

# **The People-Side of Nascent and Infant Entrepreneurs**

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The President:

Prof. Dr. Thomas Bieger

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## List of Abbreviations

|      |   |
|------|---|
| AT   | Appraisal Theories                          |
| AU   | Preference for acknowledging the unexpected |
| cf.  | confer                                      |
| e.g. | exempli gratia (for example)                |
| GEM  | Global Entrepreneurship Monitor             |
| i.e. | Id est (thus, that is)                      |
| IMR  | Inverse Mill's Ratio                        |
| MR   | Mill's Ratio                                |
| PSED | Panel Study of Entrepreneurial Dynamics     |
| S.D. | Standard Deviation                          |
| TWQ  | Teamwork Quality                            |
| VIF  | Variance Inflation Factor                   |
| w/   | With  |
| 2SLS | Two-stage least squares                     |

## Executive Summary

How an entrepreneur thinks and acts is central to every entrepreneurship phenomenon. Therefore, this dissertation focuses on three person-related determinants of nascent and infant entrepreneurs: *entrepreneurial appraisal*, *teamwork quality*, and *communicational persuasion*.

The first study discusses who is likely to exploit an entrepreneurial opportunity. Although this question has been addressed often, it lacks theoretical underpinnings and effective samples, both of which are addressed by the first study of this thesis. The main finding is that prior start-up experience (human capital factor), the desire to be autonomous (motivational factor), and the quantity of interaction with team members and investors (relational factor) foster entrepreneurial appraisal. Referring to the nascent venture team, study 2 analyzes how handling uncertainty affects team collaboration quality when the product's novelty to market and the functional team diversity are high and/ or low. As a central insight, the preference for acknowledging the unexpected instead of wanting to overcome it positively impacts teamwork quality. This effect is stronger when novelty to market is high and functional team diversity is low. The third study provides the first empirical insights into how rhetorical aspects in crowdfunding videos affect crowdfunding success; the ancient work of Aristotle about the three main persuasion modes served as a basic framework for the video analyses. The overall finding is that ethos, pathos, and logos factors are relevant, but not to the same extent. In particular, a strong emotional involvement can have disadvantageous effects. This study is of particular practical interest, as the findings represent recommendations for action when setting up business videos.

Altogether, the three papers offer valuable contributions to nascent entrepreneurship research with respect to the three mentioned person-related factors. All three studies take an innovative perspective on nascent entrepreneurs' mind (appraisal, decision-making style) and behavior/ action (teamwork, crowdfunding video set-up) by testing or exploring strong samples.

## **Zusammenfassung**

Der Mensch steht im Zentrum eines jeden unternehmerischen Phänomens. Diese Arbeit vertieft daher drei spezifische personenbezogene Faktoren von „Nascent Entrepreneurs“: *Entrepreneurial Appraisal*, *Teamwork* und die *kommunikative Überzeugungskraft von Unternehmern*. Jeder dieser Faktoren wird in einem selbststehenden wissenschaftlichen Artikel adressiert.

Der erste wissenschaftliche Artikel geht der bekannten Frage nach, wer unternehmerische Gelegenheiten umsetzt. Das Hypothesenmodell basiert dabei nicht, wie gewöhnlich, auf Intentionen, sondern geht auf die Appraisal Theorie von Lazarus zurück. Diese berücksichtigt Humankapital-, Sozialkapital- und Motivationsfaktoren und verknüpft Kognitionen und Emotionen. Im Spezifischen zeigen sich die Start-up Erfahrung, der Wunsch nach Unabhängigkeit und die Interaktion mit dem Team und mit Investoren als die wichtigsten Antezedenzen von Entrepreneurial Appraisal.

Der zweite wissenschaftliche Artikel untersucht die Konfiguration der Faktoren Neuheit auf dem Markt, Team-Verantwortlichkeiten und Umgang mit Unsicherheit im Team mit dem Ziel, Teamwork im frühen Gründerstadium zu fördern. Eine wesentliche Erkenntnis besteht darin, dass ein offener Umgang mit Unsicherheit, im Sinne des „Effectuation“ von Sarasvathy, die Teamwork-Qualität im Gründerteam steigert. Dieser positive Effekt ist umso stärker, je neuer das Produkt für den Markt ist und je weniger Verantwortlichkeitsbereiche im Team definiert werden.

Ein explorativer Ansatz in der dritten Studie liefert neue Erkenntnisse über den Zusammenhang zwischen rhetorischer Überzeugung und Crowdfunding-Erfolg. Hierbei wird das antike Werk von Aristoteles herangezogen. Die Ergebnisse der explorativen Analysen sowie der abgeleitete Kriterienkatalog für den Appell an die drei rhetorischen Modi dienen Gründer als Handlungsempfehlungen bei der Erstellung von Geschäftsvideos. Diese Studie erweitert nicht nur das Wissen über die „Crowd“ sondern auch über den Funktionsmechanismus dieser modernen Mittelbeschaffung.

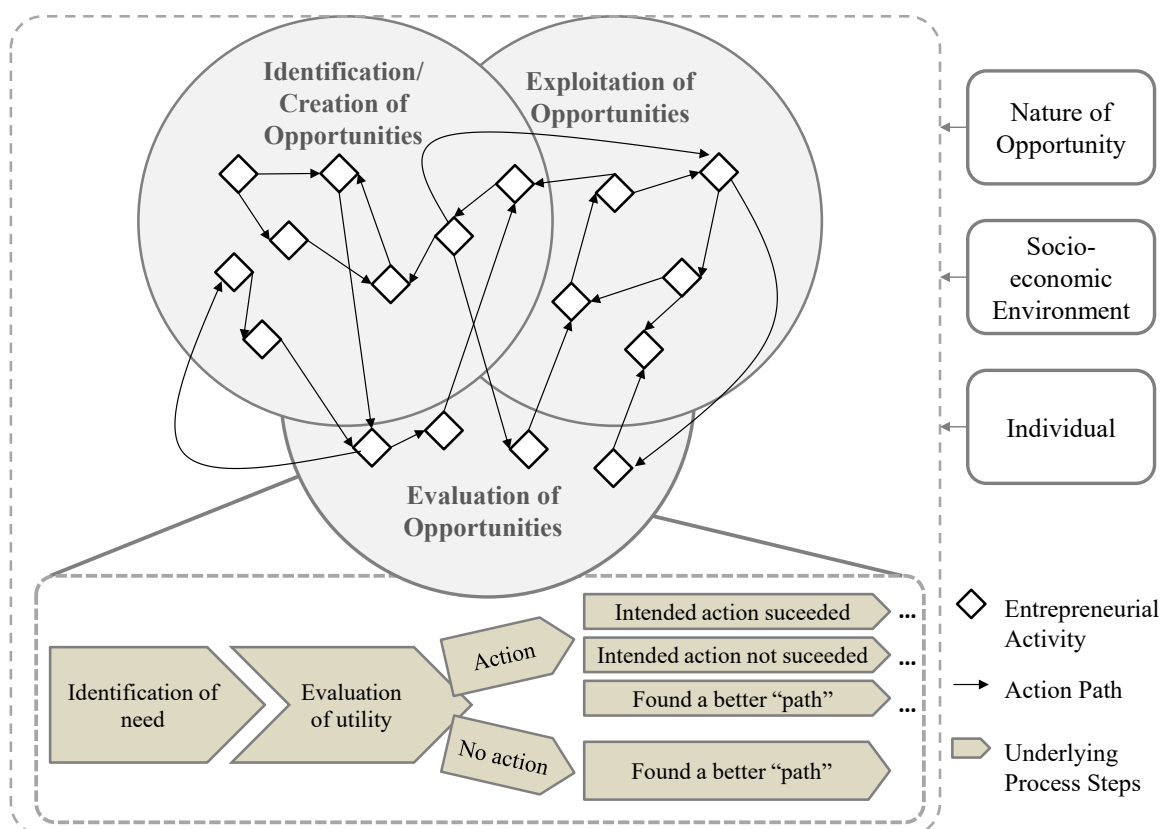
# **Chapter A: Introduction to the Paper Series**

## **1. Research Motivations**

### **1.1 Foci and Requirements in Entrepreneurship Research**

Entrepreneurship is a phenomenon essential for the social and economic well-being, as new ventures, business sectors, or products create new jobs, market innovations, and thus, economic growth (e.g., Aldrich and Ruef, 2006; Wennekers and Thurik, 1999 ). Further, global market trends require the reallocation of resources to reach a comparative advantage. This induces an increased demand for entrepreneurial activities (Audretsch and Thurik, 1998). As a consequence, the general question of how entrepreneurial activities can be fostered matters on an international level.

Fostering entrepreneurial activities—in terms of increasing the number of new ventures or market innovations or enhancing the probability of their success—first requires a definition of the phenomenon to build on. Following Baron and Shane (2008), entrepreneurship can be best characterized as a three-step process consisting of opportunity identification or creation, evaluation, and exploitation. These three steps are neither executed successively nor can they be considered separately. In practice, they often cannot even be distinguished. For instance, activities in regards to resource acquisition can be both an evaluation approach for the new product or exploitation efforts towards the monetization of the identified or created opportunity. However, activities, such as renting workspace or hiring employees clearly incorporate exploitation efforts. As such, the three steps are interrelated and do not clearly build on the classification of entrepreneurial activities. The following figure displays a procedural view on entrepreneurial phenomena.

**Figure 1 Procedural Perspective on Entrepreneurial Phenomena**

Since there can be numerous possible action paths to follow and each is dependent on the entrepreneurs, the nature of the opportunity, and the socioeconomic environment (e.g., Carlsson, Braunerhjelm, McKelvey, Olofsson, Persson, and Ylinenpää, 2013; Shane and Venkataraman, 2000), Figure 1 incorporates the complexity of entrepreneurship as an overarching research field. Moreover, two overlying views exist. As such, the entrepreneurial procedure can be viewed from a micro perspective, including the individuals and the actions taken to exploit an opportunity, and from a macro perspective, focusing on new enterprise emergence and its role in furthering economic progress (e.g., Acs, Braunerhjelm, Audretsch, and Carlsson, 2009; Carlsson et al., 2013; Shane and Venkataraman, 2000). Because of this broad definition of entrepreneurship, there is no matter of great urgency for the advancement of the overall research field of entrepreneurship. Instead, Davidsson, Low, and Wright (2001) stated that there may be a problem of focus.

As a consequence, entrepreneurship scholars started to refocus the field. Important aspects of this research field development were the rediscovery of the individual, the importance of (social) networks, and the focus on different contexts—

all in conjunction with the identification/ creation, evaluation, and exploitation of opportunities. Accordingly, recent entrepreneurship research on the micro-level has gone away from the entrepreneurial “traits” approach towards behavior and learnable cognitive issues (Mitchell, Busenitz, Lant, McDougall, Morse, and Smith, 2002). In view of that, former research questions have to be investigated once more considering this new re-focusing, e.g., entrepreneurial activities (Carter, Gartner, and Reynolds, 1996) or entrepreneurial motivation (Amit and Muller, 1995).

Further, scholars have recognized the importance of team consideration in entrepreneurship research, as entrepreneurial processes are rarely driven by one single person. Concepts, such as collective cognition (West, 2007), team diversity (e.g., Chowdhury, 2005; Der Foo, Kam Wong, and Ong, 2005), and teamwork quality (Hoegl and Gemuenden, 2001) emerged. This affected not only theory embeddedness, but also methodologies, since the unit of analysis changed from the individual entrepreneur to the team. As such, multiple data sources or sophisticated validity and reliability methods to justify single respondent approaches are essential (Davidsson et al., 2001).

At the same time, the development of entrepreneurship research is also affected by real market dynamics. In particular, the emergence of new tools of communication, e.g., social networks and crowdfunding platforms, drive scholars to achieve valuable practitioner implications that support entrepreneurial activities. The lack of an overarching entrepreneurship theory (Cuervo, Ribeiro, Roig, and Gartner, 2007) together with the ambition to provide relevant findings for theory and practice, has opened up the way for explorative approaches (e.g., Elfring and Hulsink, 2003; Mollick, 2014).

In sum, although the field of entrepreneurship research has progressed, since Low and MacMillan (1988) published a review of research developments and identified future challenges, the boundaries of this research domain are still fuzzy (Davidsson et al., 2001). Indeed, entrepreneurship is a phenomenon, but at the same time it still represents a field of shared interests consisting of loosely interrelated sub-phenomena, such as the emergence of new enterprises, new organizations, innovation, venture capital, small business, and family firms. Accordingly, many



special sub-research areas have emerged (Certo and Certo, 2010), e.g., social entrepreneurship, technology entrepreneurship, corporate entrepreneurship, women entrepreneurship, and nascent entrepreneurship. However, although combining more phenomena within one study is necessary to reach a more integrated view on entrepreneurship research, Ucbasaran, Westhead, and Wright (2001) concluded that narrowly designed studies provided the most useful insights.

Adding empirical insights to entrepreneurship research considering the aforementioned state-of-the-art foci and requirements is one goal of this thesis. Further, I follow Ucbasaran et al. (2001) and focus on one entrepreneurial sub-phenomenon that particularly caught my research interest, i.e., nascent entrepreneurship.

## 1.2 Critical Aspects in Nascent Entrepreneurship Research

Focusing on nascent entrepreneurship is of particular relevance because it captures on the one hand the major source of organizational variations and on the other hand—due to information lack—the highest degree of chaos and disorder in the new venture creation process (Aldrich and Ruef, 2006). Following Davidsson and Gordon (2012), nascent entrepreneurship studies can be clustered in three main topics:

- (1) **Characteristics of nascent entrepreneurs**—characterized by human capital, social capital, motivational, and cognitive differences between nascent entrepreneurs and other (sub-)groups.
- (2) **Explaining new venture creation outcomes**—characterized by analyses of nascent entrepreneurs' characteristics and progress or outcome variables.
- (3) **Antecedents and characteristics of the new venture creation process**—characterized by analyses of nascent entrepreneurs' characteristics and specific entrepreneurial activities or progress variables.

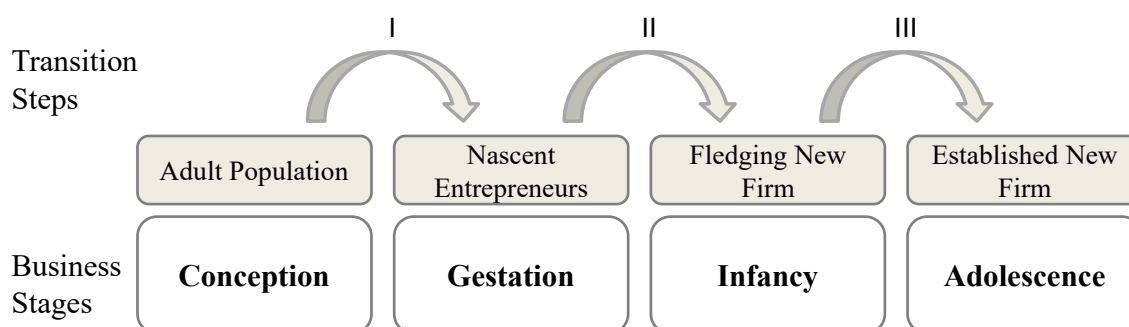
Overall, deriving recommendations for action in this sub-research field and thus intervening at a very early entrepreneurial stage means providing further

understanding of the fundamentals of entrepreneurial success. Before doing so, some substantial particularities of this specific sub-research field should be mentioned.

### 1.2.1 Performance Measurement

Overall, scholars as well as practitioners in this field are interested in figuring out which nascent entrepreneurs/ nascent ventures are likely to “make it,” i.e., to reach an operational status, survive, and grow (Davidsson, 2006). Hence, the study of nascent entrepreneurship merges into the study of entrepreneurs or ventures in an advanced business stage. In this regard, Reynolds provided a model of “four stages of nascent entrepreneurship” involving three transitions and four periods displayed in Figure 2 in order to delimit nascent entrepreneurs/ nascent ventures from other entrepreneurial phenomena.

**Figure 2 The Stages of Nascent Entrepreneurship**



These stages imply that if we want to know which factors in the nascent stage influence later success, a sophisticated longitudinal approach is necessary. In practice, these approaches are time- and cost-intensive, which is why longitudinal studies are still rare in entrepreneurship research. Accordingly, since nascent entrepreneurs/ nascent ventures represent a group of potential market newcomers, it is often not easy to find ideal outcome or performance variables to capture their entrepreneurial success in the nascent stage. Because of this early stage, classic financial success indicators (e.g., revenues, number of employees, etc.) cannot be taken for granted. In prior studies, scholars used dichotomous or continuous indicators of progress in the start-up process, e.g., the number of gestation activities (e.g., Davidsson and Honig, 2003; Samuelsson, 2001) but also dichotomous or continuous financial performance variables for those who had at least first revenues

(e.g., Delmar and Shane, 2003b; Newbert, 2005). None of these performance variables capture the phenomena without losses in the samples (Davidsson, 2006).

### 1.2.2 Sample Heterogeneity

In addition to the vague definition of the unit of analysis in nascent entrepreneurship, a sample-heterogeneity problem appears. Indeed, nascent entrepreneurs/ nascent ventures are heterogeneous and often not comparable with each other. This is because first sales must not necessarily mark the starting point of the operational status, and not all ventures need to complete the same type and number of gestation activities to achieve operating status. As a consequence, different ventures need different amounts of time for the same gestation activities, and abandonment of the business project must not necessarily be a worse outcome than continuation (Davidsson, 2006).

### 1.2.3 Sample Selection

Although a great part of entrepreneurship research is about the emergence of new ventures, samples including entrepreneurs in their early business stage are rare (cf. Davidsson and Honig, 2003). Besides the studies using the Panel Study of Entrepreneurial Dynamics (PSED) (e.g., Carter, Gartner, Shaver, and Gatewood, 2003) most of the published work examining the emerging entrepreneurs focuses on entrepreneurial intentions and often uses samples of individuals that have not yet entered into nascent activity (e.g., Krueger Jr and Brazeal, 1994). Further, due to the sample-heterogeneity-problem, the final samples to be analyzed are restricted ineffectively. For instance, following the definition used in the PSED (Reynolds, 2000, p. 170f.) and in the Global Entrepreneurship Monitor (GEM) (Reynolds, Bosma, Autio, Hunt, De Bono, Servais, Lopez-Garcia, and Chin, 2005)<sup>1</sup> would exclude those who achieved positive cash flows with their first sales but still are not operational or those who have progressed quickly in less than 12 months but have not yet reached the market.

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<sup>1</sup>This definition assumes that a nascent entrepreneur is a person who is trying to start a new business, has been active in trying to start up in the past 12 months, who expects to be the owner or part owner of the new firm, and whose start-up did not have a positive monthly cash flow that covers expenses for more than three months.

In sum, nascent entrepreneurship research encompasses studies that analyze businesses in early and later stages. At the same time, nascent entrepreneurs/ nascent ventures have clearly been defined by means of their progress in regards to their gestation activities (e.g., Aldrich and Ruef, 2006; Carter et al., 1996; Delmar and Davidsson, 2000). In this connection, Aldrich and Ruef (2006) defined a nascent entrepreneur as a person who engages seriously in activities that are intended to culminate in a business startup, e.g., writing a business plan, looking for facilities and equipment, investing money, or organizing a startup team (e.g., Reynolds, 1994; Carter et al., 1996). Additionally, Delmar and Davidsson (2000) stated that being engaged in at least one gestation activity is enough to delineate nascent entrepreneurs from non-entrepreneurial adults. Beyond this definition ambiguity, the activity-based classification has been criticized by Davidsson (2006), who called attention to the high heterogeneity of nascent samples and thus to the critical comparability of nascent entrepreneurs/ ventures. This makes outcome and progress variables in this research stream unreliable and the definition of a reliable unit of analysis as well as tailored study conclusions difficult.

The present paper series follows Davidsson's (2006) call to approach these criticisms by (1) analyzing entrepreneurs that are already engaged in serious business activities, (2) focusing on comparable person-related instead of process-related aspects, and (3) drawing conclusions for different sub-groups of nascent entrepreneurs, e.g., technology-driven entrepreneurs (Liao and Welsch, 2003), women entrepreneurs (Carter and Brush, 2004), or entrepreneurs from a certain region (Wagner and Sternberg, 2004). These three research strategies allowed using cross sectional samples without eliminating cases due to their mismatching nascent business stage (cf. Figure 2). It was not possible to clearly differentiate between nascent entrepreneurs/ nascent ventures and "fledging" new firms, but this differentiation was not substantial for the purposes of this thesis. Since our data sources permitted us to assume at least an emerging stage for all cases, we draw conclusions for nascent and infant entrepreneurs/ ventures. To simplify, I will refer to this group as nascent entrepreneurs/ nascent ventures. The following table describes the research strategies in relation to the three scientific papers of this thesis.

**Table 1 Counteracting the Criticism of Nascent Entrepreneurship Research**

| <b>Motivations</b>   | <b>Research Strategies</b>   |   |  |
|--|--|---|--|
|  | <i>Chapter B: Study 1</i>  | <i>Chapter C: Study 2</i>   | <i>Chapter D: Study 3</i>  |
| 1. Analyze entrepreneurs that are already engaged in serious business activities<br><br>2. Capture the dynamics of the emerging stage: high degree of disorder and uncertainty | To test the hypothesized models in Paper 1 and 2, I collected data from sources that included nascent entrepreneurs/ ventures only—business plan competitions and start-up support programs. Accordingly “writing a business plan” as well as “searching start-up support” are activities typically positioned in the nascent business stage (Carter et al., 1996; Reynolds, 1994). <sup>2</sup> |   | I collected data from an online crowd-funding platform. Such a research acquisition process can be positioned in an early business stage as it serves to fund new products that will be produced after the crowdfunding campaign ends (Mollick, 2014). |
| 3. Focus on person-related factors<br><br>4. Counteract performance-measurement-problem: classic (financial) performance measures are not nascent performance measures!        | This paper focuses on person-related factors that predict entrepreneurial appraisal—a construct that has been shown to be essential for opportunity evaluation and exploitation (Welp et al., 2012)  | This paper analyzes how handling with the high degree of uncertainty in the early business stage can influence team collaboration, which is substantial for the success of innovative teams (Hoegl et al., 2001). | This paper explores how rhetoric aspects used in crowdfunding video material affects backers' decision to fund a project.  |
| 5. Draw conclusions for sub-groups<br><br>6. Counteract sample-heterogeneity-problem   | I controlled for several structural variables to consider differences in the team structure, product type, and progress.   |   | The sample contains technology-driven projects only.   |

The topical emphasis of this thesis is expressed in motivation 3 and 4 in the above depicted Table. The following sections aim to deepen these research motivations in order to substantiate the specific research questions underlying this thesis.

<sup>2</sup>As the used data sources can be subject to potential misapplications, e.g., persons who “try to win money” for other purposes than a business start-up, additional entrepreneurial activities were retrieved within the analyzed samples to ensure nascent or infant business stage.

### 1.3 Mental Processes in Nascent Entrepreneurship

In view of the aforementioned critical aspects in nascent entrepreneurship research, person-related—instead of process-related—dependent variables gain importance. Also, prior research has shown that person-related factors predict a meaningful amount of variance in growth and later-stage venture performance (e.g., Baum and Locke, 2004; Ensley and Hmieleski, 2005; Wiklund and Shepherd, 2003). So, the overarching research question of this dissertation can be formulated as follows:

*RQ<sub>0</sub>: What are person-related factors that can be influenced in the nascent stage and have leverage effects in later business stages?*

Prior studies on nascent entrepreneurs' characteristics have mainly focused on comparing business founders with other groups of people [first topical focus], such as employees and the general population, or to compare sub-groups, e.g., men and women nascent entrepreneurs. Specifically, differences were examined in regards to human capital (e.g., Menzies, Diochon, and Gasse, 2004), social capital (e.g., Liao and Welsch, 2003), motivations (e.g., Cassar, 2007a), and cognitions (Johnson, Danis, and Dollinger, 2008). In order to explore whether these differences impact the new ventures' success, further studies investigated the impact of nascent entrepreneurs' characteristics on outcomes (e.g., Liao and Welsch, 2005; Newbert, 2005) [second topical focus]. Beyond the fact that performance variables in this stream of research are not unproblematic, an overall conclusion is that resource endowment effects (including human and social capital resources) on outcomes appear weak. Contrary to that, the effect of human and social capital, as well as cognitive constructs, on specific activities or process variables<sup>3</sup> (e.g., Alsos and Kolvereid, 1998; Brush, Edelman, and Manolova, 2008)—instead of outcome variables—seemed to be more uncritical [third topical focus]. Thus, research on entrepreneurial activities has provided evidence that nascent entrepreneurs' characteristics influence whether or not a nascent venture writes a business plan (Honig and Karlsson, 2004), how resources are bootstrapped (Grichnik, Brinckmann, Singh, and Manigart, 2014), or how intensive information is searched (Westhead,

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<sup>3</sup>Process variables refer to the opportunity creation/ identification, evaluation, and exploitation.

Ucbasaran, and Wright, 2009)—to mention only a few studies. One reason why these effects are more uncritical to interpret is that there are fewer effects in between the studied variables, which have to be considered and explained. For instance, experience per se cannot lead to higher performance. Instead, it might help to take decisions about further actions or to build up decision-paths based on learnings from the past (cf. Davidsson, 2004; Unger, Rauch, Frese, and Rosenbusch, 2011). Such mental processes might influence behavior and this might lead to a specific performance level or outcome (e.g., Welpe, Spörrle, Grichnik, Michl, and Audretsch, 2012; Colombo and Grilli, 2010). In line with this, a “thought-behavior-outcome” relationship (cf. Zilberstein, 2012) underlies entrepreneurial processes. Mental processes (how individual characteristics impact thought and action) in nascent entrepreneurship are under-researched, although “cognitive ability is more important for early stage entrepreneurs than for most occupations” (Baum, Frese, and Baron, 2012, p. xix).

Overall, entrepreneurial behavior in response to a mental process, e.g., a judgmental decision under uncertainty, refers to entrepreneurial action—which is the main requirement for every entrepreneurship phenomenon (McMullen and Shepherd, 2006). A direct analysis of person-related factors and outcomes would neglect relevant inner-person mechanisms, which are important to understand entrepreneurial success. The direct effects may also be exposed to endogeneity problems, as relevant influence factors are excluded from the hypotheses models. Hence, there is a non-satisfied need to focus more on the emergence of mental processes in the nascent stage, i.e., on the effect of entrepreneurs’ characteristics on their evaluations, attitudes, and/ or perceptions, as well as directly and/ or indirectly on their actions. Further, research on mental processes in entrepreneurship has shown that inner processes can be multistage (e.g., Ozgen and Baron, 2007) but also multidimensional (e.g., Krueger Jr., Reilly, and Carsrud, 2000). This is also reflected in the fact that studies analyzing the relationship between motivational or cognitive constructs—such as growth aspiration (e.g., Liao and Gartner, 2006)—and success provide weak or incompatible results in nascent entrepreneurship (Davidsson and Gordon, 2012). In addition, the third topical focus has provided clearance about the vastly varying duration and composition of the entrepreneurial process. At the same time, this research stream lacks team-level studies and is exposed to sample definition and

heterogeneity problems (Davidsson and Gordon, 2012). Again, studying entrepreneurial processes as a whole—from the individuals' mental processes to their action and the resulting performance—would resolve the causality problems of cross-sectional samples. An alternative to this long-lasting longitudinal research design consists of complementing process-parts that are pre-studied and published in high-ranked peer-reviewed journals. This thesis adheres to the last mentioned alternative.

Furthermore, mental processes in entrepreneurship can be analyzed from two main perspectives: the entrepreneur's perspective and the perspective of involved third parties, e.g., financiers. The last mentioned view is a nascent research field characterized mostly by conceptual and empirical studies on legitimacy building (e.g., Pollack, Rutherford, and Nagy, 2012), sense-making (e.g., Holt and Macpherson, 2010), and narratives (e.g., Villanueva, 2013a). Specifically, this literature provides insights into how entrepreneurs' characteristics and actions affect evaluative judgments of third parties involved in the new venture creation process. Thereby “the art persuasive communication” appears particularly relevant within modern financial resource acquisition efforts, in which nascent entrepreneurs have no personal contact to their potential financiers (e.g., crowdfunding).

Summarizing, Davidsson and Gordon's (2012) first topical focus is too unilateral, their second focus excludes important in between-effects, and their third focus—which is the most important one—is under-researched and characterized by severe sample definition and heterogeneity problems. Overall, this thesis aims at underscoring the importance of nascent entrepreneurs' mental processes for their behavior. In particular, I aim to counteract the afore-described lack of knowledge concerning the “individual characteristics-thought” and the “thought-behavior” relationship. Thus, at expanding the first and adding to the third topical focus by addressing and considering the aforementioned methodological criticisms of nascent entrepreneurship research<sup>4</sup>. Additionally, I aim at enhancing the emerging research field of third party influence in nascent entrepreneurship with empirical insights. Following the notion that research should produce results for theory and practice, the first two studies have a strong theoretical emphasis, while the third study creates

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<sup>4</sup>With “thought-behavior” and “individual characteristics-thought” relationship I refer to the multistage (i.e., a mental process leads to action/ behavior) and multidimensional (i.e., a mental process or individual characteristic leads to another mental process) modeling of entrepreneurial mental processes.



knowledge, which supports nascent entrepreneurs in the execution of their crowdfunding campaigns.

## **2. Sub-Research Questions**

It lies in the nature of the far-reaching overarching research question and the variety of criticisms in nascent entrepreneurship research that this thesis can neither answer the question in full nor respond to all criticisms in parallel. Instead, it needs to focus on specific issues. In detail, study 1 investigates an individual characteristics-thought process building on a prior work of Welppe et al. (2012) with the specific aim to complement a causal chain of cognition, emotion, and entrepreneurial action and to increase theoretical harmonization in the first topical focus. Study 2 focuses on a team-level thought-behavior causality building on prior work of Hoegl and colleagues on teamwork and collaboration (e.g., Hoegl and Gemuenden, 2001; Hoegl, Ernst, and Proserpio, 2007; Hoegl and Proserpio, 2004). Study 3 explores how persuasive communication within online videos can influence backers' decision to fund a project in the context of crowdfunding campaigns on the Indiegogo platform. As such, this study cannot be integrated in one of the three topical foci but represents a new literature stream in nascent entrepreneurship research. Instead, it handles the rarely considered perspective that entrepreneurs' characteristics and behaviors can affect third parties' actions. The following sub-chapters describe the research questions underlying the single studies.

### **2.1 Nascent Entrepreneurs' Means and Appraisal**

Despite the large stream of literature in the first topical focus that investigates differences between nascent entrepreneurs and other groups, nascent entrepreneurs' characteristics and thoughts have been analyzed to a large extent within motivation and intention studies (e.g., Falck, Heblich, and Luedemann, 2012; Walter, Parboteeah, and Walter, 2013). These studies focused on the question of who is likely to become a nascent entrepreneur. The answer to this research question has been sought in a large amount of studies mainly by building on the discussion of necessity-driven (push) versus opportunity-driven (pull) entrepreneurs (Dawson, 2012) as well

as the planned behavior theory (Krueger Jr. et al., 2000). Planned behavior studies have been criticized for not capturing entrepreneurs' behavior, since most of them focus on the intention formation rather than on actions (e.g., Baierl, Grichnik, Spörrle, and Welp, 2013; Van Gelderen, Brand, van Praag, Bodewes, Poutsma, and van Gils, 2008). Further, push and pull studies lack harmonization of theoretical interpretations and theoretical underpinnings. This theoretical disorder applies also for studies focusing on the effect of perceptual variables on the decision to become a nascent entrepreneur (cf. Arenius and Minniti, 2005; Wagner, 2004). Thus, a confused view of the relationship between the nascent's characteristics and their decision to become a nascent entrepreneur (thus, their thoughts) exists. Whereby, the characteristics can be seen as the entrepreneurs' means when starting a new business.

