.

#### **4.3.2 Robustness Check for Venture Goal Progress**

Additionally, I present robustness tests to reduce the likelihood that the regression outcomes and hypotheses testing are affected by the model's specification, or any other biases present in the data. For this purpose, I have calculated several robustness check models in line with existing research (Breugst, Patzelt, et al., 2012; Tacke et al., 2022). First, I conducted a robustness check without incorporating control variables (Model 17). Second, I calculated the model with venture goal progress as dependent variable with only individual-level variables as control variables (Model 18) and calculated it with only team/venture-level variables as control variables (Model 19). Also, I tested the model by only including ventures younger than 5 years because these ventures represent the majority in my study and because social dynamics in older ventures might be different (Model 20) (Breugst, 2023; Kakatkar et al., 2023; Patzelt, Preller, et al., 2021).

##### ***Results of Hypotheses Testing without Control Variables (Model 17)***

In line with existing research (Breugst, Patzelt, et al., 2012; Tacke et al., 2022), I re-evaluated the entire model without control variables, to address possible confounding effects and preempt any critique regarding the inclusion of control variables. The results of the hypotheses testing are depicted in Model 17 in Table 43.



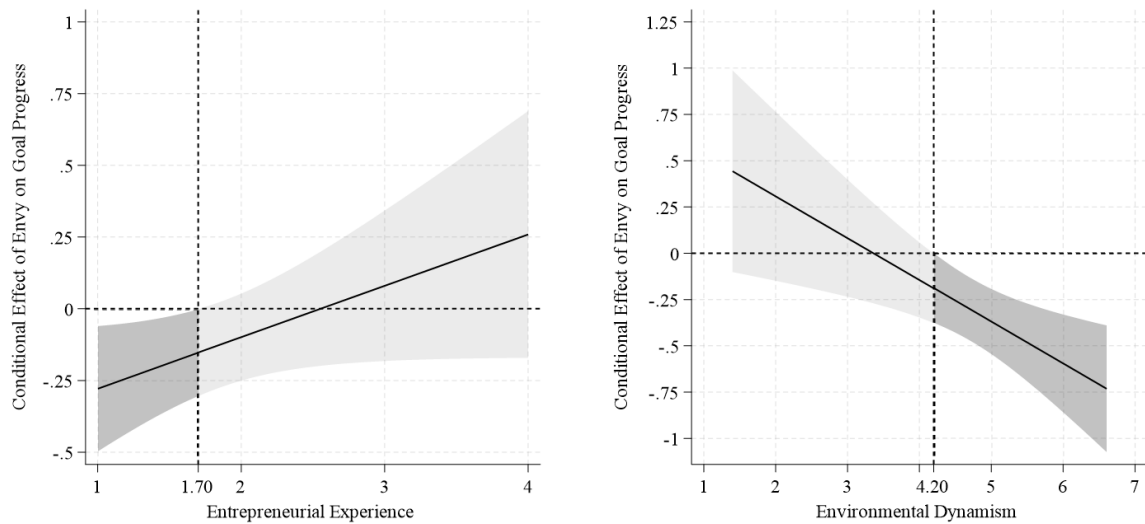
	<b>Model 17</b>		<b>Model 18</b>		<b>Model 19</b>		<b>Model 20</b>	
Constant	5.440***	(.096)	4.485***	(.658)	5.123***	(.233)	4.602***	(.698)
<b>Main effects</b>								
Envy	-.220**	(.091)	.034	(.095)	-.038	(.103)	.014	(.104)
Entr. Experience	.184*	(.110)	-.001	(.099)	.016	(.097)	-.057	(.106)
Env. Dynamism	-.038	(.092)	.046	(.088)	.055	(.096)	.076	(.095)
<b>Controls</b>								
Gender			.056	(.234)			.059	(.246)
Social Desirability			.182*	(.103)			.177	(.109)
Age			.028**	(.014)			.019	(.015)
Business Education			-.249	(.297)			-.270	(.311)
University Degree			-.075	(.440)			-.229	(.477)
Equity Owner			.200	(.247)			.181	(.271)
Entr. Self-Efficacy			.239*	(.124)			.247*	(.137)
Industry (Sciences)					.425	(.269)	.375	(.306)
Industry (Services)					.355	(.318)	.399	(.353)
Industry (Comp. Hardware and Software)					.281	(.288)	.269	(.319)
Numb. of Co-Founders					.023	(.072)	.010	(.078)
Numb. of Employees					.028*	(.016)	.019	(.018)
Venture Age					.006*	(.003)	.010	(.006)
Goal Progress T1			.448***	(.112)	.529***	(.113)	.445***	(.115)
<b>Interactions</b>								
Envy x Experience	.179*	(.095)	.129*	(.074)	.162*	(.090)	.191**	(.090)
Envy x Dynamism	-.226***	(.079)	-.185**	(.073)	-.167**	(.078)	-.173**	(.079)
Observations	156		156		156		152	
R-squared	.116		.326		.298		.352	

**Table 43: OLS Linear Regression Results for Robustness Models (Model B)** (Own illustration); robust standard errors in parentheses; T1 = first-round questionnaire; \*\*\* p < .01, \*\* p < .05, \* p < .10.

First, the calculated model without any control variables does provide support for my fundamental H4 on the main effect of envy on venture goal progress ( $b = -.220$ ,  $p = .016$ ), stating that the relationship between envy and venture goal progress is negative. Second, it provides support for H5 ( $b = .179$ ,  $p = .062$ ), stating that higher levels of experience weaken the negative effect of envy on venture goal progress. Third, the results support H6 ( $b = -.226$ ,  $p = .005$ ), confirming that in dynamic environments the negative effect of envy on venture goal progress is stronger.

The results can be further confirmed by plotting the conditional effects (5% level) of envy on venture goal progress at different levels of entrepreneurial experience or environmental dynamism (see Figure 32). Using the Johnson-Neyman technique, I can infer that while the relationship between envy and venture goal progress in Model 17 is significantly negative at high levels of environmental dynamism (values  $> 4.20$ ; uncentered), entrepreneurial experience only significantly negatively impacts the relationship at low levels (values  $< 1.70$ ; uncentered).

In summary, the outcomes from the regression model without control variables largely align with those of the full model (Model 12). Both the primary effect and the interaction effects are significant, with a significance level of 5%. However, there is a divergence regarding the significance area for the interaction between envy and entrepreneurial experience. Contrary to the main model, which indicates a significantly positive relation only for values above 2.30 in the envy-venture goal progress relationship, Model 17 suggests a significantly negative relationship exclusively for values below 1.70 of entrepreneurial experience.



**Figure 32: Conditional Effects without Control Variables (Model B)** (Own illustration); grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism and entrepreneurial experience; dark grey indicates area where  $p < .05$  and the moderator has statistically significant effect on the envy-venture goal progress relationship.

### ***Results of Hypotheses Testing with Control Variables on Founder Level (Model 18)***

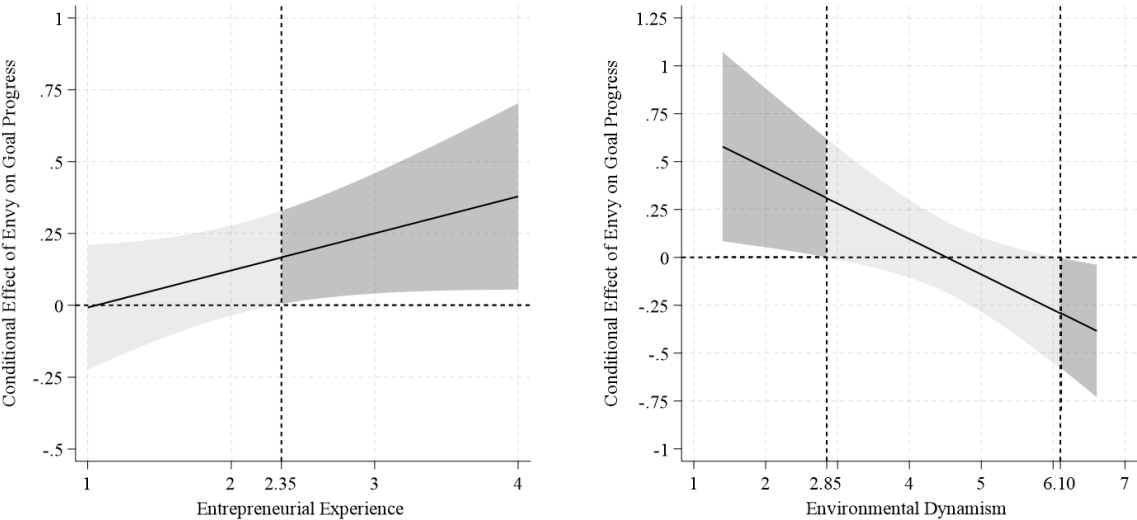
Table 43 depicts Model 18 and includes only control variables on the individual, single-founder level. In particular, these are gender, age, social desirability, business education, university degree, equity ownership, entrepreneurial self-efficacy.

The results are consistent with Model 12, providing no support for H4 but do support H5 and H6: the main effect of envy on venture goal progress is not significant ( $b = .034$ ,  $p = .722$ ), the interaction of envy and entrepreneurial experience has a positive coefficient and is marginally significant at the 90% level ( $b = .129$ ,  $p = .082$ ), and the interaction of envy and environmental dynamism has a negative coefficient and is significant – therewith in line with my main model ( $b = -.185$ ,  $p = .013$ ).

The results are also reflected in the Johnson-Neyman plots, analyzing the conditional effects for envy on venture goal progress contingent on different levels of entrepreneurial experience and environmental dynamism (see Figure 33).

While the effect of envy on venture goal progress is significantly positive for values above 2.35 of entrepreneurial experience, the effect is significantly negative for values below 2.85 and significantly positive above 6.10 for environmental dynamism. This is in line with the findings of Model 12.

In summary, the results of the hypotheses testing for the model including only the control variables on the individual level provide full support for the findings of my main analysis. The lack of team level control variables only affects the level of significance of the interaction effect of envy and entrepreneurial experience. This corresponds with the robustness check for model A, which includes venture performance (see Chapter 4.2), where the omission of team-level control variables similarly influences the significance level of the interaction effect between envy and entrepreneurial experience.



**Figure 33: Conditional Effects with Control Variables on Founder Level (Model B)** (Own illustration); grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism and entrepreneurial experience; dark grey indicates area where  $p < .05$  and the moderator has statistically significant effect on the envy-venture goal progress relationship.

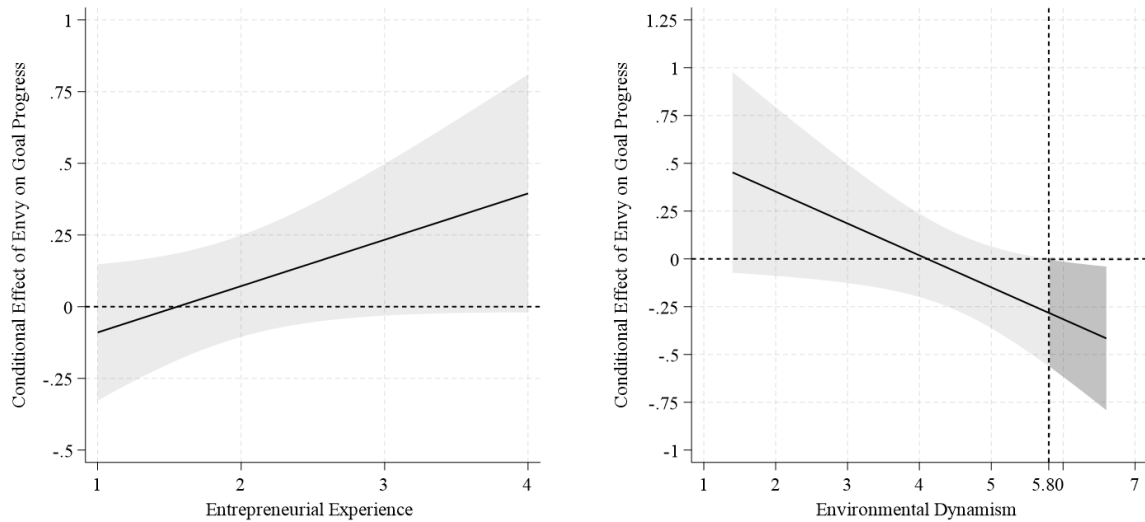
### ***Results of Hypotheses Testing with Control Variables on Team/Venture Level (Model 19)***

Table 43 depicts Model 19 and includes only control variables on the team or venture level, respectively. These are industry, number of co-founders, number of employees, and venture age.

The results are consistent with my analysis, providing no support for H4, but do support H5 and H6: The main effect of envy on venture goal progress is, like in Model 12, not significant ( $b = -.038$ ,  $p = .714$ ). The interaction of envy and entrepreneurial experience has a positive coefficient and is marginally significant at the 90% level ( $b = .162$ ,  $p = .076$ ), providing marginal support for H5 and directionally in line with Model 12. Furthermore, the interaction of envy and environmental dynamism has a negative coefficient and is also significant – therewith in line with my main model ( $b = -.167$ ,  $p = .034$ ), providing support for H6 and in line with Model 12.

The graph illustrating the significance areas (at the 5% level) for the interaction terms reveals consistent findings (see Figure 34). The interaction of envy with entrepreneurial experience does not show any significant effect at the 5% level. However, the interaction involving envy and environmental dynamism significantly negatively influences venture performance at environmental dynamism levels above 5.80 (uncentered).

In summary, the results of the hypotheses testing for the model including only the control variables on the individual level provide support for the findings of my main analysis. The lack of individual level variables only affects the level of significance of the interaction effect of envy and entrepreneurial experience.



