Is There No 'I' in Team? - Team formation, decisions,
and outcomes under individual differences

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Christian Henrik Wesemann

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Approved on the application of

Prof. Dr. Dietmar Grichnik

and

Prof. Dr. Thomas Markus Zellweger

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The President:

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St.Gallen, 14 July 2019   Henrik Wesemann

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List of Abbreviations

AET	Affective Events Theory
AIT	Affect-as-Information Theory
CA	California
ed.	Editor
eds.	Editors
et al.	Et alii
IT	Information Technology
p.	Page
Ph.D.	Doctor of Philosophy
pp.	Pages
MA	Massachusetts
max.	Maximum
MI	Michigan
min.	Minimum
n	Number of observations
NJ	New Jersey
NY	New York
RCT	Role Conflict Theory
TMT	Top Management Team
UET	Upper Echelons Theory
UK	United Kingdom
URL	Uniform Resource Locator
USA	United States of America

List of Symbols

&	Ampersand (and)
@	At
#	Number
%	Percent
β	Regression coefficient
†	10% significance level
*	5% significance level
**	1% significance level
***	0.1% significance level
p	Significance level
R^2	Regression coefficient of determination
i	Industry
Δ	Delta
χ^2	Likelihood Ratio Chi-Squared

Executive Summary (English)

Although an ever increasing number of decisions are made by teams, our understanding of how entrepreneurial teams arrive at their choices remains incomplete. An especially unclear aspect is how individual perception and decision making aggregates to the team level. This dissertation addresses this gap with three investigations of how individuals function in teams. Drawing on three sets of different theories and quantitative methods, it sheds a light on a series of team processes in distinct settings.

First, I build on Affective Events Theory and Affect-as-Information Theory to show that leadership emergence in nascent venture teams is contingent on team members' emotion regulation: Reappraising emotions is associated with more leader emergence, whereas suppressing emotions is associated with less leader emergence. In emotionally negative team contexts, emotional reappraisal becomes increasingly important. The data are from startup events in Denmark, France, Germany, Norway, Sweden, and Switzerland.

Second, I use Role Conflict Theory to explain how individual decisions within a team are influenced by biases. In the specific context of the study, I propose gender-related mechanisms that affect how business angels invest in female entrepreneurs. Moreover, I connect this to the team level and show that gendered conversations change funding behavior. The data came from televised venture funding pitches from the United Kingdom and the United States.

Third, I use Upper Echelons Theory to link behavioral differences between top management team members to firm-level outcomes. My data show that differences in top management team members' learning behavior are associated with different levels of radical innovation. This article uses longitudinal surveys collected from IT firms and government data from Finland.

Collectively, the articles in this dissertation highlight that even in teams, idiosyncrasies of individuals remain important. Individual traits make people team leaders; individual preconceptions guide decisions in teams; and differences between individual members shape team outcomes. Leaving our idiosyncrasies behind to work in teams often comes natural to us; using our idiosyncrasies to the benefit of our team is something we still learn.

Executive Summary (German)

Entscheidungen im Unternehmenskontext werden zunehmend von Teams getroffen. Trotz der deutlichen Entwicklung hin zu Teamentscheidungen bleiben die Auswirkungen von individuellen Faktoren auf der Teamebene größtenteils unbekannt. Diese Dissertation wendet unterschiedliche Theorien und quantitative Methoden an, um diese Schnittstelle zwischen Prozessen auf dem individuellen und dem Teamlevel besser zu verstehen.

Der erste Artikel dieser Dissertation zeigt mithilfe von Affective Events und Affect-as-Information Theory, wie Emotionen Venture-Team Führungsstrukturen beeinflussen. Teammitglieder, die ihre Emotionen neu interpretieren, werden mit einer höheren Wahrscheinlichkeit als Führungsperson wahrgenommen; bei Teammitgliedern, die ihre Emotionen unterdrücken, ist es umgekehrt. In emotional negativen Teamkontexten ist es besonders wichtig die Emotionen neu zu interpretieren. Die Daten stammen von Startup-Events in Dänemark, Frankreich, Deutschland, Norwegen, Schweden und der Schweiz.