This study aims at addressing this theoretical disorder in order to build a base for future thought-behavior research. In doing so, I refer to Lazarus' appraisal theory, which was adapted in an earlier study by Welp et al (2012). Their analyses built on the emotion elicitation process and the effect of emotions on opportunity evaluation and exploitation<sup>5</sup> but failed to explain how emotions are created. Following Lazarus and his colleague, Folkman, emotions are elicited by primary appraisals. This context-related construct incorporates cognitive, relational, and motivational antecedents and has two main dimensions that express how congruent one's behavior is with one's inner life motivations and life goals. Thus, if we understand what forms entrepreneurial appraisal, we might be able to understand entrepreneurs' evaluation and exploitation processes, thus understanding why some entrepreneurs exploit their opportunities while others do not. At the same time, the appraisal theory offers a way to harmonize theoretical interpretations concerning nascent entrepreneurs' characteristics. Accordingly, this research question intends to clarify if human capital, social capital, and motivational factors—thus, personal means—are antecedents of the primary entrepreneurial appraisal:

*RQ<sub>1</sub>: What are the antecedents of the primary entrepreneurial appraisal of nascent entrepreneurs?*

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<sup>5</sup>Accordingly, Welp et al. (2012) focused on a thought-behavior process.

## 2.2 Attitude towards Uncertainty and Teamwork Quality

Dealing with uncertainty is one of the biggest tasks nascent entrepreneurs are confronted with. Making team decisions under high uncertainty can disrupt a team, when the team spirit is negatively touched by grave decision-conflicts (De Dreu and Weingart, 2003; Jehn and Mannix, 2001). This can lead to an abandonment of the entrepreneurial intent. In line with the afore-remarked goals, this paper scrutinizes the relationship between the attitude towards uncertainty (decision-making style) and team collaboration. Following teamwork quality literature, a high-collaborating team leads to high outcome levels in corporate contexts (Hoegl, Praveen Parboteeah, and Gemuenden, 2003). At the same time, antecedents of teamwork quality have not yet been investigated. As a consequence, the main research question intends to enhance knowledge on the link between decision-making style and teamwork quality in nascent venture teams:

*RQ<sub>2</sub>: How does the acknowledgment towards unexpected events within the founding team affect teamwork quality in the nascent business stage?*

How entrepreneurs deal with uncertainty might depends on the level of uncertainty, expressed by the level of novelty to the market (cf. Atuahene-Gima, 1995) and on how responsibilities within the team are defined (Dayan and Di Benedetto, 2009). Therefore, two additional sub-research questions are formulated:

*RQ<sub>2a</sub>: How does novelty to market influence the above-stated link?*

*RQ<sub>2b</sub>: How does functional team diversity affect the above-stated link?*

Similar to study 1, this scientific article builds on prior work to complement a causal chain, i.e., the teamwork quality-outcome chain.

## 2.3 Persuasive Communication and Fundraising Success

“Narratives,” “storytelling,” and “tales” are all terms to capture what entrepreneurs tell, but none of the terms possess a clear definition. Most of the studies considering these woolly concepts refer to their effects on decisions of others. However, to understand from the ground how narratives affect someone else’s

decisions and behavior, we need to go one step backwards, i.e., to ask how communication as a whole can persuade others. The art of persuasive communication is incorporated in Aristotle's rhetoric theory, which builds the theoretical framework of this study. In line with prior work in this very specific and new research field, I explored persuasive communication in the context of financial resource acquisition, i.e., crowdfunding. This explorative study followed the subsequent research question to gather insight into how rhetorical strategies within modern online communication media affect the decisions of potential financiers.

*RQ<sub>3</sub>: How do rhetorical aspects of video material impact backers' judgements in crowdfunding campaigns?*

Contrary to studies 1 and 2, the dependent variable is not a person-related factor but an outcome variable. This is due to the fact that the success of the activity, starting a crowdfunding campaign, is directly measurable. Though, this is just one gestation activity among many others; thus, the person-related factor here is communication, which can be manipulated to achieve later-stage success.

### **3. Logic and Structure of the Paper Series**

Following the logic of a cumulative dissertation, the above-stated research questions are answered in self-standing research articles. These are reproduced in the same order as the above research questions in the subsequent chapters of this thesis. Accordingly, this thesis is structured into five chapters: this introduction, followed by three chapters—one for every article—and finally by an overall conclusion. The following table summarizes and structures the research goals, the research questions, and the methods in relation to the three studies.

**Table 2 Logic and Structure of the Paper Series**

| Overarching Research Questions   | Study Title   | Central Person-Related Factor                       | Specific Sub-Research Questions   | Research Design  | Level of Analysis | Unit of Analysis                          | Sample  | Consideration of Research Requirements  |
|--|---|---|---|--|-------------------|---|---|---|
| What are such person-related factors that can be influenced in the nascent stage and have leverage effects in later business stages? | <b>Study 1</b><br><b>Chapter B</b><br>Who is Likely to Exploit A Business Opportunity? An Integrative Approach from an Appraisal Theory Perspective                         | Entrepreneurial Appraisal (dependent variable)      | RQ <sub>1</sub> : What are the antecedents of the primary entrepreneurial appraisal of nascent entrepreneurs?   | Cross-Sectional; Hypotheses Testing; Regression Analyses | Individual        | Nascent/ Infant Entrepreneur              | Business plan competitions                            | <ul style="list-style-type: none"> <li>• Sample definition and heterogeneity problem is not a concern</li> <li>• Performance measurement is not a concern</li> </ul>                                |
|  | <b>Study 2</b><br><b>Chapter C</b><br>How Configurations of Novelty, Team Structure, and the Decision-Making Style Influence Team Collaboration Quality                     | Teamwork Quality (dependent variable)               | RQ <sub>2</sub> : How does acknowledgment towards unexpected events within the founding team affect teamwork quality in the nascent business stage?<br>RQ <sub>2a</sub> : How does novelty to market influence the above-stated link?<br>RQ <sub>2b</sub> : How does functional team diversity affects the above-stated link? | Cross-Sectional; Hypotheses Testing; Regression Analyses | Team-Level        | Nascent/ Infant Teams (single-respondent) | Business plan competitions; start-up support programs | <ul style="list-style-type: none"> <li>• Sample definition and heterogeneity problem is not a concern</li> <li>• Performance measurement is not a concern</li> <li>• Team level analysis</li> </ul> |
|  | <b>Study 3</b><br><b>Chapter D</b><br>Ethos, Pathos, Logos in Crowdfunding - Exploring the Link between Rhetoric Persuasion in Crowdfunding Videos and Crowdfunding Success | Entrepreneurs' Communication (independent variable) | RQ <sub>3</sub> : How do rhetorical aspects of video material impact backers' judgements in crowdfunding campaigns?   | Cross-Sectional; Explorative Study; Regression Analyses  | Venture-Level     | Videos                                    | Technology crowdfunding campaigns on Indiegogo        | <ul style="list-style-type: none"> <li>• Sample definition and heterogeneity problem is not a concern</li> <li>• Performance measurement is not a concern</li> <li>• Sub-group analysis</li> </ul>  |

## Chapter B: Nascent Entrepreneurs' Means and Appraisal

### WHO IS LIKELY TO EXPLOIT A BUSINESS OPPORTUNITY? AN INTEGRATIVE APPROACH FROM AN APPRAISAL THEORY PERSPECTIVE

Co-authored by Uwe Gross, Dietmar Grichnik, and Jan Brinckmann<sup>6</sup>

#### Abstract

Business ideas appearing similar to outsiders could be appraised and exploited differently by nascent entrepreneurs. What individual factors are responsible for these different appraisals? Based on Lazarus's psychological appraisal theories we investigate the antecedents of entrepreneurial appraisal - a hybrid construct relevant for the emotion elicitation and opportunity exploitation - and argue that variances in entrepreneurial appraisal are induced by cognitive, motivational, and relational features of the nascent entrepreneur. We empirically demonstrate that each of these dimensions is relevant to predict entrepreneurial appraisal of nascent entrepreneurs and offer a new approach to study the cognition-emotion-action relationship. Specifically, we find four variables to be significant for the entrepreneurial appraisal, i.e., entrepreneurial experience, the independence motive (opportunity motives), as well as investor, and team interaction. With our findings we also refine prior research showing that necessity (push) and opportunity (pull) motives may not have opposing effects, but result in similar effects yet at different effect levels.

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<sup>6</sup>A former version of this paper has been presented at two conferences:

- FGF Forschungskolloquium, Koblenz 2013.
- Rencontres de St.-Gall., St.Gallen 2014.

A former version of this paper has been submitted, but rejected, at *Entrepreneurship Theory and Practice*. The recent version of this paper has been revised and rejected by *Small Business Economics*.

## 1. Introduction

The economically important question of who is likely to exploit an opportunity (e.g., Baron, 2004) or remain “stillborn”, has been asked frequently and studied from various theoretical perspectives. While most of the planned behavior and the identity theory studies focus on cognitive facets that form intentions, identities, or roles (e.g., Fauchart and Gruber, 2011; Farmer, Yao, and Kung-Mcintyre, 2011; Krueger Jr. et al., 2000; Van Gelderen et al., 2008), motivational and relational aspects have been analyzed separately (e.g., Baptista, Karaöz, and Mendonça, 2014; Block, Kohn, Miller, and Ullrich, 2015; Falck et al., 2012; Hessels, van Gelderen, and Thurik, 2008; Schjoedt and Shaver, 2007).

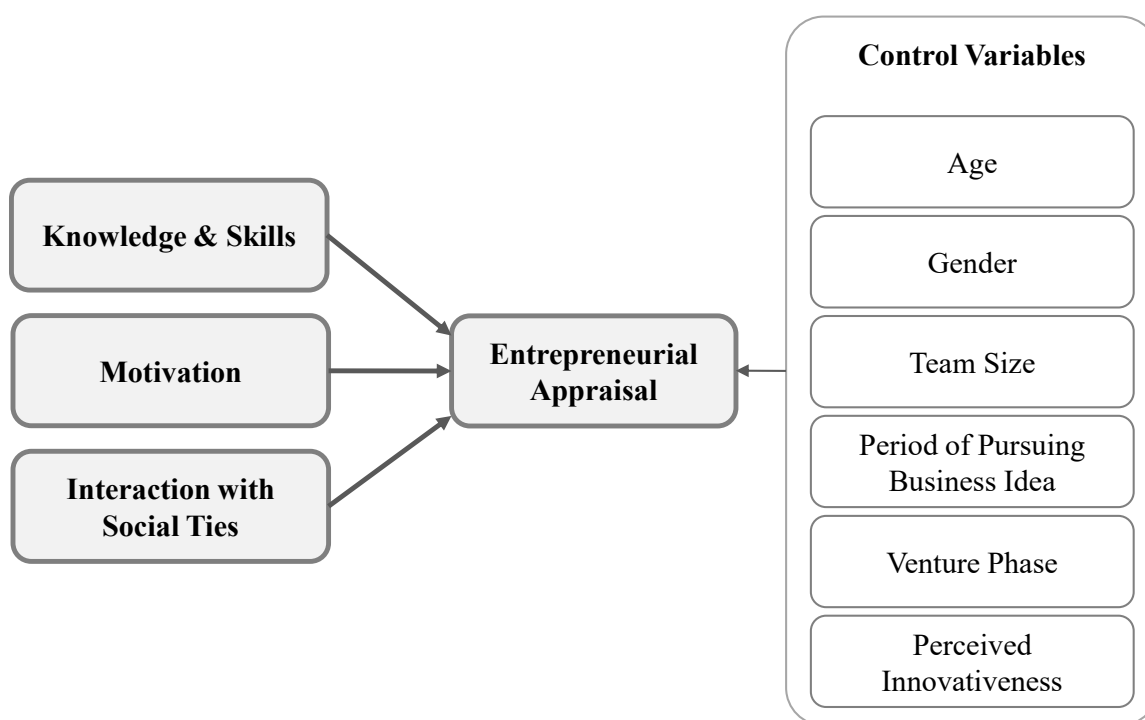
Consistent with our approach to draw on well-known psychological appraisal theories (Arnold, 1960; Lazarus and Folkman, 1984; Lazarus, 1991a; Lerner, 2000; Smith and Ellsworth, 1985; Smith and Lazarus, 1993), we simultaneously examine the effect of cognitive, motivational and relational aspects on the entrepreneurial appraisal—a construct that originally is assumed to link information processing and emotion elicitation (Lazarus, 1991b; Michl, Welp, Spörrle, and Picot, 2009). In this regard, we built on the findings of Welp et al. (2012), Michl et al. (2009), and Grichnik et al. (2010) who provide evidence that emotions, and accordingly the underlying appraisals, have a direct impact on the opportunity exploitation. Thereby, entrepreneurial appraisal measures the degree to which a person's life goals and life motivations are consistent with the personal well-being.

Overall, the existent theoretical perspectives focus each on different aspects, but an integral identity construct that combines these aspects is missing. Further, the concept of “meaning” has been neglected in recent intention studies, but plays a crucial role in understanding what an identity is and when it takes effect (cf. Murnieks, 2007). Since intentions, identities (e.g., Krueger Jr. et al., 2000; Lent, Brown, and Hackett, 1994; Souitaris, Zerbinati, and Al-Laham, 2007; Cardon, Wincent, Singh, and Drnovsek, 2009; Hoang and Gimeno, 2010) as well as appraisals (Grichnik et al., 2010; Michl et al., 2009; Welp et al., 2012) are thought to be significant predictors of career choice and behavior, we base on that assumption and

address the mentioned research gaps by deriving hypotheses about the *antecedents of entrepreneurial appraisal*.

Based on the specific hypothesis of Lazarus's appraisal theory and in line with Sarasvathy's (2001) entrepreneurial means, we propose that the entrepreneurs' experience (what I know), personal motives to found a company (who I am), and interaction with social ties and the team (whom I know) are among the main predictors of entrepreneurial appraisal (cf. De Carolis and Saporito, 2006; Shaver and Scott, 1991; Unger et al., 2011). The following figure describes the hypotheses model.

**Figure 1 The Hypothesized Model**



This study adds to earlier work in various aspects and makes the following contributions. First, we provide the first empirical examination of the antecedents of entrepreneurial appraisal. Thereby, we recognize that the planned behavior constructs ("perceived desirability", "subjective norms" and "perceived feasibility") appear to be similar in their role and function within the entrepreneurial process—in particular "desirability". Yet, desirability measures love, tension and enthusiasm towards starting a business (Krueger Jr., 1993). Thus, it is an affect induced by an appraisal (Lazarus and Folkman, 1984; Lazarus, 1991a; Smith and Lazarus, 1993).



Second, we draw on and extend the proposed pre-exploitation model of Welpel et al. (2012). In so doing, we are in line with the reasoning of Unger et al. (2011) and assume that nascent entrepreneurs' means per se do not have a direct influence on their performance or behavior, but on their way of interpreting the person-environment-relationship. In line with their reasoning, we provide evidence that prior contextual experience, motives and interaction quantity have an impact on entrepreneurial appraisal.

Third, we provide a new concretization of how the "meaning" of becoming an entrepreneur can be understood, i.e., as the relevance and accordance to one's personal life goals and life motivations. Thus, in contrast to most of the existent identity studies to date, entrepreneurial appraisal represents an entrepreneurial identity construct with two concrete dimensions.

Finally, we do not limit ourselves to the direct effects of the entrepreneurs' aggregated means but also explore single-item effects and inter-construct effects more in detail. We provide evidence that entrepreneurial appraisal is action relevant, which is in line with the findings of Welpel et al. (2012); we also specify their findings insofar as the appraisal-action relationship may be moderated by emotions.

The rest of the paper is organized as follows. Based on our review of the appraisal-emotion and the single entrepreneurial means literature, we derive and propose a theoretical hypotheses model for the antecedents of entrepreneurial appraisal assuming that appraisal creates emotions and emotions trigger actions. This section is followed by an empirical part explaining the research method, the results, and further statistical analyses underlying our model. The paper concludes with a discussion of the findings, practical contributions, limitations, and a conclusion.

## **2. Theoretical Background and Hypotheses**

Although the additional role of cognitions in entrepreneurial decision-making is unquestionable (Gustafsson, 2006; Mitchell, Busenitz, Bird, Marie Gaglio, McMullen, Morse, and Smith, 2007; Woo, Cooper, and Dunkelberg, 1991), we miss an important element in predicting the entrepreneurial decision to exploit an

opportunity and create a new venture. Several studies provide evidence for the impact of emotions on venture outcomes such as the number of new products introduced into the market (Baron and Tang, 2011), individual risk perceptions, the entrepreneurs' investment choices (Foo, 2011), and on the learning from failure as well as the commitment to further projects (Shepherd, Covin, and Kuratko, 2009a)—to mention only a few. Neuroscientists have explicitly associated emotions with decision-making and information processing (e.g., Cohen, 2005; Phelps, 2006). Welpe et al. (2012) provide evidence for the direct influence of emotions on the individual's opportunity exploitation tendency and their moderating effect on the association between opportunity evaluation and exploitation tendency. Consequently, relevant parts of entrepreneurial behavior and action prerequisite an understanding of how emotions are generated.

According to appraisal theories (AT) (Arnold, 1960; Lazarus and Folkman, 1984; Lazarus, 1991a; Lerner, 2000; Smith and Ellsworth, 1985; Smith and Lazarus, 1993), emotions are elicited by an event. The type of emotion that is evoked depends on how that event is appraised along different kinds of appraisal dimensions, such as the personal well-being (Lazarus, 1991b), controllability of the event (Smith and Ellsworth, 1985), moral event-evaluation (Siemer and Reisenzein, 2007), etc. An individuals' appraisal can globally be defined as an intuitive and evaluative internal process that can be both conscious (Lazarus and Folkman, 1984; Lazarus, 1991a; Smith and Lazarus, 1993) or unconscious (Arnold, 1960). With our survey-based approach, we focus on the conscious aspect of appraisal, as thought is relevant for the emotion elicitation process (Lazarus, 1982).

Another important assumption of Lazarus's AT is that two different types of appraisals exist, but only one is a necessary requirement for an emotional state (Michl et al., 2009). The emotion-eliciting primary appraisals are judgments concerning the meaning of an event or a situation, whereas secondary appraisals are the individual's additional assessments of their own coping resources and options for an appraised event or a situation (Kappas, 2006; Lazarus and Folkman, 1984). Also consistent with Lazarus's AT and Welpe et al.'s (2012) line of inquiry, the meaning of a situation is reflected by two criteria, i.e., the relevance for and accordance with personal life goals and motivations (cf. Michl et al., 2009). In other words, if “becoming an

entrepreneur” is completely irrelevant, the individual will not experience any emotions, and is unlikely to act towards opportunity exploitation.

The third basic AT assumption is that the elicitation of emotion through appraisals is cognitive, motivational, and relational. Cognitive because it includes the individual's knowledge; motivational, because motives are necessary to understand how relevant an encounter is; relational, because emotions are about person-environment relationships (Lazarus, 1991b).

We transfer the presented AT assumptions to individuals who have just started to engage seriously in activities that are intended to culminate in a business startup (Carter et al., 1996; Reynolds, 1994). Accordingly, their *entrepreneurial appraisal* can be defined as a personal assessment of how “becoming an entrepreneur” fits to the personal life goals and motivations. The greater the congruence level, the more likely it is that positive emotions will be elicited and the more likely it is that this person will physically act/ behave like an entrepreneur (Michl et al., 2009).

In the remainder of this section, we elaborate on these theoretical assumptions and refer to Sarasvathy's (2001) framework of entrepreneurs' means (Zanakis, 2012). Accordingly, a nascent entrepreneur bases her decision to act towards opportunity exploitation on what she knows, who she is, and whom she knows (Read and Sarasvathy, 2005).

## **2.1 What I Know: Nascent Entrepreneurs' Contextual Knowledge**

One aspect relevant to entrepreneurial appraisal is contextual knowledge, i.e., the beliefs about how things work in a specific situation (Lazarus, 1991b). Knowledge concerning the entrepreneurial process is gained through, among other means, prior start-up experience (Cope, 2005; Corbett, 2005). This knowledge reflects an additional information source to draw on, lowering general uncertainties and strengthening task-specific self-confidence (Bandura, 1994). Since entrepreneurial appraisal concerns the *relevance and accordance with personal life goals and motivations*, prior start-up experience per se suggests at least the existence of both dimensions, i.e., relevance and accordance. This is because entrepreneurial experience is purposive and terminable, i.e., the individual chose to become

entrepreneur and is also able to quit this experience (Morris, Kuratko, Schindehutte, and Spivack, 2012). Further, Hoang and Gimeno (2010) argue that past entrepreneurial experience leads to role familiarity. Thus, it facilitates a successful transition into the entrepreneurial role.

Second, the higher success rates of habitual entrepreneurs may be connected to their better ability to evaluate the saliency of particular events (Mitchell et al., 2007). A possible implication then is that more experienced entrepreneurs are more likely to properly interpret person-environment relationships and hence the impact and significance of a given situation (Morris et al., 2012).

Third, an event or a situation is typically felt to be relevant when the appraised person-environment relationship somehow touches the entrepreneur's personal well-being and causes stress (Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen, 1986b). According to Baron (2008), the tendency to get frustrated or feel stress is tempered by prior experience. Therefore, prior start-up experience can be expected to positively affect the assessment of the emerging person-environment relationship, i.e., the new venture creation. Further, prior experience has been found to be an antecedent for self-efficacy (Baron and Ensley, 2006), information processing (Cooper, Folta, and Woo, 1995), and metacognition in decision-making (Haynie, Shepherd, Mosakowski, and Earley, 2010).

In sum, prior start-up experience in terms of tacit and explicit knowledge concerning the entrepreneurial process (cf. Farmer et al., 2011) helps nascent entrepreneurs to better define the personal meaning of their nascent entrepreneurial stage, i.e., their entrepreneurial appraisal. This indicates that prior start-up experience results in a higher entrepreneurial appraisal. Thus, we hypothesize:

*Hypothesis 1a: More prior start-up experience is associated with a higher individual entrepreneurial appraisal.*

In addition to start-up experience in general, we reflect on another experiential aspect that is considered important in entrepreneurial decision-making (Cardon, Stevens, and Potter, 2011; Shepherd et al., 2009a; Ucbasaran, Westhead, Wright, and Flores, 2010). Critical setback experience reflects the specific knowledge about how

to handle proceedings that did not turn out as expected. Explicitly, we focus on critical setbacks within new venture creation that required change of plans, quick problem solutions, and a search for new alternatives.

One could assume that negative experience causes discouragement and restrains somebody from doing or trying something again; thus, it should lower entrepreneurial appraisal, because the biased entrepreneur tends to put her personal professional situation in a negative context. Prior work does not confirm this assumption, but shows that the effect is bifid. On the one hand, negative experience endows individuals with greater initial entrepreneurial capabilities (Baron, 2004; Cardon et al., 2011; Green, Welsh, and Gordon, 2003), which is an indication for a positive influence. On the other hand, it may lower entrepreneurial appraisal because the previous appraised negative event has triggered a negative emotional response that interferes with the ability to learn from loss and thus to process information concerning the personal meaning of an event or a situation more effectively (Shepherd, 2003).<sup>7</sup>

However, most studies examining negative experiences (e.g., Shepherd, Wiklund, and Haynie, 2009b; Ucbasaran, Shepherd, Lockett, and Lyon, 2013) focus on business failure, and therefore show a high degree of negativism. Also, the downside of negative experience is mostly tied with grief or other negative emotional states (Fisher, 2001; Hayward, Shepherd, and Griffin, 2006; Huy, 2002). As we study a lower level of negative experience, i.e., critical setbacks within typical new venture creation steps, the positive effects are assumed to be stronger. This assumption is in line with Yamakawa et al. (2013), who conclude that the literature on failure and learning seems to suggest an inverted U-shaped relationship between failure experience and venture performance.

Moreover, entrepreneurs who have not been confronted with unexpected critical events may have limited motivation to question their decisions (Ucbasaran et al., 2010) and are more exposed to the risk of confirmation bias (McGrath, 1999). This would imply that their assessment of the professional situation (being an entrepreneur) is distorted and their entrepreneurial appraisal tends to be lower,

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<sup>7</sup>Here, we implicitly assume that appraisal is a dynamic construct that creates emotions, but can also be changed by the emotions that are created (cf. Arnold, 1960)

because they have a more negative attitude towards failure (Politis and Gabrielsson, 2009), smaller psychological capital (composed of self-efficacy, optimism, hope, and resilience) (Luthans and Youssef, 2004), and less confidence that they will cope with future challenges (Jenkins, Wiklund, and Brundin, 2014).

In addition, the obstructive emotions, such as grief, caused by prior failure appraisals are intense but short-term feelings (e.g., Fredrickson, 2005; Shepherd, 2003). Thus, we assume that the direct positive effects of critical setbacks on entrepreneurial appraisal are more profound.

In sum, we assume that a nascent entrepreneur, who has been strongly challenged during the venture creation steps, will appraise the person-environment relationship in the nascent stage more positively than those with less critical setback experience. Accordingly, we summarize:

*Hypothesis 1b: More prior critical setback experience within the new venture creation is associated with a higher individual entrepreneurial appraisal.*

## **2.2 Who I Am: The role of Motivation**

Among the founders' attributes behind the question "who I am" in Sarasvathy's effectuation theory (Zanakis, 2012), one is particularly relevant for entrepreneurial appraisal, i.e., motivation (cf. Gabrielsson and Politis, 2011). According to Lazarus's AT, the individual's motives towards an event are necessary to determine what this event means to them. Specifically, we refer to the reasons for starting a business expressed by nascent entrepreneurs. Following Lazarus's AT, motives are dispositional and omnipresent in the form of goal hierarchies. The disposition to attain a goal is activated by the demands, constraints and resources of the action environment. Thus, nascent entrepreneurs' motives are activated when their perception of the nascent entrepreneurial situation is formed, which is why a direct effect of motives on entrepreneurial appraisal can be assumed (Lazarus, 1991a; Lazarus, 1991b).

The primary development in motivation literature in entrepreneurship (e.g., Buttner and Moore, 1997; Evans and Leighton, 1989; Ritsilä and Tervo, 2002) results in a two-category-differentiation of entrepreneurial motives, i.e., push motives, which constitute “necessity entrepreneurs”, and pull motives characterizing “opportunity entrepreneurs” (Reynolds, Camp, Bygrave, Autio, and Hay, 2002). On both micro and macro levels past research has shown significant differences between these two types of entrepreneurs (e.g., Block, Sandner, and Spiegel, 2013; Wennekers, van Stel, Thurik, and Reynolds, 2005; Wong, Ho, and Autio, 2005). Accordingly, we assume that the direction of this hypothesized effect of motives on entrepreneurial appraisal depends on the motive type (Carsrud, Brännback, Carsrud, Elfving, and Brandt, 2009; Ryan and Deci, 2000).

The reasons push-motivated entrepreneurs give for starting a business suggest an extrinsic motivation. Thus, in order to assign the new venture creation a relevant meaning in regards to personal life goals and motivations, an instrumentality between an activity and a consequence is required (Porter and Lawler, 1986; Vroom, 1964). Following Carsrud et al. (2009), this instrumentality is assumed to reflect the superordinate goal in the individual goal hierarchy, pushing entrepreneurship per se into a subordinate goal position (Elfving, 2008), which may be manifested in a lower entrepreneurial appraisal. Following this line of reasoning, we expect necessity or push-motivated entrepreneurs to condition their meaning of the situation of new venture creation according to whether it meets the external expectations or not (Gagné and Deci, 2005). These external expectations are usually set by the entrepreneur's closest ties, such as family members, but also by general societal norms and values. Indeed, “escaping unemployment”, “meeting family expectations” or “wanting to obtain more prestige” are among the most often mentioned personal motives for becoming an entrepreneur (Dawson, 2012; Shane, Kolvereid, and Westhead, 1991). In this regard, the appraisal of entrepreneurs who are motivated by such “social forces” should be lower than in cases where the meaning is drawn from the nascent entrepreneurial situation itself.

Moreover, literature linking motivation to risk provides an additional argument to suppose a negative influence of such “socially formed motives” on individual entrepreneurial appraisal. This literature investigates, among other things, how

attitude towards risk influences entrepreneurial intentions. In this vein, Segal et al. (2005) provide evidence that tolerance of the inherent risk of entrepreneurial activity positively influences entrepreneurial intentions. Since push-motivated entrepreneurs tend to be more risk averse than opportunity or pull-motivated entrepreneurs (Block et al., 2013), they might appraise their uncertain entrepreneurial situation as more irrelevant to and incongruent with their life goals and motivations. Given these considerations, we hypothesize:

*Hypothesis 2a: A higher level of socially formed motives (push motives) is associated with a lower individual entrepreneurial appraisal.*

Contrary to that, opportunity entrepreneurs are pull motivated and demonstrate an intrinsic motivation (Carsrud and Brännback, 2011). Analogously, their entrepreneurial appraisal is supposed to be higher, since they take contextual satisfaction—thus its meaning for personal well-being—from the situation of being nascent entrepreneur itself (Carsrud et al., 2009; Porter and Lawler, 1986; Vroom, 1964); their superordinate goals are entrepreneurial activities per se (Elfving, 2008). Furthermore, they are more tolerant of risk (Block et al., 2013).

Specifically, motives related to personal independence and the desire to innovate are among the most commonly mentioned reasons for starting a business (Cassar, 2007a). Both pull motives can be associated with a greater interest and involvement on the part of the nascent entrepreneur, but also with a higher level of experienced positive challenge (Amabile, 1996), which positively influences the internal process of bringing personal life goals and motivations in line with the ups and downs of the new venture creation.

Independence-related motives, such as “being autonomous” or “self-define work tasks” imply that the individual feels a need to decide freely about her everyday work without having a boss. Following Schein (1978) and N. R. Smith and Miner (1983), the motive to be independent also includes the desire to control and to be flexible in the use of one’s time. In contrast to activities as an employed person, entrepreneurship consists of exactly this way of proactive and independent working. Accordingly, a high congruence level between “being an entrepreneur” and personal life goals and motivations can be assumed.