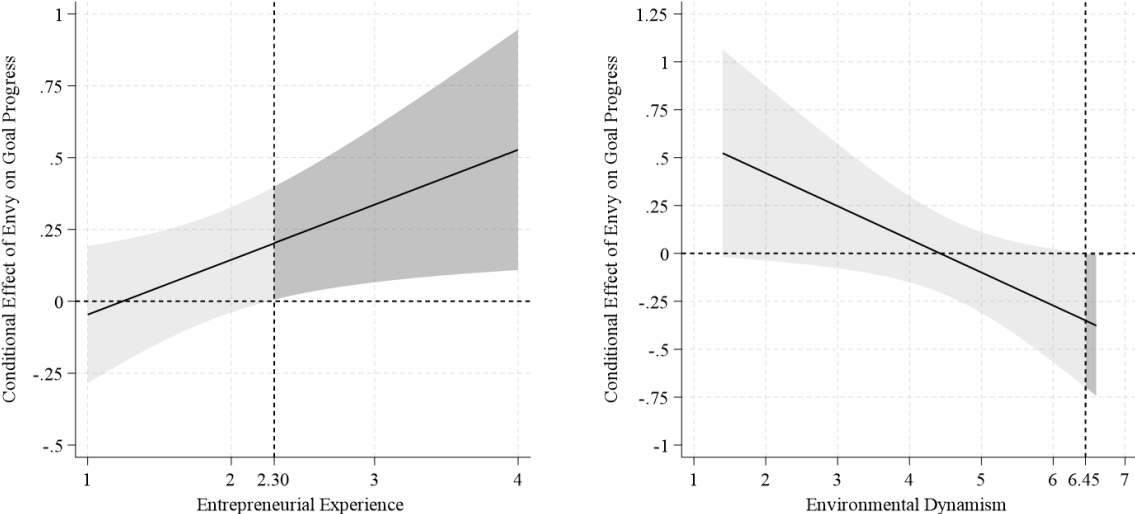
**Figure 34: Conditional Effects with Control Variables on Team Level (Model B)** (Own illustration); grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism and entrepreneurial experience; dark grey indicates area where  $p < .05$  and the moderator has statistically significant effect on the envy-venture goal progress relationship.

### *Results of Hypotheses Testing for Five-Year-Old or Younger Ventures (Model 20)*

In my sample, 152 of 156 founders (97%) were part of ventures that were five years old or younger. Hence, only four founders (3%) were part of ventures that were older, namely two founders of a venture being seven years old, one of a venture of nine years, and one founder of a venture of 12 years. As working dynamics and entrepreneurial work differs in younger ventures compared to older ventures (Lumpkin et al., 2006), I performed an extra robustness check, which involved only ventures that were five years old or younger. These younger ventures represent the majority of my sample in terms of venture age.

The results from this hypotheses testing align completely with the findings of the main model. Consistent with the main model, H4 is not supported ( $b = .014$ ,  $p = .893$ ) as the main effect for envy is not significant. Also, H5 is fully supported as the interaction between envy and entrepreneurial experience has a positive coefficient and is also significant at the 5% level ( $b = .191$ ,  $p = .035$ ). H6 is supported as the interaction between envy and environmental dynamism has a negative coefficient and is significant at the 5% level ( $b = -.173$ ,  $p = .030$ ).

The plots depicting the conditional effects of envy on venture goal progress at various levels of entrepreneurial experience and environmental dynamism show similar outcomes (see Figure 35). The impact of envy on venture goal progress is significantly positive only when entrepreneurial experience exceeds 2.30. In contrast, for environmental dynamism, the effect is significantly negative at levels 6.45. These observations largely correspond with the results obtained from Model 12.



**Figure 35: Conditional Effects for Five-Year-Old or Younger Ventures (Model B)** (Own illustration); grey area indicates confidence interval at 95% and only includes observable values of environmental dynamism and entrepreneurial experience; dark grey indicates area where  $p < .05$  and the moderator has statistically significant effect on the envy-venture goal progress relationship.

**Summary of Robustness Checks**

Table 44 contains a summary of the conducted robustness checks in comparison with the full Model 12. Despite one exemption, all models indicate the same direction for support of all three hypotheses.

First, three of the four conducted robustness checks do not provide support for the main effect on the influence of envy on venture goal progress. I derived and hypothesized a negative relationship in the theory part of this dissertation but did not find sufficient support in the full model calculations and simple slope analyses conducted in Chapter 4.3.1. Hence, as only the

exclusion of all control variables provides support for the main effect, the main effect is not sufficiently supported.

Second, all found conducted robustness tests provide support for H5. However, three of these models do only provide support at the 90% confidence level. It is obvious that a lack of either team or individual level variables impacts the level of significance of the interaction effect of envy and entrepreneurial experience. Overall, the findings related to Hypothesis 5 thus exhibit a degree of sensitivity to the specification of the model.

Lastly, all four conducted robustness tests provide support for H6, even at the 95% confidence level. Therefore, the results on H6 can be considered robust.

<b>Hypothesis</b>	<b>Model 12 – <i>Full model</i></b>	<b>Model 17 – <i>without control variables</i></b>	<b>Model 18 – <i>with control variables on founder level</i></b>	<b>Model 19 – <i>with control variables on team/venture level</i></b>	<b>Model 20 – <i>only five-year-old or younger ventures</i></b>
<b>Hypothesis 4</b>	No	Yes	No	No	No
<b>Hypothesis 5</b>	Yes	Marginal	Marginal	Marginal	Yes
<b>Hypothesis 6</b>	Yes	Yes	Yes	Yes	Yes

**Table 44: Summary of Hypotheses Testing and Robustness Checks (Model B) (Own illustration)**



## **5 Discussion**

In the following sections, I discuss the significant theoretical and practical implications of my findings. First, I present a short summary on the key findings of the relationship of envy on entrepreneurial success, measured by venture performance and venture goal progress (Chapter 5.1). Second, I elaborate on the various theoretical contributions to different literature streams (Chapter 5.2), namely the role of peers and affect in entrepreneurship and to social comparison theory. Third, I outline the practical implications of my findings (Chapter 5.3). Finally, I summarize the main limitations of my dissertation (Chapter 5.4), followed by a conclusion and an outlook on avenues for future research (Chapter 5.5).

### **5.1 Key Advancements**

While envy has been studied in different areas of literature (Duffy et al., 2021; Kim et al., 2020; Vecchio, 2000), the lack of research on envy in entrepreneurship is surprising because founders are likely to engage in social comparison processes (Baron, 2007) which have been found to be connected to envy (Lange & Crusius, 2015; Smith & Kim, 2007). Congruent with social comparison theory (Festinger, 1954), I make significant findings that contribute to the current knowledge base of several streams of literature, including entrepreneurship and social comparison theory.

Overall, my findings show that there is no significant main effect of envy on venture performance or on venture goal progress, respectively. However, my findings do illustrate that there are important contingencies that affect the envy-venture performance and envy-venture goal progress relationship. More specifically, my analysis shows that the relationship between envy and both entrepreneurial outcomes is contingent on entrepreneurial experience and environmental dynamism. Concretely, while the relationship between envy and venture performance and venture goal progress is negative for low levels of entrepreneurial experience,

it becomes less negative, and even turns significantly positive as entrepreneurial experience increases (significant for values higher than 1.75 previously founded ventures in Model A containing venture performance; significant for values higher than 1.30 previously founded ventures in Model B containing venture goal progress). Oppositely, as the environment of the venture becomes more dynamic, the relationship between envy and venture performance and venture goal progress becomes significantly negative (significant for values higher than 5.20 in Model A containing venture performance; significant for values higher than 6.50 in Model B containing venture goal progress). On the other hand, as the environment becomes less dynamic and more stable, the relationship between envy and venture performance and envy and venture goal progress even turns significantly positive (significant for values lower than 2.30 in Model A containing venture performance; significant for values lower than 1.65 in Model B containing venture goal progress).

As to what the theorizing and explanation for the finding related to high levels of entrepreneurial experience is concerned, I argue that a founder's prior entrepreneurial experience, as indicated by the number of ventures founded before the current one, provides founders with more (objective) reference points for comparison. I argue that this can decrease the intensity of social comparisons with others stemming from envy by shifting the focus towards their own venture's objectives. Even more, I argue that it not only decreases certain negative consequences of envy, such as resentment (Smith & Kim, 2007), hostility (Smith & Kim, 2007), or impulsivity (Crusius & Mussweiler, 2012), but even bears the potential to bring out the beneficial consequences of comparisons with others, such as inspiration or motivation (Corcoran et al., 2011; Crusius et al., 2022; Shepherd & Patzelt, 2018b).

In contrast, I found that when a founder's venture environment is highly dynamic, higher levels of envy are associated with lower levels of venture performance and lower levels of venture goal progress. I argue that dynamic venture environments increase the tendency of high envy

founders to engage in social comparison due to fewer available, rapidly changing objective measures, thereby increasing founders' reliance on social information to evaluate themselves.

## **5.2 Theoretical Contributions**

In the next section, I outline the theoretical contributions of my dissertation. As this dissertation started with the quote by Dimov (2007) that entrepreneurship is a social process, I start with highlighting my contributions to research on the role of peers in entrepreneurship. Furthermore, this dissertation focuses on envy as a type of affect as the central independent variable in my study. Hence, I describe my contributions to the role of negative affect in entrepreneurship and my contributions to the body of knowledge on contingencies between affect and entrepreneurial outcomes. I end my theoretical contributions with a summary of advancements in the social comparison theory domain.

### **5.2.1 Contributions to the Role of Peers**

I offer a novel perspective to research on the role of peers in entrepreneurship. Thus far, the entrepreneurship literature has predominantly focused on the advantageous aspects of founders' social ties, encompassing dimensions such as emotional support (Seyoum et al., 2021), networking (Greve & Salaff, 2003), mentorship (Sullivan, 2000) and the influence of role models (Bosma et al., 2012). Extant literature posits that founders can benefit from observing their peers in the form of learning from them (Bosma et al., 2012; Pocek et al., 2021), increased creativity (Zozimo et al., 2017), and encouragement and motivation (e.g., Ahmed & Harrison, 2022; Bellò et al., 2017). Even more, research on entrepreneurial support organizations, such as accelerators and incubators, underscores the recurrent emphasis on the positive outcomes derived from peer-to-peer learning (Bergman & McMullen, 2022), particularly facilitated through the close physical proximity and interaction of founding peers (Bouncken & Aslam, 2019). In contrast to the prevailing consensus lauding the predominantly constructive and

functional attributes associated with proximity to other founders and ventures (Bouncken & Aslam, 2019), my findings challenge this paradigm of peers' generally positive importance and relevance. Crucially, my research illustrates that being exposed to fellow founders can create envy, trigger social comparison processes, and subsequently trigger behavioral responses that have a significant (negative) impact on entrepreneurial outcomes. Specifically, while peers could provide emotional support (Seyoum et al., 2021), open their network (Greve & Salaff, 2003) act as mentors (Sullivan, 2000) or role models (Bosma et al., 2012), they could, under specific circumstances, also divert founders' attention away from their own goals and distract them from advancing their own venture endeavor. Thus, my findings demonstrate that peers in the entrepreneurial sphere yield not only positive and utilitarian outcomes, but potentially also have detrimental and dysfunctional effects on individuals.

Even more, my findings contribute to a more nuanced understanding of the conditional factors determining peer relevance. While current research has primarily suggested that the importance of peers for the entrepreneurial process is contingent on peer's individual characteristics or capabilities, such as skills (Cohen & Levinthal, 1990), experience (Nanda & Sørensen, 2010), diversity or gender (Markussen & Røed, 2017; Rocha & van Praag, 2020), social background (Wyrwich et al., 2016), or risk taking propensity (Lopera & Marchand, 2017), my findings contribute through the provision of a new perspective that has been neglected thus far. In dynamic and unpredictable settings where technology rapidly evolves and market instability is common, my findings reveal that envy may negatively affect entrepreneurial outcomes. I argue that this is because, in such environments, reliable, objective benchmarks are scarce, potentially leading founders high in envy to rely more on their peers for evaluating themselves, turning their attention away from entrepreneurial outcomes. My findings demonstrate that the relevance of peers for the individual founder or the founder's venture is not only shaped by the characteristics of the peer but also by the characteristics of the founder (namely, the founder's

own experience) and the context in which they operate (namely the dynamism of the environment).

### **5.2.2 Contributions to the Role of Negative Affect**

I contribute to research on the role of negative affect in the entrepreneurial process. A widespread postulation and agreement in entrepreneurship literature on affect is that negative affect mostly leads to undesirable, destructive consequences (e.g., Bernoster et al., 2020; Breugst & Shepherd, 2017; Patzelt, Gartzia, et al., 2021) and positive affect mostly leads to desirable, beneficial consequences (e.g., Bernoster et al., 2020). For example, entrepreneurial fear of failure is primarily studied as a negative affect that hinders entrepreneurial activities, serving as an obstacle to engaging in entrepreneurship (Arenius & Minniti, 2005; Cacciotti et al., 2016; Minniti & Nardone, 2007) or leading founders to have less positive views about opportunities (Cacciotti et al., 2020; Li, 2011; Welpe et al., 2012). In the same vein, entrepreneurial stress has been found to be mainly detrimental to the venture and the founder (Lerman et al., 2021; Wincent & Örtqvist, 2009), ultimately negatively impacting venture performance (Lerman et al., 2021). And lastly, the affect of emotional exhaustion in entrepreneurship has been found to increase the likelihood of entrepreneurial exit (Shahid & Kundi, 2021). On the positive side of affect however, entrepreneurial motivation (Powers et al., 2007), passion (Breugst, Domurath, et al., 2012; Hu et al., 2022), resilience (Fisher et al., 2016; Hedner et al., 2011; Preller et al., 2023), entrepreneurial self-efficacy (Zhao et al., 2005), or locus of control (Chatterjee & Das, 2015; Olakitan & Ayobami, 2011) have been found as examples of positive affect primarily positively connected to entrepreneurial outcome and success.

My findings, however, challenge this current, seemingly simple understanding and shed light on the more complex role of negative affect in entrepreneurship. In particular, my results show

that the previous consensus that negative affect has only undesirable and negative consequences does not hold across all circumstances. With envy as the exemplary representation of negative affect, I show that it can have a destructive impact on entrepreneurial outcome, represented by venture performance or venture goal progress, being especially true in dynamic environments, where objective standards are absent and hence the comparison with others becomes more prominent. More importantly however, my findings also show that negative affect, and more specifically envy, can also positively influence entrepreneurial outcomes, represented by venture performance and venture goal progress, especially for founders with high levels of prior entrepreneurial experience. I argue that this is because prior experience serves as a reference point, reducing the importance of comparison with others and potentially emphasizing the beneficial consequences of comparisons, such as inspiration or motivation (Corcoran et al., 2011; Crusius et al., 2022).

Therefore, my findings challenge the current understanding of the role of affect in entrepreneurship by showing that the role of negative affect is more complex than assumed so far. As such, I join the emerging conversation on potentially beneficial effects of negative affect (e.g., Foo et al., 2009; Welpe et al., 2012). For example, Foo et al. (2009) found that negative affect directly predicts founders' effort toward tasks that are required immediately. They build upon affect-as-information theory and suggest that when founders experience negative affect, it indicates issues within their venture, prompting them to dedicate additional effort to tasks that need urgent attention (Breugst et al., 2020). Building upon the same theory, Welpe et al. (2012) found that anger positively influences entrepreneurial exploitation. My findings provide further evidence for this stream of literature and show that while negative affect, in my case envy, has negative consequences, it can also positively influence entrepreneurial outcomes. Under certain conditions, in my case environmental stability and high entrepreneurial experience, envy seems

to serve as a motivator to focus on one's own venture goals by simultaneously being inspired by the achievements of other peers.

### **5.2.3 Contributions to Entrepreneurial Experience and Context**

My findings provide a nuanced understanding for the positive role of entrepreneurial experience for entrepreneurial outcome. Current literature discusses whether entrepreneurial experience, signified by the number of ventures founded, positively or negatively relates to entrepreneurial success. Several authors suggest a positive relationship, as entrepreneurial experience indicates that important lessons have been learned (Dimov, 2010), founders are more able to effectively apply knowledge from prior ventures to current efforts (Aldrich & Yang, 2014), are more capable in recognizing patterns for opportunity recognition (Baron & Ensley, 2006), or are more likely to develop routines they can quickly reuse in the next venture (Eesley & Roberts, 2012). However, other authors do find none (Sandberg & Hofer, 1987) or even a negative relationship (Gottschalk et al., 2014; Toft-Kehler et al., 2014; Van de Ven et al., 1984) as novice founders might not be able to generalize their experiential knowledge accurately into new ventures (Toft-Kehler et al., 2014; Tryba et al., 2023). My results may reconcile these findings by pointing to the role of entrepreneurial experience as a contingency factor. More specifically, my findings suggest that entrepreneurial experience determines how founders are able to channel their negative affect and the corresponding outcome. For example, my findings show that entrepreneurial experience seems to enable founders to be less influenced by comparison with others and to focus more on their own experiences and lessons learned than on comparison with other founders. This enables founders to focus more on their own goals and thus be less distracted from their own entrepreneurial endeavor and more motivated and inspired by comparison with others.

Second, I point to the importance of considering the context in which a venture operates in, especially the dynamism of the venture environment, when assessing the impact of affect (in this case: envy) on entrepreneurial outcomes. There is wide agreement that context plays a crucial role in influencing the entrepreneurial process. Scholars agree that, for example, industry (Lumpkin & Dess, 2001; Yang & Wang, 2014), culture (Audretsch, 2020), or environmental hostility (Onwe et al., 2020; Zahra & Garvis, 2000) play an important role. Also, environmental dynamism has already been identified: So far, scholars have mainly considered the (moderating) influence of environmental dynamism on strategic topics, such as leadership behavior (Ensley et al., 2006), firm level innovation (Baron & Tang, 2011), decision comprehensiveness (Heavey et al., 2009), team heterogeneity (Hmieleski & Ensley, 2007), leadership (Ensley et al., 2006), or general venture performance (Hmieleski & Ensley, 2007; Paudel, 2019). Similarly, scholars have shed light on the moderating effect of environmental dynamism on individual characteristics, such as creativity (Baron & Tang, 2011), entrepreneurial orientation (Tajeddini & Mueller, 2019) or positive affect (Baron & Tang, 2011). My findings, however, introduce a novel perspective for the effect and role of environmental dynamism in entrepreneurship. Specifically, I enlarge the current perspective by demonstrating that environmental dynamism provides a contingency factor for consequences of negative affect, in my case envy, on entrepreneurial outcomes. My findings show that in dynamic environments, founders high in envy are more likely to rely on comparison with others and thus suffer from the detrimental consequences of their comparison-induced distraction on venture success. Conversely, in more stable environments, the intensity of comparison seems to be reduced for founders high in envy, which favors their focus on their own goals and thus positively impacts their entrepreneurial success.



#### **5.2.4 Contributions to Social Comparison Theory**

Additionally, I contribute to social comparison theory. Thus far, social comparison theory delineates how individuals evaluate themselves and their abilities by comparing themselves to others. The theory suggests that people have a natural tendency to assess themselves in relation to others as a way to understand their own abilities, opinions, and social standing (Festinger, 1954; Lyubomirsky & Ross, 1997). My study provides a new perspective into the current understanding by suggesting that personal experience may shape the occurrence of social comparison. Specifically, I argue that the consequences of social comparison may be weakened by higher personal entrepreneurial experience, suggesting that as individuals gather an increased number of experiences (i.e., through founding previous ventures) serving as comparison points, they are more able to derive their self-evaluation from these experience(s) rather than from comparison with others. As such, my study points to contingency factors affecting the extent to which individuals engage in social comparison. Consistent with parts of entrepreneurship literature, I argue that through their entrepreneurial experience, founders gather important lessons learned (Dimov, 2010), are more able to effectively apply knowledge from prior ventures to current efforts (Aldrich & Yang, 2014), are more capable in recognizing patterns (Baron & Ensley, 2006), and are more likely to develop routines they can quickly reuse in the next venture (Eesley & Roberts, 2012) – and through all of this, develop reference and comparison points with which they can calibrate their subsequent performances.

#### **5.2.5 Contributions to Contextual Contingencies of Social Comparison Theory**

Finally, I contribute to contextual contingencies of social comparison theory. More specifically, I challenge the current, static understanding by introducing a new dimension as a contingency for social comparison processes: the stability of the environment over time. Existing research has revealed different conditions under which social comparison is more likely to occur, such as contexts where objective comparison standards are lacking (Festinger, 1954; Lyubomirsky

& Ross, 1997), or the accessibility of comparison standards is high (Mussweiler, 2003). Even further, certain cultural aspects have been identified to exacerbate social comparison processes (Guimond et al., 2007; White & Lehman, 2005), arguing that social comparison might be more prominent in collectivistic, interdependent cultures than in individualistic, independent cultures (White & Lehman, 2005). My research challenges the prevailing understanding of the factors that affect the extent of social comparison by introducing a novel temporal dimension. This requires taking into account the consistency of the environment over time. Current studies of social comparison typically, but mostly implicitly, assume the stability of contexts and environments over time (Crusius et al., 2022; Mussweiler, 2003). However, my research challenges this oversimplified view by demonstrating that the rate of environmental change, which I quantify through environmental dynamism, significantly influences the likelihood of social comparison occurring. This perspective offers a novel integration of existing knowledge. The results suggest that social comparison is more prevalent in the absence of objective benchmarks, as noted by Lyubomirsky and Ross (1997). However, my findings reveal that it is important for researchers to also consider the impact of temporal (environmental) changes on this process. In detail, environments that are characterized by high dynamism and high rates of change, seem to intensify social comparison processes of individuals high in envy. Conversely, environments that are characterized by more stable, low rates of change, seem to diminish the same.

### **5.3 Practical Implications**

My study also imposes practical implications for founders and other stakeholders involved in the entrepreneurial context. First, my study has fundamental implications for the role of entrepreneurial support programs and their respective setups. While current practice has mainly considered accelerator or incubator programs as seeding grounds for entrepreneurial success (e.g., Yu, 2020), I uncover the potential destructive side of social environments. My data shows

that in social environments, such as accelerators or incubators, inherent social comparison processes can have a detrimental effect on entrepreneurial outcomes, such as venture performance or venture goal progress. In order to address potential negative effects stemming from envy, program coordinators could on the one hand focus on raising awareness for potential detrimental effects of envy and social comparison by offering training or workshops related to emotional intelligence, social dynamics and coping mechanisms. This could help participating ventures and respective founders to be aware of their potential envious affect and proactively address the consequences, against the backdrop of knowing the potential detrimental effects on their entrepreneurial success.

Conversely, program coordinators of incubators or accelerators should include my findings into their decision making, especially when it comes to decisions regarding the physical closeness of the ventures in incubator spaces. These could include physical space or office allocation in incubator offices or conducting workshops with several similar ventures as participants. While there is agreement that closeness between similar ventures offers valuable opportunities, such as networking (Cohen et al., 2019), learning from each other (Bosma et al., 2012), or potential collaboration (Moritz et al., 2022), my findings reveal that these advantages come at a cost – which are necessary to be balanced and actively evaluated in decision making.

My findings also hold significant implications for founders at an individual level. It is a widely accepted notion that having prior experience in founding ventures contributes positively to the success of new entrepreneurial endeavors (Aldrich & Yang, 2014; Baron & Ensley, 2006). My findings echo this sentiment but also highlight a crucial converse perspective. The absence of founding experience can exacerbate the detrimental effects of envy, potentially impeding entrepreneurial outcomes. This underscores the importance of considering both the presence of prior founding experience and the lack thereof in understanding the dynamics of entrepreneurial success and the psychological factors that may influence it. This is particularly important for

young, less experienced founders, for whom envy and comparison with others can play a particularly important role in their early venture endeavors.

Even more, founders should acknowledge the potential negative consequences of comparing themselves to other ventures and stories of other founders. Especially in the current age, where the individual stories of founders are available on social media at any time, founders need to consume comparison-inducing content with caution, as the potential distraction through focusing on the achievement of others could potentially hinder the own progress towards one's own goals and could even more create a downward spiral of not reaching the achievements of others and hence even more comparing oneself to superior founders and their seemingly superior successes.

#### **5.4 Limitations**

My dissertation presents robust findings on the negative impact of envy on entrepreneurial success, specifically on venture performance and venture goal progress, contingent on situational contexts. Nonetheless, the current study also has several limitations, which I discuss in the following section.

First, I deliberately decided to conduct my study in a homogeneous environment. I consciously chose early-stage ventures of one university incubator ecosystem in Munich, Germany. However, envy as the main construct of my study has been found to be more or less pronounced depending on cultural values (Tan et al., 2016). Furthermore, existing research has identified significant differences between countries in terms of general entrepreneurial activities, particularly concerning motivational drivers of founders (e.g., Burmeister & Schade, 2007; Koellinger et al., 2007). Although my sample (see Chapter 3.2) is diverse – e.g., the respective ventures do stem from a diverse set of industries, backgrounds, and maturity stages – it is important to consider the potential influence of cultural factors when generalizing my findings

to other entrepreneurial contexts, due to aforementioned reasons. For example, diverging societal norms may affect the importance of the entrepreneurial endeavor and hence influence the consequences of envy into behavior. Because of this, I propose that future research may take different cultural contexts into account when studying the consequences of envy in entrepreneurship.

Second, this study is constrained by the nature of its data, which are derived from self-reported surveys. Self-reported data inherently face challenges, such as the potential for participant bias, including biases towards socially desirable responses (Strahan & Gerbasi, 1972). This type of bias emerges because it is often uncertain whether a participant's subjective perception aligns with objective reality (Gupta & Beehr, 1982). Podsakoff and Organ (1986) point out that "scaling the psychological states of participants" (p. 532), including envy, can be problematic due to the difficulty of validating these perceptions through external means. When scholars collect data, they are essentially seeking specific, verifiable facts, such as age, gender, or number of co-founders. However, the analysis of psychological states requires participants to engage in higher-order cognitive processes, not only recall but also weighting, inference, prediction, interpretation, and evaluation (Podsakoff & Organ, 1986). In this case it becomes particularly challenging when researchers aim to establish correlations between variables based solely on self-reported data that cannot be independently verified. In my study, my core constructs, such as envy, venture performance or venture goal progress, rely on self-reported data, making it difficult to be verified externally. Furthermore, participants frequently respond to questions in ways that conform to social norms and expectations, resulting in a social desirability response bias. This form of bias, also referred to as socially desirable responding, raises concerns in fields such as entrepreneurship, psychology, and organizational studies, as respondents may tailor their answers to align with perceived societal norms and standards (Arnold & Feldman, 1981; Zerbe & Paulhus, 1987). Hence, the study is limited to self-reported

data. While I have already implemented measures to mitigate potential biases arising from self-reported data, such as controlling for social desirability and utilizing a two-point time measurement for the dependent and independent variables, it is possible that my findings could benefit from further validation through experimental methods and the collection of data from multiple sources. Because of this, I propose that future research may analyze envy by employing other data collection methods than online-based questionnaires, such as experiments or case studies.

Third, I measured envy using an adjusted version of Vecchio's (1995) workplace envy scale. While there is already an ongoing widespread discussion in the envy literature on how to correctly measure envy, my findings are limited to the scale and conceptualization at hand. While the reliability of the scale with a Cronbach's alpha of .81 [.79] already indicates a very good level of scale reliability, other studies might analyze the envy-venture performance and the envy-venture goal progress relationship with other scales (see Table 4) in order to provide further confirmations for the robustness of my analysis and findings. Also, by using Vecchio's (1995) workplace envy scale in my study, I have used a situational and affective conceptualization of envy. This way of measuring has revealed a CES of only .6, indicating not sufficient stability to consider envy as trait. Hence, my conceptualization is only one existing perspective on the construct and its consequences, limiting my findings. Because of this, I propose that future research may also conceptualize envy as disposition, focusing on the stability of the construct over time, and also validate my findings in an experimental setting, focusing more on the situational component of the construct.

Fourth, I have measured entrepreneurial outcome with the dependent variables of venture performance and venture goal progress. While both measures are self-reported, they also bear a limitation to my findings. Even though both measures have revealed results pointing to the same effects of envy in the entrepreneurial context, more objective, external measures of

entrepreneurial success may provide support for my findings. Because of this, I propose that future research may analyze the consequences of envy regarding external performance metrics, such as sales, funding volume, market share, or customer satisfaction.

Fifth, I shed light on the relationship of envy on entrepreneurial outcome by taking situational contingencies into account. For this purpose, I have tested my hypotheses that have mainly been developed using social comparison as the explaining mechanisms. As I can only confirm the hypotheses relation, and can however only theorize on the ongoing mechanism (for theorizing see Shepherd & Patzelt, 2023a, 2023b, 2023c), future research should take this into account. More specifically, future research should focus on understanding the mechanisms through which experience affects the envy-outcome relationship, through observations or qualitative research, for example.

## **5.5 Avenues for Future Research and Conclusion**

Based on the above chapters, several avenues for future research can be derived. In the following, I provide a summary of the major avenues that I perceive most relevant. First, with my study of envy in entrepreneurship I am introducing a novel construct to the entrepreneurial context that has thus far not, or only very superficially, been analyzed in entrepreneurial research. While a few studies on envy in the entrepreneurial context do exist (e.g., Biniari, 2012; Brooks et al., 2019; Choi, 1993), I am the first to demonstrate the important role of envy for entrepreneurial outcomes, such as venture performance or venture goal progress. However, due to the novelty and underrepresentation of the construct in research, we still lack sufficient understanding on boundary conditions and main effects that envy has on the entrepreneurial process. In particular, we still lack understanding of the contexts in which the negative consequences of envy and social comparison do materialize. We do already know what consequences envy has in general work contexts, but do not know what peculiar consequences

envy elicits in entrepreneurial settings. In the same vein, I have analyzed and measured envy with regards to other founders and ventures. However, envy might also play an important and non-negligible role in the relationship with founder's direct colleagues in the same venture. Because of these factors, I propose that future research may analyze envy (1) in different entrepreneurial contexts, such as accelerator programs, pitch competitions, before and after investment rounds, or innovation challenges like hackathons, (2) with regards to other entrepreneurial outcomes than entrepreneurial success measures, and (3) in relationship with founders' direct colleagues or founding team members.