*Hypothesis 2b: A higher level of independence motives (pull motives) is associated with a higher individual entrepreneurial appraisal.*

Furthermore, entrepreneurs, who focus on the innovation of their product or service are more likely to engage in non-compulsory activities (cf. Frey and Jegen, 2001); they do what they really want to do, i.e., develop new products or optimize an existing process, and do not condition the meaning of a situation on whether a separable goal will be reached or not. Moreover, this motive category is considered as “learning” (Shane et al., 1991) or as the “need for personal development” (e.g., Birley and Westhead, 1994). This learning status helps nascent entrepreneurs to be more creative and to better recognize alternative and new solution paths within the entrepreneurial process (Lumpkin and Lichtenstein, 2005), which can increase the likelihood that being an entrepreneur is part of one’s own life goals and motivations. Based on this chain of reasoning, the following hypothesis should apply:

*Hypothesis 2c: A higher level of innovation motives (pull motives) is associated with a higher individual entrepreneurial appraisal.*

## **2.3 Whom I Know: The Role of Interaction**

Individual appraisals are relational (Lazarus, 1991b), which means that the environment in which they are formed must be considered. A nascent entrepreneur’s environment consists to a high degree of people around her that are likely to influence her decision-making (Davidsson and Honig, 2003). Specifically, the interaction with these persons is thought to be an enabling force for rethinking opportunities, creating new ones, and acting towards exploitation; Venkataraman et al. (2012) call this the new action-interaction nexus in entrepreneurship. Interacting within an existing social environment leads to shared representations, interpretations, and systems of meaning among the involved parties (Nahapiet and Ghoshal, 1998), which is a first indication of a positive relationship of interaction quantity and entrepreneurial appraisal. Overall, nascent entrepreneurs need to interact with their social environment in order to decide if their actions are harmful or beneficial for the person-environment

relationship (cf. Grant, 1996; Nonaka, 1994). Thus, a direct effect of interaction and entrepreneurial appraisal is supposed to exist.

The network literature provides more extensive arguments for a positive direction of this relationship assumption. Accordingly, for the argumentation we will distinguish between strong ties, such as family and close friends, and weak ties, such as investors or research institutions (De Carolis and Saporito, 2006; Elfring and Hulsink, 2003; Stam and Elfring, 2008). First, considering also career literature, the interaction and identification with close ties develop and maintain vocational interests (Super, 1949). Further, family members and friends are marked by a high emotional involvement, trustworthiness, and continuity (Dubini and Aldrich, 1991) and are therefore likely to serve as role models for entrepreneurs (De Jong and Marsili, 2013). Interacting with them can help entrepreneurs to value their own “entrepreneurial identity” (Falck et al., 2012), e.g., the degree to which being nascent entrepreneur fits to what they consider to be a positive role. In addition, weak ties are assumed to provide more diverse and novel information to the new venture creation process (Granovetter, 1973), expanding the array of action alternatives in a manner that may well be positive for entrepreneurial appraisal it allows more alternative consequences of actions to be processed. Second, it is shown that social ties play a fundamental role when it comes to resource access (Adler and Kwon, 2002; Leiblein and Madsen, 2009; Liao and Welsch, 2003). Resource scarcity—which is typical of the nascent stage—may be considered a reason for stopping the entrepreneurial process when “fighting for resources” hardly figures among an individual’s life motivations. In that case, social interaction increases the congruence level of the resource acquisition activity and life motivations, resulting in a stronger entrepreneurial appraisal. In sum, we hypothesize:

*Hypothesis 3a: More interaction with social ties is associated with a higher individual entrepreneurial appraisal.*

Interaction, as a representation of the entrepreneur’s environment, also takes place within the entrepreneurial team. Team dynamics are considered to be relevant for entrepreneurial decision-making (West, 2007), task performance, and also for venture success (Lechler, 2001). Through team interaction, information is combined,

weighted, and integrated (Gibson, 1999). This is because it is collectively acquired, stored, manipulated and exchanged, which also means that the corresponding tasks, risks and daily challenges are shared (Shepherd and Krueger, 2002). Accordingly, the individual founder may well have occasion to project aspects that are incongruent with his life goals and motivations, such as risk, anger, or other negative emotional states, onto other team members, so increasing her own entrepreneurial appraisal.

Therefore, we assume:

*Hypothesis 3b: More team interaction is associated with a higher individual entrepreneurial appraisal.*

### **3. Data**

#### **3.1 Sample and Procedure**

To test our hypotheses, we conducted an online survey among the participants of four large business-planning competitions in Germany, in Berlin-Brandenburg, Munich, Cologne/Bonn/Dusseldorf, and Dortmund. As appraisal is measured on the individual level, we asked the key contact person of each founding team. To create trust and a higher likelihood of participation (Larson, 2005), the corresponding managers of each business plan competition asked their participants to fill in the questionnaire. To reduce common method bias, the introductory page of the online survey assured anonymity and that there would be no impact on the business plan (Podsakoff, MacKenzie, Podsakoff, and Lee, 2003). In total, 469 team leaders opened the survey link, whereof 140 completed the questionnaire to a usable extent.

The status of being a nascent entrepreneur was guaranteed through the competition process itself, since the respondents were involved in at least one gestation activity, namely working on the business plan (Davidsson and Honig, 2003). Further, the average number of initiated activities was 10 out of 18 survey activities. Thus, we assumed that all respondents in our sample have serious intentions to create a new venture. To constrain the other extreme, the case that the

respondents were not nascent anymore, we followed Davidsson and Honig's (2003) proposed criteria that ventures are considered to be started and no longer in a nascent stage if, in the past six months, the entrepreneurs have invested money in the business, registered with the authorities, and established a positive cash flow. For the latter aspect we used a dummy variable asking for the venture stage in regard to the customer activities. Thereby, we assumed that start-ups having established a fixed customer base are more likely to have generated a positive cash flow. However, none of the 140 new ventures fulfilled the three criteria. Hence, our sample is likely to include nascent or at least infant entrepreneurs only. Finally, a comparison of the variable means of the main constructs between early and late respondents shows no significant difference. Thus, our observations suggest that non-response bias is unlikely to be present in our sample.

On average, the entrepreneurs were 36 years old; 62% were male; 63.6% regarded themselves as innovative; the average team size was relatively low (two persons); they had been pursuing their business idea for 15.2 months; most had already developed a prototype or were in the development process; 66.4% had a university degree; and on average they had 12.4 years of general work experience. Accordingly, we statistically controlled for potential significant differences in these variables in later analyses.

## 3.2 Measures

### 3.2.1 Dependent and Independent Variables

*Entrepreneurial appraisal* is the dependent variable. According to Baierl et al. (2013), Michl et al. (2010), and Spörrle et al. (2009), who developed their measures based on the cognitive appraisal theory of Lazarus, we asked the participants to respond to six questions about their decision to become an entrepreneur, including both prior explained dimensions, motivational relevance and accordance (see Appendix). Each item was measured on a seven-point Likert scale ranging from 1 ("not at all") to 7 ("completely"). In order to avoid an item order bias, we randomized the item sequence. The individual score for each respondent was calculated by the mean value of all six items and represents the primary appraisal score concerning the

“to-become-entrepreneur” status. The resulting scale has a high internal consistency showing a Cronbach’s alpha of .94.

**Experience:** in line with many other studies in entrepreneurship (cf. Mayer-Haug, Read, Brinckmann, Dew, and Grichnik, 2013), we asked the key informant how many years he or she had previously worked as an entrepreneur (in self-employment) to measure *entrepreneurial experience*. As an alternative, we also asked the key contact person how many start-ups he or she had already founded. Further, we measured *critical setback experience* following Politis et al. (2009). We asked the participants to rate on a seven-point scale (1 = “very low” to 7 = “very high”) the extent to which they had experienced critical setbacks in various new venture creation steps (see Appendix). These steps are based on prior theoretical work on the traditional incidents that nascents face (Kaulio, 2003; Stinchcombe, 1965; Shepherd, Douglas, and Shanley, 2000). With a Cronbach’s alpha score of .82, this measure achieved sufficient internal validity (Nunnally, 1978). The mean value of these six items represents the individual extent of experienced critical setbacks in the early start-up phase.

**Motives:** in consideration of prior research work on the study of necessity (push) and opportunity (pull) entrepreneurs, we operationalized *entrepreneurial motives* by capturing the reasons for starting their own business (Block and Wagner, 2010; Dawson, 2012). Therefore, we first asked the entrepreneurs to rate 12 order-randomized items on a seven-point scale (1 = “not at all” to 7 = “completely”) with regard to the question of why they decided to become an entrepreneur (Cassar, 2007b). We selected the items reviewing and consolidating entrepreneurial motivation measures in prior studies (e.g., Birley and Westhead, 1994 ; Dawson, 2012; Shane et al., 1991). In so doing, we ensured that we took into consideration the most often mentioned reasons for starting a business. With reference to Carter et al. (2003), the motives can be organized into the five sub-categories “financial success”, “independence”, “recognition”, “innovation”, and “family tradition”. We considered the “unemployment” motive separately.

In a second step, we classified the motives in the two main categories, push and pull, based on existing work. For instance, reasons that can be drawn back to

personal or professional dissatisfaction, such as the “need for social recognition”, “more prestige” or “escaping from unemployment” (cf. Noorderhaven, Thurik, Wennekers, and Van Stel, 2004) are classified as necessity motives, and thus push factors, since these reasons reflect the inner duty of entrepreneurs to prevent negative outcomes and to concentrate on error avoidance (cf. Baron, 1998). Also, “meeting the family expectations” expresses per se that the entrepreneurs feel they have to do something (Brockner and Higgins, 2001). In contrast, all motives that reflect the willingness of entrepreneurs to do something on their own or reach a certain positive outcome are classified as pull factors. For instance, “wanting to be autonomous/independent” or “wanting to be innovative” are both reasons that express a promotion focus, an inner regulatory state consisting of a high willingness to accomplish something and a high sensitivity to the opportunity of advancing in goal attainment (Freitas, Liberman, and Higgins, 2002).

In a third step, we conducted a principal component analysis to figure out the factors and operationalize the motives. We rearranged the sub-categories by excluding items with low or theoretically inconsistent factor loadings (marked \*). Finally, we included the three clear factors in our further analyses, one representing the push motives, two for the pull motives. The motivation score of each respondent was calculated by summing up all items for each factor. Factor 1 represents Motives by Social Forces (push), factor 2 represents Independence (pull), and factor 3 Innovation (pull). The detailed set of items used for capturing entrepreneurial motives is presented in the Appendix.

**Table 1 Factor Analysis—Measurement of Motives**

|  | Factors                            |                               |                                 |
|--|------------------------------------|-------------------------------|---------------------------------|
|  | 1                                  | 2                             | 3                               |
|  | <i>Socially Formed<br/>Motives</i> | <i>Innovation<br/>Motives</i> | <i>Independence<br/>Motives</i> |
| ... escaping unemployment                  | <b>.652</b>                        | -.142                         | .190                            |
| ... meeting family expectations            | <b>.810</b>                        | .069                          | .045                            |
| ... obtaining prestige                     | <b>.706</b>                        | .280                          | .054                            |
| ... being autonomous                       | .081                               | .033                          | <b>.887</b>                     |
| ... creating my own job                    | .161                               | .152                          | <b>.858</b>                     |
| ... developing new products/ services      | .055                               | <b>.859</b>                   | .125                            |
| ... developing new manufacturing processes | .064                               | <b>.855</b>                   | .047                            |

Loadings greater 0.65 were considered significant.

**Interaction:** we captured social ties interaction quantity by asking the entrepreneurs to state on a seven-point scale (1 = “very little interaction” to 7 = “a lot of interaction”) how much they interacted with various groups of people. We selected actors known as typical contact persons for nascent entrepreneurs (in line with Liao and Welsch, 2005; Mosey and Wright, 2007). Thereby, we covered the strong ties with “family” and “close friends” as well as the weak ties with “academic institutions” and “investors” (e.g., venture capitalists). For each group of people we calculated the average score representing the interaction variable. To capture team interaction, we asked the respondents in the same way to assess the interaction quantity with the team members.

### 3.2.2 Control Variables

**Innovativeness:** we control for the degree of innovation of the emergent organization on a scale ranging from 1 = “it is a copycat” to 2 = “it is innovative” to 3 = “it is a radical innovation”. We do so because the degree of innovation may influence the entrepreneurial mind (Zahra and George, 2002; Zhao and Parry, 2012).

**Age and gender of the entrepreneur:** because an individual’s age and gender may also influence entrepreneurial attitude (Aldrich and Ruef, 2006; Lévesque and

Minniti, 2006), we control for both. Further, we capture the professional experience of the entrepreneur based on their number of years of prior employment; thus it is necessary to control for age, even on a methodological level (Davidsson and Honig, 2003).

**Team size:** because of the potential influence of team dynamics on an individual's well-being, we integrate the number of founders in our regression to investigate whether the founding team size influences individual entrepreneurial appraisal.

**Period and product development phase:** to take into account additional start-up experience acquired during the new venture creation, we control for the length of time spent pursuing the business idea and for the stage of product development. First, we asked the individuals to provide the number of months they had been pursuing the business idea. Then, we asked them to indicate the stage of the emergent organization's product development based on a scale from research by Delmar and Shane (2003).

**Education and general work experience:** we control for a potential influence of generic human capital. Therefore, we took education as reported formal educational attainment in terms of the recent graduation level achieved in the German education system. Moreover, we included general work experience in years (Farmer et al., 2011).

## 4. Analyses

To test the relationship between the presented variables and the entrepreneurial appraisal, we used linear regression analysis. In a first step, we calculated a linear regression for each variable block to examine the independent effects (Model 1-5). Then, in a second analysis we entered the variable blocks stepwise to show the change and the overall effect size (Model 6-9). We found two control variables that are likely to cause multi-collinearity distorting our results, the age of the entrepreneur and his or her general work experience. To ensure that the two collinear control variables do not influence our main effects, we run two further regressions, one



excluding general work experience, and one excluding age. The results remain identical only in the first case, which is why we excluded general work experience from our analyses. Model 9 represents our main model. Table 2 presents the descriptive statistics of our variable set concerning their mean, standard deviation, and the respective Pearson's correlation coefficients; Tables 3 and 4 depict our regression results, including, collinearity statistics, one robustness check (Model 10) and one post-hoc analysis (Model 11).

**Table 2 Descriptive Statistics and Correlations**

|   | Mean | SD    | 1       | 2      | 3        | 4       | 5       | 6      | 7      | 8     | 9      | 10      | 11      | 12     | 13    | 14      | 15      | 16      | 17     |
|---|------|-------|---------|--------|----------|---------|---------|--------|--------|-------|--------|---------|---------|--------|-------|---------|---------|---------|--------|
| <i>Appraisal</i>                            | 5.4  | 1.40  | 1.00    |        |          |         |         |        |        |       |        |         |         |        |       |         |         |         |        |
| <b>Controls</b>                             |      |       |         |        |          |         |         |        |        |       |        |         |         |        |       |         |         |         |        |
| <i>Innovativeness</i>                       | 2.0  | 0.56  | -0.06   | 1.00   |          |         |         |        |        |       |        |         |         |        |       |         |         |         |        |
| <i>Gender</i>                               | 1.4  | 0.49  | -0.06   | -.223* | 1.00     |         |         |        |        |       |        |         |         |        |       |         |         |         |        |
| <i>Age</i>                                  | 36.5 | 10.32 | 0.00    | .200*  | -0.03    | 1.00    |         |        |        |       |        |         |         |        |       |         |         |         |        |
| <i>Team Size</i>                            | 2.0  | 1.13  | 0.01    | .193*  | -0.197*  | -0.05   | 1.00    |        |        |       |        |         |         |        |       |         |         |         |        |
| <i>Period of Pursuing BI<sup>Note</sup></i> | 15.2 | 20.42 | 0.180*  | 0.09   | -0.03    | 0.239** | -0.16   | 1.00   |        |       |        |         |         |        |       |         |         |         |        |
| <i>Product Development Phase</i>            | 3.5  | 1.18  | 0.204*  | -0.04  | 0.05     | 0.06    | 0.05    | 0.202* | 1.00   |       |        |         |         |        |       |         |         |         |        |
| <i>Education</i>                            | 4.6  | 0.94  | -0.04   | 0.03   | 0.01     | 0.209*  | 0.16    | -0.10  | -0.12  | 1.00  |        |         |         |        |       |         |         |         |        |
| <b>Experience</b>                           |      |       |         |        |          |         |         |        |        |       |        |         |         |        |       |         |         |         |        |
| <i>Entrepreneurial Experience</i>           | 3.4  | 5.94  | 0.218*  | .215*  | -0.05    | 0.529** | 0.09    | 0.14   | 0.09   | -0.06 | 1.00   |         |         |        |       |         |         |         |        |
| <i>Critical Setback Experience</i>          | 3.9  | 1.38  | 0.188*  | 0.03   | -0.223*  | -0.04   | 0.176*  | -0.09  | -0.11  | 0.03  | -0.06  | 1.00    |         |        |       |         |         |         |        |
| <b>Motives</b>                              |      |       |         |        |          |         |         |        |        |       |        |         |         |        |       |         |         |         |        |
| <i>Socially Formed Motives</i>              | 7.8  | 4.06  | 0.236** | -0.01  | 0.00     | 0.08    | 0.08    | -0.10  | -0.13  | -0.03 | 0.04   | 0.258** | 1.00    |        |       |         |         |         |        |
| <i>Independence Motives</i>                 | 11.9 | 2.48  | 0.569** | -0.07  | 0.04     | 0.16    | 0.00    | 0.05   | 0.06   | 0.07  | 0.09   | 0.175*  | 0.269** | 1.00   |       |         |         |         |        |
| <i>Innovation Motives</i>                   | 10.8 | 3.30  | .0247** | .359** | -0.210*  | 0.11    | 0.194*  | 0.213* | 0.08   | -0.02 | 0.200* | 0.08    | 0.17    | 0.189* | 1.00  |         |         |         |        |
| <b>Interaction</b>                          |      |       |         |        |          |         |         |        |        |       |        |         |         |        |       |         |         |         |        |
| <i>Interaction w/ Family</i>                | 3.9  | 2.12  | 0.13    | -0.05  | 0.04     | 0.08    | -0.05   | 0.05   | 0.207* | -0.17 | 0.08   | -0.10   | 0.00    | 0.03   | 0.09  | 1.00    |         |         |        |
| <i>Interaction w/ Friends</i>               | 5.2  | 1.75  | 0.05    | -0.13  | 0.12     | -0.09   | -0.03   | 0.02   | 0.11   | -0.07 | -0.13  | 0.00    | -0.08   | 0.00   | -0.07 | 0.426** | 1.00    |         |        |
| <i>Interaction w/ RI<sup>Note</sup></i>     | 3.7  | 2.33  | 0.04    | 0.14   | -0.01    | -0.10   | 0.310** | 0.13   | 0.01   | 0.09  | -0.04  | -0.02   | -0.05   | -0.04  | 0.18  | 0.05    | 0.233** | 1.00    |        |
| <i>Interaction w/ Investors</i>             | 3.0  | 2.11  | 0.17    | 0.05   | -0.277** | 0.15    | 0.260** | -0.04  | 0.11   | 0.13  | 0.17   | -0.03   | -0.05   | 0.01   | 0.02  | 0.191*  | 0.16    | .330**  | 1.00   |
| <i>Interaction w/ the Team Members</i>      | 5.8  | 2.14  | 0.13    | 0.16   | -0.294** | -0.12   | 0.405** | -0.11  | -0.08  | 0.08  | -0.05  | 0.09    | -0.11   | -0.06  | 0.16  | 0.01    | 0.265** | 0.315** | 0.220* |

\*\*p &lt; .01; \*p &lt; .05 (2-tailed); Note: "BI" stands for Business Idea, "RI" for Research Institutes

## 4.1 Results

Our regression analyses result in the following observations. In the experience variable block, only entrepreneurial experience (Model 9:  $b = 0.29$ ;  $p = .004$ ) shows a significant and positive impact on the nascent's entrepreneurial appraisal in the main model (H1a). The entrepreneurial experience-appraisal-relationship is relatively strong and stable across all models, compared to the other human capital variables, i.e., education, and critical setback experience (Becker, 1975). We also considered a related measure, managerial experience (years in a management position as employee) (Stuart and Abetti, 1990), but found no impact on entrepreneurial appraisal (not displayed in Tables). However, managerial experience is also highly correlated (correlation coefficient = .531, significant at 1% confidence level) with entrepreneurial experience and therefore does not reflect an independent effect ( $VIF > 2.0$ ). Setback experience (Model 9:  $b = 0.13$ ;  $p = .123$ ) is not significant in the main model (H1b). Contrary to entrepreneurial experience, the impact of critical setback decreases in the stepwise regression analysis from  $b = 0.24$  ( $p = .021$ ) to  $b = 0.13$  ( $p = .123$ ), but it is also noteworthy that its impact is significant at a 5% confidence level in Model 2 ( $b = 0.20$ ;  $p = .021$ ), when the experience variable block is regressed alone. Further, the correlation matrix shows a significant positive correlation between motives by social forces and setback experience (Pearson correlation = 0.26; 1% confidence level), but also between independence motives and setback experience (Pearson correlation = .175; 5% confidence level). To obtain an independent effect, we excluded the motive variables from our main model and find a higher significant and positive impact ( $b = 0.28$ ;  $p = .008$ ) of setback experience, compared to Model 9. In other words, entrepreneurs' setback experience has no (weak) impact on the entrepreneurial appraisal, if it is observed in combination with the entrepreneurs' motives. At the same time entrepreneurs driven by social forces and by independence motives are likely to experience more critical setbacks.

Contrary to our expectations, the motives by social forces (push motives) reveal a positive and quasi-significant impact (H2a) in the main model (Model 9:  $b = 0.15$ ;  $p = .075$ ), while they are non-significant in Models 3, 7, and 8. We found a high correlation between the independence motives and these push motives (Pearson correlation = .27; 1% confidence level), which might influence our results. Because

of this, we checked the effects of the motive types including the two variables single-wise and found a positive significant relation for both. Also, the VIF-values suggest no distortions in our main model due to multi-collinearity. Next, we find significant and highly positive confirmation of the beneficial influence of the motive category independence (Model 9:  $b = 0.50$ ;  $p < .001$ ; Model 3:  $b = 0.54$ ;  $p < .001$ ) on entrepreneurial appraisal (H2b). It is particularly remarkable that the addition of the motivation variables increased the adjusted explained variance from 10.7% to 40.8%. Finally, we find a non-significant effect of the innovation motives on entrepreneurial appraisal (H2c).

In H3a and H3b we proposed that more interaction with social ties enhances the entrepreneurial appraisal. However, we do not find an overall significant relationship between the tie interaction and the entrepreneurial appraisal. While team interaction (Model 9:  $b = 0.26$ ;  $p = .007$ ) and the interaction with investors (Model 9:  $b = 0.19$ ;  $p = .046$ ) provide support for our hypotheses in the stepwise regression analysis, the interaction with family, close friends, and academic institutions do not—neither single-wise nor in the stepwise analysis. Next, we considered the correlation effects in Table 2: interaction with the entrepreneurial team is positively correlated with interaction with friends (Pearson correlation = .27; 1% confidence level), with academic institutions (Pearson correlation = .32; 1% confidence level), and with investors (Pearson correlation = .22; 1% confidence level). As correlations do not necessarily show direct causal relationship, this can either mean that the team interaction per se leads to more interaction with investors and academic institutions or that team members are investors or representatives of academic institutions in our sample (the VIF-values of these variables are low, thus we can exclude distortions in our main model due to multi-collinearity). Overall, the added adjusted variance achieved by the inclusion of all interaction variables is considerable, but not substantial for entrepreneurial appraisal (from 40.8% in Model 7 to 46.3% in Model 9).

**Table 3 Regression Analysis I—Single-wise Inclusion of the Variable Blocks**

|   | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|---|---------|---------|---------|---------|---------|
| <i>Innovativeness</i>                                   | -0.08   |         |         |         |         |
| <i>Gender</i>   | -0.08   |         |         |         |         |
| <i>Age</i>  | -0.03   |         |         |         |         |
| <i>Team Size</i>  | 0.02    |         |         |         |         |
| <i>Period of Pursuing Business Idea</i>                 | 0.16†   |         |         |         |         |
| <i>Product Development Phase</i>                        | 0.17†   |         |         |         |         |
| <i>Education</i>  | 0.0002  |         |         |         |         |
| <i>General Work Experience (Excluded from analysis)</i> |         |         |         |         |         |
| <b><i>Experience</i></b>                                |         |         |         |         |         |
| <i>Entrepreneurial Experience</i>                       |         | 0.23**  |         |         |         |
| <i>Critical Setback Experience</i>                      |         | 0.20*   |         |         |         |
| <b><i>Motives</i></b>                                   |         |         |         |         |         |
| <i>Socially Formed Motives</i>                          |         |         | 0.07    |         |         |
| <i>Independence Motives</i>                             |         |         | 0.52*** |         |         |
| <i>Innovation Motives</i>                               |         |         | 0.14†   |         |         |
| <b><i>Interaction with Social Ties</i></b>              |         |         |         |         |         |
| <i>Interaction with Family</i>                          |         |         |         | 0.12    |         |
| <i>Interaction with Close Friends</i>                   |         |         |         | -0.03   |         |
| <i>Interaction with Research Institutes</i>             |         |         |         | -0.01   |         |
| <i>Interaction with Investors</i>                       |         |         |         | 0.16    |         |
| <b><i>Interaction with the Team Members</i></b>         |         |         |         |         | 0.13    |
| R square  | 0.074   | 0.088   | 0.349   | 0.041   | 0.018   |
| Adjusted R square                                       | 0.021   | 0.073   | 0.334   | 0.006   | 0.008   |

\*\*\*p &lt; .001; \*\*p &lt; .01; \*p &lt; .05; †p &lt; 0.10 (2-tailed)

**Table 4 Regression Analysis II—Stepwise Inclusion of the Variable Blocks**

|   | Model 6 | Model 7 | Model 8 | Model 9 | Multi-Coll. Test<br>Tol. VIF |      | Model 10<br>Over-Specification Test | Model 11<br>Heckman Treated | Model 12<br>Action Relevance |
|---|---------|---------|---------|---------|------------------------------|------|-------------------------------------|-----------------------------|------------------------------|
| <i>Innovativeness</i>                         | -0.10   | -0.06   | -0.05   | -0.06   | 0.75                         | 1.32 |                                     | -0.05                       | -0.05                        |
| <i>Gender</i>                                 | -0.04   | -0.07   | -0.01   | 0.05    | 0.70                         | 1.42 |                                     | 0.11                        | 0.07                         |
| <i>Age</i>                                    | -0.22†  | -0.30** | -0.33** | -0.32** | 0.56                         | 1.78 | -0.26**                             | -0.35**                     | -0.31**                      |
| <i>Team Size</i>                              | -0.05   | -0.07   | -0.10   | -0.18†  | 0.65                         | 1.53 | -0.13                               | -0.20†                      | -0.19†                       |
| <i>Period of Pursuing Business Idea</i>       | 0.17†   | 0.15†   | 0.17    | 0.19*   | 0.76                         | 1.32 | 0.17†                               | 0.21*                       | 0.20*                        |
| <i>Product Development Phase</i>              | 0.19†   | 0.16†   | 0.13    | 0.16†   | 0.84                         | 1.19 | 0.13†                               | 0.14                        | 0.18*                        |
| <i>Education</i>                              | 0.07    | 0.05    | 0.05    | 0.04    | 0.79                         | 1.26 |                                     | 0.02                        | 0.05                         |
| <i>General Work Experience<sup>EX</sup></i>   |         |         |         |         |                              |      |                                     |                             |                              |
| <b>Experience</b>                             |         |         |         |         |                              |      |                                     |                             |                              |
| <i>Entrepreneurial Experience</i>             | 0.33**  | 0.30**  | 0.28**  | 0.28**  | 0.63                         | 1.58 | 0.28**                              | 0.26*                       | 0.30**                       |
| <i>Critical Setback Experience</i>            | 0.24*   | 0.10    | 0.12    | 0.13    | 0.82                         | 1.22 |                                     | 0.15                        | 0.12                         |
| <b>Motives</b>                                |         |         |         |         |                              |      |                                     |                             |                              |
| <i>Socially Formed Motives</i>                |         | 0.11    | 0.12    | 0.15†   | 0.80                         | 1.25 |                                     | 0.15                        |                              |
| <i>Independence Motives</i>                   |         | 0.51*** | 0.50*** | 0.50*** | 0.84                         | 1.19 | 0.59***                             | 0.50***                     |                              |
| <i>Innovation Motives</i>                     |         | 0.07    | 0.08    | 0.06    | 0.69                         | 1.45 |                                     | 0.09                        |                              |
| <b>Interaction with Social Ties</b>           |         |         |         |         |                              |      |                                     |                             |                              |
| <i>Interaction with Family</i>                |         |         | 0.06    | 0.09    | 0.71                         | 1.41 |                                     | 0.05                        | 0.10                         |
| <i>Interaction with Close Friends</i>         |         |         | -0.01   | -0.09   | 0.64                         | 1.57 |                                     | -0.10                       | -0.10                        |
| <i>Interaction with Research Institutes</i>   |         |         | -0.01   | -0.05   | 0.67                         | 1.50 |                                     | -0.10                       | -0.04                        |
| <i>Interaction with Investors</i>             |         |         | 0.19*   | 0.19*   | 0.67                         | 1.49 | 0.15†                               | 0.38†                       | 0.18*                        |
| <b>Interaction with the Team Members</b>      |         |         |         | 0.26**  | 0.62                         | 1.60 | 0.20*                               | 0.24†                       | 0.28**                       |
| <b>Motives (single items)</b>                 |         |         |         |         |                              |      |                                     |                             |                              |
| <i>Overcome Unemployment</i>                  |         |         |         |         |                              |      |                                     |                             | 0.07                         |
| <i>Obtaining Prestige</i>                     |         |         |         |         |                              |      |                                     |                             | 0.16†                        |
| <i>Meet Requirements of Family Tradition</i>  |         |         |         |         |                              |      |                                     |                             | 0.003                        |
| <i>Be autonomous</i>                          |         |         |         |         |                              |      |                                     |                             | 0.38***                      |
| <i>Creating one's Own Job Tasks</i>           |         |         |         |         |                              |      |                                     |                             | 0.18†                        |
| <i>Developing New Products/ Services</i>      |         |         |         |         |                              |      |                                     |                             | -0.01                        |
| <i>Developing New Manufacturing Processes</i> |         |         |         |         |                              |      |                                     |                             | 0.05                         |
| <b>Inverse Mill's Ratios (IMR)</b>            |         |         |         |         |                              |      |                                     |                             |                              |
| <i>IMR Investor Interaction</i>               |         |         |         |         |                              |      |                                     | -0.19                       |                              |
| <i>IMR Team Interaction</i>                   |         |         |         |         |                              |      |                                     | 0.03                        |                              |
| R square                                      | 0.191   | 0.483   | 0.516   | 0.559   |                              |      | 0.502                               |                             | 0.573                        |
| Adjusted R square                             | 0.107   | 0.408   | 0.419   | 0.463   |                              |      | 0.456                               |                             | 0.452                        |

\*\*\*p &lt; .001; \*\*p &lt; .01; \*p &lt; .05; †p &lt; .10 (2-tailed); EX=Excluded from analysis

In summary, the comparison of the standardized beta coefficients of the significant antecedents of entrepreneurial appraisal shows that the pull motive category independence has the strongest influence, followed by entrepreneurial experience. Accordingly, we find full support for H1a, H2b, and H3b; we find partial support for H1b, H3a; based on our findings, we have to reject H2a and H3c. Compared to our basic control model (Model 1), the adjusted explained variance increases from 2.1% to 46.3%.

In addition, two control variables significantly influence our dependent variable. The age of the entrepreneur (Model 9:  $b = -0.32$ ;  $p = .002$ ) negatively influences entrepreneurial appraisal. Thus, the older the nascent entrepreneur, the more she is likely to assess a new opportunity with a negative value. Next, the period spent pursuing the business idea (Model 9:  $b = 0.20$ ;  $p = .027$ ) positively influences the entrepreneurial appraisal.