Second, I consciously focused on analyzing the envy-venture performance and the envy-venture goal progress relationship contingent on entrepreneurial experience and environmental dynamism. As I found social comparison to be the explaining phenomenon, there might be more constructs shaping both relationships. On the one hand, environmental hostility (Green et al., 2008) might also influence the consequences of envy and social comparison. Hostile environments are defined by "precarious industry settings, intense competition, harsh, overwhelming business climates, and the relative lack of exploitable opportunities" (Covin & Slevin, 1989, p. 75). In addition to my findings, it would be instructive to understand what influence increasing hostility in the environment has on the intensity of social comparison following envy. While my findings support my initial hypothesis that environmental dynamism seems to create a sense of urgency among founders to act, as standards change rapidly and thus social comparison increases, the same could be true for increasing competition and hostility. On the other hand, it would be insightful to understand the influence of other experiences than founding experiences (in this dissertation called entrepreneurial experience) on the envy-entrepreneurial success relationship. For example, industry experience (e.g., Kim & Longest, 2014) or general work and employment experience (Kim & Longest, 2014) might be important constructs for future research. While I find support for my initial hypothesis that experience as



a founder of previous ventures provides essential reference points for comparison and hence turns social comparisons inward, the question remains whether this might also be true for general work experience or industry experience. Even more, future research may analyze whether general work experience (e.g., through internships, employment experience in established corporations) or industry experience also provides founders with important lessons learned (Dimov, 2010) that can help to mitigate the negative consequences of envy and social comparison in the entrepreneurial process.

Third, besides venture performance and venture goal progress, there might be other central constructs and outcomes that might be impacted by envy in entrepreneurship. For example, in terms of venture performance, it might be insightful to study the influence of envy on objective metrics such as venture survival (Amezcuca et al., 2013; Soto-Simeone et al., 2020) or customer satisfaction (Cuevas-Vargas et al., 2019). While external performance metrics have not been comprehensively available for the participating ventures at the time of my data collection, I did not include those. However, studying more objectively valid metrics might not only validate my findings but provide a more meaningful insight into the significant potential impact of envy on entrepreneurial outcome. Even more, in terms of individual level behavior, envy in general has been identified to also shape other important (destructive) constructs, such as social undermining (Kim et al., 2020), avoidance oriented behaviors (Tussing et al., 2021), or general work effort (Kim et al., 2020). However, we do lack understanding for the influence of envy on individual level constructs in entrepreneurship. Thus, in order to gain a more comprehensive understanding of envy's role in the entrepreneurial process, the study of central constructs on the individual level is essential, such as leadership style (Dunne et al., 2016), collaboration between team members (Amankwah-Amoah et al., 2022), or general entrepreneurial effort (Laffineur et al., 2020).

Fourth, my results demonstrate that envy seems to have two faces: in situations with low dynamism and high entrepreneurial experience of a founder, the influence of envy on entrepreneurial success is beneficial and positive. Conversely, in situations with high dynamism and low entrepreneurial experience of a founder, the influence of envy on entrepreneurial success is detrimental and negative. Hence, it would be insightful to understand the underlying mechanisms of these relationships in more detail. I call scholars to analyze the influence of envy on the ability of founders' ambidexterity (Kammerlander et al., 2020; O'Reilly & Tushman, 2008), namely on exploitation and exploration (Spoerrle et al., 2009), to further understand whether entrepreneurial envy rather increases the focus on short or long-term objectives. This is important because ambidexterity, the ability to reduce variability of firm performance through both exploring new and exploiting existing business opportunities, has been identified as an important indicator for venture survival and entrepreneurial success (Parida et al., 2016).

Sixth, following the call of Shepherd (2019) for more research on the dark side, downside and destructive side of entrepreneurship (see also Reuter, 2023), I am the first to fully introduce envy into entrepreneurship as one of the seven deadly sins (Veselka et al., 2014) – a group of self-destructive constructs and behaviors that were originally defined by the Catholic Church. Specifically, the capital vices include: anger, envy, gluttony, greed, lust, pride, and sloth (Veselka et al., 2014). As scholars have already undertaken efforts to shed light on some of the identified vices, such as greed (Tacke et al., 2022), or anger (Welpel et al., 2012), we still lack understanding for the role of the other sins. Hence, I call scholars to not only extend research on envy in entrepreneurship, but to generally focus on the other destructive constructs in order to gain a more holistic understanding of the individual founder and one's propensity to engage in the seven deadly sins.

Lastly, I conducted my study amongst early-stage ventures of a university incubator in Germany. However, as the working dynamics of early-stage ventures is different than the dynamics in later stage ventures (Lee & Kim, 2018; Shepherd et al., 2023), the significance and role of envy might also vary. For example, while in early-stage ventures, the development and filing of a patent, the recruiting of a (founding) team, or the advancement of the technology might be the highest priorities, later stage ventures might be more focused on generating first revenues or gaining access to larger sums of capital. These different stages, contexts, and respective challenges might also influence the prominence and occurrence of envy and related social comparisons. Therefore, it would be insightful to analyze the role of envy in later-stage ventures, to comprehensively understand the role of envy in the entrepreneurial process.

In conclusion, with my dissertation I extend the understanding of peer-comparison induced effects in entrepreneurship. Based on my findings I demonstrate how social comparison and envy shape entrepreneurial outcomes. Importantly, this research highlights that envy does not always impact venture performance or venture goal progress but only under certain contingencies that are primarily shaped by the environment and the individual founders' characteristics. Hence, this dissertation does not only introduce envy to entrepreneurship literature but also sheds light on the importance of social comparison in entrepreneurial contexts. It opens up avenues for future research and perhaps even an entirely new research stream – the role of envy in entrepreneurship.

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## Appendix

### Appendix A: Envy Scales

#### *Benign and Malicious Envy Scale by Lange and Crusius (2015)*

Item #	Original Items
1	When I envy others, I focus on how I can become equally successful in the future.
2	I wish that superior people lose their advantage.
3	If I notice that another person is better than me, I try to improve myself.
4	Envyng others motivates me to accomplish my goals.
5	If other people have something that I want for myself, I wish to take it away from them.
6	I feel ill will toward people I envy.
7	I strive to reach other people's superior achievements.
8	Envious feelings cause me to dislike the other person.
9	If someone has superior qualities, achievements, or possessions, I try to attain them for myself.
10	Seeing other people's achievements makes me resent them.

**Table 45: Benign and Malicious Envy Scale by Lange and Crusius (2015)** (Source: Lange & Crusius, 2015, p. 288)

#### *Benign and Malicious Envy Scale by van de Ven et al. (2009)*

Item #	Original Items
1	It felt pleasant.
2	I felt inspired by the person whom I envied.
3	I tried harder to achieve my goals.
4	I complimented the other for his or her success.
5	I felt cold toward the person whom I envied.
6	It felt frustrating.
7	I hoped that the person whom I envied would fail something.
8	I complained to someone else about the person whom I envied.

**Table 46: Benign and Malicious Envy Scale by van de Ven et al. (2009)** (Source: van de Ven et al., 2009, p. 425)

***Dispositional Envy Scale by Smith et al. (1999)***

<b>Item #</b>	<b>Original Items</b>
1	I feel envy every day.
2	The bitter truth is that I generally feel inferior to others.
3	Feelings of envy constantly torment me.
4	It is so frustrating to see some people succeed so easily.
5	No matter what I do, envy always plagues me.
6	I am troubled by feelings of inadequacy.
7	It somehow doesn't seem fair that some people seem to have all the talent.
8	Frankly, the success of my neighbors makes me resent them.

**Table 47: Dispositional Envy Scale by Smith et al. (1999)** (Source: Smith et al., 1999, p. 1011)

***Domain-Specific Envy Scale by Rentzsch and Gross (2015)***

<b>Item #</b>	<b>Original Items</b>
1	It bothers me when others can have every romantic partner that they want.
2	It is hard to bear when other people are more intelligent than I am.
3	It bothers me when others own things that I cannot have.
4	It makes me feel uncomfortable when others are more attractive than I am.
5	It disturbs me when others can express themselves verbally better than I can.
6	It is hard for me to bear when others can buy everything they want to buy.
7	It annoys me when others are more popular than I am.
8	It bothers me when others are more creative than I am.
9	It troubles me when others have higher tech equipment than I have.
10	It disturbs me when people get along with others better than I do.
11	It bothers me when others are quicker on the uptake of an issue than I am.
12	It is hard for me to bear when others have more clothes in their wardrobe than I have.
13	It eats me up inside when people come across to others better than I do.
14	It disturbs me when others have a greater fund of knowledge than I have.
15	It bothers me when others live in a better neighborhood than I do.

**Table 48: Domain-Specific Envy Scale by Rentzsch and Gross (2015)** (Source: Rentzsch & Gross, 2015, p. 535)

***Envy Scale by Schaubroeck and Lam (2004)***

<b>Item #</b>	<b>Original Items</b>
1	Feelings of envy constantly torment me.
2	I generally feel inferior to his/her success.
3	Frankly, his/her success makes me resent him/her.
4	It is so frustrating to see this co-worker succeed so easily.

**Table 49: Envy Scale by Schaubroeck and Lam (2004)** (Source: Schaubroeck & Lam, 2004, p. 40)

***Envy Scale by Parrot and Smith (1993)***

<b>Item #</b>	<b>Original Items</b>
1	Enraged.
2	Angry at a particular person.
3	Hurt.
4	Hostility toward (rival).
5	Rejected.
6	Depressed.
7	Longing for what another has.
8	Feeling inferior.
9	Feeling like a failure.
10	Feeling mediocre.
11	Angry about the unfairness of life.
12	Resentment.
13	Feeling unfairly treated by life.
14	Self-doubt.
15	Insecure.
16	Feeling wishful.
17	Dissatisfied with himself or herself.
18	Some of his or her feelings would be embarrassing to admit to.

**Table 50: Envy Scale by Parrot and Smith (1993)** (Source: Parrott & Smith, 1993, p. 914)

***Episodic Envy Scale by Cohen-Charash (2009)***

<b>Item #</b>	<b>Original Items</b>
1	Rancor (resentment, ill-will).
2	Some hatred.
3	Bitter.
4	I have a grudge (resentment, bitterness) against X.
5	Gall (irritated, annoyed).
6	Envious.
7	A desire to have what X has.
8	Feeling lacking some of the things X has.
9	X has things going better for him/her than I do.

**Table 51: Episodic Envy Scale by Cohen-Charash (2009)** (Source: Cohen-Charash, 2009, p. 2140)

***Facebook Envy Scale by Tandoc et al. (2015)***

<b>Item #</b>	<b>Original Items</b>
1	I generally feel inferior to others.
2	It is so frustrating to see some people always having a good time.
3	It somehow doesn't seem fair that some people seem to have all the fun.
4	I wish I can travel as much as some of my friends do.
5	Many of my friends have a better life than me.
6	Many of my friends are happier than me.
7	My life is more fun than those of my friends.
8	Life is fair.

**Table 52: Facebook Envy Scale by Tandoc et al. (2015)** (Source: Tandoc et al., 2015, p. 142)

***Materialism Scale by Belk (1985)***

<b>Item #</b>	<b>Original Items</b>
1	I am bothered when I see people who buy anything they want.
2	I don't know anyone whose spouse or steady date I would like to have as my own.
3	When friends do better than me in competition it usually makes me happy for them.
4	People who are very wealthy often feel they are too good to talk to average people.



Item #	Original Items
5	There are certain people I would like to trade places with.
6	When friends have things, I cannot afford it bothers me.
7	I don't seem to get what is coming to me.
8	When Hollywood stars or prominent politicians have things stolen, I really feel sorry for them.

**Table 53: Materialism Scale by Belk (1985)** (Source: Ger & Belk, 1996, p. 65)

***Vices and Virtues Scale by Veselka et al. (2014)***

Item #	Original Items
1	I feel frustrated when someone receives a promotion at work that I too would like to have.
2	When I am in competition with someone, I feel a sense of bitterness when they come out on top.
3	I feel upset when I see others wearing expensive things that I want but can't afford.
4	When a friend receives an extravagant gift that I desire, I am unable to be happy for them.
5	I find it hard to be happy for someone who does better than I do on a test, assignment, or project.
6	When someone excels at a task that I have always wanted to master, I cannot help but feel a sense of resentment toward them.
7	I am annoyed when I see people who buy things that I cannot have.
8	I get upset when a friend gets a new device that I've wanted and don't have.
9	I enjoy seeing others receive praise for their efforts, even when I do not receive similar praise myself.
10	I feel resentful when my friends or co-workers receive compliments from others and I don't.

**Table 54: Vices and Virtues Scale by Veselka et al. (2014)** (Source: Brud & Ciecuch, 2020, p. 7)

***Workplace Envy Scale by Vecchio (1995)***

Item #	Original Items
1	Most of my co-workers have it better than I do.
2	My supervisor values the efforts of others more than she/he values my efforts.
3	I don't imagine I'll ever have a job as good as some that I've seen.
4	I don't know why, but I usually seem to be the underdog at work.
5	It is somewhat annoying to see others have all the luck in getting the best assignments.


**Table 55: Workplace Envy Scale by Vecchio (1995)** (Source: Vecchio, 2000, p. 169)

***York Enviousness Scale by Gold (1996)***

<b>Item #</b>	<b>Original Items</b>
1	The better off someone else is the worse I feel.
2	It makes me feel good to “rain on someone’s parade”.
3	I wouldn’t want to trade places with anyone.
4	I feel angry when others succeed.
5	I think a lot about what others have that I would like.
6	I feel happy for the more fortunate people in society.
7	I like to burst other peoples’ bubbles.
8	I do not fantasize about getting what others possess.
9	I dislike seeing others enjoying themselves.
10	When my friends succeed, I feel hurt.
11	It brings me happiness to see my friends succeed.
12	I’m content with what I’ve got.
13	I am happy when others succeed even when I don’t.
14	It doesn’t bother me if someone outperforms me.
15	It pains me to think of the success of my friends.
16	I would rather see someone I don’t know win a lottery than to see an acquaintance win.
17	I feel bitter when I see people doing well for themselves.
18	I like to see others having a good time.
19	I feel happy for others when they get something that I don’t have.
20	It’s nice to see a friend do well.

**Table 56: York Enviousness Scale by Gold (1996)** (Source: Rentzsch & Gross, 2015, p. 530)

# Appendix B: First-Round Questionnaire




### Welcome and thanks for your support in our study!


Thank you very much for taking the time to answer the following questionnaire! Your input is highly appreciated as it provides a valuable perspective on the process of founding a company! To ensure reliable results, please try to answer the questionnaire as carefully as possible.

Prior participants have typically not taken longer than ~15-20 minutes.


We are interested in your perspective of a(n) nascent firm founder. In the questionnaire, some questions refer to your "venture." Specifically, we are interested in the entrepreneurial project you are currently working on in an entrepreneurship support program (e.g., TUM Venture Labs). Your venture does not yet have to be officially incorporated, but we are also interested in your work towards incorporating this project.



Prof. Dr. Dr.  
Holger Patzelt



Prof. Dr.  
Nicola Breugst



M.Sc.  
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Lichtenbergstraße 6, 85748 Garching  
Contact: Benedikt Jakob, benedikt.jakob@tum.de, Mobile: +49 174 180 1575

#### Information on data privacy

We collect and process your data in order to understand the dynamics of the founding process better. Your response is very important to us and we treat all your information strictly confidentially. Your data will only be analyzed in an anonymized way pooled across all study participants.

I agree to the processing of my personal data in accordance with the information provided herein

[START THE SURVEY](#)



### Instructions

The following pages list various questions or statements that relate to personal attitudes or characteristics. There are no right or wrong answers. Please answer spontaneously, intuitively and in the way that best applies to you personally.

If you find it difficult to decide on an answer, choose the answer that most closely matches your attitude.


The survey covers the following topics:

1. Personality (~9 min)
2. Founding team (~2 min)
3. Venture (~3 min)
4. Wellbeing (~3 min)
5. Venture environment (~1 min)
6. Demographics (~2 min)

Have fun in answering!

8% [CONTINUE](#)

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### In the first section, we would like to get to know you better as a person.

1. Personality (~9 min)
2. Founding team (~2 min)
- ...

#### Please indicate the extent to which you agree or disagree with each statement.

When working on my venture...

	Strongly disagree					Strongly agree	
	1	2	3	4	5	6	7
... I find myself learning often.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I continue to learn more as time goes by.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I see myself continually improving.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am not learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am developing a lot as a person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I feel alive and vital.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I have energy and spirit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I do not feel very energetic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I feel alert and awake.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am looking forward to each new day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### Please indicate the extent to which you agree or disagree with each statement.

	Strongly disagree					Strongly agree	
	1	2	3	4	5	6	7
... I find myself learning often.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I continue to learn more as time goes by.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I see myself continually improving.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am not learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am developing a lot as a person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I feel alive and vital.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I have energy and spirit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I do not feel very energetic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I feel alert and awake.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am looking forward to each new day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am confident that I can successfully identify new business opportunities.

I am confident that I can successfully create new products.


I am confident that I can successfully think creatively.

I am confident that I can successfully commercialize an idea or new development.

#### Please indicate the extent to which you agree or disagree with each statement.

	Strongly disagree					Strongly agree	
	1	2	3	4	5	6	7
It is exciting to figure out new ways to solve unmet market needs that can be commercialized.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Searching for new ideas for products/services to offer is enjoyable to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am motivated to figure out how to make existing products/services better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scanning the environment for new opportunities really excites me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inventing new solutions to problems is an important part of who I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establishing a new venture excites me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Owning my own venture energizes me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nurturing a new business through its emerging success is enjoyable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being the founder of a business is an important part of who I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really like finding the right people to market my product/service to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assembling the right people to work for my business is exciting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 36: First-Round Questionnaire, Pages 1-4 (Source: Unipark Screenshot)

<p>Pushing my employees and myself to make our venture better motivates me. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>Nurturing and growing ventures is an important part of who I am. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <span>BACK</span> <span>15% CONTINUE</span> </div>	<div style="text-align: center; margin-bottom: 10px;">  </div> <p><b>Please indicate the extent to which you agree or disagree with each statement.</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Strongly disagree</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th style="text-align: center;">Strongly agree</th> </tr> <tr> <th></th> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> <th style="text-align: center;">5</th> <th style="text-align: center;">6</th> <th style="text-align: center;">7</th> </tr> </thead> <tbody> <tr> <td>In my venture, I feel bursting with energy.</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>In my venture, I feel strong and vigorous.</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>I am enthusiastic about my venture.</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>My venture inspires me.</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>When I get up in the morning, I feel like going to work.</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>I feel happy when I am working intensely on my venture.</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>I am proud of the work that I do with my venture.</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>I am immersed in my venture.</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>I get carried away when I am working on my venture.</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> </tbody> </table> <p><b>Please indicate the extent to which you agree or disagree with each statement.</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Strongly disagree</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th style="text-align: center;">Strongly agree</th> </tr> <tr> <th></th> <th 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type="radio"/>	In my venture, I feel strong and vigorous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I am enthusiastic about my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	My venture inspires me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	When I get up in the morning, I feel like going to work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I feel happy when I am working intensely on my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I am proud of the work that I do with my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I am immersed in my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I get carried away when I am working on my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		Strongly disagree						Strongly agree		1	2	3	4	5	6	7	I can communicate an idea in many different ways.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	I avoid new and unusual situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input 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<p>I can find workable solutions to seemingly unsolvable problems. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>I seldom have choices when deciding how to behave. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>I am willing to work at creative solutions to problems. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>In any given situation, I am able to act appropriately. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>My behavior is a result of conscious decisions that I make. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>I have many possible ways of behaving in any given situation. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>I have difficulty using my knowledge on a given topic in real life situations. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>I am willing to listen and consider alternatives for handling a problem. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p>I have the self-confidence necessary to try different ways of behavior. <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p> <p><b>Please indicate the extent to which you agree or disagree with each statement.</b></p> <table style="width: 100%; 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**Figure 37: First-Round Questionnaire, Pages 5-8** (Source: Unipark Screenshot)



**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
I wish that superior people lose their advantage.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I envy (german: beneiden) others, I focus on how I can become equally successful in the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I notice that another person is better than me, I try to improve myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Envy (german: beneiden) others motivates me to accomplish my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If other people have something that I want for myself, I wish to take it away from them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel ill will toward people I envy (german: beneiden).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I strive to reach other people's superior achievements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Envious (german: neidisch) feelings cause me to dislike the other person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If someone has superior qualities, achievements, or possessions, I try to attain them for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seeing other people's achievements makes me resent them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate the extent to which you agree or disagree with each statement.**

In the following questions, "important others" refer to any stakeholder that is important to you and your venture (e.g., VCs, investors, program supervisors)

	Strongly disagree					Strongly agree	
	1	2	3	4	5	6	7
I feel depressed when important others speak favorably about another venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I see important others praising another venture, my stomach knots up.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When important others pay attention to other ventures, I feel irritated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If important others were to single out another venture for recognition, it would make me feel good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes worry that important others will feel that another venture is more proficient than mine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be resentful if important others asked another venture that is competing with mine for help with a problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most of the other ventures have it better than we do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Important others value the efforts of other ventures more than they value our efforts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't imagine I'll ever have a venture as good as some that I've seen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't know why, but we usually seem to be the underdog venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is somewhat annoying to see other ventures have all the luck in getting the best support.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BACK
31% CONTINUE

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**Please indicate how often you have exhibited the following behaviors to founders/members of other ventures around you?**

	Not at all						Very much
	1	2	3	4	5	6	7
I have put down other founders or was condescending to them in some way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have paid little attention to a statement made by other founders or showed little interest in their opinion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have made demeaning, rude or derogatory remarks about other founders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have addressed other founders in unprofessional terms either privately or publicly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have ignored or excluded other founders from professional camaraderie (e.g. social conversation).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have doubted other founders' judgment in a matter over which they had responsibility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have made unwanted attempts to draw other founders into a discussion of personal matters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
I like to gossip at times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

There have been occasions when I took advantage of someone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm always willing to admit it when I make a mistake.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes try to get even rather than forgive and forget.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I have really insisted on having things my own way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have never been liked when people expressed ideas very different from my own.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have never deliberately said something that hurt someone's feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BACK
38% CONTINUE

**Figure 38: First-Round Questionnaire, Pages 9-12 (Source: Unipark Screenshot)**



**As you have indicated that your founding team consists of at least one other co-founder besides you, we would like to get to know characteristics that regard your founding team.**

1. Personality (~9 min)  
2. Founding team (~2 min)  
3. Venture (~3 min)  
...

**How many co-founders do you have in your venture, excluding yourself?**

Please select

**Since when does your founding team work together in this constellation?**

**How many full-time equivalent (FTE) employees do you currently have, including yourself and your co-founders?**

46%

**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree					Strongly agree	
	1	2	3	4	5	6	7
If one makes a mistake in our founding team, it is often held against him/her.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Members of our founding team are able to bring up problems and tough issues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People on our founding team sometimes reject others for being different.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is safe to take a risk on our founding team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult to ask other members of our founding team for help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No one on our founding team would deliberately act in a way that undermines my efforts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working with members of our founding team, my unique skills and talents are valued and utilized.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree					Strongly agree	
	1	2	3	4	5	6	7
I am very satisfied working with this founding team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am happy working with this founding team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


---

I enjoy working in this venture with my founding team members.

**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree					Strongly agree	
	1	2	3	4	5	6	7
The founding team really has ownership of the venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The venture we are working on really is ours.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think I can speak for everyone when I say, "this is our venture."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Everyone in this founding team feels like they own a piece of the venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sense that this venture is mine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really feel that this is my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really feel like I own the venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

54%



**The following section deals with questions that regard the dimension of your venture/project.**

...  
2. Founding team (~2 min)  
3. Venture (~3 min)  
4. Wellbeing (~3 min)  
...

**For how many hours do you work on the venture on average per week?**

Please round to next full hour.

**Please indicate the share of administrative vs. creative tasks in your work on your venture.**

Share of administrative tasks	%	<input type="text" value="0"/>
Share of creative tasks	%	<input type="text" value="0"/>
Total	%	<input type="text" value="0"/>

**Please indicate the amount of effort that you put into venture tasks.**

	Very little					A lot	
	1	2	3	4	5	6	7
How much effort did you put into venture tasks that are administrative in nature?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much effort did you put into venture tasks that require product or process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 39: First-Round Questionnaire, Pages 13-16 (Source: Unipark Screenshot)



In the following section, we would like to get to know your perspective on dimensions related to your personal wellbeing.

- 3. Venture (~3 min)
- 4. Wellbeing (~3 min)
- 5. Venture environment (~1 min)

Please indicate how satisfied you feel.

	Not at all satisfied	1	2	3	4	5	6	Completely satisfied
How satisfied are you with working on your venture?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How satisfied are you with your venture in general?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate the extent to which you agree or disagree with each statement.

	Strongly disagree	1	2	3	4	5	6	Strongly agree
Working on my venture is more stressful than I had ever imagined.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I fear that the amount of stress in my job will make me physically ill.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel emotionally drained from my work on my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel used up at the end of the work day on my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel tired when I get up in the morning and have to face another day at work on my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the feeling of doing useful work when working on my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The work on my venture gives me the feeling of work well done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In most ways my life is close to my ideal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The conditions of my life are excellent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
So far I have gotten the important things I want in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could live my life over, I would change almost nothing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate the extent to which you agree or disagree with each statement.

	Strongly disagree	1	2	3	4	5	6	Strongly agree
I am able to adapt to changes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can deal with whatever comes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to see the humorous side of things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coping with stress strengthens me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to bounce back after an illness or hardship.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can achieve my goals despite obstacles.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can remain focused under pressure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not easily discouraged by failures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I see myself as a strong person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can handle the unpleasant feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



In this section, we would like to get to know the environment of your venture.

- 4. Wellbeing (~3 min)
- 5. Venture environment (~1 min)
- 6. Demographics (~2 min)

Please indicate the extent to which you agree or disagree with each statement.

	Strongly disagree	1	2	3	4	5	6	Strongly agree
Actions of competitors are generally quite easy to predict.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The set of competitors in my/our industry has remained relatively constant over the last 3 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Product demand is easy to forecast.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customer requirements / preferences are easy to forecast.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My/our industry is very stable with very little change resulting from major economic, technological, social, or political forces.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


Please indicate the extent to which you agree or disagree with each statement.

	Strongly disagree	1	2	3	4	5	6	Strongly agree
The failure rate of firms in my industry is high.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My industry is very risky, such that one bad decision could easily threaten the viability of my business unit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competitive intensity is high in my industry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customer loyalty is low in my industry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Severe price wars are characteristic of my industry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low profit margins are characteristic of my industry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BACK 77% CONTINUE

Figure 40: First-Round Questionnaire, Pages 17-20 (Source: Unipark Screenshot)



Finally, we would like to ask you some demographical questions.

5. Venture environment (-1 min)  
6. Demographics (-2 min)

**Venture emergence**

When did you start working on the project? Month Year

(Only if already done) when was your venture officially incorporated?

Please indicate the approximate amount of revenue that your venture generated so far.

One-time revenues (in EUR)  Recurring revenue (in EUR, per year)

Do not know/Prefer not to answer

Are you currently part of the TUM Venture Labs program?

Yes  
 No

In which industry is your venture operating?

Please enter your year of birth (e.g., 1996)

Please enter your gender

How many years of work experience do you have (including internships, working student activities or similar)?  
Please round to full years.

How many years of work experience do you have in the industry in which your venture is active (including internship, working student activities or similar)?  
Please round to full years.

How many years of work experience do you have in startups before working for your current venture (including internship, working student activities or similar)?  
Please round to full years.

How many other businesses have you founded before the current venture?

Please indicate your highest degree of graduation

---

Please indicate your main field of education

Are you a part-time founder? (i.e. do you have another job, work for another venture, actively pursue your PhD degree...?)

How big is your share/equity stake in the venture (if not decided, what portion do you expect)?

0 10 20 30 40 50 60 70 80 90 100

%

Do not know/Prefer not to answer

Do you pay yourself a salary?

Yes  
 No  
 Other (e.g., EXIST)

What is the main source of financing of your venture?