Finally, the result concerning the team size is somehow ambiguous, especially with regard to the correlation between team interaction and team size (Table 2). Following our belief that team interaction positively influences entrepreneurial appraisal (H3b), a greater team size generally gives opportunity for more and different interaction and hence should positively influence entrepreneurial appraisal. Our regression results show the exact opposite. Team size (Model 9:  $b = -0.18$ ;  $p = .056$ ) negatively influences entrepreneurial appraisal, indicating that a larger founding team leads to a lower level of entrepreneurial appraisal.

## 4.2 Robustness Checks

**Verifying over-specification:** in analyses of small samples, model over-specification may be a methodological concern when a substantial number of variables is employed. Therefore, to test the robustness of our final model, we removed all non-significant variables and regressed all variables that show significance at a 10% level again (Model 10). We found that our results remained robust. Specifically, the adjusted R square value (0.46) remained high, while the R square value naturally decreased (0.50). In view of this, we assume that over-specification does not distort our findings.

**Controlling for an endogeneity bias:** it is conceivable that the effect of interaction on entrepreneurial appraisal has been overestimated because the entrepreneurs could have selected their interaction partners strategically. In order to show that the significant interaction with investors and the team has an effect on entrepreneurial appraisal, which is independent of the entrepreneurs' potential strategic approach, we apply the commonly used statistical procedure, the Heckman selection model, to remove a potential endogeneity bias (Heckman, 1979; Leiblein, Reuer, and Dalsace, 2002; Shaver, 1998). Hamilton and Nickerson (2003) provide the mathematical derivation for this endogeneity modeling.

In the first step of the Heckman procedure, the potentially overestimated selection process is studied using a selection model for each endogenous selection variable, thus for investor and team interaction. For this purpose, two probit models are estimated, wherein investor and team interaction are the dichotomous dependent variables.<sup>8</sup> In the selection equations we included all variables from the main model except the corresponding endogenous variables and calculated the residuals. These residuals from the selection equations are used to construct the endogeneity variables for our main model. In the second step, we included these endogeneity variables, which are equivalent to the Inverse Mill's Ratios, single-wise as well as together in our main model, and found a non-significant effect on entrepreneurial appraisal in both cases and for both the investor and the team interaction endogeneity variable (Heckman, 1979). Hence, our results are robust against a potential endogeneity of investor and team interaction.

### 4.3 Post-Hoc-Analyses

We performed two post-hoc analyses to detail and complement our main findings.

**Splitting motivation:** as the motives explain most of the model variance, we mean to offer a detailed analysis of the link between the entrepreneur's motives and her entrepreneurial appraisal. For this, we ran the same linear regression as in our main model, but replaced the aggregated motive sub-categories with the single items

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<sup>8</sup>The original variables are continuous, so we had to recode them in binary form: "1" if the value was above the average and "0" if it was below.



from our factor analysis. We found the motive of being autonomous to be the most important ( $b = 0.50$ ;  $p < .000$ ). Furthermore, the desire to self-define tasks and obtain prestige became significant at a 10 % confidence level.

***Appraisal's action relevance:*** as our study builds on the finding that appraisal is action-relevant through emotions (Welppe et al., 2012), with this additional analysis, we intend to stress and specify the link between entrepreneurial appraisal and the entrepreneur's action (opportunity exploitation). Therefore, we run another linear regression analyzing the impact of entrepreneurial appraisal on the status of various gestation activities. In line with Carter (1996) and Delmar and Shane (2002), we presented the respondents with a list of gestation activities. We asked them to give the current status of each activity (0 = not relevant, 1 = not yet initiated, but planned, 2 = initiated, 3 = completed). We found a significant positive direct impact of appraisal on the status of the following activities: "building a founding team", "asking for funding", "saving money to invest", "estimating financial forecasts", "searching for information about possible competitors and customers", "applying for licenses/patents", "marketing and promotion efforts", "establishing contact with suppliers", and "gathering information about financing options".

## 5. Discussion

The purpose of this study was to find evidence on the validity of Lazarus's AT in the specific context of nascent entrepreneurship, offering an explanation of why "becoming an entrepreneur" respectively "exploit a business opportunity" can be appraised different across nascent entrepreneurs. According to Lazarus's AT and in line with prior studies (David & Suls, 1999; Johnson et al., 2010; Krause, 2004; Martin et al., 2005; Rowley et al., 2005), we find that cognitive, motivational, and relational features of the nascent entrepreneur are relevant for a higher general entrepreneurial appraisal, which reflects how accordant "being a founder" is with personal well-being, i.e., life goals and motivations.

We find four variables to be significant for entrepreneurial appraisal, i.e., entrepreneurial experience, the independence motive, and investor and team interaction. Consequently, entrepreneurial appraisal should be higher and create

positive emotions when the nascent entrepreneur has prior start-up experience, when she pursues the goal of creating a new venture because she wants to be independent, and finally when she interacts with investors and the team members to a high degree.

Entrepreneurial experience as a specific human capital aspect is a significant and stable antecedent for entrepreneurial appraisal, while the general human capital aspect, education, for which we controlled, is not. This is ambiguous, as education is argued to generally improve learning and problem-solving abilities (Honig, 2001). Anyway, our results are in line with prior entrepreneurship literature emphasizing that higher education can also be limitative in the uncertain venture creation context, as academic learning promotes a single optimal answer for a pre-defined problem, in contrast to learning on the job (Honig, 2004; Mintzberg and Gosling, 2002; Wiltbank, Dew, Sarasvathy, and Read, 2006).

Moreover, our study details and confirms prior research showing that necessity (push) and opportunity (pull) motives have a different impact level (Block et al., 2013; Williams, 2007), but also opens a different view in suggesting that these entrepreneurs are substantially similar in their entrepreneurial appraisal. One explanation for this could be the possible internalization of external motivation (cf. Gagné and Deci, 2005). According to Ryan et al. (1985), people are able to take in values, attitudes, or regulatory structures and transform external regulation of a behavior into an internal one. This implies that the presence of an external contingency is no longer required. Furthermore, one of the most frequently mentioned pull factors for starting a business (Carter et al., 2003; Van Gelderen and Jansen, 2006), i.e., autonomy, is revealed to have the strongest and most significant positive impact on entrepreneurial appraisal. Van Gelderen and Jansen (2006) explained this special construct for the first time, emphasizing the different autonomy motive types. They differ between proximal motives associated with the task characteristics of being self-employed (e.g., “creating one’s own job tasks”) and distal motives for which autonomy is instrumental (e.g., “being autonomous”). They argue that the question of whether autonomy is indeed realized will be crucial in understanding an individual’s satisfaction with self-employment. Our study considers both dimensions of autonomy motives, underlines and complements their assumption, since we find that “being autonomous” is the strongest antecedent of entrepreneurial

appraisal. In addition to that, our findings are in line with the self-determination theory of Ryan et al. (1985), who assume that autonomy is one of the three innate needs of humans. Opportunities that satisfy this need, such as creating a new venture, are important for the individual to be self-determined rather than controlled. By implication, autonomy-motivated founders are likely to have a high entrepreneurial appraisal.

Finally, our study provides support for the assumption that interaction with professional connections strengthens entrepreneurial appraisal. Specifically, that interaction with investors and team members has a positive effect, while interacting with family, friends and academic institutions cannot be shown to be appraisal relevant. This could be because strong ties are more likely to offer psychological support, while investors and team members provide the entrepreneur with content-related feedback (cf. Hills, Lumpkin, and Singh, 1997) that can more easily be processed within the estimation of possible action consequences. Our results concerning the interaction with research institutes is in line with the findings of Walter et al. (2013). This could result from the fact that interaction with research institutes most often happens via events or support programs; thus, not on an individual-to-individual level. Other—more personal—interaction possibilities neutralize this effect, as the nascent entrepreneur may put more importance on individual-to-individual interaction. Despite this, our robustness check reveals that the effect of investor interaction remains robust, while the team interaction effect loses significance. Considering also the significant negative team size effect, the decreasing importance of team interaction is rather related to the fact that team interaction is open, and thus unlimited, whereas investor interaction is naturally limited as it cannot take place constantly. Accordant with conflict research (e.g., Ensley, Pearson, and Amason, 2002; Ucbasaran, Lockett, Wright, and Westhead, 2003), we assume that the conflict level is likely to increase towards a destructive one with every additional team member. Analogously, the positive team interaction effect tends to decrease (lower beta coefficient; lower significance level).

In addition, we found age as a control variable to be relevant for entrepreneurial appraisal. This could result from increasing opportunity costs with increasing age (Preisendörfer and Voss, 1990). A young entrepreneur might have less

to lose in case of failure than an older one. It may be the case that the older person has more life responsibility, for instance towards family. Hence, it is more difficult to convince him or her to work in a new and uncertain environment.

## 6. Limitations and Future Research

Our analyses rely on the subjective assessments of the entrepreneurs regarding their entrepreneurial appraisal, motives, and interactions. Subjective assessment could distort our results, but there exists a substantial proportion of literature showing the validity of using entrepreneurs as key respondents (e.g., Delmar and Shane, 2003a).

Further, our sample frame—nascent entrepreneurs participating in a business plan competition in Germany—may cause our results to be biased and unrepresentative of the population of nascent entrepreneurs. However, we aim to guarantee the nascent stage and focus on persons experiencing the earliest, but seriously taken, stage of self-employment (high-potential entrepreneurs), so our sample is frame relevant (Grichnik et al., 2014). To understand the boundaries of our findings, future studies could apply and expand our research model to other types of nascent entrepreneurs, e.g., in a high-technology or social context.

As it has not yet been established that the boundary between opportunity and necessity motives is clear-cut (Arias and Pena, 2010; Bhola, Verheul, Thurik, and Grilo, 2006; Block and Köllinger, 2009), we measured motives in such a way that an entrepreneur can belong to both categories. Thus, by not separating necessity (push) from opportunity (pull) entrepreneurs, but investigating the motives per se, we implicitly captured motivational conflicts that appear to upstage the effect of critical setbacks. This consideration draws attention to the need for research specifically focused on the interaction between motivational conflicts and critical setbacks and its potential decreasing effect for entrepreneurial appraisal. In addition to that, our sample can be biased, as we do not include entrepreneurs with critical setback experience that did not continue with the founding process. This missing information may explain the weak significance in our regression analysis. As coping with critical setbacks is individual, there is a need to analyze this kind of negative experience considering also secondary appraisal, i.e., coping strategies (Coyne and Lazarus,

1980; Folkman et al., 1986b; Lazarus and Folkman, 1984), in order to detail the impact of this predictor on primary appraisal.

Future studies could extend our research by measuring motivation on a bilateral scale to better capture the motivational tendency and avoid item-correlation. Additionally, self-regulation tendencies and their implications for the motivation-entrepreneurial appraisal relationship could be examined in more depth within a moderator analysis of the self-determination theory constructs (*introjection, identification, and integration*) proposed by Ryan et al. (1985).

In regards to the weak effect of interaction, we argue that interaction may be more multifaceted and complex than we recognize. The consideration of interaction quantity may be too limiting; examining its quality and intensity could be part of future research projects.

Moreover, in the highly uncertain and dynamic context of new venture creation (McKelvie, Haynie, and Gustavsson, 2011), intense emotions (Forgas and George, 2001) can have a great influence on decision-making and exploitation tendencies (Baron and Tang, 2011; Foo, 2011; Schwarz and Clore, 2007; Shepherd et al., 2009b)—as it is also shown by the pre-exploitation model of Welpel et al. (2012). Our innovative approach to apply Lazarus's appraisal theories on the nascent entrepreneurship context adds to the pre-exploitation model of Welpel et al. (2012) and eventuates in—but does not empirically offer—one explanation for why nascent entrepreneurs emotionally act and decide different in order to exploit existing opportunities, as we theoretically know that high levels of appraisals are thought to generate positive emotions and vice versa (Michl et al., 2009). Future studies could complement this chain of causality by applying for instance a structural equation model to empirically prove the relationship between entrepreneurial appraisal, emotions, and exploitation tendencies/ entrepreneurial action as a whole.

Finally, primary appraisal is a dynamic construct that links information processing to emotion creation. It is a hybrid construct between cognition and emotions, which changes with incoming emotions, but also with changes in the person-environment relationship. We provide a base to investigate primary appraisal

in longitudinal studies, for instance to explore how individual changes of motives or interaction quantity impact entrepreneurial appraisal.

## **7. Practical Implications**

In our study, we adapt the AT to the context of nascent entrepreneurship, making it accessible not only for entrepreneurship researchers, but also for entrepreneurship supporters such as investors and policy-makers.

Nascent entrepreneurs who really want to commit to new venture creation but for some inexplicable reasons do not, can profit from the findings about their entrepreneurial appraisal. In fact, our findings suggest that they should pay more attention to their motives, their social network and their team interaction. It could be that having an explanation for why their entrepreneurial appraisal is low will help them to actively work on it and overcome potential emotional barriers.

In particular, investors or other money lenders, research institutes, foundations as well as other entrepreneurship supporters often depend on their own resource investment decisions. By figuring out the degree of the proposed antecedents and considering their inter-relational effects, stakeholders are able to better estimate entrepreneurs' emotional reactions in the early nascent stage. Thus, appraisal could be a good instrument for evaluating the entrepreneur's potential to exploit the opportunity.

On a macro-economic level the motives are of particular interest for policy-makers in regard to growth, employee development, and a country's level of innovation. Setting up programs to foster entrepreneurial activities must differentiate between necessity- and opportunity-driven entrepreneurs, inasmuch as necessity motives per se lead to higher entrepreneurial appraisal, but to less than half the extent that opportunity motives do. Besides the fact that self-employment, as a career choice, is presented very late within most school systems, formal education is likely to have little impact on entrepreneurial appraisal. In agreement with Farmer et al. (2011), education should have an identity-building role helping early on to develop opportunity motives that increase entrepreneurial appraisal. Entrepreneurship

educators and trainers, especially at universities, may be able to foster this identity-building process by breaking down their dialogue to the individual level. Furthermore, they should give potential entrepreneurs more opportunities to interact and to systematically collect start-up experience through the educational system.

## 8. Conclusion

Contemporary cognition literature emphasizes that emotions play a crucial role in entrepreneurial decision-making, especially among nascent entrepreneurs. At the same time, cognition research—in terms of skills, knowledge, mindsets, and information processing—has matured so quickly and been applied so often that it is necessary to take stock of it (Dimov, Cornelissen, van Burg, and Grégoire, 2013). Although both cognition and emotion theories are interlocked, the cognition-emotion relationship is sparsely documented in the entrepreneurship literature. Our study contributes to these needs and starts from the origins of emotion creation. Our study is a pioneer in examining the antecedents of entrepreneurial appraisal and is of direct relevance for future intention research. It complements the existing intention studies in that it considers emotions to be action-relevant. Future research on decision-making could benefit from understanding how persons identify themselves with the relevant event or situation. Therefore, we encourage taking into consideration primary appraisal in future cognition research in entrepreneurship.

Finally, we provide evidence for the relevance of the entrepreneur's means to their entrepreneurial appraisal. With that, we make a step towards a model that enables us to predict entrepreneurial action by figuring out the level of the appraisal's antecedents. In additional analyses, we highlight the significant impact of appraisal on a substantial number of gestation activities, showing that appraisal is not specific to the activity clusters proposed by Delmar and Shane (2002) but also to single activities. We also offer detailed results concerning the impact of the strongest predictor, opportunity motives.

We propose not only a literature-based framework for the appraisal-emotion interaction in early start-up phases, but also the first empirical work towards a mutual understanding of entrepreneurial appraisal, opening a new research thread.

Overall, we offer a concept that can easily be adapted (e.g., Krause, 2004; Martin, Jones, and Callan, 2005; Rowley, Roesch, Jurica, and Vaughn, 2005) to another specific entrepreneurial situation, such as corporate entrepreneurship, e.g., the impact of employees' appraisal concerning corporate culture on firm performance.



## Annex—Chapter B

The following tables display the original measures underlying the empirical part of study 1 and their corresponding reliability indicator. For the purposes of study 1, these items were translated into German and slightly adapted for our sample.

**Table 5 Measurement of Entrepreneurial Appraisal**

*To what extent do the following statements apply for you?*

*Please state on a scale from 1 = „not at all“ to 7 = „completely“.*

*(Cronbach's alpha = .940)*

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1. How much does being an entrepreneur correspond to your own goals and personal ideas in life?

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2. To what extent does being an entrepreneur correspond to your personal intentions and resolutions?

---

3. How much is being an entrepreneur consistent with what you expect from life and wish for in life?

---

4. How important is it generally for you to be an entrepreneur?

---

5. How relevant and essential is it for you to be an entrepreneur?

---

6. Is it quintessential for you to become an entrepreneur?

---

**Table 6 Measurement of Critical Setback Experience**

*To what extent have you experienced critical moments in the following new venture creation steps? For instance, critical moments are such, in which solutions have to be found, plans have to be revised, or a search for new alternatives is required.*

*Please state on a scale from 1 = „to a very little extent“ to 7 = „to a very high extent“*

*(Cronbach's alpha = .818)*

---

1. Developing a new product/ service

---

2. Finding competent employees for the new venture

---

3. Communicating with external stakeholders

---

4. Finding long-term finance for the new venture

---

5. Finding a profitable market niche for a product/ service

---

6. Finding a customer base for a product/ service

---

**Table 7 Measurement of Entrepreneurial Motives**

*Please state on a scale from 1 = „not at all“ to 7 = „completely“, why you decided to become an entrepreneur.*

*For me, the decision to become an entrepreneur is strongly connected to ...*

---

***Opportunity Motives***


---

***Financial Success (excluded)***


---

... becoming rich

... increasing my income

---

***Independence  $\alpha = .724$*** 


---

... being autonomous

... creating my own job

... having no boss anymore (excluded)

---

***Innovation  $\alpha = .696$*** 


---

... developing new products/services

... developing new manufacturing processes

---

***Necessity Motives***


---

***Recognition  $\alpha = .831$*** 


---

... obtaining prestige

... being socially recognized (excluded)

---

***Family Tradition  $\alpha = .651$*** 


---

... meeting family expectations

... perpetuating the family tradition (excluded)

---

***Unemployment—single item***


---

... escaping unemployment

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## Chapter C: Attitude towards Uncertainty and Teamwork Quality

### HOW CONFIGURATIONS OF NOVELTY, TEAM STRUCTURE, AND THE DECISION-MAKING STYLE INFLUENCE TEAM COLLABORATION QUALITY

Co-authored by Uwe Gross, Dietmar Grichnik, and Jan Brinckmann<sup>9</sup>

#### Abstract

The present study examines how acknowledging unexpected events instead of wanting to overcome them, in the sense of the effectual logic, affects the teamwork quality of nascent venture teams. Specifically, we examine different venture and team configurations that are thought to have a relevant impact on this relationship, i.e., novelty to the market and the team's functional diversity. In doing so, we use a sample of German, Swiss and Austrian nascent entrepreneurs and apply linear regression analysis and the Hackman procedure to test and tighten the hypotheses model. We found two venture-team-configurations, in which the teamwork quality level is affected minimally, and two more, that can substantially harm or advance collaboration quality in the nascent business stage.

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## 1. Introduction

Dealing with unexpected events in the context of high uncertainty is part of nascent venture teams' daily business (e.g., McMullen and Shepherd, 2006; Wiltbank et al., 2006). The significant diversity of challenges in this early business stage can increase the personal stress levels, frustration, and anxiety of the team members (Blatt, 2009), which can disturb an effective collaboration or even cause the team to disband (cf. Der Foo et al., 2005). This detrimental effect is particularly pronounced when the product or service the team works on is highly innovative for the market (cf. Hoegl et al., 2003). Thus, how nascent venture teams handle unexpected events is a relevant question for their collaboration quality and thus for team subsistence.

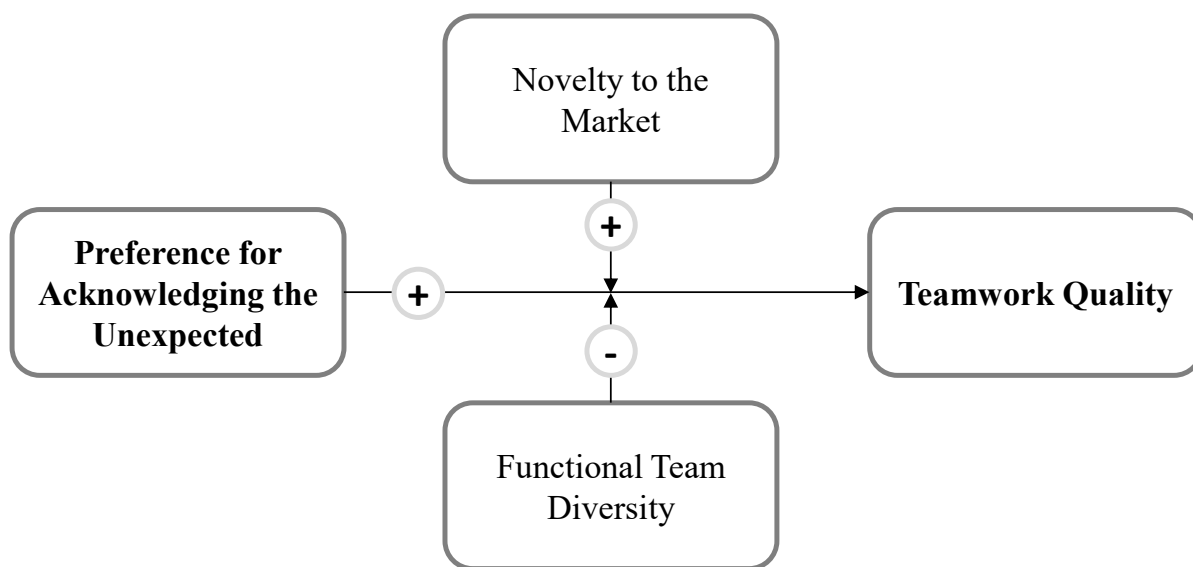
While teamwork quality has been studied from different perspectives, most extant studies have focused on the teamwork quality-performance relationship of highly innovative teams working in corporates. In this context, a team with strong external relational capabilities was found to increase employment and sales growth while teamwork quality itself only had a negative effect on team member additions while sales and employment growth were not affected (Brinckmann and Hoegl, 2011). Other authors deepened the effect of teamwork quality on decision making and creative performance (Easley, Devaraj, and Crant, 2003). Thereby, the effectiveness of teams that work well together is even higher when task innovativeness increases (Hoegl et al., 2003). In some pertinent studies, the authors considered teamwork quality as an important moderator that strengthens the positive link between teams' specific skill levels and their performance (Hoegl and Parboteeah, 2007). However, empirical evidence also suggests that it can also weaken the relationship between group member voice and member performance (Chang and Choi, 2014). Several antecedents of teamwork quality have also been investigated. For example, Hoegl and Parboteeah (2006) found that teamwork quality is negatively affected by team-external influence, while team-internal decision-equality has a positive effect. Moreover, Dayan and Di Benedetto (2009) showed that organizational aspects such as functional team diversity and team stability affect the quality of teamwork.

Taken together, this evidence suggests that teamwork quality primarily depends on the level of novelty (i.e., uncertainty, innovativeness), teams' decision-making style, and team structural aspects. However, as these findings mainly pertain to corporate teams and/ or stress the performance effects, their applicability to nascent entrepreneurial teams needs to be verified.

In order to fill this gap, our study retracts by one step and builds on these results to investigate nascent venture teams' teamwork quality. Similar to corporate teams responsible for highly innovative project tasks, the entrepreneurial phenomenon has been primarily perceived as an individual endeavor (e.g., Cantillon, 1755; Hayek, 1948; Schumpeter, 1982). Yet, contrary to this view, authors of several recent works proposed that entrepreneurship should be understood as a team effort (e.g., Ensley et al., 2002; Harper, 2008; Iacobucci and Rosa, 2010; West, 2007). Therefore, we provide novel insights on the manner in which teamwork quality evolves in the context of nascent entrepreneurship. We show that innovativeness, decision-making style, and organizational aspects can not only serve as moderators, but also contribute to a certain level of teamwork quality in this early business stage. In other words, we posit that their presence increases the likelihood that a team would not disband before it even steps into the market. Our study goes beyond transferring the prevailing results to the nascent venture context, since we analyze the different combinations of the teams' decision-making style, innovation level, and organizational aspects. In doing so, we specifically consider the decision-making style as our main antecedent. In particular, we refer to Sarasvathy's (2001) fifth principle, i.e., acknowledging unexpected events vs. wanting to overcome or avoid them. Moreover, the basic assumption for a high teamwork quality is that all team members are willing to collaborate, irrespective of their functional affiliation (Hoegl and Gemuenden, 2001). Yet, this view can introduce an important problem when the nascent venture team starts building functional or responsibility areas, as these might create barriers to their ability to co-create and communicate, especially if a team consists of only a few members (Dayan and Di Benedetto, 2009). Lack of co-creation or communication due to an exaggerated responsibility structure might also have an impact on how decisions in the team are taken and thus on the teamwork quality.

In summary, the present study proposes that the preference for acknowledging the unexpected positively affects teamwork quality in the uncertain context of nascent entrepreneurship. We argue that this relationship is moderated by greater novelty to the market and lower functional diversity. Figure 1 summarizes the model tested in this work.

**Figure 1 The Hypothesized Model**



In proposing and testing this model, the present study contributes to the extant literature on teamwork in innovative contexts in three ways, discussed below.

First, in contrast to most studies focusing on the teamwork quality-performance relationship (e.g., Brinckmann and Hoegl, 2011; Hoegl and Parboteeah Praveen, 2003), we complement the work conducted to date by studying factors that help improve teamwork quality. Specifically, the present study adds to the team decision-making literature by investigating whether the way nascent venture teams deal with uncertainty (effectual or causal) affects their teamwork quality. Such analysis can help increase the current understanding of the factors leading to high teamwork quality in the context of nascent entrepreneurship.

Second, we distinguish between two types of teams that start their new venture—a professionally composed team that structures tasks by defining several responsibility areas *ab initio* and a team that is likely to be more homogenous and therefore distributes tasks based on preferences, convenience, or similarities (cf.

Beckman and Burton, 2008; Burton and Beckman, 2007). We provide evidence on the team characteristics that are better suited to different ways of handling uncertainty with respect to their teamwork quality.

Third, we contribute to innovation literature in that we analyze the specific aspect of novelty to market, which is equivalent to customer familiarity (Atuahene-Gima, 1995), as an important factor influencing teamwork quality. The effect of novelty to market on performance is still underexplored and the extant evidence is inconsistent and ambiguous. According to the findings presented by Calantone, Chan, and Cui (2006), novelty has a positive impact on new product profitability. On the other hand, the empirical results of Rijdsdijk, Langerak, and Hultink (2011) indicate that innovativeness can be detrimental for new product performance, if customers are not sufficiently familiar with the new product or service. Building on the assumption that teamwork quality has a positive effect on performance, our study aims to clarify the currently ambiguous relationship between team characteristics and attitude toward novel situations. More specifically, it treats novelty to market as an indirect performance predictor, which interacts with the teams' decision-making approach and affects their teamwork quality. Empirical evidence suggests that, even in the nascent venture context, which is characterized by elevated uncertainty, the degree of uncertainty varies. As such, we show that the nascent entrepreneurs' decision-making style and the degree of novelty to market can have different impact directions depending on the level of these two latent variables.

In the following sections, we firstly present the conceptual and theoretical framework underpinning our hypothesized model, before providing empirical foundation for our work. Next, we present and discuss our results, including the main contributions and limitations of our study. The paper concludes with some final remarks on our findings, followed by some suggestions for future research initiatives in this field.

## **2. Theoretical Background & Hypotheses Development**

Entrepreneurial behavior that involves acknowledging the unexpected is assumed to be beneficial for nascent venture teams developing higher degree of



innovation (e.g., Garonne and Davidsson, 2010). The rationale behind this positive link has mostly been anchored in the nature of the effectuation framework. More specifically, according to Chesbrough, 2010, effectuation is associated with an experimental action-path, which provides necessary information pieces in steps of short duration, thus helping overcome the informative disadvantages. However, as such advantageous behaviors may not be fully exploited in non-collaborative teams, in this study, we posit that the view of the future and the attitudes toward uncertainty are related to teamwork quality.

## **2.1 Acknowledging the Unexpected and Teamwork Quality**

This research uses Hoegl and Gemuenden's (2001) concept of teamwork quality as the dependent latent construct. To capture the complex nature of team members working together, Hoegl and Gemuenden (2001) conceptualize and empirically validate teamwork quality as a higher-order construct with six facets: communication, coordination, balance of member contributions, mutual support, effort, and cohesion. In general, the teamwork quality facets can be classified into two sub-categories: task-related facets (communication, coordination, balance of member contribution) and social interaction facets (mutual support, effort, and cohesion). The main underlying proposition of this high order construct is that highly collaborative teams display behaviors related to all dimensions cited above (e.g., Hoegl and Parboteeah Praveen, 2003; Dayan and Di Benedetto, 2008). When Hoegl and Gemuenden (2001) proposed this construct, they essentially referred to antecedents related to the team members' behaviors to each other and towards activities they are required to perform (e.g., Adler, 1995; Cooke and Szumal, 1994; Hauptman and Hirji, 1996; Seers, Petty, and Cashman, 1995; Weingart, 1992). Yet, thus far, the team's attitude toward critical events has rarely been explored as a potential determinant of teamwork quality. However, this aspect is particularly relevant in the context of nascent entrepreneurship as well as high innovation projects, since these team types are exposed to a higher degree of uncertainty and thus need to face a wide range of potential unexpected events.

The extant literature focusing on effectuation provides a framework that addresses the aforementioned missing link. For example, Sarasvathy (2001) proposed

principles pertaining to the view of the future, namely the use of given means, partnerships, the predisposition toward risk, and the predisposition toward contingencies. According to Read, Song, and Smit (2009), effectuation can be described “as a set of heuristics for decision making in uncertain environments that consists of strategies, which combine available means with unanticipated contingencies to construct a series of stakeholder commitments” (p. 576). Among these principles, team’s predisposition toward contingencies is most relevant for the present study, as it directly relates to the team’s attitude toward, and ability to cope with, unexpected events. In that respect, the effectuation framework contrasts the effectual logic with the traditional causal logic that is assumed to be more frequent in later business stages (cf. Perry, Chandler, and Markova, 2012). While acknowledging uncertainty implies that an individual or a team is capable of exploiting environmental contingencies by remaining flexible, according to Sarasvathy, 2001), wanting to overcome uncertainty is more likely to be associated with the exploitation of pre-existing capabilities and resources, while simultaneously attempting to avoid unexpected events. In addition to the ability to exploit environmental contingencies, individuals that acknowledge uncertainty tend to assign high priority to the intersubjective interaction (Dew, Read, Sarasvathy, and Wiltbank, 2008). This trait might be relevant to the team collaboration, as it might influence commitment, effort, or team support (cf. Hoegl and Gemuenden, 2001).

Given our study objective, in this work, we adopt Hoegl and Gemuenden’s concept of teamwork quality, along with Sarasvathy’s last and her super-ordinate first principle, which addresses the overall teams’ view of the future. Henceforth, the preference for acknowledging the unexpected will be referred to using the abbreviation AU.