Private financing (through the venture's team members)  
 Bank loan  
 Business angel

Venture capital firm  
 Support programs/grants (e.g., EXIST)  
 Other (please specify)

85%

Figure 41: First-Round Questionnaire, Pages 21-24 (Source: Unipark Screenshot)



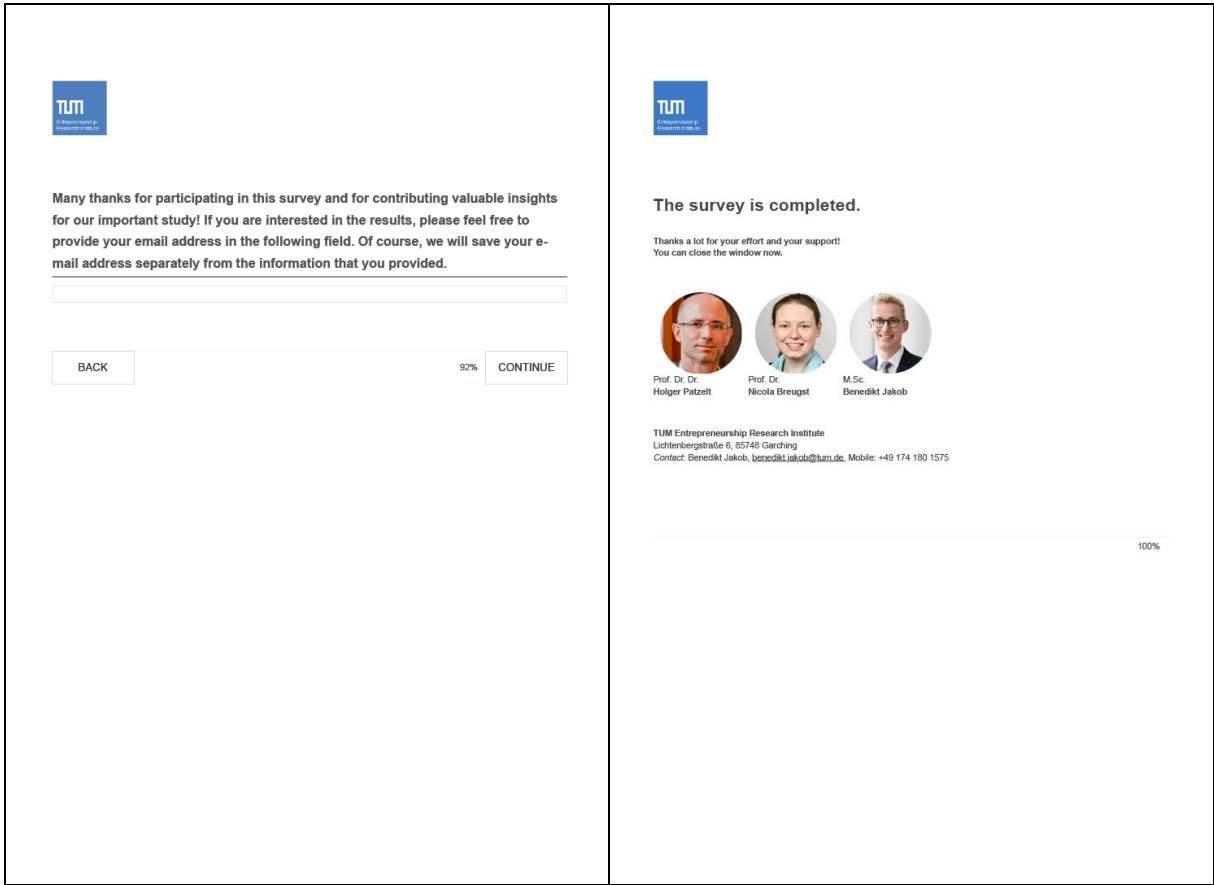



Figure 42: First-Round Questionnaire, Pages 25-26 (Source: Unipark Screenshot)

# Appendix C: Second-Round Questionnaire




**Welcome again and thanks again for your support in our study!**

Thank you very much for taking the time to answer the follow-up questionnaire of our entrepreneurship study! Your input is highly appreciated as it provides a valuable perspective on the process of founding a company! As in the first round, please try to answer the questionnaire as carefully as possible to ensure reliable results.


This second questionnaire is way shorter than the one that you have already completed approx. three months ago.

Prior participants of this follow-up questionnaire have typically not taken longer than ~10 minutes.


We are interested in your perspective of a firm founder. In the questionnaire, some questions refer to your "venture." Specifically, we are interested in the entrepreneurial project you are currently working on. Your venture does not yet have to be officially incorporated, but we are also interested in your work towards incorporating this project.



Prof. Dr. Dr.  
Holger Patzelt



Prof. Dr.  
Nicola Bresgut



PhD Candidate, M.Sc.  
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**Information on data privacy**

We collect and process your data in order to understand the dynamics of the founding process better. Your response is very important to us and we treat all your information strictly confidentially. Your data will only be analyzed in an anonymized way pooled across all study participants.

I agree to the processing of my personal data in accordance with the information provided herein

[START THE SURVEY](#)



**Instructions**

The following pages list various questions or statements that relate to personal attitudes or characteristics. There are no right or wrong answers. Please answer spontaneously, intuitively and in the way that best applies to you personally.

If you find it difficult to decide on an answer, choose the answer that most closely matches your attitude.

The survey covers the following topics:

1. Personality (~3 min)
2. Founding team (~2 min)
3. Venture (~3 min)
4. Wellbeing (~2 min)

Have fun in answering!

10% [CONTINUE](#)

---



**In the first section, we would like to get to know you better as a person.**

1. Personality (~3 min)  
2. Founding team (~2 min)  
...

**Please indicate the extent to which you agree or disagree with each statement.**

When working on my venture...

	Strongly disagree						Strongly agree							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
... I find myself learning often.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I continue to learn more as time goes by.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I see myself continually improving.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am not learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am developing a lot as a person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I feel alive and vital.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I have energy and spirit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I do not feel very energetic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I feel alert and awake.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am looking forward to each new day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree						Strongly agree							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
... I find myself learning often.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I continue to learn more as time goes by.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I see myself continually improving.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am not learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am developing a lot as a person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I feel alive and vital.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I have energy and spirit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I do not feel very energetic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I feel alert and awake.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I am looking forward to each new day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[BACK](#) 20% [CONTINUE](#)

I am confident that I can successfully identify new business opportunities.

I am confident that I can successfully create new products.

I am confident that I can successfully think creatively.

I am confident that I can successfully commercialize an idea or new development.

**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree						Strongly agree							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
I am confident that I can successfully identify new business opportunities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can successfully create new products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can successfully think creatively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can successfully commercialize an idea or new development.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 43: Second-Round Questionnaire, Pages 1-4 (Source: Unipark Screenshot)



**Please indicate the extent to which you agree or disagree with each statement.**

In the following questions, "important others" refer to any stakeholder that is important to you and your venture (e.g., VCs, investors, program supervisors)

	Strongly disagree							Strongly agree						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
I feel depressed when important others speak favorably about another venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I see important others praising another venture, my stomach knots up.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When important others pay attention to other ventures, I feel irritated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If important others were to single out another venture for recognition, it would make me feel good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes worry that important others will feel that another venture is more proficient than mine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be resentful if important others asked another venture that is competing with mine for help with a problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most of the other ventures have it better than we do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Important others value the efforts of other ventures more than they value our efforts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't imagine I'll ever have a venture as good as some that I've seen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't know why, but we usually seem to be the underdog venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is somewhat annoying to see other ventures have all the luck in getting the best	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

support.

**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree							Strongly agree						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
If it would help my venture, I would misrepresent the truth to make my company look good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If it would help my venture, I would exaggerate the truth about my company's products or services to customers and clients.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If it would benefit my venture, I would withhold negative information about my company or its products from customers and clients.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If my venture needed me to, I would give a good recommendation on the behalf of an incompetent employee in the hope that the person will become another company's problem instead of my own.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If my venture needed me to, I would withhold issuing a refund to a customer or client accidentally overcharged.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If needed, I would conceal information from the public that could be damaging to my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BACK
30%
CONTINUE



**In the following section, we would like to get to know characteristics that regard your founding team.**

- Personality (~3 min)
- Founding team (~2 min)
- Venture (~3 min)
- ...

**How many co-founders do you have in your venture, excluding yourself?**

**Has there been any change in your founding team composition since the last survey three months ago?**

Please leave blank if there has been no change.

Number of new entries to your founding team (members who have joined the team)

Number of exits of your founding team (members who have left the team)

Other changes (please specify)

BACK
40%
CONTINUE



**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree							Strongly agree						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
If one makes a mistake in our founding team, it is often held against him/her.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Members of our founding team are able to bring up problems and tough issues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People on our founding team sometimes reject others for being different.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is safe to take a risk on our founding team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult to ask other members of our founding team for help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No one on our founding team would deliberately act in a way that undermines my efforts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working with members of our founding team, my unique skills and talents are valued and utilized.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree							Strongly agree						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
I am very satisfied working with this founding team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am happy working with this founding team.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


Figure 44: Second-Round Questionnaire, Pages 5-8 (Source: Unipark Screenshot)

I enjoy working in this venture with my founding team members.

**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree					Strongly agree								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
The founding team really has ownership of the venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The venture we are working on really is ours.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think I can speak for everyone when I say, "this is our venture."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Everyone in this founding team feels like they own a piece of the venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sense that this venture is mine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really feel that this is my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really feel like I own the venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

50%



**The following section deals with questions that regard the dimension of your venture/project.**

2. Founding team (~2 min)  
**3. Venture (~3 min)**  
 4. Wellbeing (~2 min)  
 ...

**For how many hours do you work on the venture on average per week over the last three months?**

Please round to next full hour.

**Please indicate the amount of effort that you put into venture tasks.**

	Very little						A lot
	1	2	3	4	5	6	7
How much effort did you put into venture tasks that are administrative in nature on average over the last three months?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much effort did you put into venture tasks that require product or process creativity on average over the last three months?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate the extent to which you agree or disagree with each statement.**

---

	Strongly disagree					Strongly agree								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Over the last 3 months, I/we have made a great deal of progress concerning our venture goal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Over the last 3 months, I/we have hardly made any progress in the attempt of advancing in our venture goal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Over the last 3 months, I/we have had quite a lot of success in pursuing our venture goal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Over the last 3 months, many of my/our efforts in carrying out my/our venture goal have failed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Considering the last three months, please indicate how satisfied you are with the venture's progress over the last three months.**

	Not satisfied at all					Very satisfied								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Sales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Market share	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gross margin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Return on investment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New product development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Market development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate the extent to which you agree or disagree with each statement.**

	Strongly disagree					Strongly agree								
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

60%

We are very satisfied with the progress of this venture.

So far, I would rate this venture's performance as very poor.

Considering this venture's stage of development, it has done very well.

Market conditions aside, the value of our investment in this venture has greatly increased.

60%

Figure 45: Second-Round Questionnaire, Pages 9-12 (Source: Unipark Screenshot)



In the following section, we would like to get to know your perspective on dimensions related to your personal wellbeing.

3. Venture (-3 min)  
4. Wellbeing (-2 min)

Please indicate how satisfied you feel.

	Not at all satisfied						Completely satisfied
	1	2	3	4	5	6	7
How satisfied are you with working on your venture?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How satisfied are you with your venture in general?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate the extent to which you agree or disagree with each statement.

	Strongly disagree			Strongly agree			
	1	2	3	4	5	6	7
Working on my venture is more stressful than I had ever imagined.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I fear that the amount of stress in my job will make me physically ill.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel emotionally drained from my work on my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel used up at the end of the work day on my venture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel tired when I get up in the morning and have to face another day at work on my	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

venture.

I have the feeling of doing useful work when working on my venture.

The work on my venture gives me the feeling of work well done.

70%

BACK CONTINUE



Please indicate how often you have exhibited the following behaviors to founders/members of other ventures around you over the period of the last three months?

	Not at all						Very much
	1	2	3	4	5	6	7
I have put down other founders or was condescending to them in some way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have paid little attention to a statement made by other founders or showed little interest in their opinion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have made demeaning, rude or derogatory remarks about other founders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have addressed other founders in unprofessional terms either privately or publicly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have ignored or excluded other founders from professional camaraderie (e.g. social conversation).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have doubted other founders' judgment in a matter over which they had responsibility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have made unwanted attempts to draw other founders into a discussion of personal matters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

80%

BACK CONTINUE



Many thanks for participating in this survey and for contributing valuable insights for our important study!

If you are interested in the results, please feel free to provide your email address in the following field.  
*Of course, we will save your e-mail address separately from the information that you provided.*

90%

BACK CONTINUE

Figure 46: Second-Round Questionnaire, Pages 13-16 (Source: Unipark Screenshot)



Figure 47: Second-Round Questionnaire, Pages 17-18 (Source: Unipark Screenshot)

## Appendix D: CMV Marker Variable Models

### Model A: CMV Marker Variable Models

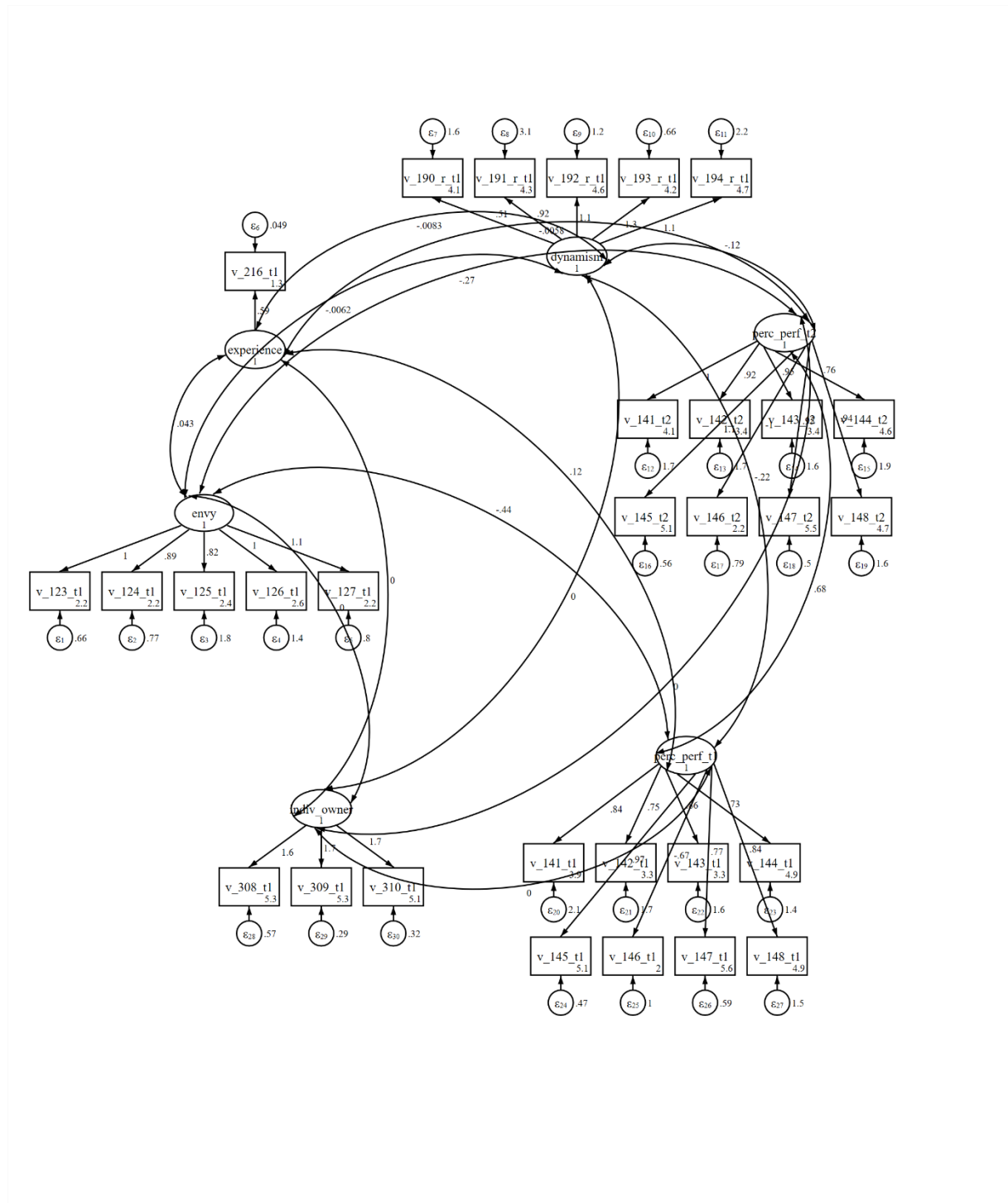


Figure 48: CMV Baseline Model for Model A (Own illustration)

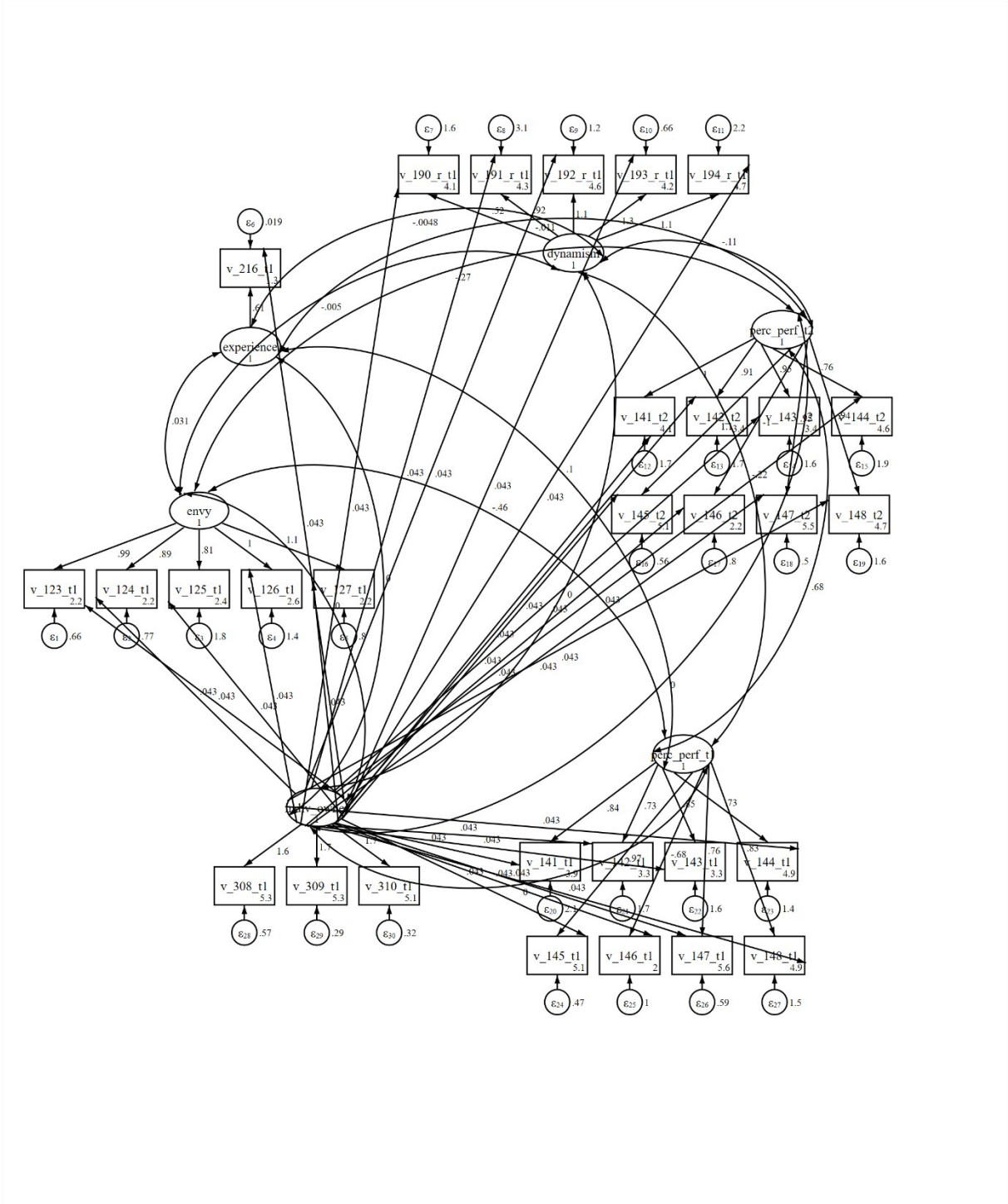


Figure 49: CMV Methodc Model for Model A (Own illustration)



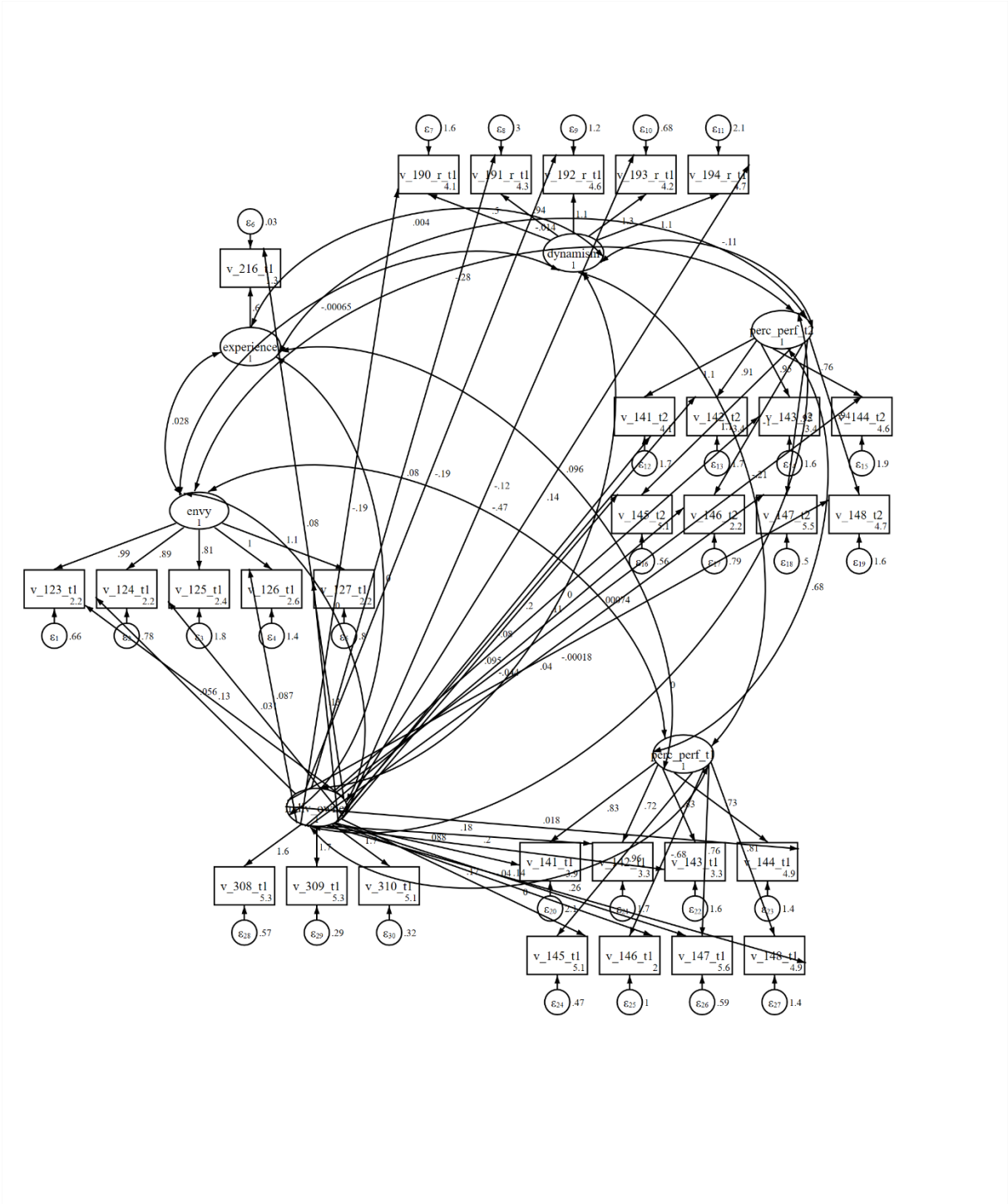


Figure 50: CMV Method U Model for Model A (Own illustration)

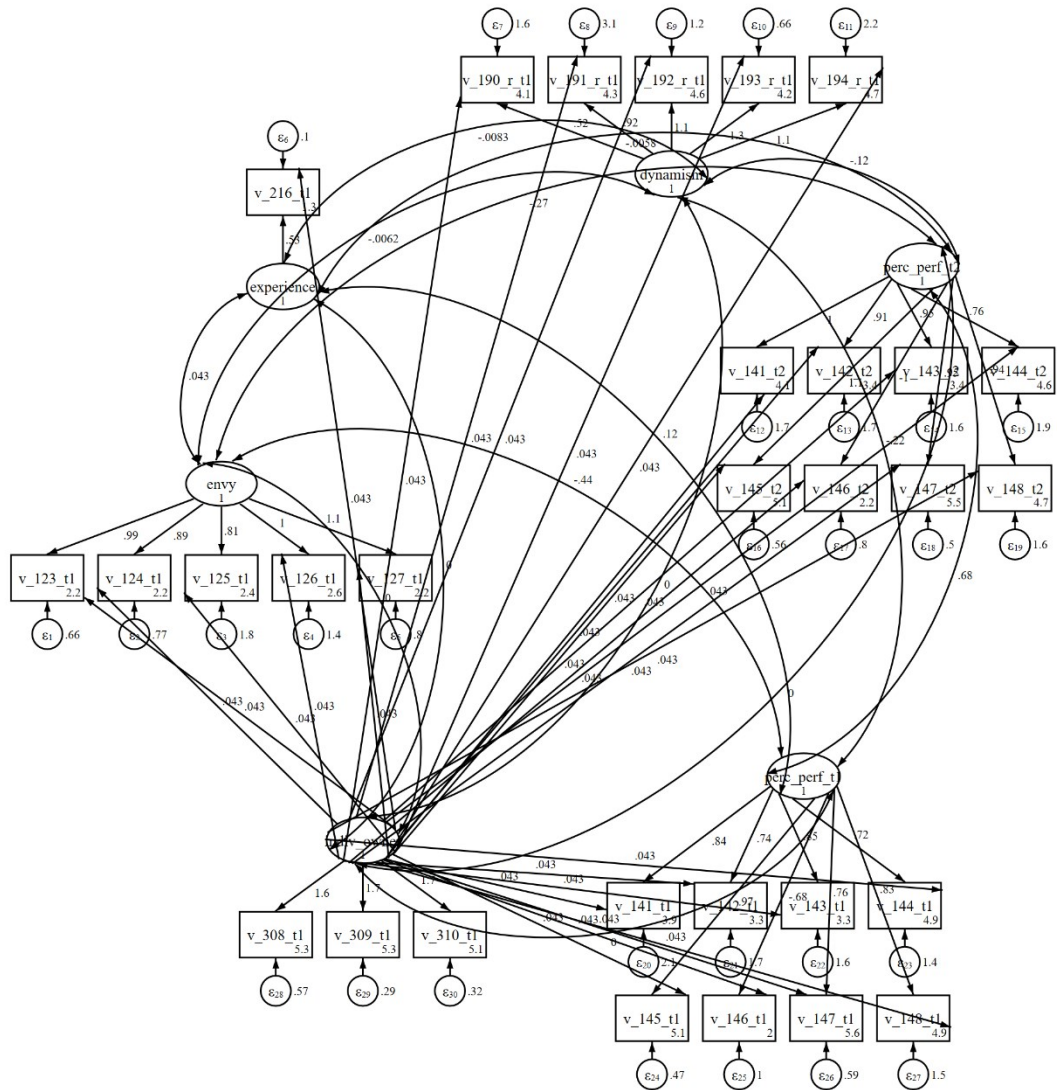
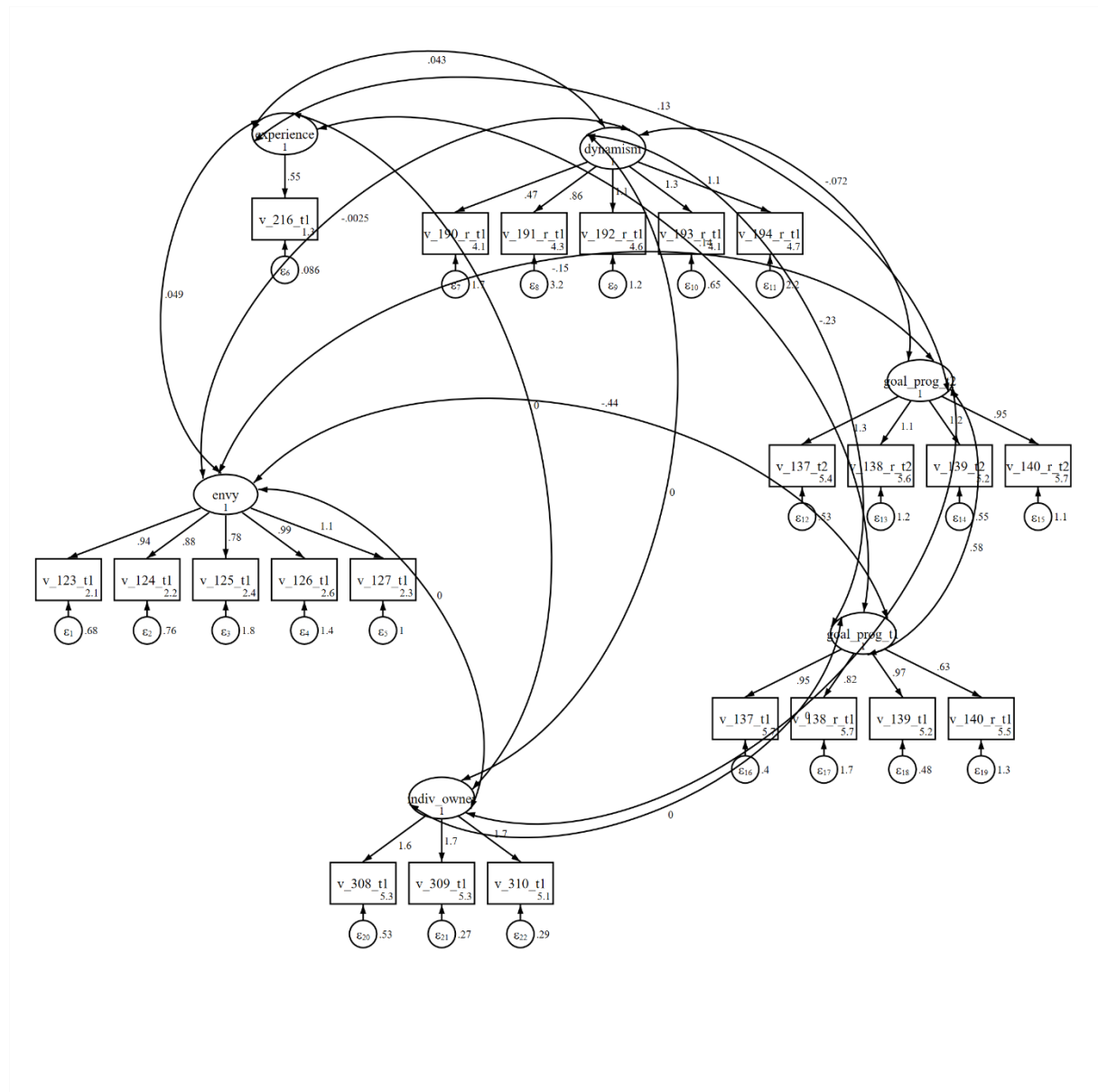