Start-up teams that acknowledge uncertainty in their decision-making tend not to attempt to predict future events, focusing instead on transforming emerging changes into new goals and opportunities (e.g., Sarasvathy and Dew, 2005; Dew, Read, Sarasvathy, and Wiltbank, 2009). In contrast to the teams that strive to accurately predict and plan for the future (e.g., Dew et al., 2009), being more flexible when handling changes requires more verbal interaction among the team members, as

new venture strategies are formulated and new opportunities are created in response to uncertainties.

In addition, a team that prefers acknowledging instead of overcoming the unexpected is more likely to be attuned to task redefinitions, as the team members are used to acting incrementally (e.g., Galkina and Chetty, 2015; Johanson and Vahlne, 2009). Thus, coordination efforts due to task interdependencies may be mastered more effectively as task redefinitions are expected to occur.

Future prediction, i.e., the causal logic, often leads to commitments (Wiltbank et al., 2006) that are not easy to dismiss. In such cases, individual goals may overspread the common team goals leading to a disturbed mutual support within the entrepreneurial team. In contrast, future acknowledgement is associated with short cycles between action and feedback from the environment (Sarasvathy, 2001), eliminating the potential for fixed commitment structures.

Permanently adapting to environmental changes also requires the team members to increase their flexibility concerning their product or service design (Brettel, Mauer, Engelen, and Küpper, 2012). This, in turn, implies flexibility with respect to their general efforts towards the new business creation, including working time. As the effectual view of the future also implies that contingencies are leveraged to new opportunities, dynamic work norms are part of the team culture. In contrast, teams that adopt the causal view of the future perceive unexpected events as obstacles that have to be avoided (e.g., Chesbrough, 2010). Because such events can cause more workload than planned, flexible adaption to new effort requirements may not be possible within a team that is engaged in overcoming unexpected events.

In summary, an open mind towards future events, i.e., the acknowledgment of unexpected events, can be associated with a highly collaborative team and thus high teamwork quality, while a team that works towards avoiding surprises tends to lack flexibility and risks undermining teamwork efforts. Consequently, we hypothesize:

*Hypothesis 1: A high preference for acknowledging, instead of striving to overcome, the unexpected is associated with a high teamwork quality.*

## 2.2 Functional Team Diversity and Teamwork Quality

Functional team diversity pertains to a number of functional areas represented in the team. Thus, the more functional areas the team is able to define, the higher the functional team diversity (Dayan and Di Benedetto, 2009). Previous research in the context of new product development has revealed that cross-functionality is one of the most basic components of teamwork quality, since each member of a cross-functional team represents a function, i.e., a responsibility area, and provides crucial information about that function to the other team members (Hackman, 1987; Seers et al., 1995).

In the context of nascent entrepreneurship, high functional team diversity can be associated with a heterogeneous team with respect to the members' functional background distribution. This assumption is based on extant research suggesting that prior functional training conditions individual future cognition (e.g., Phillips, 2002; Tripsas and Gavetti, 2000). Thus, a professionally composed team, with members having different functional backgrounds, is more likely to have higher functional team diversity. In contrast, low functional team diversity is often a characteristic of a homogenous team that was composed based on preferences, acquaintances, or similarities, e.g., a university spin-off comprising of mainly compatible classmates (Ensley and Hmieleski, 2005). The team members in this case often have similar backgrounds and tend not to define fixed responsibility areas, but rather follow the "all-do-all" principle. Since this organizational aspect influences how tasks within the teams are implemented—and thus determines how the team members collaborate—functional team diversity is an important antecedent of teamwork quality.

Nascent venture teams that define functional areas often structure their informational processes following the structural logic of corporate departments. As such, they create responsibility areas for management, marketing, development, finance, or legal affairs. The effect of high functional team diversity is critical to new project outcomes (e.g., Larson and Gobeli, 1988; Olson, Walker, and Ruekert, 1995). Thus, it poses some critical questions concerning the teamwork quality. For instance, defining functional areas may lead to unintentionally rigid responsibility areas. This lack of flexibility could result in a reduced informal interaction among the team

members, as every entrepreneur focuses solely on his/her own task set (Dayan and Di Benedetto, 2009).

Further, high functional team diversity is often combined with a geographically more dispersed team. As noted by Hoegl and Gmnuenden (2001) and by Hoegl, Ernst, and Proserpio (2007), reduced communication due to the low team member proximity may undermine teamwork quality. In this case, an open approach towards unexpected events is assumed to lead to new ideas, as creativity and imagination is encouraged (Chiles, Bluedorn, and Gupta, 2007). Hence, changes and challenges might increase interaction opportunities among the dispersed team members. This could help the team with negotiating the functional borders. Nevertheless, this increased interaction tends to take place primarily among the concerned team members (i.e., involves only a part of the team). Accordingly, added effort is expected in order to consolidate and integrate the single information pieces pertaining to specific task areas for the benefit of the entire team. This added effort is created solely by the task organization and may be perceived as annoying, thus negating the basic intention of the effectual approach to evolve.

Additionally, low functional team diversity within the team is more likely to induce a situation in which all team members feel integrated (Hauptman and Hirji, 1999). Accordingly, imposing hierarchical structures is hindered by the fact that all team members can contribute equally to the new venture creation, which is usually not the case when responsibility areas are clearly defined. For instance, by their very nature, management tasks are at a higher organizational level. Hence, a flat or non-hierarchical team structure, i.e., a team with low functional team diversity, is more appropriate for applying a decision-making style that involves acknowledging the unexpected instead of avoiding or wanting to overcome it. This preference largely stems from the fact that an open decision-making style facilitates rapid decision-making and learning (Chandler, DeTienne, McKelvie, and Mumford, 2011) and enables team members to respond quickly to new challenges, which is congenial with flat hierarchies (Child and McGrath, 2001).

Furthermore, when new venture teams are characterized by low functional team diversity, common work attitude, as well as preference and goal homogeneity, is

more likely to evolve. Thereby, in this work, we adopt the hypotheses posited in the similarity theory (Bowers, Pharmer, and Salas, 2000) and rely on the previously mentioned evidence that homogeneous teams are less likely to define specific task areas. In view of these assertions, homogeneity improves predictability of each other's behavior, which is central to the setup of an organizational culture (Lincoln and Jon, 1979). This might facilitate the achievement of short-term goals by expediting the decision-making processes. As a result, the positive effect of preferring the unexpected on teamwork quality can be assumed to be stronger when the teams in the early phase of formation are characterized by a low functional diversity.

Overall, despite the positive aspects of high functional team diversity on new product development outcomes (e.g., Keller, 2001; Lovelace, Shapiro, and Weingart, 2001; Tziner, 1985), we take the view that a low functional team diversity represents a supportive condition for nascent venture teams' collaboration quality. More specifically, we argue that a low diversity facilitates *ad-hoc* decisions, maintains strong informal communication, and reduces the potential for the emergence of additional organization-induced coordination needs. Thus, we hypothesize:

*Hypothesis 2: Lower levels of functional team diversity are associated with higher levels of teamwork quality.*

*Hypothesis 3: The relationship between the preference for acknowledging the unexpected, instead of striving to overcome it, and teamwork quality is moderated by the functional team diversity, in that decreasing functional team diversity increases the positive influence of the preference for acknowledging the unexpected on teamwork quality.*

## **2.3 Novelty to the Market and Teamwork Quality**

A product or a service that is completely new to the market requires a high degree of behavioral change and learning effort by the potential customers (Atuahene-Gima, 1995). Consequently, the entrepreneurial team is faced with more

complex and uncertain tasks, compared to a team aiming to place a known (e.g., a copy-cat business) or simple product or service. This implies that the aforementioned teamwork quality facets may be influenced by task characteristics due to the degree of novelty (Gladstein, 1984; Stewart and Barrick, 2000). Thus, the positive effect of the openness towards the unexpected on teamwork quality is not necessarily unconditional, as it may be more important in cases of high novelty, where unforeseen and rapidly changing tasks require greater incrementalism and flexibility (cf. Hoegl et al., 2003).

When customers are expected to learn what the product is and how to use it, market orientation becomes an essential task for the entrepreneurial team. As they have to establish and educate the market, they also have a greater need for reliable market information (David, 1988; Olleros, 1986). In this instance, openness towards surprises and unexpected situations may help the team to be more effective in their information gathering endeavors. This link is posited because valuable information is often gathered through informal communication, which is assumed to be stronger when founders perceive unexpected events as new opportunities (Parry and Song, 2010). Additionally, entrepreneurs that tend to exploit uncertainty tend to quickly learn from their successes and failures, thus decreasing the likelihood of unnecessary data collection or gathering superfluous information (Brettel et al., 2012). Consequently, the benefits of acknowledging the unexpected instead of striving to overcome it are greater when market orientation is characterized by high task priority.

Moreover, highly innovative products or services are linked to longer processes aiming to identify suitable business models (Stinchcombe, 1965) and tend to require more interaction with a wider range of contacts (Liao and Welsch, 2008), compared to imitative products or services. Both task blocks are time-intensive and might result in delaying the point at which the team gets operational, often inducing impatience and imbalanced efforts among the team members. A team exhibiting less fear of uncertainty and willing to consider unexpected situations as beneficial might thus be more likely to prevent such effort and collaboration reductions than a more causal-oriented team. This assertion is based on Sarasvathy's effectuation framework, as the effectual team members are assumed to proceed on the assumption that every new information and contact can be a new opportunity and/ or might present a better

path to follow. As such, the longer development periods due to a high degree of novelty, combined with a high level of acknowledgement of unexpected events, might strengthen the team's sense of cohesiveness, since these stretched intervals are more likely to be utilized effectively. For instance, they could be used to evaluate potential new business strategies or opportunities.

Another reason behind the preference for remaining more open towards the future matters at high levels of novelty stems from task conflict and creativity within the team. Complex and uncertain environments can cause task conflicts, which—up to a certain level—foster creativity (Chen, 2006). At the same time, excessive task conflict may overwhelm team members with possible options, thus making reaching a coherent solution difficult (De Dreu, 2006) and increasing the stress levels (De Dreu and Weingart, 2003; Jehn and Mannix, 2001). Moreover, the extant studies on effectuation tend to be based on the assumption that “effectuators” are more likely to build “participatory cultures” through which they more effectively draw out conflicting preferences, while following a logic of commitment instead of transaction (cf. Sarasvathy and Dew, 2005). Thus, at high levels of novelty, being open towards future surprises plays a more important role for the teamwork quality because it fosters commitment, e.g., effort and mutual support. In addition, open minded teams are more likely to perceive conflict as an implicit aspect of the founding process rather than as a hindrance to teamwork (Butler and Williams-Middleton, 2014). Thus, in cases of high novelty to the market, keeping the vulnerable task conflict level under the critical point is beneficial, as this fosters utilization of the team's full creative potential.

Finally, referring to the work of Gerwin and Moffat (1997), Kazanjian et al. (2000), and Hoegl and Gemuenden (2004), we posit that task interdependencies and changes occurring during the development process are two forces that create coordination needs. Accordingly, in businesses, where novelty to market is high and information changes quickly, team members are forced to coordinate their tasks in order to avoid excessive rework. In addition, task coordination can be achieved more quickly and with less coordination effort when all team members are open to changes.



In summary, we conclude that high levels of novelty to market are associated with greater task complexity, higher stress levels, and stricter task coordination needs, all of which can have a negative impact on the teamwork. We thus posit that nascent venture teams can mitigate these adverse effects of novelty to market by applying a more “effectual” way of handling uncertainty. Based on the above, we hypothesize:

*Hypothesis 4: Higher levels of novelty to market are associated with lower levels of teamwork quality.*

*Hypothesis 5: The relationship between the preference for acknowledging the unexpected, instead of striving to overcome it, and teamwork quality is moderated by the novelty to market, in that a high novelty to the market strengthens the positive influence of the preference for acknowledging the unexpected on teamwork quality.*

### **3. Methods**

#### **3.1 Sample and Procedure**

To test our hypotheses, we conducted an online survey among entrepreneurs, who participated in various start-up programs, such as business plan competitions, idea contests, coaching programs, and university support programs, in Germany, Austria, and Switzerland in the period from February 2013 to April 2014. To create trust and increase the likelihood of participation (Larson, 2005), the corresponding managers of each program asked their participants to complete the questionnaire. For that purpose, the online link to the questionnaire was sent directly by e-mail or posted on the corresponding closed community social media page. To reduce common method bias, the introductory page of the online survey assured anonymity and specifically stated that participation in the study would not affect entrepreneurs’ evaluation within the start-up support program (Podsakoff et al., 2003). As an incentive, we proposed holding a raffle, whereby three participants would be randomly chosen among the survey respondents to receive one of three prizes—two

cash and one commodity prize (cf. Larson, 2005). Further, we proposed to donate to a child aid organization for every fully completed survey and to send all respondents a few key figures upon completion of the data collection process. The online survey was completed by 472 entrepreneurs. However, as our study explored team dynamics, we included only potential new ventures with at least two founders. This restricted the participant pool to 261 entrepreneurs, each from another (potential) new venture. To ensure that the participants of the aforementioned start-up support programs had serious intentions to create a new venture, we checked the average number of initiated gestation activities (16 activities out of 27) and whether there were entrepreneurs with no initiated activity (Davidsson and Honig, 2003). In line with prior approaches (e.g., De Clercq, Dimov, and Thongpapanl, 2013; Simons and Peterson, 2000), we used a single-respondent design, asking one founder to give us information about the entire team. In this early stage of new venture creation, every founding team member is likely to be knowledgeable about the firms' strategic goals and overall team functioning. For that reason, we decided to send our survey link to one randomly selected founder.

The questionnaire was administered in German. The measurement scales that were adopted from English literature were thus translated for the present study. Before commencing the data collection, we conducted an internal pretest and asked the program managers to provide feedback on the survey design, structure, wording, etc. Based on the information obtained, the wording of some items was refined and the structure of the questionnaire slightly modified.

On average, the start-up teams in our sample had a team size of 2.9 members, of whom about 20% were females. In addition, 46.3% of the teams had already registered with the authorities, 43.1% regarded themselves as innovative, 40% were technology start-ups and were pursuing their new business idea for 3.6 months on average, and 69% offered a product or service for end-users (others worked in the B2B sector).

## 3.2 Measures

### 3.2.1 Dependent and Independent Variables

All measures in the present study refer to the team as the unit of analysis. Thus, all constructs were specified on a team level. To avoid item order bias, we randomized the order of all items within the corresponding measures of the present study. Additionally, we conducted principle component analysis (PCA) for all latent variables to check for inconsistent factor loadings.

Our measure of the dependent variable *teamwork quality* was based on the original teamwork quality framework of Hoegl and Gemuenden (2001). Following Brickmann and Hoegl (2011), we also used a more compact measurement of teamwork quality, albeit including facets that represented both main categories. Our measure thus captured three teamwork quality facets, namely coordination (task-related), mutual support, and effort (social interaction). In total, we asked the founders to rate 14 order-randomized items (see Appendix) pertaining to the quality of their teamwork on a seven-point Likert scale (anchored at 1 = “not at all” and 7 = “completely”). In the second step, we run an explorative PCA to validate the construct and found two inconsistent factor loadings, which we excluded from our measure. Further, we assumed a high internal consistency (reliability) of this measure, based on the Cronbach’s alpha of .94 (Nunnally, 1978).

The data pertaining to the teams’ *preference for acknowledging the unexpected instead of striving to overcome it* (henceforth referred to as AU) was gathered using the bipolar effectuation-causation scale developed by Brettel et al. (2012). Due to inconsistent factor loadings, we excluded three of the seven items pertaining to this construct (see Appendix) and checked its internal consistency (reliability) ( $\alpha = .73$ ). With this measure, we captured the degree to which a team follows the superordinate (view of the future) and fifth effectual principle (predisposition toward contingencies) vs. the corresponding causal one.

To measure the *novelty to market*, we used the construct “newness to the customers” (cf. Atuahene-Gima, 1995; Houston, 1986; Kirby, 1972). This construct was measured via six survey items ( $\alpha = .79$ ), whereby responses were given on a

seven-point Likert scale (anchored at 1 = “not at all” and 7 = “completely”). Using this approach, we gathered the degree “of behavioral change or learning effort required by potential customers to adopt the new product” (p. 278) or service (Atuahene-Gima, 1995). The items are displayed in the Appendix of this chapter.

In line with the work of Dayan and Di Benedetto (2009), we measured *functional team diversity* by counting the functional areas represented in the founding team. Therefore, we asked one founder to indicate the responsibility areas (coordination/management, technology/development, marketing, financials, and legal affairs) of each founding team member.

### 3.2.2 Control Variables

Given that team structure can have a potential influence on the teamwork quality (cf. Hoegl et al., 2007), we controlled for the structural variable *team size* and *female quota* (i.e., percentage of female team members) as well as for education and experience as human capital aspects (cf. Johansson and McKelvie, 2012). For the last measure, we added the number of team members with an explicit education to that of the individuals with work experience in the mentioned responsibility areas. Consequently, the variable *team education* has a higher value in teams where many team members received training in many areas. Similarly, the variable *team experience* has a high value when many team members have experience in many areas.

Additionally, we considered that the specific group of technology start-ups may differ from other start-ups due to their specific technology-based tasks (e.g., Marvel and Lumpkin, 2007; Mosey and Wright, 2007). Analogously, we also assumed that task interdependencies could differ substantially and influence the teamwork quality when acting simultaneously within different markets. For this reason, we distinguished new ventures acting in both the B2B and the B2C market from those serving only one market. Accordingly, we asked the founders whether or not their start-ups were technology-based (*tech vs. non-tech*) and if their product was for the end consumer only (*B2C market*) and/ or for another industry (*B2C & B2B Business*).

Finally, in order to capture the effect of previous successful common activities on the perceived team's collaborative quality (e.g., Hoegl and Parboteeah Praveen, 2003; Salas, Shuffler, Thayer, Bedwell, and Lazzara, 2014), we controlled for the perceived achievement of operational goals (*fulfill operational goals*) and compliance with the schedule (*stay on schedule*). Therefore, we asked the respondents to rate their operational and time-related goal achievement on a 7-point Likert scale (ranging from 1 = "not at all" to 7 = "completely").

### 3.3 Analyses and Results

Table 1 provides descriptive statistics, Pearson's correlations, and Cronbach's  $\alpha$ s for the corresponding variables used in the present study.

We used multiple regression analyses to test the hypothesized moderator effects of novelty and functional team diversity on the AU-teamwork quality relationship. In line with the prior research in this field, we used a stepwise procedure to show the increasing explained model variance (adjusted R squared) and excluded missing values list-wise. First, we entered the control variables (Model 1), after which we added our independent variable to test the main effect (Model 2). This was followed by successively augmenting the model with the moderator variables (Model 3). Before running the final regression with all moderator variables and interaction terms included, we tested the two moderator effects in two single regressions (Model 4 and Model 5) independently from each other.

**Table 1 Descriptive Statistics and Correlations**

|  | Mean  | SD    | Alpha | 1       | 2       | 3        | 4      | 5      | 6       | 7       | 8       | 9      | 10    | 11     |
|--|-------|-------|-------|---------|---------|----------|--------|--------|---------|---------|---------|--------|-------|--------|
| <i>Teamwork Quality</i>                      | 5.712 | 1.287 | 0.949 |         |         |          |        |        |         |         |         |        |       |        |
| <i>Team Size</i>                             | 2.862 | 0.983 |       | -0.116  |         |          |        |        |         |         |         |        |       |        |
| <i>Female Quota of the Team</i>              | 0.219 | 0.288 |       | -0.040  | -.177** |          |        |        |         |         |         |        |       |        |
| <i>Tech. vs. Non-tech</i>                    | 0.400 | 0.491 |       | 0.011   | 0.159*  | -0.292** |        |        |         |         |         |        |       |        |
| <i>B2C &amp; B2B Business</i>                | 0.354 | 0.479 |       | -0.047  | 0.001   | -0.091   | -0.013 |        |         |         |         |        |       |        |
| <i>Team Education (sum)</i>                  | 5.122 | 2.854 |       | -0.022  | 0.356** | -0.191** | -0.031 | 0.106  |         |         |         |        |       |        |
| <i>Team Experience (sum)</i>                 | 6.608 | 4.767 |       | 0.022   | 0.396** | 0.021    | 0.017  | 0.110  | 0.378** |         |         |        |       |        |
| <i>Stay on Schedule (perceived)</i>          | 4.157 | 1.685 |       | 0.118   | -0.031  | 0.213*   | -0.147 | 0.047  | 0.046   | 0.136   |         |        |       |        |
| <i>Fulfill Operational Goals (perceived)</i> | 4.821 | 1.436 |       | 0.288** | -0.069  | -0.060   | 0.016  | 0.133  | 0.051   | 0.265** | 0.467** |        |       |        |
| <i>Preference for the Unexpected</i>         | 4.330 | 0.990 | 0.725 | 0.174*  | -0.043  | 0.104    | 0.065  | 0.009  | 0.019   | 0.035   | -0.114  | -0.003 |       |        |
| <i>Novelty to Market</i>                     | 2.703 | 1.233 | 0.793 | -0.191* | 0.081   | -0.065   | 0.088  | -0.032 | -0.056  | 0.023   | -0.048  | -0.143 | 0.049 |        |
| <i>Functional Team Diversity</i>             | 4.364 | 1.138 |       | 0.135*  | 0.140*  | -0.181** | 0.121  | 0.158* | 0.158*  | 0.073   | 0.045   | 0.146  | 0.062 | -0.044 |

\*\*p &lt; .01; \*p &lt; .05 (2-tailed)

**Table 2 Regression Analyses, DV: Teamwork Quality**

|   | Model 1 | Model 2 | Model 3 | Model 4             | Model 5             | Model 6              | Model 7<br>(Endogeneity corrected) | Tolerance<br>Model 6 | VIF<br>Model 6 |
|---|---------|---------|---------|---------------------|---------------------|----------------------|------------------------------------|----------------------|----------------|
| <b>Controls</b>   |         |         |         |                     |                     |                      |                                    |                      |                |
| <i>Team Size</i>  | -0.10   | -0.08   | -0.07   | -0.01               | -0.09               | -0.04                | -0.06                              | 0.62                 | 1.60           |
| <i>Female Quota of the Team</i>                         | 0.06    | 0.03    | 0.01    | 0.05                | 0.00                | 0.01                 | 0.45                               | 0.72                 | 1.40           |
| <i>Tech. vs. Non-tech</i>                               | 0.04    | 0.02    | 0.03    | 0.02                | -0.01               | 0.01                 | 0.17                               | 0.84                 | 1.18           |
| <i>B2C &amp; B2B Business</i>                           | -0.06   | -0.07   | -0.08   | -0.06               | -0.09               | -0.09                | -0.07                              | 0.92                 | 1.09           |
| <i>Team Education (sum)</i>                             | -0.04   | -0.05   | -0.08   | -0.09               | -0.04               | -0.08                | -0.08                              | 0.66                 | 1.51           |
| <i>Team Experience (sum)</i>                            | 0.12    | 0.10    | 0.12    | 0.06                | 0.09                | 0.07                 | 0.10                               | 0.54                 | 1.87           |
| <i>Stay on Schedule (perceived)</i>                     | -0.08   | -0.05   | -0.03   | -0.06               | -0.03               | -0.04                | -0.72                              | 0.67                 | 1.49           |
| <i>Fulfill Operational Goals (perceived)</i>            | 0.32**  | 0.31**  | 0.27*   | 0.30**              | 0.30**              | 0.29**               | 0.78†                              | 0.62                 | 1.60           |
| <b>Independent Variable</b>                             |         |         |         |                     |                     |                      |                                    |                      |                |
| <i>Preference for the Unexpected</i>                    |         | 0.18*   | 0.19*   | 0.19*               | 0.19*               | 0.20*                | 0.20*                              | 0.93                 | 1.07           |
| <b>Moderation Variables</b>                             |         |         |         |                     |                     |                      |                                    |                      |                |
| <i>Novelty to Market</i>                                |         |         | -0.22** | -0.23**             |                     | -0.21**              | -0.08                              | 0.94                 | 1.07           |
| <i>Functional Team Diversity</i>                        |         |         | 0.04    |                     | 0.07                | 0.05                 | 0.03                               | 0.90                 | 1.11           |
| <b>Interactions Terms</b>                               |         |         |         |                     |                     |                      |                                    |                      |                |
| <i>Preference for Unexpected × Novelty to Market</i>    |         |         |         | 0.27**              |                     | 0.20*                | 0.20*                              | 0.87                 | 1.15           |
| <i>Preference for Unexpected × Functional Diversity</i> |         |         |         |                     | -0.32***            | -0.26**              | -0.26**                            | 0.92                 | 1.09           |
| <i>Inverse Mill's Ratio_AU</i>                          |         |         |         |                     |                     |                      | 0.68                               |                      |                |
| R <sup>2</sup>  | 0.119   | 0.149   | 0.196   | 0.260               | 0.250               | 0.323                | 0.330                              |                      |                |
| Adjusted R <sup>2</sup>                                 | 0.063   | 0.088   | 0.125   | 0.194               | 0.183               | 0.250                | 0.251                              |                      |                |
| F/ F-Change   | 2.121   | 4.438   | 3.640   | 9.219 <sup>C2</sup> | 8.300 <sup>C2</sup> | 11.317 <sup>C3</sup> |                                    |                      |                |
| Sig. F-Change   | 0.038   | 0.037   | 0.029   | 0.000               | 0.000               | 0.000                |                                    |                      |                |

\*\*\*p &lt; .001; \*\*p &lt; .01; \*p &lt; .05; †p &lt; 0.10 (2-tailed); C2: F-Change compared to Model 2; C3: F-Change compared to Model 3

As the last step, we calculated the main model (Model 6). The regression coefficients and significant effects are presented in Table 2.

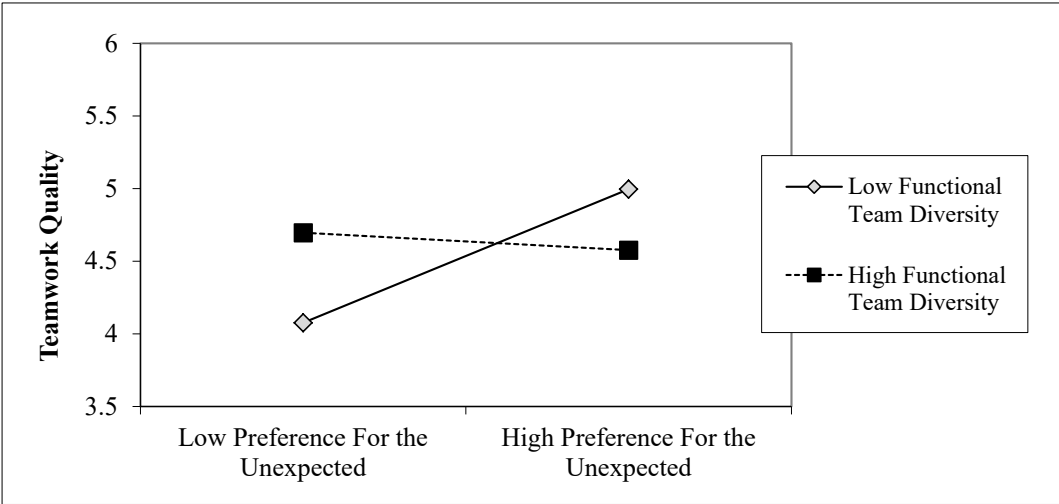
We found the preference for acknowledging the unexpected instead of wanting to overcome it to be significant and positive for the teamwork quality ( $b = 0.20$ ;  $p = .013$ ). Further, both interaction terms included were found to be significant in the single as well as in the main regression. Thereby, the interaction with novelty to market shows a coefficient equivalent to 0.20 at a 5% confidence level ( $p = .015$ ), while the interaction term with functional team diversity results in a negative coefficient ( $b = -0.26$ ) at an even higher confidence level ( $p = .001$ ). Moreover, novelty to market has a significant negative impact on teamwork quality ( $b = -0.21$ ;  $p = .007$ ), while functional team diversity shows no significant direct effect. The explained model variance ( $R^2$ ) increases stepwise from 11.9% in Model 1 to 32.3% in Model 6, corresponding to an adjusted  $R^2$  of 25%. Accordingly, we found support for H1, H3, H4, and H5, while H2 was not supported.

The aforementioned moderated relationships are illustrated in Figure 2 and 3. In presenting our results, we followed the suggestions of Dawson (2014) and plotted the predicted values of teamwork quality for high and low values of AU and functional team diversity (Figure 2) or novelty to market (Figure 3), as this enabled us to better interpret our moderation results (cf. Aiken and West, 1991; Cohen, Cohen, West, and Aiken, 2003). For the plots, we used Dawson's online resource (<http://www.jeremydawson.com/slopes.htm>). It should be noted that, as the plots were created with the unstandardized regression coefficients, the teamwork quality values correspond to the rating scale employed during the data collection.

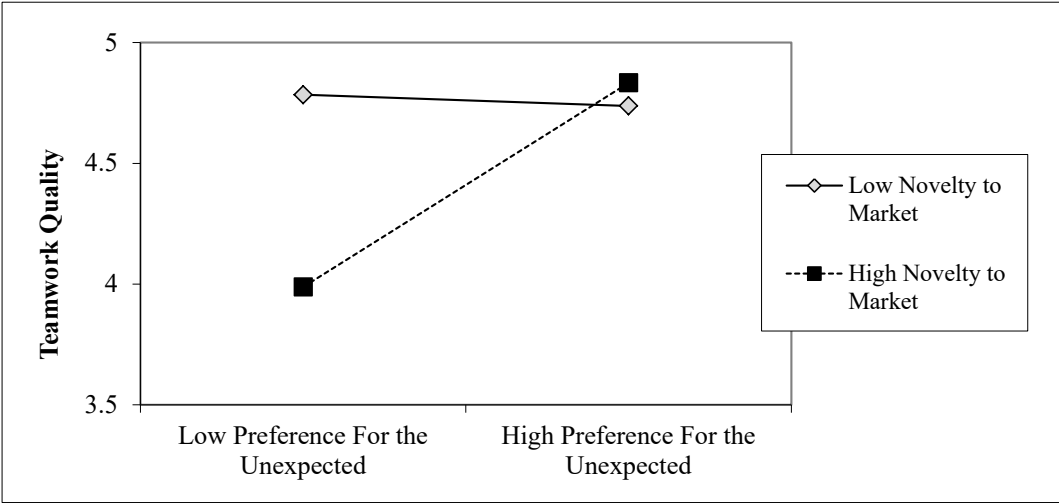
Beyond that, we found the perceived fulfillment of operational goals to be positively related to teamwork quality with  $b = 0.29$ . This finding was statistically significant at the 5% confidence level.



**Figure 2 Moderation with Functional Team Diversity**



**Figure 3 Moderation with Novelty to Market**



### 3.4 Controlling for Specification Errors

We found significant correlations between some captured independent variables and our main predictor, AU (see Table 1). To exclude concerns with multicollinearity, we first checked the VIF and tolerance values (see Table 2) for the main model, which were in the accepted range (Neter, Kutner, Nachtsheim, and Wasserman, 1996; Tabachnick and Fidell, 2001).

However, it is possible that the degree to which a founding team acknowledges the unexpected is influenced by these variables and that this change in AU affects the teamwork quality. This link would imply that we introduced a specification error into the present empirical model. In order to check for this possibility, we tested for a

potential mediation of these variables by AU. Therefore, following the suggestion of Shaver (2005), we applied a two-stage least squares (2SLS) approach. This helped avoid further bias due to correlated predictor variables and the error terms in the equation system of a mediation analysis. Hereby, we constructed an instrumental variable for AU, including newness to customers, functional diversity, the two perceived goal achievements, team education level, team experience level, and the venture age (time since registration with the authorities). For the regression, we adopted the control variables that were included in our main model. We found no statistical evidence for the mediation and the standard approach to test this equation system led to the same conclusion. Detailed results of the 2SLS and the traditional mediation analysis are available from the authors upon request.

Since AU may be endogenous due to influence of omitted variables, we corrected for the resulting selection bias and potential specification error. More specifically, we adopted the traditional Heckman two-step procedure suggested by Hamilton and Nickerson (2003). First, we calculated a selection model, in which we used the problematic predictor AU as the dichotomous dependent variable. Thereby, we applied a logistic regression model including all variables of our main model, except TWQ and the interaction terms, as predictors. The estimated predicted values of AU, calculated using this selection model, were used to compute our variable of interest, the inverse Mill's Ratio (MR). MR represents a summarizing measure for all effects of unmeasured characteristics related to the variable AU. In the second step, the variable MR served as a correction factor in our main model, as its coefficient can be interpreted as the part of the unmeasured characteristics' effect, which is related to the TWQ. We found no significant effect of MR. Further, the interaction terms, as well as the AU coefficient, remained significant.

Finally, as common method bias is a known problem that can be introduced by using online questionnaires as data collection instruments, we tested for presence of implausible correlations. For instance, we checked for answers that were given randomly or cases where only middle values were selected (e.g., central tendency bias). Hence, when a significant part of the respondents had systematically selected only high, middle, or low values, at least all latent variables would display a correlation. Thus, an inclusion of any latent variable in our main model would be

likely to change our results. When we included variables that were measured on an individual level (e.g., identity constructs) in our main model, our results remained robust.

## 4. Summary and Conclusions

The present study aimed to establish a link between the manner in which entrepreneurial teams handled uncertainty and the quality of their teamwork. We explored this relationship under two conditions: varying the functional team diversity and the novelty to the market in the context of nascent entrepreneurship. Thus, our findings have the potential to advance the current understanding of effectual handling in the context of teams facing unknown challenges, as we demonstrated that teams that embrace uncertainty tend to exhibit higher levels of teamwork quality compared to causal teams. As such, we complemented the extant literature on team characteristics and dynamics, which provides evidence that the context (e.g., rapid technological advances, high levels of time pressure, high-stakes situations, etc.) as well as the team structure or composition (e.g., team heterogeneity, as well as organizational structures of the team) are core determinants of teamwork effectiveness (cf. Salas et al., 2014).

Specifically, no support was found for our hypothesis concerning the direct impact of functional team diversity on teamwork quality. Thus, we cannot assume that functional team diversity is directly related to teamwork quality, at least not linearly. In contrast, novelty to the market *per se* (considered single-wise) was found to have a negative and statistically significant direct impact on the teamwork quality. Our detailed investigation of the moderation effects suggests that high functional team diversity and low novelty to the market lead to changes in the main direct relationship that can be neglected (see Figure 2 and 3). The results pertaining to low functional team diversity and high novelty to the market are also noteworthy. Overall, we found that the relationship between AU and the teamwork quality is weaker when a greater number of responsibility areas are defined within the team, while it is stronger when the novelty to market is higher. These results contribute to the extant body of literature on team characteristics and teamwork in several ways:

First, our decision to focus the investigation on the effect of functional team diversity on teamwork quality helps elucidate factors that lead to failures in the establishment of teams' shared understanding, which has thus far not been sufficiently explored in team cognition studies (Salas et al., 2014). As we found, even though high functional team diversity does not promote the level of shared team-specific experience, which increases teamwork quality (Kor, 2006), it might induce a clear task structure and thus lower the uncertainty perceived by the team members. This ambiguous character of functional team diversity may be the reason behind the lack of statistically significant direct linear relationship with teamwork quality. Further, building on perspectives of the upper echelon and resource-based theory, for instance, strategic choices are made and implemented through dynamic processes, in which the team members interact, debate, and consult each other (e.g., Chandler, 1991; Mahoney, 1992). Our results, combined with these theoretical arguments and available evidence, indicate that functional team diversity stops being beneficial after a certain point (cf. Dayan and Di Benedetto, 2009). Until this point, the associated high degree of functional heterogeneity and diminished interaction can lead to competition between the team members. As a result, a linear relationship could not be confirmed. On the other hand, the AU-functional diversity interaction term significantly decreases the AU-teamwork quality relationship, which is consistent with the findings yielded by extant studies focusing on the negative influence of functional team diversity (e.g., Olson et al., 1995). The least optimal team configuration is reached when the team applies a planning and uncertainty-overcoming decision-making style, while not planning and structuring at all (both of which are characteristics of low functional team diversity). This might occur when a team strives to reduce perceived uncertainty. In this case, the exploitation of actions after decision-taking is difficult, because no roles and responsibilities are defined. Cognitive dissonance is likely to emerge (Festinger, 1957), resulting in diminished teamwork quality.

Second, our results concerning the level of novelty to market are in line with those reported by Rosenbusch, Brinckmann, and Bausch (2011) and their innovation-performance meta-analysis. According to the authors, innovation process outcomes (e.g., patents, new products, new services, etc.) have a weaker positive effect on the venture performance than innovation orientation. We empirically verified their

findings by offering a possible explanation for the weaker relation. In fact, we took a step further and posited that the effect may manifest through a poorer teamwork quality. Thus, even though high levels of novelty to market can be associated with higher financial venture returns, the fact that a team offers a new product or service does not fully leverage the potential of innovation. This is the case because the new product or service is associated with higher levels of uncertainty that might undermine the team's collaboration effectiveness. Given these findings, it is evident that the present study not only complements prior research, but also offers an answer to the question of how this trade-off can be resolved. In this regard, we found that high levels of novelty to the market in combination with a high degree of openness towards unexpected future events could lead to a flourishing teamwork. In other words, this combination is the best strategy for overcoming the downsides of innovation, which adversely affect team collaboration. In contrast, a team that prefers overcoming unexpected events, i.e., takes a more causal approach to uncertainty handling, can find it difficult to establish a good teamwork when novelty to the market is high. In other words, when novelty to the market is low, as the type of uncertainty handling is not substantial, the team can adopt either the open or the planning approach without compromising the teamwork quality (see corresponding line in Figure 3, which is nearly horizontal). This result is consistent with findings of many extant studies analyzing effectuation in the context of innovation (e.g., Köllinger, 2008; Brettel et al., 2012). Indeed, it confirms the importance of such open-minded approach in situations characterized by high uncertainty, i.e., it is relevant not only for the venture performance, but also affects the team's ability to collaborate effectively. Our results are also in line with Harper's (2008) prediction that a "we-frame" is more likely adopted when the degree of interdependence among entrepreneurs is higher, which is usually the case when novelty is high (e.g., Jones, 1987; Karimi, Somers, and Gupta, 2004). Additionally, the present study also implies that preference for overcoming or avoiding future surprises may not necessarily be a disadvantage in this early business stage, in particular when nascent venture teams work on imitative or less innovative projects. More specifically, our findings indicate that, when novelty to the market is not a concern, the decision-making style (effectual vs. causal) might not be crucial. In other words, the teams can choose their decision-

making style freely without affecting their collaboration quality. However, when novelty to market is high, an effectual approach seems to be more appropriate.

## 4.1 Practical Implications

The findings of this research are relevant for the managerial practice, in particular in cases when new teams are being designed. While our work focused on nascent entrepreneurship, the findings yielded are also highly relevant in corporate entrepreneurship contexts, such as new product development team design, or project teams in consulting businesses. One central implication derives from viewing teamwork quality not as given, but as a construct that has to be formed. In contrast, the way one deals with uncertainty can be interpreted as a mindset that is more likely to exist at the time of team formation, as it is a reflection of various human capital factors specific to the team members (cf. Johansson and McKelvie, 2012).

Further, not all approaches to uncertainty affect the teamwork quality in the same manner, as some are more influential than others. However, the size and direction of their effect depends on the uncertainty level the team faces as well as the team structure. In practice, one often tends to prefer team members that have expertise in certain areas and can form a heterogeneous team, as this allows them to perform all types of tasks (e.g., Chatterji, 2009; Srivastava and Lee, 2005). At the same time, agile methods, such as the lean start-up approach (Breuer, 2013), which is consistent with AU, are assumed to be particularly beneficial for new business creation. Our study shows that these aspects have to be evaluated simultaneously when managers or individual founders want to build a well-collaborating team. Beckmann and Burton (2008) provided evidence suggesting that prior functional experience of the team members will shape the initial functional structure. Thus, having a non-experienced team and failing to define responsibility areas makes teamwork building very challenging, especially when attempting to lead by adopting rigid project management methods or tools in a corporate context. This team would find it very difficult to organize itself and to operate within this rigid structure. Conversely, when the team is comprised of experienced experts, they possess the capability to quickly build a functional structure and define tasks and responsibilities (e.g., Burton and Beckman, 2007; Schein, 1992). Such a team, nonetheless, operates

better in a well-planned setting. However, our results indicate that adopting a flexible approach with an expert team would cause considerably lower negative effects on the teamwork than adopting a rigid approach with a completely inexperienced team.

Moreover, as teamwork is an important performance predictor, our results are also relevant for investors, who have to evaluate teams when making investment decisions. Accordingly, investors can use our model as an evaluation tool in order to assess the team collaboration quality and thus determine its potential for entrepreneurial success.

## 4.2 Limitations and Future Research

First, in our study, we used cross-sectional data to test the hypotheses and answer the research questions. Thus, while the direction of the analyzed relationship can be explained theoretically, causality cannot fully be established. Therefore, in order to overcome this limitation, we recommend that this study be replicated using a longitudinal research design, as this would help further elucidate the presented relationships. Further, generalization of our findings is possible in the context of nascent venture teams. Still, in future studies of this type, the researchers should attempt to establish whether the presented findings are replicable in other contexts, such as new product development teams in corporates, project teams in consulting businesses, or the social-oriented teams. Moreover, other novelty perspectives, such as market and technology familiarity (cf. Danneels and Kleinschmidt, 2001) could be included in future analyses to differentiate among different novelty types. In addition, as we focused on one effectuation aspect to address dealing with uncertainty, it would be beneficial to examine the effect of effectuation as a decision-making concept (e.g., all principles) on teamwork quality. Finally, we considered functional team diversity by counting the defined responsibility areas within a team and controlling for the team size. In this regard, high functional team diversity within a small team implies that team members are responsible for more than one task area, i.e., their responsibilities overlap. However, prior research indicates that conceptualization of functional diversity can lead to different results (e.g., Bunderson and Sutcliffe, 2002). Hence, capturing the “degree of overlaps” in future studies may lead to a more precise effect of functional team diversity on teamwork quality.

## Annex—Chapter C

In analogy to the annex of chapter B, the following tables display the original measures underlying the empirical part of study 2 and their corresponding reliability indicator. For the purposes of study 2, these items were translated into German and slightly adapted for our sample.

**Table 3 Measurement of Novelty to Market**

*To what extent does each of the following statements describe the new product?  
Please state on a scale from 1 = „strongly disagree“ to 7 = „strongly agree“.  
(Cronbach's alpha = .793)\**

- 
1. It required a major learning effort or experience by customers.
  2. It took a long time before customers could understand its full advantages.
  3. The product/service concept was difficult for customers to evaluate or understand.
  4. It required considerable advance planning by customers before use.
  5. It involved high changeover costs for the customer.
  6. Product/service was more complex than we have introduced into the same market.
- 

\*The items were put in present tense.



**Table 4 Measurement of the Preference for Acknowledging the Unexpected**

*To what extent do the following statements describe your founding project?*

*Scale: 1=full preference for unexpected, 7=full preference for wanting to overcome the unexpected.*

*(Cronbach's alpha = .725 based on the used items)\**

| <b>Preference for unexpected</b>  | <b>Preference for wanting to overcome unexpected</b>  |
|---|---|
| We always tried to integrate surprising results and findings during the R&D process — even though this was not necessarily in line with the original project target | We only integrated surprising results and findings when the original project target was at risk |
| Our R&D process was flexible enough to be adjusted to new findings <sup>excluded</sup>  | Our R&D process focused on reaching the project target without any delay <sup>excluded</sup>    |
| New R&D findings influenced the project target  | New R&D findings did not influence the project target   |
| The project planning was carried out in small steps during the project implementation   | The project planning was basically carried out at the beginning of the project                  |
| Despite of potential delays in project execution we were flexible and took advantage of opportunities as they arose   | We first of all took care of reaching our initially defined project targets without delays      |
| We allowed the project to evolve as opportunities emerged — even though the opportunities have not been in line with the original project target                    | We have always paid attention to reach the initial project target                               |
| Potential setbacks or external threats were used as advantageous as possible  | By the use of upfront market analyses we tried to avoid setbacks or external threats            |

\*The items were put in present tense. Further, instead of “R&D Process” we used the term “founding process”; instead of “R&D findings”, we used the term “new insights”. Two items not fitting to our context were excluded.

**Table 5 Measurement of Teamwork Quality**

*Please state on a scale from 1 = „strongly disagree“ to 7 = „strongly agree“ to what extent these statements describe the founding team.*

*(Cronbach's alpha = .949 based on the used items)\**

| <b>Dimension</b>      | <b>Items</b>   |
|-----------------------|--|
| <b>Coordination</b>   | <ul style="list-style-type: none"> <li>• The work done on subtasks within the project was closely harmonized</li> <li>• There were clear and fully comprehended goals for subtasks within our team</li> <li>• The goals for subtasks were accepted by all team members</li> <li>• There were conflicting interests in our team regarding subtasks/subgoals<sup>ReverseCoded</sup></li> </ul>   |
| <b>Mutual Support</b> | <ul style="list-style-type: none"> <li>• The team members helped and supported each other as best they could</li> <li>• If conflicts came up, they were easily and quickly resolved</li> <li>• Discussions and controversies were conducted constructively</li> <li>• Suggestions and contributions of team members were respected</li> <li>• Suggestions and contributions of team members were discussed and further developed</li> <li>• Our team was able to reach consensus regarding important issues</li> </ul> |
| <b>Effort</b>         | <ul style="list-style-type: none"> <li>• Every team member fully pushed the project</li> <li>• Every team member made the project their highest priority</li> <li>• Our team put much effort into the project</li> <li>• There were conflicts regarding the effort that team members put into the project<sup>ReverseCoded</sup></li> </ul>  |

\*We excluded the two reverse coded items due to on inconsistent factor loadings. Further, we slightly changed wording to adapt the measure to our sample.

## **Chapter D: Persuasive Communication and Fundraising Success**

### **ETHOS, PATHOS, AND LOGOS IN CROWDFUNDING— EXPLORING THE LINK BETWEEN RHETORIC PERSUASION IN CROWDFUNDING VIDEOS AND CROWDFUNDING SUCCESS**

Single-authored<sup>10</sup>

#### **Abstract**

This study applies an exploratory approach to provide first insights into rhetorical strategies within crowdfunding videos. In a first step, I adapt success-factors, which are assumed to build legitimacy during the resource acquisition process, to crowdfunding videos. These features are evaluated in regards to their rhetorical appeal and classified into the three persuasion modes defined by Aristotle—ethos, pathos, and logos. In a second step, I conduct empirical analyses, which offer first analytical insights into how the persuasion modes affect crowdfunding success. The findings give first suggestions for optimal combinations of these features; thus, for the definition of rhetorical strategies.

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## 1. Introduction

Crowdfunding campaigns are recent and often adapted approaches to overcoming the liabilities of newness in the founding process (e.g., Bruton, Khavul, Siegel, and Wright, 2015). In fact, according to Massolution (2014), existing crowdfunding platforms have raised 2.7 billion USD and successfully funded more than 1 million campaigns in 2012. A crowdfunding campaign gives nascent entrepreneurs the opportunity to incrementally tap into the market by testing how potential customers react to the new product or idea. It represents a unique chance for gathering reliable market information, gaining legitimacy, and effectively building on these resources (e.g., Frydrych, Bock, Kinder, and Koeck, 2014). Thus, it is highly pertinent to ascertain what nascent entrepreneurs need to do to fully leverage this funding chance.

Several scholars have attempted to answer this question. For instance, Belleflamme, Lambert, and Schwienbacher (2014) examined how the two main forms of crowdfunding, i.e., “pre-selling” and “profit sharing,” can be implemented optimally. As, in the capital acquisition process, the entrepreneurial team is typically required to present the business in front of potential investors (e.g., Clark, 2008), narratives used are an essential part of the investors’ evaluative judgments (e.g., Villanueva, 2013a, Villanueva, 2013b). In view of this fact, Allison, Davis, Short, and Webb (2015) analyzed the impact of language usage on the the speed with which microloans are funded by individual investors. Since capital acquisition within a crowdfunding campaign is mainly conducted online, nascent ventures appeal to potential backers using online media (e.g., audio, video, or text). Hence, an investigation of the nascent ventures’ profile information is inevitable, in order to better identify the crowdfunding campaign types that are more likely to gain support from the crowd. Additionally, when analyzing their online profile, the language used by the (nascent) entrepreneurs must be examined through a multi-faceted lens. Since online profiles can contain text (written language), pictures (visualized language), and videos (a combination of spoken, audio, and visualized language), conducting only text analysis of the written profile content is insufficient to elucidate the full extent of information that can influence potential backers. Beyond that, Mollick (2014)

explored potential quality signals within the profile information that might influence the success of a crowdfunding campaign. He found, for example, that projects promoted through a video are more likely to receive funds than those not represented through a video. Hence, information conveyed to the crowd via video seems to be of particular relevance for this kind of resource acquisition process.

Building on the work of Mollick (2014), the present study applied an exploratory approach (e.g., Cho, Shen, and Wilson, 2012; Yang, 2013) in order to reveal first analytical insights of how video content persuade backers within a crowdfunding campaign. More specifically, was is grounded in the ancient work of Aristotle, as he is often noted as the founder of the art of persuasive communication and rhetoric theory (e.g., McKee, 2003; Clark, 2008). In particular, his work *Rhetoric* offers a theoretical frame that can be adapted to multi-faceted communication media, i.e., the video, since persuasion can be induced by text and images, as well as by music or spoken language. In this regard, not only narratives (e.g., Dodd, 2002; Fletcher, 2007; Mantere, Aula, Schildt, and Vaara, 2013), but also technical qualities of a video must be included in the exploration, as they can be a part of a rhetoric strategy. Aristotle identified *ethos*, *pathos*, and *logos* as the three core modes of persuasion. With *ethos*, he referred to the credibility and trustworthiness of the characters (i.e., the entrepreneurs or the actors in the videos/ or the narrator, when the actor is absent). Similarly, *pathos* pertains to the capability to appeal to somebody's emotions, while *logos* refers to the ability to reason facts and circumstances.

Moreover, this study also aimed to capture the high degree of uncertainty due to technological newness. In addition, its goal was to provide results for the mainstream. Finally, as most of the crowdfunding platform providers recommend using a video, it attempted to derive recommendations for the implementation of entrepreneurial videos. In order to meet these objectives, the present study used profile data of technology-driven projects that were promoted online in 2014 on the worldwide crowdfunding platform Indiegogo. The study findings provide two main contributions to the crowdfunding and entrepreneurial communication literature.

First, in contrast to most studies in this emerging field, this research moves away from the discussion on what a story is, if a story exists, and what narratives are.

Instead, the research focus is on the effects of “the communicated message” in the videos with respect to the decision of the backers. Thus, independently from whether there is a story or not, I defined features that a video should comprise, when the entrepreneurs want to appeal to ethos, pathos, or logos. These features were obtained from extant work in entrepreneurial communication and legitimacy literature (e.g., Lounsbury and Glynn, 2001; Pollack et al., 2012). Applying Aristotle’s rhetoric theory, I could offer a theory-based framework for analyzing entrepreneurial video material and deepen the understanding of persuasive communication in entrepreneurship.

Second, the present study provides empirical evidence to the emerging research field of entrepreneurial communication. Thereby, I followed Mollick (2014), who showed that projects promoted through an online video were more likely to achieve their funding goals on the crowdfunding platform Kickstarter. I confirmed his findings and extended them by providing first analytical insights on the most relevant persuasion mode or “mode-mix,” identified within the online videos, in the context of technological crowdfunding campaigns.

This paper is presented in two main parts. It starts by providing an introduction in rhetorical strategies and a review of extant literature on the role of communication in the resource acquisition process. This is followed by the discussion of the role of online communication in the specific context of crowdfunding. Next, I provide a framework to analyze entrepreneurial video material. In the second part, I statistically explore and discuss the impact of ethos, pathos, and logos appeals on the crowdfunding campaign success, as well as present study implications, before discussing its limitations, and finally recommending some paths for future research in this field.

## **2. Theoretical Background**

Before discussing literature pertinent to this study, it is essential to note that the terms “narratives,” “stories,” or “tales” are in common usage, when referring to what is being said, written, or shown in the context of their effect on someone else’s evaluative judgments or emotions. For none of these terms an explicit definition is

been established. Thus, in this work, I have adopted a more generic term “communication” in order to refer to the entrepreneurs’ information transmission to another party irrespective of the persuasion mode used.

In general, communication initiated by entrepreneurs, employees, leaders, or politicians has been analyzed from different perspectives and has been used in several ways. For instance, narratives were analyzed in order to increase knowledge and evidence about the emotional state and sense-making of the narrator (e.g., Byrne and Shepherd, 2015; Mantere et al., 2013; Wolfe and Shepherd, 2015). Discourses were explored to increase the understanding of the manipulative effect of communication within an organizational change implementation (e.g., Ibarra and Barbulescu, 2010; Sonenshein, 2010). Further, entrepreneurial stories were examined as a means to investigate the persuasive strength of communication within entrepreneur-investor interaction (e.g., Martens, Jennings E., and Jennings P. (2007)). However, the entrepreneur-investor interaction perspective has attracted the most widespread interest among management scholars within the last decade. Hence, in the following sections, I will firstly discuss how communication can affect social action, before elaborating on the role of communication in the resource-acquisition process, and finally specifying its role in the context of crowdfunding.

## **2.1 Rhetorical Strategies**

Similar to managers (Green, 2004), founders spend a significant proportion of their working time in verbal activity, aimed at information gathering, product promotion, or developing shared understanding of the world with stakeholders and (potential) customers. However, most of the founders are not aware of how important their communication is for their social actions. Several scholars have shown that how something is communicated can influence the diffusion of managerial practices (Green, 2004), legitimize alternatives (Greenwood, Suddaby, and Hinings, 2002; Vaara, Kleymann, and Seristö, 2004), or motivate others to participate (Creed, Maureen, and John, 2002). In this regard, rhetorical theory offered explanations, which helped to increase the understanding of entrepreneurial communication and its causes.

Rhetoric has a long history in the humanities and can be traced back to the work of Aristotle. It is a broad and complex theory with extensive possibilities of adaptability. It encompasses not only language, but “was discounted as the study of superficial elements of style or appearance of communication rather than its content” (Suddaby and Greenwood, 2005, p. 39). Most of the studies using a rhetorical perspective examined how legitimacy of organizational changes can be established through persuasive communication (e.g., Golant and Sillince, 2007; Whittle, Suhomlinova, and Mueller, 2010). For instance, Ruebottom (2013) proposed that rhetorical devices (e.g., metaphors and analogy) and vocabulary sets build meta-narratives (“master-frames”) that influence organizational legitimacy.

Building on the work of Green (2004), who proposed that the type of persuasion mode (ethos, pathos, or logos) affects the speed the diffusion of managerial practice, I examined how these types of persuasion within crowdfunding campaigns affect crowdfunding success. According to the theoretical perspectives on persuasion that have recently attracted most attention—i.e., the extended elaboration likelihood model (Slater, 2002) and the transportation-imagery model (Green and Brock, 2000)—this effect is higher when the speakers or actors manage to immerse the audience in their narratives. Also, following Aristotle (1991), this immersion is more likely to occur when (1) the characters or actors within a communicative act appear *believable* and when the communicated *content seems to be real* (ethos); (2) they develop *a cognitive and emotional connection* to the audience (pathos); and (3) they provide *logic, non-contradictory arguments* (logos).

## 2.2 The Role of Communication in the Resource Acquisition Process

Classical social ties (e.g., Hall and Hofer, 1993; Steier and Greenwood, 1995) and signaling approaches (e.g., Scott and Daniel, 2002; Scott and Toby, 2002) have been criticized for not being able to fully capture and explain the processes by which entrepreneurs exploit their relationships or by which the set of signals is leveraged to acquire the required capital (e.g., Baron and Markman, 2003; Lounsbury and Glynn, 2001). As such, focusing on entrepreneurs’ communication quality, when they try to convince resource providers, represents an alternative and new method to address



these shortcomings (Martens et al., 2007). Extant studies suggest that entrepreneurs that engage in telling a story or persuade through their narratives are more likely to succeed in resource acquisition (Villanueva, 2013a). In her pioneer empirical study in this area, O'Connor (2004) showed that narratives affect the investors' perception of legitimacy. Martens et al. (2007) found that identity-related pieces of an entrepreneurial story, the elaboration of the rationale behind a firm's intended actions, and the use of contextually familiar and unfamiliar elements in the entrepreneurial narratives have a significant impact on the acquiring capital success. Similarly, Phillips, Tracey, and Karra (2013) provided evidence indicating that the more identities a money borrower claims in the business narratives, the more the lenders are willing to provide financial backing. Beyond that, Pollack, Rutherford, and Nagy (2012) built on the work on narrative sense-making, reporting that preparedness of a pitch significantly and positively affects the perceived cognitive legitimacy from the perspective of investors. The last concept was the focus on Villanueva (2013a). Indeed, the author proposed a theoretical mediation model to explain how stories influence individual cognitive and affective states, which subsequently affect the evaluative judgments of potential funders.

## **2.3 Communication in Crowdfunding Campaigns**

Crowdfunding as a form of fundraising is rooted in the more traditional micro-financing (Morduch, 1999) and was initially inspired by the concept of crowdsourcing (Poetz and Schreier, 2012). Nonetheless, it is unique in the sense that it utilizes the Internet and various online platform providers (such as Indiegogo, Kickstarter, and Startnext, among others) to convey the message and attract investors. In practice, this type of fundraising has reached a worldwide interest among entrepreneurs and has provided numerous benefits to the capital acquisitions market. Yet, despite its growing popularity, a formal definition of this fundraising form does not presently exist. Among various descriptions of crowdfunding, that proposed by Schwienbacher and Larralde (2010) is particularly noteworthy, considering the recent research interests and the two existing types of crowdfunding, i.e., pre-selling and profit sharing (Belleflamme et al., 2014; Sahm, Belleflamme, Lambert, and Schwienbacher, 2014). In line with this classification, according to Schwienbacher and Larralde (2010), crowdfunding is

“an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes.” (p. 4)

Within a face-to-face interaction, the founder/s can react to the investors' questions and opinions and, if necessary, silence their doubts. This, however, is not possible within crowdfunding campaigns, as they are not interactive. Hence, given the absence of personal interaction between the fundraisers and the funders during the product/ idea presentation, “the communicated message” as well as the used medium, become particularly relevant. Even though most founders engage in extensive marketing activities to promote their crowdfunding campaigns, which can influence the funding success, the pure communication through their online profile still plays an important role in their campaign success. In this regard, Anglin, Allison, McKenny, and Busenitz (2014) found that the usage of word-families (which they captured through word counting in the written content of the online profiles), such as a collective focus or action-driven language, had a significant impact on the speed of funding acquisition. In a similar study, Allison et al. (2015) investigated the degrees of profit, risk taking, human interest, and diversity wordings on the time taken to attain the required funding. They found that intrinsic wording, which gives cues to be tied to intrinsic motivation, was an effective way of quickly attaining financial support, compared to an excessive use of extrinsic words.

Aside from these two studies, extensive literature review revealed absence of any other works focusing on the concrete effect of communication on the funding success in the context of crowdfunding. However, both studies used data from a non-profit crowdfunding platform with the mission to connect people in order to alleviate poverty. As funders that are active on exclusively socially oriented crowdfunding platforms can be assumed to generally have a stronger social interest, the results might be biased. In addition, focusing on the usage of special types of word-families provides insufficient understanding of the entrepreneur-investor communication. In order to meet the objectives of the present study, it was deemed more appropriate to employ a concept that includes the usage of words, pictures, sounds, etc., in combination, as this might help elucidate why this might lead to a certain behavior. Accordingly, a rhetorical perspective and its connection to persuasion cannot be

neglected in the context of crowdfunding. As such, from a rhetoric theory perspective—beyond the theory-based discussion of their presented findings—it is possible that the usage of “intrinsic words” or emphasis on a “collective focus” are just rhetorical strategies. Thus, it can be posited that Anglin et al.'s (2014) and Allison et al.'s (2015) constructs might induce a persuasive effect on funders due to a stronger transportation of credibility and trustworthiness of the fundraiser/s, or higher emotional involvement (e.g., Green and Brock, 2000; Slater, 2002).

In summary, rhetoric has started to play an important role in explaining how organizational changes or new ideas can be conveyed in order to achieve a certain target, such as induce a particular audience behavior. Indeed, in the extant literature attempting to explicate the resource acquisition process, many terms and concepts have been introduced; however, none has been theoretically or statistically validated. Although we can neither talk about empirical evidence nor about a narrative, storytelling, or entrepreneurial communication theory, the commonality among the presented debates is that they examine communication in the light of its persuasive effect on potential backers' decision.

## 2.4 Capturing Persuasive Features of Crowdfunding Videos

Building on this theoretical background, this study examined the role of persuasive communication in the context of crowdfunding, by applying a rhetoric perspective and scrutinizing the specific medium *video* used for promotional purposes within crowdfunding campaigns. This approach helped define persuasive features of videos and classify them in the three persuasion modes proposed by Aristotle, namely *ethos*, *pathos*, and *logos*. Hence, the study relied not only on Aristotle's work, but also on best practices of visual rhetoric in the field of advertisement. The resulting classification provided the framework for subsequent statistical analyses performed within this study. In view of the multi-faceted communication medium and Suddaby and Greenwood's (2005) definition of rhetoric, the analyses included video content and appearance features, as both can be part of a rhetoric strategy.

As previously noted, *ethos* refers to the credibility and trustworthiness of the author or speaker. The direct and indirect message that an actor or a speaker transmits has an ethically valuable appeal to the audience. Similar to the branding industry that

benefits from celebrity faces (visual rhetoric) on advertising material to appeal to ethos (e.g., Stafford, Spears, and Hsu, 2003), an entrepreneurial video can assist with selling the idea to funders by increasing legitimacy of the business and its founders. Thus, the *presence of a human face*—whether real or animated—might be valuable in inducing this credibility and trust (Mollick, 2014). Similarly, *stressing the uniqueness of the product or the idea* (Lounsbury and Glynn, 2001) might help increase trustworthiness, since this implies that the entrepreneurial team is aware of the existing—perhaps deficient—solutions, which are enhanced by their approach. Moreover, the actor(s) and the speaker in the video might raise their credibility when *signaling a distinct personality with unique objectives* (e.g., Anlanger and Engel, 2008). This might indirectly demonstrate that nobody else is capable of solving the presented problem.