Figure 51: CMV Method<sub>R</sub> on Method<sub>C</sub> Model for Model A (Own illustration)

**Model B: CMV Marker Variable Models**



**Figure 52: CMV Baseline Model for Model B (Own illustration)**

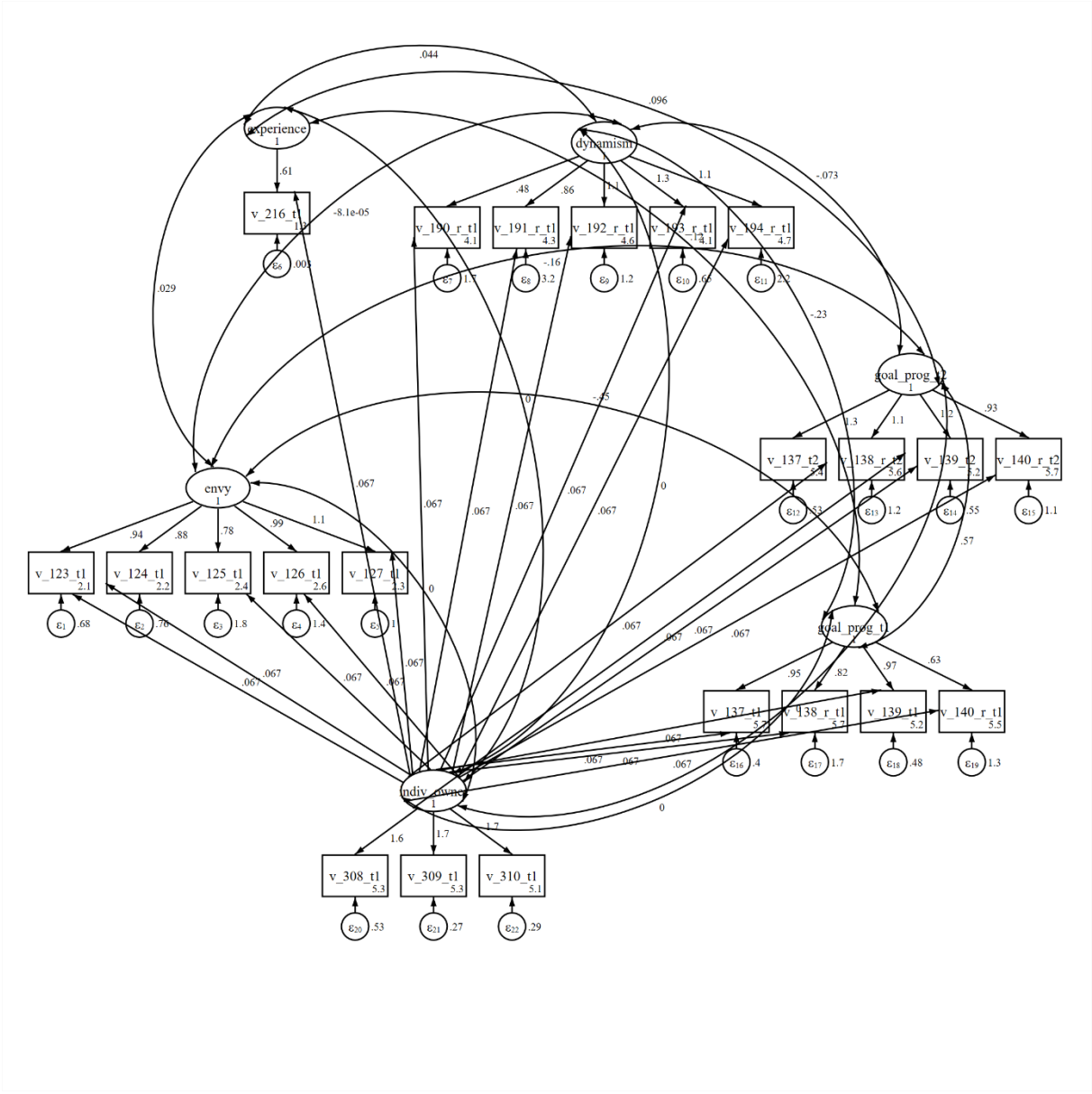


Figure 53: CMV Methodc Model for Model B (Own illustration)

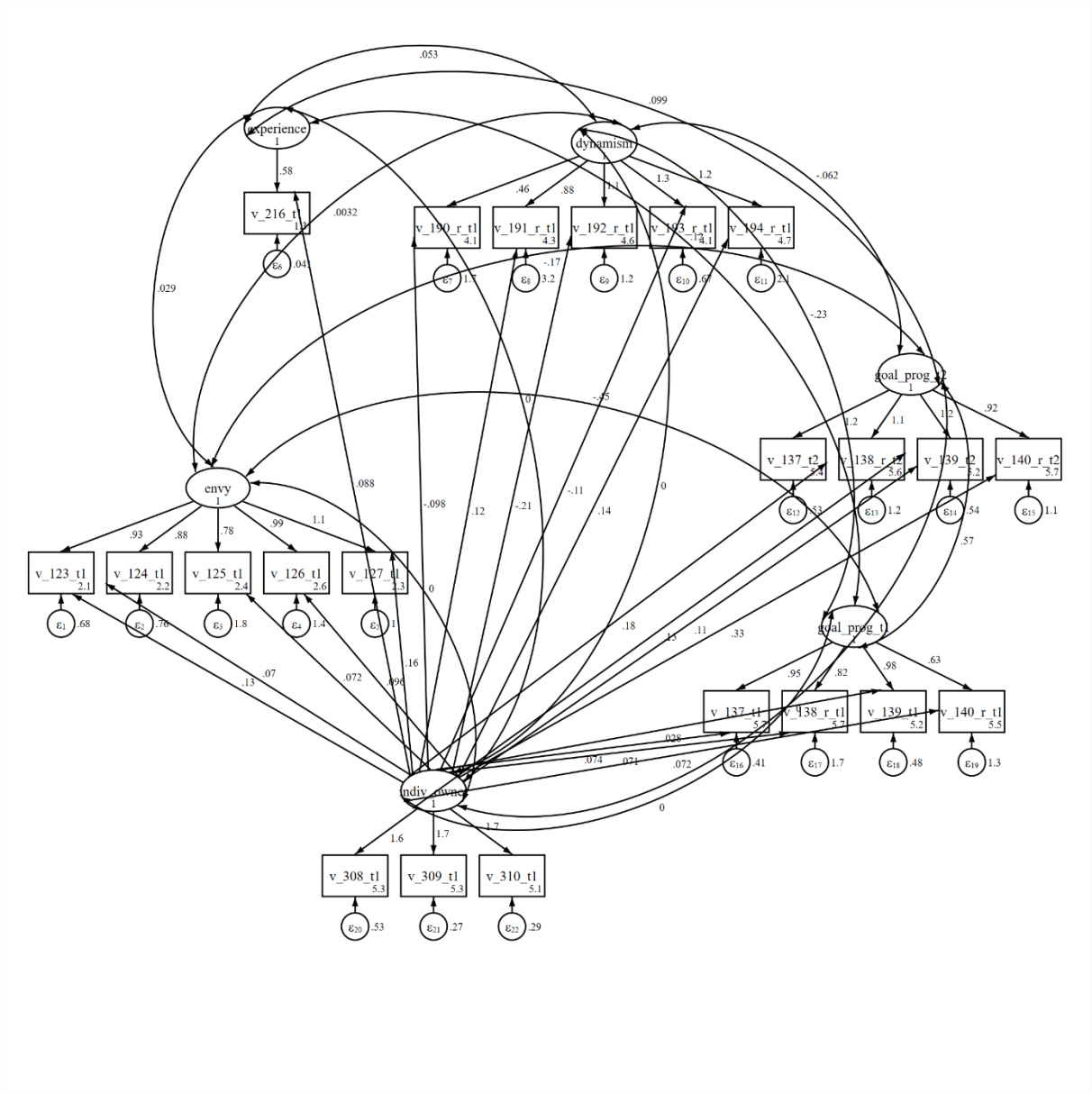


Figure 54: CMV Method Model for Model B (Own illustration)

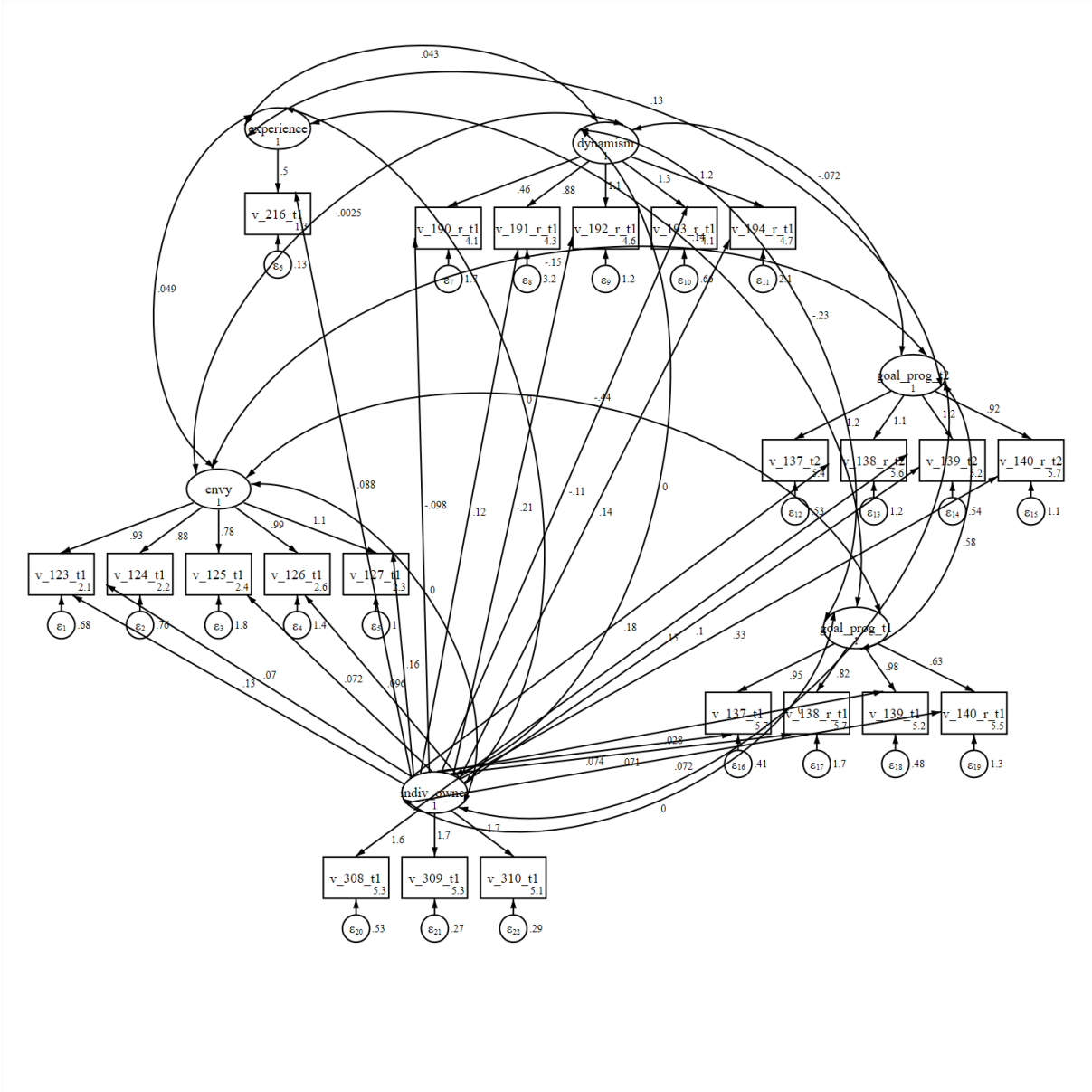


Figure 55: CMV Method<sub>R</sub> on Method<sub>U</sub> Model for Model B (Own illustration)