Building on the ancient work of Aristotle (1991), competence, the intention, and the speaker's empathy are also important requirements that need to be met in order for the founders and their business ideas to be perceived as credible.

First, entrepreneurs' competence can be conveyed by emphasizing past success and experiences, since this helps to lower uncertainty and increase legitimacy from the backers' perspective (Lounsbury and Glynn, 2001). For instance, a video that contains *advertisement of proprietary capital and resource selection-capabilities* or specifically referring to *the venture's prior performance and track record* can be assumed to appeal to ethos. Considering the fact that a video contains not only spoken or written, but also visualized manifestations of communication, expertise/competence can also be signaled with a high degree of professionalism in the manner video is choreographed and executed. Hence, whether the video has been self-filmed by non-experts or is a *professional video shoot* can be part of an ethos appeal. Ethos can be further enhanced by structuring the video content into sub-topics by clearly signaling the changes of subject, which can be achieved by using *clear titles* and an *agenda* (Mollick, 2014).

Second, verbal communication is the easiest way to *convey an inner goal or an intention*, which is also assumed to increase legitimacy towards investors (Lounsbury and Glynn, 2001). Thus, if such an intention has been communicated, an ethos appeal can be assumed.

Third, unlike competence and the intentions of the speaker(s) or the actor(s), empathy is more difficult to convey to the audience. As empathy indicates ability to understand and share the feelings of others, it is inextricably tied with pursuing collective interests (e.g., Van de Ven, Sapienza, and Villanueva, 2007). Hence, a video in which *alternative solutions are solicited* and the *relevance and value to related resources* (such as extant and anticipated technologies, organizational configurations and capabilities, or market needs) is demonstrated (e.g., Denning, 2004; Fog, Budtz, Munch, and Blanchette, 2010), signals that the entrepreneur or the entrepreneurial team has interests that go beyond the own. By analogy, *stressing the normative appropriateness* of the new product or idea constructs not only an identity that legitimates (Lounsbury and Glynn, 2001), but signals empathetic traits, which appeal to ethos.

*Pathos* is a persuasion mode that relies on the emotional influence of the audience. Thus, when attempting to convince someone, it is essential to trigger the appropriate emotional state. For instance, *the use of emotionally charged and tangible language* is assumed to be persuasive in the context of entrepreneurship funding (e.g., Anglin et al., 2014; Allison, McKenny, and Short, 2013). Beyond *directly showing or addressing an emotional involvement or component* (Yang, 2013) within the video by, for example, sharing a touching experience, emotional states can be triggered by the voice tone or by an *underlying melody* (e.g., Scott, 1990). Moreover, in line with the findings reported in extant literature on aesthetic engagement (e.g., Berleant 1991; Larkey and Hecht, 2010; Miller, Hecht, and Stiff, 1998 ), an increased connection to reality might facilitate the emotional involvement of the audience. In other words, a *plausible conflict or problem* is more likely to emotionally involve the audience than a fictitious one. Similarly, a video that shows scenes from real life is more likely to induce an emotional involvement than *animated videos*, since it is easier for the viewers to imagine finding themselves in similar situations.

*Logos* refers to the rationale and the logic of “the communicated message”. This persuasion mode builds on the assumption that the audience is capable of quickly grasping the main point of the message being conveyed and is not flooded with unnecessary information. In other words, it is an appeal to the desire for efficient and effective action (Green, 2004). Accordingly, language that aims to persuade

through logos employs *factual data, statistics, and theoretical definitions* (Simon, 1945). As such, fact-based arguments about the team and the new product or idea may rely on the persuasion mode logos and should be effective in convincing the audience. For instance, the speaker might claim that the entrepreneurial team comprises of members with distinct personalities and benefits from the different “minds” (Macmillan, Siegel, and Narasimha, 1985). In sum, a *clear rationale and explication of the entrepreneurial activities* (Lounsbury and Glynn, 2001) as well as an *uncrowded revelation of facts* (Mollick, 2014) without rambling might be key elements of effective communication. Similarly, avoidance of excessive detail (*only including meaningful detail*) and *short video length* could also be indications that the entrepreneur or the entrepreneurial team aimed at appealing to logos. Another typical logos strategy relies on providing facts about third-party endorsements. Thus, mentioning “big names” in order to *borrow reputation* or *talk about (intensive) social interaction* in the video increases the public relations value (e.g., Morsing, Schultz, and Nielsen, 2008) and can be assumed to be a logos appeal.

As can be seen from above, these three modes cannot be considered separately, as they often appear simultaneously (Green, 2004). For instance, an entrepreneur can show his/ her unique personality through his/ her emphatic manner (ethos) in telling a story about a touching topic (pathos) and by using statistics to stress the facts (logos). Further, the identified features could refer to different aspects of a video, i.e., to the actor(s)/ speaker(s), the video setup, and to the video content. Considering these three aspects, Table 1 summarizes and structures the persuasion features commonly used in crowdfunding videos.

**Table 1 Persuasive Features in Crowdfunding Videos**

|                         | Ethos-Features   |  | Pathos-Features                           |  | Logos-Features  |   |
|-------------------------|--|--|---|--|---|---|
| Actor(s)/<br>Speaker(s) | Human face   | <i>Is a human face part of the video?</i>  | - -                                       |  | - -   |   |
|                         | Actor(s)/ Speaker(s) have a distinct personality and unique objectives | <i>Do the actor(s)/ speaker(s) seem unique in regards to their personality and goals?</i>      |   |  |   |   |
| Content                 | Stressing the uniqueness of the product or the idea                    | <i>Is the product or the idea unique?</i>  | Emotionally charged and tangible language | <i>Has such a language been used?</i>  | Statistics  | <i>Are statistics visible or mentioned?</i>   |
|                         | Resource capital and resource selection capabilities                   | <i>Are these competences mentioned / advertised?</i>   | Emotional involvement or component        | <i>Does the video contain an emotional/ touching event/ situation?</i>       | Theoretical definitions   | <i>Are theoretical definitions visible or mentioned?</i>                                    |
|                         | Entrepreneurs' or the venture's prior performance and track record     | <i>Are these qualities mentioned / advertised?</i>   |   |  | Clear rationale and explication of the entrepreneurial activities | <i>Have the entrepreneurial activities by the time of the video been clearly presented?</i> |
|                         | Inner goal/ intention  | <i>Has an inner goal or an intention been communicated/ shown?</i>                             | Plausible conflict or problem             | <i>Is the addressed problem/ conflict/ market need plausible or fictive?</i> | Only including meaningful detail                                  | <i>Are the provided details helpful / meaningful?</i>                                       |
|                         | Alternative solutions  | <i>Have alternative solutions been solicited?</i>  |   |  | No rambling   | <i>Do the actor(s)/ speaker(s) ramble?</i>  |
|                         | Relevance and value to related resources                               | <i>Have the relevance and the value to related resources been mentioned/ stressed somehow?</i> |   |  | Cite "big names" (borrow reputation)                              | <i>Are third parties mentioned?</i>   |
|                         | Normative appropriateness  | <i>Has normative appropriateness been mentioned / stressed somehow?</i>                        |   |  | Talk about social interaction                                     | <i>Do the actor(s)/ speaker(s) talk about their social interactions?</i>                    |
| Setup                   | Clear titles   | <i>Are there clear titles visible?</i>   | Underlying melody                         | <i>Is there an underlying melody?</i>  | Video length  | <i>How long is the video?</i>   |
|                         | Agenda   | <i>Is an agenda visible?</i>   | Animated video                            | <i>Is the video animated or real?</i>  |   |   |
|                         | Professional video setup   | <i>Is the video shoot professional?</i>  |   |  |   |   |

### **3. Data**

#### **3.1 Data Collection and Sample**

In order to explore how the persuasion features affect crowdfunding success, the data for this study was collected from (potential) technology ventures by automatically screening their profile on the crowdfunding platform [www.indiegogo.com](http://www.indiegogo.com), which is the largest global online tool for fundraisers following the principle of “pre-selling.” Data collection was performed in several steps, commencing with extracting the profile data of technology campaigns in the period from June to October 2014. Since the first data set contained a mix of open and concluded campaigns, and only comparable campaigns (i.e., completed campaigns) were required, data had to be extracted twice. In the second profile extraction, which was used for the subsequent analyses, only data pertaining to completed campaigns was retrieved. As not all campaigns offered an online video, only those that featured video footage were retained. In the next step, pertinent data was collected by accessing the videos via the links provided, focusing on the persuasive features. By viewing each video, the features were captured. This method is consistent with published work using data collection through coding television show episodes (e.g., Maxwell, Jeffrey, and Lévesque, 2011) or other video material (e.g., Hoehn-Weiss, Brush, and Baron, 2004).

To minimize potential bias due to the researcher’s subjective evaluations, and to consider objectivity of the measurement, two research assistants, both working in the entrepreneurship context, examined the videos independently from each other, and with a time lag of four months. In cases, where the existence of a particular element was not clearly evident, I discussed the specific case with both colleagues. Moreover, a third helper, who does not work in the entrepreneurship field, looked at some randomly chosen videos in order to assess the congruence among the three researchers. Finally, I eliminated all cases where the research assistants had a dissimilar result concerning the presence of the persuasive features, as well as all crowdfunding campaigns that represented non-serious efforts to raise funds. This



process resulted in 180 cases with an online video and 215 without a video. The following table provides the summary statistics of the analyzed sample.

**Table 2 Summary Statistics**

|                                    | Video         | No Video     |
|------------------------------------|---------------|--------------|
| <i>N</i>                           | 180           | 215          |
| <i>Campaigns with Backers</i>      | 164           | 93           |
| <i>Campaigns with Backers in %</i> | 91%           | 43%          |
| <i>Total Funds*</i>                | 13'110'370.83 | 742'915.0973 |
| <i>Goal Achieved</i>               | 59.00         | 12.00        |
| <i>Goal Achieved in %</i>          | 33%           | 6%           |
| <i>Backers</i>                     | 87'457        | 6'739        |
| <i>Comments</i>                    | 14'738        | 718          |
| <i>Updates</i>                     | 1'570         | 242          |

\*independently from whether the entrepreneur(s) received the funds or not

## 3.2 Variables

### 3.2.1 Dependent Variables

Indiegogo offers two basic funding models, “all or nothing” and “keep what you get.” The performance variables adopted in this study were directly extracted from the Indiegogo system. Accordingly, the *level of funding* and the *number of backers* at the end of the campaign were employed, independently from the funding model. A histogram showed a strong skewed distribution of both performance variables, thus challenging one of the important assumptions necessary for applying OLS regression analyses. In accordance with the advice given by Mollick (2014), in order to overcome this issue, I transformed the variables and included their logarithmic values in the analyses. Moreover, I tested a third variable, *funding goal achievement*, which captured whether the campaign achieved the funding goal (value = 1) or not (value = 0).

### 3.2.2 Independent Variables

Table 1 presents all independent variables. The intensity of persuasion power depends on how intensive the persuasive features are, from the perspective of the

research assistants. Thus, as the first step towards the operationalization of persuasion modes within videos, the researchers focused solely on the presence of a specific feature. Hence, the relevant features were binary coded (1 = existent, 0 = nonexistent). In order to identify the mode that was used most frequently, I counted the evident features within the modes, in order to define one representative variable per mode. To ensure comparability, I standardized (via z-transformation) the three variables—PATHOS, ETHOS, and LOGOS—before including them in the regression analyses.

### 3.2.3 Control Variables

In addition, I also extracted from the system the number of *comments* and *updates* and the *Facebook Likes*, which were included as control variables due to potential network effects (Martens et al., 2007). Finally, I considered the level of the set *funding goal* in order to ensure unbiased results.

## 4. Analyses and Results

As this is an exploratory empirical study, its goal was not to engage in formal hypothesis testing. Instead, it aimed to empirically explore how rhetorical aspects within online videos affect the crowdfunding success. Such a method is particularly appropriate for studying evolving research topics, such as crowdfunding and rhetoric in entrepreneurship (Busenitz, West, Shepherd, Nelson, Chandler, and Zacharakis, 2003; Cornelius, Landström, and Persson, 2006). Since the research goal of the present study was to provide as comprehensive view of rhetoric influence on crowdfunding success as possible, I explored not only direct single-wise effects, but also conducted factor analyses and tested two aggregations of the variables within linear and binary logistic regression analyses. Binary logistic analyses were performed whenever the effects on goal achievement (binary coded) have been examined.

In order to test whether crowdfunding campaigns with a video have a significantly higher success relative to crowdfunding campaigns without a video, I first conducted an independent samples t-test, with Sample A = “has a video” and

Sample B = “no video.” The findings confirmed that the three means of the dependent variables were significantly higher in Sample A.

#### **4.1 How are Ethos, Pathos, and Logos Features Associated with Successful Fundraising?**

According to prior research, persuasive communication involves the audience in the narratives and thereby influences the audience’s emotions and behavior. In the context of entrepreneurial funding, this involvement may lead to the decision to invest in a potential new venture. The factors leading to successful fundraising have been of great interest in the context of face-to-face pitches with expert investors (e.g., Cardon, Sudek, and Mitteness, 2009; Chen, Yao, and Kotha, 2009; Pollack et al., 2012). However, appeals for crowdfunding are conveyed in a completely different setting, as the *ad hoc* interchange of information does not take place. In addition, entrepreneurs do not have the chance to explain any misunderstood issues or answer questions. Signals of quality, such as preparedness or entrepreneurial passion (Chen et al., 2009), as well as probity, are more difficult to transmit through an online profile. On the other hand, entrepreneurs may find not being exposed to critical questions of the investors beneficial, as these might be difficult to answer quickly.

Among the options that entrepreneurs have to present themselves and their new idea or product, the online video—compared to other forms of online communication (e.g., only written or only audio material)—is most similar to the traditional face-to-face pitch. On the other hand, in contrast to the traditional face-to-face pitch, the potential backers only have the content of the video on which to base their decisions. This might be one reason why campaigns without a video are less likely to succeed—they furnish insufficient information and involvement. Accordingly, raising money through crowdfunding and using a video as sales pitch means escaping from the unpleasant awkwardness that might arise from having to answer questions and to justify business ideas. At the same time, entrepreneurs have to make sure that they deliver the right quantity and quality of information, as communication “mistakes” cannot be compensated. Owing to these characteristics, starting a crowdfunding campaign represents a unique chance to convey one’s

conviction to a potential market. Thus, using rhetoric strategies might be the key to this success.

Table 1 provides ideas sourced from the extant literature on communication effects, focusing on the persuasive aspects that have been shown to positively influence funding success. Using this framework, I regressed each of the three dependent variables with these features (each persuasion mode single-wise). If the persuasive features positively influence the crowdfunding success, this would reinforce the relevance of rhetoric power and enhance rhetoric theory in the context of crowdfunding. Further, it might also cast a critical glance at crowdfunding, as it allows assessing the quality of this funding form, i.e. do high-potential ideas with weak rhetoric power attract less attention from the potential funders?

The regression results are shown in Table 3 to 5. It is obvious that the control variables show the greatest overall impact across all three analyses. On the other hand, very few persuasive features show a positive and significant effect. The effects on the received amount of funding (AoF) and the number of backers (AoB) remain robust across nearly all cases. Specifically, among ethos factors, the solicitation of alternative solutions ( $b_{AoF} = .15, p = .053$ ;  $b_{AoB} = 0.07$ , not sig.) and the professional video setup ( $b_{AoF} = 0.13, p = .052$ ;  $b_{AoB} = 0.13, p = .038$ ); among pathos factors, the direct emotional involvement ( $b_{AoF} = 0.28, p = .012$ ;  $b_{AoB} = 0.30, p = .002$ ) and the underlying melody ( $b_{AoF} = 0.15, p = .017$ ;  $b_{AoB} = 0.12, p = .023$ ); and among logos factors, the social interactions ( $b_{AoF} = 0.13, p = .067$ ;  $b_{AoB} = 0.10, p = .091$ ) as well as the meaningful details ( $b_{AoF} = 0.21, p = .002$ ;  $b_{AoB} = 0.18, p = .002$ ) show a significant impact (at 5% and 10% confidence level, respectively) on the crowdfunding success.

In contrast, regression analyses using the third success variable, goal achievement (GA), show a notable different result. Within the ethos factors, the demonstration of the relevance and value to related resources ( $b_{GA} = 1.23, p = .064$ ) and the professional video setup ( $b_{GA} = 1.18, p = .07$ ) are significant at a 10% confidence level, while stressing the normative appropriateness ( $b_{GA} = -1.69, p = .013$ ) surprisingly shows a negative significant effect on the goal achievement. Within the pathos factors, no significant effect was found. Finally, among the logos

factors, only talking about social interactions ( $b_{GA} = 1.13$ ,  $p = .072$ ) positively affected the goal achievement at a 10% confidence level.

**Table 3 Regression Analyses, Ethos-Features**

| Dependent Variables  | Model 1<br>(LOG)<br>Total<br>Funding<br>Received | Model 2<br>(LOG)<br>Number of<br>Backers | Model 3<br>Goal<br>Achieved |
|--|--|--|-----------------------------|
| <b>Controls</b>  |  |  |                             |
| <i>Number of Comments</i>  | 0.08   | 0.09                                     | 0.07                        |
| <i>Number of Updates</i>   | 0.43***  | 0.52***                                  | 0.09*                       |
| <i>Facebook Likes</i>  | 0.15*  | 0.21**                                   | 0.00*                       |
| <i>(Log) Funding Goal</i>  |  |  | -0.98***                    |
| <b>Ethos-Features</b>  |  |  |                             |
| <i>Human face is present</i>   | 0.11   | 0.13                                     | 0.37                        |
| <i>Characters seem to be equipped with distinct personalities and objectives</i> | -0.05  | 0.01                                     | 1.04                        |
| <i>The uniqueness of the product or the idea is stressed</i>                     | 0.04   | 0.03                                     | 0.08                        |
| <i>Resource capital and resource-picking capabilities are advertised</i>         | 0.11   | 0.09                                     | 1.01                        |
| <i>Entrepreneurs'/ venture's prior performance/ track record is communicated</i> | -0.03  | -0.05                                    | -0.30                       |
| <i>Clear titles</i>  | 0.01   | 0.03                                     | 0.60                        |
| <i>Set agenda</i>  | -0.03  | -0.06                                    | 1.46                        |
| <i>Transmission of an inner goals/ intentions</i>                                | 0.03   | 0.06                                     | 0.17                        |
| <i>Alternative solutions are solicited</i>                                       | 0.15†  | 0.07                                     | 2.31                        |
| <i>Relevance and value to related resources is demonstrated</i>                  | -0.07  | -0.07                                    | 1.23†                       |
| <i>Normative appropriateness is stressed</i>                                     | 0.01   | 0.00                                     | -1.69*                      |
| <i>Professional video setup</i>  | 0.13†  | 0.12*                                    | 1.18†                       |
| R square   | 0.42   | 0.56                                     |                             |
| Adjusted R square/ Pseudo R square   | 0.37   | 0.52                                     | 0.52                        |

\*\*\* $p < .001$ ; \*\* $p < .01$ , \*  $p < .05$ ; † $p < .10$

**Table 4 Regression Analyses, Pathos-Features**

| Dependent Variables   | Model 1<br>(LOG)<br>Total<br>Funding<br>Received | Model 2<br>(LOG)<br>Number of<br>Backers | Model 3<br>Goal<br>Achieved |
|---|--|--|-----------------------------|
| <b>Controls</b>   |  |  |                             |
| <i>Number of Comments</i>   | 0.09   | 0.09                                     | 0.06 **                     |
| <i>Number of Updates</i>  | 0.45 ***   | 0.55 ***                                 | 0.04 †                      |
| <i>Facebook Likes</i>   | 0.16 *   | 0.22 ***                                 | 0.00                        |
| <i>(Log) Funding Goal</i>   |  |  | -0.79 ***                   |
| <b>Pathos-Features</b>  |  |  |                             |
| <i>Use of emotionally charged and tangible language</i>               | -0.15  | -0.12                                    | 1.348                       |
| <i>Directly show or address an emotional involvement or component</i> | 0.28 *   | 0.30 **                                  | -0.52                       |
| <i>Plausible conflict or problem</i>                                  | -0.01  | -0.01                                    | -0.10                       |
| <i>Underlying melody</i>  | 0.15 *   | 0.12 *                                   | 0.23                        |
| <i>Animated video</i>   | -0.08  | -0.08                                    | -0.85                       |
| R square  | 0.40   | 0.56                                     |                             |
| Adjusted R square/ Pseudo R square                                    | 0.38   | 0.54                                     | 0.46                        |

\*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ ; † $p < .10$ **Table 5 Regression Analyses, Logos-Features**

| Dependent Variables  | Model 1<br>(LOG)<br>Total<br>Funding<br>Received | Model 2<br>(LOG)<br>Number of<br>Backers | Model 3<br>Goal<br>Achieved |
|--|--|--|-----------------------------|
| <b>Controls</b>  |  |  |                             |
| <i>Number of Comments</i>  | 0.08   | 0.08                                     | 0.07                        |
| <i>Number of Updates</i>   | 0.45 ***   | 0.53 ***                                 | 0.05 *                      |
| <i>Facebook Likes</i>  | 0.16 *   | 0.21 **                                  | 0.00                        |
| <i>(Log) Funding Goal</i>  |  |  | -0.92 ***                   |
| <b>Logos-Features</b>  |  |  |                             |
| <i>Statistics</i>  | -0.01  | -0.06                                    | -0.17                       |
| <i>Theoretical definitions</i>   | -0.04  | -0.08                                    | 0.35                        |
| <i>Clear rationale and explication of the entrepreneurial activities</i> | 0.04   | 0.08                                     | -0.19                       |
| <i>Cite "big names" (borrow reputation)</i>                              | -0.06  | -0.04                                    | 0.40                        |
| <i>Talk about social interaction</i>                                     | 0.13 †   | 0.10 †                                   | 1.13 †                      |
| <i>Video length</i>  | -0.03  | -0.02                                    | 0.00                        |
| <i>Avoidance of excessive detail (no rambling)</i>                       | -0.01  | -0.02                                    | 0.44                        |
| <i>Including meaningful details</i>                                      | 0.21 **  | 0.18 **                                  | 0.89                        |
| R square   | 0.55   | 0.41                                     |                             |
| Adjusted R square/ Pseudo R square                                       | 0.51   | 0.36                                     | 0.49                        |

\*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ ; † $p < .10$ 

Another important question in this context is which persuasion mode entrepreneurs should focus on. Therefore, further analyses were conducted to explore whether the number of the features present plays a role in the crowdfunding success.

Hence, I counted the extant features in each mode and standardized the sum to ensure comparability. Accordingly, the variables ETHOS, PATHOS, and LOGOS represent the respective sums of identified ethos, pathos, and logos features in the videos. The video length, pertaining to logos, was included single-wise in the regression, since it is a continuous variable (i.e., unlike other features, it was not binary coded), which would distort the results. Table 6 and 7 summarize the respective results. Model 1 to 9 in Table 6 include the persuasion modes single-wise in the regression. As can be seen, all modes show a significant and positive relation to the performance variables, except PATHOS on goal achievement (Model 6), which depict a non-significant effect. Model 10 to 12 show the results when all variables are incorporated. The results indicate that the effect of ETHOS remained robust ( $b_{AoF} = 0.195$ ;  $b_{AoB} = 0.190$ ;  $b_{GA} = 0.791$ , at a 5% confidence level). In particular, the high values of  $R^2$  and the Pseudo  $R^2$  in the binary logistic models are noticeable. Overall, the values range from 34.9% in Model 7 shown in Table 6 to 54% in Model 2 presented in Table 4. Compared to other empirical studies on entrepreneurship, these values are relatively high. A step-wise inclusion of the variables per model displays that most of the variance is explained by the control variables. In addition, the persuasive features show significant effects and—with the exception of the logos models—lead to significant increases in the explained variance.

Summarizing, the single-wise included features (Table 3, 4, and 5) provide rather disaffecting effects. On the other hand, their sum results in stronger effects, whereby PATHOS shows the greatest increase in  $R^2$  and ETHOS the most robust impact on crowdfunding success.

**Table 6 Descriptive Statistics, Persuasion Mode Comparison**

| <b>Variables</b>               | <b>Mean</b> | <b>SD</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>8</b> |
|--------------------------------|-------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <i>1. Number of Comments</i>   | 81.9        | 315.9     | 1        |          |          |          |          |          |          |          |
| <i>2. Number of Updates</i>    | 8.7         | 12.1      | 0.500**  | 1        |          |          |          |          |          |          |
| <i>3. Facebook Likes</i>       | 3050.7      | 15642.2   | 0.549**  | 0.202**  | 1        |          |          |          |          |          |
| <i>4. (Log) Funding Goal</i>   | 10.5        | 1.7       | 0.031    | -.052    | 0.098    | 1        |          |          |          |          |
| <i>5. (Stand. Sum) ETHOS</i>   | 0.0         | 1.0       | .001     | -.018    | 0.064    | 0.165*   | 1        |          |          |          |
| <i>6. (Stand. Sum) PATHOS</i>  | 0.0         | 1.0       | -0.074   | -.053    | 0.004    | 0.018    | 0.474**  | 1        |          |          |
| <i>7. (Stand. Sum) LOGOS</i>   | 0.0         | 1.0       | 0.057    | .071     | 0.081    | 0.157*   | 0.563**  | 0.494**  | 1        |          |
| <i>8. Video length (LOGOS)</i> | 189.3       | 96.8      | -0.016   | 0.107    | 0.013    | 0.211**  | 0.159*   | -0.022   | 0.132    | 1        |

\*\*p < .01; \*p < .05 (2-tailed)



**Table 7 Regression Analyses, Persuasion Mode Comparison**

|                                | Model 1                               | Model 2                       | Model 3          | Model 4                               | Model 5                       | Model 6          | Model 7                               | Model 8                       | Model 9          | Model 10                              | Model 11                      | Model 12         |
|--------------------------------|---------------------------------------|-------------------------------|------------------|---------------------------------------|-------------------------------|------------------|---------------------------------------|-------------------------------|------------------|---------------------------------------|-------------------------------|------------------|
|                                | (LOG)<br>Total<br>Funding<br>Received | (LOG)<br>Number of<br>Backers | Goal<br>Achieved | (LOG)<br>Total<br>Funding<br>Received | (LOG)<br>Number of<br>Backers | Goal<br>Achieved | (LOG)<br>Total<br>Funding<br>Received | (LOG)<br>Number of<br>Backers | Goal<br>Achieved | (LOG)<br>Total<br>Funding<br>Received | (LOG)<br>Number of<br>Backers | Goal<br>Achieved |
| <b>Controls</b>                |                                       |                               |                  |                                       |                               |                  |                                       |                               |                  |                                       |                               |                  |
| <i>Number of comments</i>      | 0.086                                 | 0.084                         | 0.061 **         | 0.095                                 | 0.096                         | 0.051 **         | 0.080                                 | 0.078                         | 0.059 **         | 0.089                                 | 0.092                         | 0.063 **         |
| <i>Number of updates</i>       | 0.449 ***                             | 0.543 ***                     | 0.059 *          | 0.457 ***                             | 0.551 ***                     | 0.051 *          | 0.448 **                              | 0.542 ***                     | 0.049 *          | 0.461 ***                             | 0.557 ***                     | 0.057 *          |
| <i>Facebook Likes</i>          | 0.182 *                               | 0.239 ***                     | 0.000            | 0.193 **                              | 0.247 ***                     | 0.000            | 0.193 **                              | 0.250 ***                     | 0.000            | 0.185 *                               | 0.241 ***                     | 0.000            |
| <i>(Log) Funding goal</i>      | -0.153 *                              | -0.135 *                      | -0.909 ***       | -0.115 †                              | -0.098 †                      | -0.721 ***       | -0.130 *                              | -0.111 *                      | -0.796 ***       | -0.138 *                              | -0.117 *                      | -0.878 ***       |
| <b>Persuasion Modes</b>        |                                       |                               |                  |                                       |                               |                  |                                       |                               |                  |                                       |                               |                  |
| <i>(standard. Sum) ETHOS</i>   | 0.248 ***                             | 0.238 ***                     | 0.888 **         |                                       |                               |                  |                                       |                               |                  | 0.195 *                               | 0.190 **                      | 0.791 *          |
| <i>(standard. Sum) PATHOS</i>  |                                       |                               |                  | 0.155 *                               | 0.178 **                      | 0.215            |                                       |                               |                  | 0.054                                 | 0.102                         | -0.238           |
| <i>(standard. Sum) LOGOS</i>   |                                       |                               |                  |                                       |                               |                  | 0.151 *                               | 0.128 *                       | 0.596 *          | 0.017                                 | -0.029                        | 0.306            |
| <i>Video length (LOGOS)</i>    |                                       |                               |                  |                                       |                               |                  | -0.027                                | -0.020                        | -0.001           | -0.039                                | -0.028                        | -0.002           |
| R square                       | 0.409                                 | 0.546                         |                  | 0.373                                 | 0.523                         |                  | 0.371                                 | 0.507                         |                  | 0.403                                 | 0.546                         |                  |
| Adj. R square/ Pseudo R square | 0.391                                 | 0.533                         | 0.482            | 0.355                                 | 0.509                         | 0.450            | 0.349                                 | 0.490                         | 0.465            | 0.375                                 | 0.525                         | 0.483            |

\*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ ; † $p < .10$

## 4.2 How are Ethos, Pathos, and Logos Features Correlated?

The persuasion modes are often represented in a triangle, symbolizing that they should be balanced (e.g., Bauer and Glaveanu, 2011; De Kort, Ijsselsteijn, Midden, Eggen, Fogg, Kjær Christensen, and Hasle, 2007). For instance a video that appeals exclusively to pathos, i.e., overwhelms with emotional arguments, may convey that the presented business idea or business model lacks solid reasoning. In addition, it is also more likely that entrepreneurs, when talking about their social interactions, would mention third parties (i.e., “big names”). Further, a professional video is more likely to have an underlying music than a self-filmed video. Consequently, the investigated persuasive features might represent fewer factors, which would imply a high inter-item correlation. In order to ascertain whether the persuasive features substantially measure fewer dimensions, I conducted an explorative factor analysis.

For this purpose, all items with factor loading greater than 0.6 were marked and clustered in the corresponding statistical factors. In the next step, the persuasion modes containing these factors were matched. Table 8 displays the rotated component matrix (varimax-rotation). In sum, five statistical factors representing five different dimensions and two single-items were found. The remaining items did not clearly load on any factor. However, I aggregated the loading items to five new variables, labeled F1 to F5. Note that the factors contained a mixture of ethos, pathos, and logos features. The overrepresented mode per factor was marked accordingly.

Three final regressions with the new variables were conducted in order to explore the impact of the five dimensions, while the other non-loading variables were included single-wise. The results are shown in Table 9.

**Table 8 Explorative Factor Analysis of the Persuasive Features**

| Persuasion Modes  | Persuasive Factors   | 1           | 2           | 3           | 4           | 5           | 6           | 7           | 8     |
|---|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|
| <i>ETHOS</i> + <i>PATHOS</i> <sup>over</sup><br>(F1)                | <i>Normative appropriateness is stressed</i>                             | 0.15        | <b>0.79</b> | 0.06        | 0.07        | 0.13        | 0.23        | 0.06        | 0.06  |
|   | <i>Directly show or address an emotional involvement or component</i>    | 0.16        | <b>0.62</b> | 0.35        | 0.30        | -0.15       | 0.35        | -0.11       | 0.08  |
|   | <i>Plausible conflict or problem</i>                                     | 0.04        | <b>0.79</b> | 0.05        | 0.10        | 0.02        | -0.18       | 0.06        | 0.03  |
| <i>ETHOS</i> + <i>PATHOS</i> + <i>LOGOS</i> <sup>over</sup><br>(F2) | <i>Professional video setup</i>  | -0.14       | 0.12        | <b>0.63</b> | 0.01        | 0.31        | 0.06        | 0.15        | -0.03 |
|   | <i>Underlying melody</i>   | 0.02        | 0.03        | <b>0.75</b> | -0.02       | 0.01        | 0.07        | 0.00        | -0.10 |
|   | <i>Avoidance of excessive detail (no rambling)</i>                       | 0.02        | 0.03        | <b>0.67</b> | 0.02        | -0.06       | -0.28       | 0.14        | 0.25  |
|   | <i>Including meaningful detail</i>                                       | -0.05       | 0.22        | <b>0.65</b> | 0.13        | 0.18        | 0.10        | -0.18       | -0.06 |
| <i>ETHOS</i> <sup>over</sup> + <i>LOGOS</i><br>(F3)                 | <i>Resource capital and resource-picking capabilities are advertised</i> | <b>0.77</b> | 0.15        | 0.03        | 0.10        | 0.05        | -0.08       | 0.02        | -0.04 |
|   | <i>Entrepreneurs' prior performance/ track record is communicated</i>    | <b>0.77</b> | 0.05        | -0.01       | 0.04        | -0.05       | 0.12        | -0.12       | 0.14  |
|   | <i>Transmission of an inner goals/ intentions</i>                        | <b>0.73</b> | 0.11        | 0.05        | 0.09        | 0.26        | -0.02       | 0.00        | -0.25 |
|   | <i>Talk about social interaction</i>                                     | <b>0.67</b> | 0.10        | -0.08       | 0.22        | 0.06        | 0.11        | -0.05       | 0.11  |
|   | <i>Cite "big names" (borrow reputation)</i>                              | <b>0.67</b> | 0.00        | -0.09       | 0.06        | -0.07       | 0.07        | 0.13        | -0.02 |
| <i>ETHOS</i><br>(F4)  | <i>The uniqueness of the product or the idea is stressed</i>             | 0.09        | 0.03        | 0.15        | 0.08        | <b>0.79</b> | 0.10        | 0.00        | 0.13  |
|   | <i>Alternative solutions are solicited</i>                               | 0.05        | 0.11        | 0.09        | 0.02        | <b>0.84</b> | -0.05       | -0.04       | 0.04  |
| <i>ETHOS</i><br>(F5)  | <i>Human face is present</i>   | 0.18        | 0.13        | 0.06        | <b>0.88</b> | 0.09        | -0.08       | 0.07        | -0.01 |
|   | <i>Characters equipped with distinct personalities and objectives</i>    | 0.21        | 0.17        | 0.02        | <b>0.83</b> | 0.06        | -0.04       | 0.05        | 0.05  |
| <i>ETHOS</i>  | <i>Set agenda</i>  | -0.09       | 0.01        | 0.02        | 0.17        | 0.01        | 0.10        | <b>0.81</b> | -0.08 |
| <i>LOGOS</i>  | <i>Theoretical definitions</i>   | 0.06        | 0.03        | 0.05        | -0.11       | 0.10        | <b>0.72</b> | 0.17        | 0.01  |
| <i>ETHOS</i>  | <i>Clear titles</i>  | -0.01       | 0.52        | 0.06        | -0.16       | 0.15        | -0.37       | 0.42        | -0.05 |
| <i>ETHOS</i>  | <i>Relevance and value to related resources is demonstrated</i>          | 0.10        | 0.01        | -0.10       | 0.21        | 0.36        | 0.15        | -0.14       | 0.65  |
| <i>PATHOS</i>   | <i>Use of emotionally charged and tangible language</i>                  | 0.18        | 0.53        | 0.36        | 0.37        | -0.14       | 0.39        | -0.06       | 0.05  |
| <i>PATHOS</i>   | <i>Animated video</i>  | -0.09       | 0.16        | -0.02       | -0.43       | 0.04        | -0.09       | 0.28        | 0.49  |
| <i>LOGOS</i>  | <i>Statistics</i>  | 0.20        | 0.09        | 0.04        | -0.17       | -0.18       | 0.33        | 0.50        | 0.12  |
| <i>LOGOS</i>  | <i>Clear rationale and explication of the entrepreneurial activities</i> | 0.42        | 0.54        | 0.11        | 0.04        | 0.29        | 0.06        | -0.03       | -0.20 |
| <i>LOGOS</i>  | <i>Video length</i>  | 0.16        | 0.11        | -0.38       | 0.11        | 0.06        | 0.46        | 0.09        | -0.48 |

**Table 9 Regression Analyses, Rhetoric Dimensions**

|  | <b>Model 1</b><br>(LOG)<br>Total Funding<br>Received | <b>Model 2</b><br>(LOG)<br>Number<br>Backers | <b>Model 3</b><br>Goal<br>Achieved |
|--|--|--|------------------------------------|
| <b>Controls</b>  |  |  |                                    |
| <i>Number of Comments</i>  | 0.076  | 0.092  | 0.085 **                           |
| <i>Number of Updates</i>   | 0.392 ***  | 0.481 **                                     | 0.061 †                            |
| <i>Facebook Likes</i>  | 0.164 *  | 0.210 **                                     | 0.000 *                            |
| <i>(Log) Funding Goal</i>  | -0.132 *   | -0.113 *                                     | -1.226 ***                         |
| <b>Persuasion Modes</b>  |  |  |                                    |
| <i>F1: ETHOS &amp; PATHOS<sup>over</sup></i>                             | 0.074  | 0.049  | -0.816 *                           |
| <i>F2: ETHOS &amp; PATHOS &amp; LOGOS<sup>over</sup></i>                 | 0.190 *  | 0.146 *                                      | 0.427                              |
| <i>F3: ETHOS<sup>over</sup> &amp; LOGOS</i>                              | 0.106  | 0.079  | 0.132                              |
| <i>F4: ETHOS</i>   | 0.179 **   | 0.095  | 0.658                              |
| <i>F5: ETHOS</i>   | 0.015  | 0.071  | 0.669                              |
| <i>Set agenda</i>  | -0.005   | -0.027                                       | 1.249                              |
| <i>Theoretical definitions</i>   | -0.044   | -0.082                                       | 0.088                              |
| <i>Clear titles</i>  | 0.043  | 0.055  | 0.718                              |
| <i>Relevance and value to related resources is demonstrated</i>          | -0.043   | -0.044                                       | 1.037                              |
| <i>Use of emotionally charged and tangible language</i>                  | -0.026   | 0.030  | 1.342                              |
| <i>Animated video</i>  | -0.126 †   | -0.103 †                                     | -0.954                             |
| <i>Statistics</i>  | 0.001  | -0.049                                       | -0.016                             |
| <i>Clear rationale and explication of the entrepreneurial activities</i> | -0.054   | -0.006                                       | -0.036                             |
| <i>Video length</i>  | 0.013  | 0.017  | 0.000                              |
| R square   | 0.461  | 0.589  |                                    |
| Adj. R square/ Pseudo R square   | 0.396  | 0.540  | 0.536                              |

\*\*\* $p < .001$ ; \*\* $p < .01$ , \*  $p < .05$ ; † $p < .10$

F2 were found to be significant and positive for AoF and AoB, F4 only for AoF, and F1 only for the goal achievement. However, in contrast to the other factors, F1 exhibits negative impact. Further, animated videos indicate negative impact ( $p_{\text{AoF}} = .057$ ;  $p_{\text{AoB}} = .076$ ) on the total funding and the number of backers. The effect of the control variables is similar to the other models presented above; however, the added explained variance through the dependent variables is higher and significant.<sup>11</sup>

<sup>11</sup>The control models have consciously been omitted to keep track of the statistical results. For any further information, contact the author.

## 5. Conclusions

### 5.1 Discussion of the Findings

The analysis findings revealed that “directly show or address an emotional involvement or component,” “underlying melody,” and “including meaningful details” positively influenced the success-variables (see Table 3, 4, and 5 for more details). Conversely, “stressing normative appropriateness” had a negative impact on the goal achievement. Moreover, even though the aggregated features per mode all led to significant positive effects, only ETHOS remained robust when all modes were included in the regressions (see Table 7—Model 11, 12, and 13). Thus, neither stand-alone persuasion features nor a high degree of ethos, pathos, and logos when present simultaneously, will increase the persuasion effect. Moreover, I found several features loading on five clear statistical factors across the persuasion modes. Thereby, only one of these factors contained features from all three persuasion modes, while the others represented only a subset of the modes. Three of these factors displayed significant effects. Compared to Model 10, 11, and 12, in which all effects—except of ETHOS—vanished, the “mixed-mode-factors” models show significant (partial) effects of all modes. This result might be due to the decreased multi-collinearity induced by the aggregation of variables that should be grouped together. Thus, the stand-alone effects (see Table 3 to 5) were incorporated in the results more correctly. However, not all “mixed-mode-factors” provided sufficient significance for a positive impact on crowdfunding success.

Overall, the results seem to suggest a dominant role of ethos features. According to Aristotle’s work *Rhetoric*, aspects of the videos appealing to ethos aim at convincing through trustworthiness and credibility. This is in line with the conclusions reached by Michal et al. (2011), who investigated several claimed identities of money borrowers on an online loan auction. They found that borrowers that claimed trustworthiness positively influenced the lenders’ willingness to engage in the economic exchange. Among the ethos aspects, when the video is professionally designed and executed, its quality consistently reaches sufficient statistical significance for a positive impact across all models—single-wise (Table 3) and within the aggregated variables (Table 7 and 9). Considering that the “money

providers” are not professional parties (e.g., banks, venture capitalists, business angels), but a group of diverse individuals (Pollock and Bono, 2013), a sophisticated video shoot can evoke enthusiasm more easily. This might oppress other—perhaps more substantial—aspects, similar to a movie that fascinates through its special effects instead of its story line. Additionally, the pure ethos factor F4 including the “uniqueness of the product” and the “solicitation of alternative solutions” only affects the amount of received funding. This ambiguous result indicates that campaigns appealing to ethos through F4 are likely to receive greater funds, but not necessarily from many backers.

In contrast to these ethos effects, “stressing the normative appropriateness” has a negative effect on the goal achievement, but no significant effect on the other success-variables (single-wise in Table 3 and within the mixed-factor F1 in Table 9). Thus, stressing moral rightness of the new product or the idea (Lounsbury and Glynn, 2001) is significantly associated with failing the funding goal. This result contrasts the proposition made by Lounsbury and Glynn (2001) as well as Michal et al. (2011), whose empirical results indicated that stressing a normative appropriateness builds an identity, which increases the perceived legitimacy of entrepreneurs from perspective of investors and other moneylenders. One plausible explanation for this result could be that the sample consists of campaigns in the technology category only. Thus, the audience—also considering their amateur status in the matter of investments—might be attracted more to products that can have immediate utility. Moreover, as the backers are end-consumers, they might be more interested in products that solve their own everyday problems. Conversely, products that claim moral rightness might appeal end-consumers with aptitude for problem-solving, e.g., those with interest in specific industry or scientific fields. Thus, seeking normative approval and claiming moral propriety by stressing normative appropriateness (Suchman, 1995) could be misguided in this context. This is contrasted to traditional pitches, where the investors are usually professionals, consider “bigger” picture, and are interested in long-term success. Similar arguments apply to the full effect of F1, as shown in Table 9. The factor analysis shows that “directly show or address an emotional involvement or component” and “outline a plausible conflict or problem” both load on the same statistical factor. Thus, they have an effect on the success-variables similar to that of “stressing normative appropriateness.” Addressing an emotional involvement, as well

as outlining a plausible conflict, one that is real and easy understandable, also appeals to pathos. These results are in line with those reported by Artinger et al. (2015), who found that entrepreneurs are likely to extensively express emotions when negotiating. While appealing to feelings of blame can lead to more rapid funding (Allison et al., 2013), entrepreneurs' expressions of negative feelings can also evoke the impression that they need to resort to emotional appeal because they lack facts or because they cannot control their emotions (Artinger et al., 2015). Ambiguously, "directly show or address an emotional involvement or component" single-wise positively affects the amount of funding and the number of backers (Table 4). This finding might be due to the fact that emotional involvement, in contrast to pathos features, appeals to the audience's self-interests (Green, 2004; Suchman, 1995) and not to common ones (e.g., firm interest, common weal, etc.). As self-interests of the "crowd" can be assumed one of the main reasons for funding a project, emotional involvement plays a crucial role. However, when emotional involvement is predominant, i.e., when pathos features are overrepresented in the videos, the funding goal is less likely to be achieved.

Finally, I found a mix of all three modes being significant for the amount of received funds and the number of backers, i.e., F2. This variable, including "a professional video setup," an "underlying music," "no rambling," and "meaningful details," substantially represents a "degree of professionalism" of the video. The more pronounced this effect is, the greater the funds received, and the more funders support the campaign. Similar to the other significant effects, the influence on goal achievement was not significant, likely because it is dependent on other factors. However, the effects of control variables cannot be neglected either. In line with the work of Mollick (2014), the number of updates and the Facebook Likes show a high significant effect on all three success variables in nearly all calculated models. Additionally, I included the number of comments to control for the effect that backers' comments might have on the subsequent backers. Indeed, high number of updates, comments, and Facebook Likes expresses high degree of interaction with potential backers, which might build trust (Rose-Ackerman, 2001) and lead to greater support. In addition, the higher the funding goal, the less likely this goal is reached. Because of the high explained variance through the controls and the highly significant

effect of the funding goal on goal achievement, it might be that ethos, pathos, and logos features did not reach sufficient significance for this dependent variable.

In sum, I conclude that the “mixed-mode-factors” more correctly represent the real world, since persuasion features correlate with each other. As such, the present study shows that all three modes are relevant for the crowdfunding campaign, as well as that specific compositions of ethos, pathos, and logos features are crucial. Further, in line with the findings of studies on entrepreneurship in general (e.g., Brundin, Patzelt, and Shepherd, 2008; Cardon, Foo, Shepherd, and Wiklund, 2012), emotions play a crucial role in the specific context of crowdfunding (e.g., Allison et al., 2013). Finally, the findings suggest that ethos, pathos, and logos do not existentially affect the achievement of the funding goal, as this is mainly explained by the control variables. In this regard, the results also show that the persuasion modes do not consistently affect both the amount of funding received and the number of backers. Instead, it is necessary to differentiate between these success variables.

## **5.2 Theoretical and Practical Implications**

Most of the extant studies provide evidence that engaging in telling a good story and building meaning through narratives—irrespective of the type of story and narratives—can influence the decision of others. However, analyses in regards to specific resource acquisitions forms and conceptual clarity concerning the terms and research perspectives are presently lacking. Hence, an important interim stage that first scrutinizes how the single pieces of communication affect the backers’ decision, before we puzzle over the effects of stories and narratives is missing. Stories and narratives can be understood as a compound of communication pieces. Once we know what kind of communication pieces are relevant, we might be able to elucidate the type of stories and narratives.

The present study contributes to the pertinent body of research in two ways. First, it focused on the resource acquisition form of crowdfunding, which enabled obtaining specific findings. Second, it also retracted by one step by analyzing various features of the crowdfunding videos (i.e., communication pieces) instead of concentrating on what we cannot even define.



In sum, given the growing popularity of crowdfunding and the significance of a video for the success of crowdfunding campaigns (Martens et al., 2007), this study offers some empirical insights regarding the aspects of an entrepreneurial video that are likely to convince backers to support a product or an idea. In achieving this goal, I adopted a rhetorical perspective to explore ethos, pathos, and logos appeals of the videos. Contrary to the work of Anglin et al. (2014) and Allison et al. (2015), I did not focus the analyses solely on non-profit projects, but examined a wide range of technological crowdfunding campaigns.

Within this work, I addressed the call for a deeper understanding of online narratives in the context of crowdfunding (e.g., Easley, 2015). I adopted Aristotle's persuasion modes to structure the success factors of traditional entrepreneur-investor interaction, which are assumed to build legitimacy. Hence, as a result of this study, I can offer a rhetorical framework to make sense of the traditional success factors in the context of crowdfunding. This framework can be used to explore the persuasive power of crowdfunding videos. Introducing the three Aristotle's persuasion modes in entrepreneurship represents a first step towards the definition of rhetorical strategies in crowdfunding.

Additionally, this study provides first analytical evidence about how rhetoric affects funding decisions. While the results concerning the effect of the control variables reinforce those reported in Mollick's (2014) empirical study, the video analyses specify his findings. More specifically, by employing classical legitimation strategies on this specific financing form, I contrast prior work in legitimacy building (e.g., Lounsbury and Glynn, 2001; Michal et al., 2011). Since several success factors of traditional entrepreneur-investor interaction reveal contrasting results in the context of crowdfunding videos, legitimacy building cannot be generalized, but might be regarded as context-specific phenomenon. Thus, the "crowd" cannot be compared to classical investors, such as bankers, venture capitalists, or business angels. Backers in crowdfunding represent a group of individuals that are amateurs in the field of investment. They decide to support a campaign based on other priorities, attitudes, or criteria. For this reason, the effect of appealing to moral rightness, i.e., "stressing normative appropriateness," is opposite from that reported by Lounsbury and Glynn (2001) and Michal et al. (2011). These amateurs might tend to support products that

solve their own problems; thus, long-term success rates as well as uncertainty diminishing performance indicators might not be of their interest. Consequently, factors that are thought to increase entrepreneurs' legitimacy from the viewpoint of investors do not analogously show significant effects in this analyzed context.

From the practical perspective, the findings indicate in general that the layout of an entrepreneurial video for a crowdfunding campaign requires significant amount of consideration, since features appealing to ethos, pathos, or logos have to be applied deliberately. Hence, the choice of the features has an important effect on the success of a crowdfunding campaign. Specifically, the findings suggest that it is worth it to invest in a professional video shoot with an underlying music. Further, simple narratives (without rambling), including only meaningful details, are better than complex discursive ones. Moreover, trying to apply to ethos, pathos, and logos to the same extent is not a recommended strategy for nascent entrepreneurs. Instead, specific combinations of ethos, pathos, and logos seem to yield a better persuasion outcome. In addition, ethos features show a dominant role among the persuasion modes. More specifically, stressing the uniqueness of the new product and soliciting an alternative solution for the presented problem or conflict are two relevant ethos features nascent entrepreneurs should include in their videos. Emotional strategies have to be treated with caution. The current findings indicate that, while emotional involvement can have a significant positive effect on the crowdfunding success, it must be implemented to an optimal extent. In the context of technology campaigns, where backers are likely to be tech-enthusiasts, a pathos focus addressing for instance a global problem is out of place. Finally, these findings should be interpreted in the view of the core assumption of the evolutionary approach to entrepreneurship (Aldrich and Ruef, 2006), which indicates that entrepreneurs are successful when their strategies fit to the environment in which they are used.

### **5.3 Limitations & Future Research**

While the findings of this study are intriguing, they represent only a first step in the better understanding of the phenomenon of online narratives in the context of crowdfunding. Therefore, a number of limitations that can be addressed in future research have to be noted.

Video is a complex communication medium characterized by diverse facets that can influence human feelings and behavior. The present study neither claimed to encompass the complete landscape of features nor to exhaust the entire literature when deriving the video features. It represents a first approach to quantify persuasion modes within video material. Future studies could thus extend the presented framework relying on alternative literature sources, such as those discussing negotiation or sense-making. In addition, the current study sample consisted of technological campaigns only, which were initiated by a specific type of entrepreneurs, i.e., technology entrepreneurs. Thus, it would be highly beneficial to replicate this study using a more diverse sample. In this regard, the identified mixed-mode-factors could be applied to test reliability and validity of the current findings. The data collection employed in this work relied solely on the research team, who was responsible for the elicitation of data by viewing the videos. Even though two independent research helpers were involved, collector bias could not be fully eliminated. An alternative approach that would mitigate this issue would be based on transcribing the videos and focusing on their spoken language by performing text analysis. Moreover, as the identified features can vary in their intensity and thus induce different degrees of ethos, pathos, or logos, future studies should find an approach to operationalize the features on a Likert-scale by holding collector bias low. Further, within the statistical analyses, the vanishing effects (e.g., in Table 7, the effects of pathos and logos disappeared) can signal potential interaction effects among the modes. As a first exploratory step, I conducted a factor analysis, in order to establish which feature loads on a common statistical factor. Thereby, I obtained mixed-mode-factors that contained features across the persuasion modes. A more intensive analysis of how ethos, pathos, and logos features interact with each other, for instance by applying moderator modeling, can be one concern of future studies.

In closing, I would like to mention two last future research opportunities. The emotional involvement within F1 possibly leads to a negative effect (Table 9) due to overconfidence in regards to the funding goal. Future research could scrutinize the relationship between using emotional strategies to persuade and overconfidence of the entrepreneurs. Furthermore, the strategic use of emotions in negotiation contexts might have constraints. Based on the concept of emotional intelligence (Li and Roloff, 2006), individuals can have four core emotional regulation competencies.

Among others, managing emotions represents a person's ability to manage and regulate feelings in oneself and others (Brackett, Lopes, Ivcevic, Mayer, and Salovey, 2004). Thus, it might be an interesting future research concern to include the concept of emotional intelligence in the study of rhetorical strategies.

## Chapter E: Overall Summary and Conclusions

### 1. Summary of Theoretical and Practical Contributions

Each of the three papers enhances knowledge about one specific element of nascent entrepreneurs' personality. Taken together, these studies contribute to our general understanding of how nascent entrepreneurs' person-related factors affect core constructs in the early business stage that can have leverage effects in later business stages. Thus, the answer to our overarching research question is:

1. **Entrepreneurial appraisal** with a leverage effect on entrepreneurial exploitation.
2. **Teamwork quality** with a leverage effect of team performance and outcomes.
3. **Persuasive communication**, which affects funding success.

The main contributions concerning the samples, theory, and practice are summarized below.

In regards to the samples, contrary to most studies in nascent entrepreneurship, we analyzed entrepreneurs who were already engaged in gestation activities. As entrepreneurship research is moving away from intentions to head to a more behavioral perspective (Davidsson and Gordon, 2012), our studies are in line with the latest state-of-the-art research. Further, we counteracted the sample definition problem and the sample heterogeneity problem by focusing on a group of nascent entrepreneurs who participated in business plan competitions and start-up support programs (in study 1 and 2), and started crowdfunding campaigns (in study 3). As all of these potential new ventures are involved in at least two gestation activities (planning and/ or resource acquisition), we have reason to assume a similar business stage for all of our cases. Furthermore, our research focused neither on the entrepreneurial process nor on progress, outcomes, or other measurable performance variables. Instead, we targeted to complement existing causal chains that explain

progress or outcome. Thus, heterogeneity was not a bigger concern, as this issue is related to performance measurement in nascent entrepreneurship (Davidsson, 2006).

Due to the specific research questions, our theoretical contributions are distinct from each other and contribute to different literatures. In particular, the first study shows that nascent entrepreneurs' human capital, social capital, and motivational aspects are relevant for their identity as business founders. Hence, the general appraisal theory has been enriched by adapting it to the nascent entrepreneurship context. Further, these findings contribute to the discussion on whether push and pull nascent entrepreneurs differ from each other. They seem to not differ—at least not from an entrepreneurial appraisal perspective—as “socially formed motives” (push motives) show a significant positive impact with a 10% confidence level. Additionally, study 1 can be of value for scholars working on the self-determination theory (Ryan et al., 1985), as the desire to be autonomous (independence motives) is one of the three innate needs of humans and at the same time the strongest predictor of a high entrepreneurial appraisal. These results have also practical implications on a macro level, as they suggest that an entrepreneurial identity can be formed—thus, be influenced—and that individuals who are pushed into entrepreneurship can have similar identity feelings to the pull entrepreneurs. Thus, both pull and push entrepreneurs can have a similar emotional basis for the opportunity exploitation (cf. Welpel et al., 2012). As a consequence, policy makers are encouraged to consider that we don't necessarily need different support programs for different types of entrepreneurs.

The second study contributes to literature on team collaboration and uncertainty in the early business stage. As such, the results show that opening the mind for unexpected events can help to foster teamwork quality in the nascent stage. This effect is even higher when functional team diversity is low and novelty to market is high. In contrast, the effect is lower at high levels of functional team diversity and at low levels of novelty to market. This study can also be of interest in the context of effectuation. Accordingly, the results show that a more effectual approach is more likely to build a strong team, but the effect strength depends on the level of novelty and functional team diversity. Taken together, our results show that in cases of low novelty to market and high functional team diversity a causal

approach could also be advantageous—which contrasts with effectuation literature foregrounding effectuation in the nascent business stage (Read and Sarasvathy, 2005). Overall, relevant antecedents for teamwork quality in the nascent business stage have been found. With this, Hoegl’s teamwork quality concept, mainly tested in the corporate context, has been adapted to a new context—which adds to the construct’s validity and strengthen the construct’s extensive impact. The study results encourage nascent entrepreneurs to think about their decision-making style and check if their uncertainty-handling fits with their team responsibility structure and their novelty to the market. Following the results of study 2, they should break up fixed responsibility/ task areas if they want to exploit unexpected events to their advantage and define fixed responsibility/ task areas when they want to overcome unexpected events. Further, they should prefer a more open approach when novelty to market is high.

Further, it is important to note that both, the first and second study, have a bearing on Sarasvathy’s effectuation framework. In particular the importance of the entrepreneurs’ means (first study) and their attitude towards unexpected events (second study) is stressed; thus, we affect two of Sarasvathy’s effectuation principles. In both studies, our results strengthen Sarasvathy’s main proposition that an effectual approach is associated to entrepreneurial success. These results can be of value within the recent scientific discussion concerning the nature of effectuation and the next steps in effectuation research (Perry et al., 2012).

With the last study, I entered two rather new sub-fields of research in entrepreneurship, i.e., narratives and crowdfunding. As these fields still lack theoretical structures, I followed Mollick (2014) and conducted an explorative analysis to enhance knowledge about the communication effect in crowdfunding campaigns. Independent from when narratives or stories begin and end, I aimed at understanding what makes crowdfunding videos powerful. Study 3 emphasizes that persuasion through rhetoric can represent a possible explanation for powerful communication. In particular, I provided a theory-driven framework including criteria to be explored. Adapting Aristotle’s rhetoric theory in the context of crowdfunding might be of value for other scholars studying the link between communication style and the communication target. Further, the results add to

rhetoric theory by showing that ethos, pathos, and logos appeals are not relevant to the same extent—they might not even be in balance in the studied context. Also, study 3 shows that legitimating factors within traditional entrepreneur-financier communication (e.g., oral pitch, business plan, etc.) cannot be transferred to the crowdfunding context. Hence, legitimacy might not be the right theoretical access to this new topical area. From a practical point of view, nascent entrepreneurs with a technological product are offered an overview of characteristics most videos in crowdfunding campaigns have. Further, they are encouraged to invest in a professional video make-up, to emphasize ethos aspects within their videos (in particular stressing the uniqueness of the product and soliciting alternative ideas), to try to emotionally involve their audience—but not to focus on emotions—and to avoid animated videos. In particular, the results indicate that a strong pathos focus negatively influences the likelihood of achieving the funding goal, while discreetly appealing to pathos (e.g., with an underlying music) positively influences crowdfunding success. Appealing to logos (e.g., with statistics and numbers) seems not to be highly convincing. Only including meaningful details and avoiding rambling, which also appeals to logos, is significant. Beyond the video content, the analyses suggest that it is strategically better to set the funding goal as low as possible and that social media activity is significant for campaign promotion. Overall, study 3 provides recommendations for action when creating a video for a crowdfunding campaign and focuses on achieving practical implications.

## **2. Limitations and Future Research Opportunities**

Heterogeneity is assumed to have lower levels in our sample, although we were not able to distinguish between nascent and infant entrepreneurs. Thus, we draw conclusion for both. A future research opportunity could be to draw a clearer line between these sub-groups and compare them to each other. Although the strategy to concentrate on process parts that complement pre-studied causal chains gave us the opportunity to circumvent the aforementioned methodological problems, an even stronger contribution could be achieved by studying the whole processes within a longitudinal research approach.



Overall, our analyses in study 1 gives reason to assume potential interaction effects of the included antecedents. Hence, one future interest could consist of focusing on moderation and/ or mediation analysis. Hereby, the motivational aspects appear to have the strongest impact and could be modelled as the main predictors.

Study 2 displays similar limitations. Although the study offers sufficient theoretical substance to assume exactly this causality, it might be that teamwork quality affects uncertainty handling. Thus, only a longitudinal approach allows for testing the underlying true causality. Further, it might be of interest to analyze the impact of effectuation as a whole because we included just the overarching principle expressing the general attitude towards future events. Furthermore, other moderators that influence the main relationship could be tested to achieve a higher level of model integrity, e.g., other types of novelty or other variables related to the team structure.

The fact that pre-studied legitimating factors cannot be transferred to the crowdfunding context indicates that the crowd should be studied as a self-standing entrepreneurship phenomenon. This would enlarge knowledge of who these financiers are (age, nationality, background) and what they are interested in. One future study could expand the criteria framework and find a way to capture the degree to which the criteria are represented. This would help to better understand what an optimal ethos-pathos-logos composition should look like.

In sum, this thesis focused on three person-related factors in nascent entrepreneurship, i.e., entrepreneurial appraisal, teamwork quality, and communication. The three studies may inspire and open an overarching future research stream that targets to complement existing behavior-outcome processes in nascent entrepreneurship. This could help to put together the theoretical fragments and achieve a more integrated theory of nascent entrepreneurship. “What leads to higher levels of growth aspiration?” and “How can fear of failure be overcome?” could be two exemplary research questions within this literature stream.

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# Curriculum Vitae

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Year of birth: 1985  
Place of Birth: Stuttgart, Germany  
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## Education

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Since 02/2012 **University of St.Gallen**, Institute of Technology Management, Chair for Entrepreneurship; Ph.D. program; thesis submitted in July 2014, disputation in September 2015

03/2009 – 08/2009 **University of Bologna**, faculty „Economia“, major in Business Informatics

10/2005 – 08/2011 **University of Hohenheim**, major in Banking, Business Informatics, and Game Theory

## Experience

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Since 09/2015 **FOM**, Lecturer in “Entrepreneurship & Strategie” and “Empirisches Projekt”

Since 03/2015 **ESADE Business School Barcelona**, Visiting Researcher at Department of Strategy & General Management

10/2011 – 02/2015 **University of St.Gallen**, Research Associate at the Chair for Entrepreneurship, Institute of Technology Management

12/2010 – 07/2011 **Campana & Schott GmbH**, Business Transformation

09/2008 – 12/2010 **Horváth & Partners AG**, Transformation by IT

10/2007 – 10/2008 **COR & FJA AG**, Marketing

10/2006 – 10/2007 **DEKRA Automobil GmbH**, Controlling

03/2005 – 11/2008 **Best Colors GmbH**, Retail Sector