Der zweite Artikel wendet Role Conflict Theory an, um den Einfluss geschlechterspezifischer Mechanismen auf das Investitionsverhalten von Business Angels gegenüber Unternehmerinnen zu untersuchen. Zusätzlich zeigt der Artikel, wie geschlechterspezifischer Sprachgebrauch auf der Teamebene das Verhalten verändert. Die Daten stammen von Startup-Pitches aus dem Vereinigten Königreich und den USA.

Der dritte Artikel verwendet Upper Echelons Theory, um Verhaltens-unterschiede zwischen Top-Management-Teams mit Innovationsfähigkeit auf Unternehmensebene zu verknüpfen. Meine Daten zeigen, dass Unterschiede im Lernverhalten der Mitglieder des Top-Management-Teams mit divergierendem Potential für radikale Innovationen verbunden sind. Die longitudinalen Daten stammen von finnischen IT-Unternehmen.

Zusammenfassend zeigen die Ergebnisse dieser Dissertation, dass die Eigenarten von Individuen auch in Teams wichtig bleiben. Es sind gerade diese individuellen Eigenschaften, die Führungsstrukturen von Teams festlegen, Entscheidungen in Teams prägen und Team-Synergien schaffen. Unsere persönlichen Eigenheiten beiseite zu legen, um in Teams zu arbeiten, erscheint uns oft selbstverständlich; wir sollten jedoch mehr Energie darin investieren, zu verstehen, wie gerade diese besonderen Eigenheiten unsere Teams verbessern können.

1.

Introduction to Individuals and Teams

John F Kennedy visited NASA for the first time in 1961 and went for a tour of the facilities. Wandering through the hallways, he came across a janitor carrying a broom. When John F Kennedy asked the janitor what his role was, the janitor replied: "Mr. President, I'm helping put a man on the moon."

This unattributed story has been told with changing actors in countless ways, but it always carries the same message: We achieve our greatest accomplishments only if we accept that we depend on each other. Research has long supported this view and highlights that it may often be beneficial to see ourselves as a team first and as individuals second (Drucker, 1992). Only then will we achieve our potential (Penrose, 1959). This sentiment has made the message of "There is no 'I' in team" a foundational principle of modern management.

But should we really leave our idiosyncrasies behind to melt into a team? There are situations in which heralding the group as one may not help. Focusing on the smallest common denominator in the group to find common ground also leaves behind much of what makes the team members special. All too often, it is the contribution of individuals within teams that solves important problems (Duch, Waitzman, & Amaral, 2010). This makes enacting notions such as "There is no 'I' in team", which highlight sacrificing individualism for the benefit for all, challenging (Wolf-Wendel, Toma, & Morphew, 2001).

The articles of this dissertation investigate individuals in teams. In three different settings, I explore how individuals become team leaders, how they make individual decisions within teams, and how individual differences affect team outcomes. Collectively, the three cases show that individual eccentricities carry great power to help teams succeed. We should not attempt to shed our idiosyncrasies fully to find common ground but, rather, draw from them to propel ourselves to ever greater heights.

1.1 Individuals, Teams, and Decision Making

Teams are collectives of individuals who have defined roles and responsibilities and work together to achieve a collective goal (Shin, Kim, Lee, & Bian, 2012). Given that a great number of professional decisions are nowadays made by teams (Mosier & Fischer, 2010), they have moved into the center of modern work culture (Cohen & Bailey, 1997).

However, even after individuals join teams, they often keep individual mental models of the team structures as well as their particular tasks (Converse, Cannon-Bowers, & Salas, 1993). This means that, while it is fairly easy to determine whether individuals form a team, it is far more difficult to understand how these teams make decisions. In many cases, individuals might officially be part of a team but not act like one at all.

Based on the definition of teams as groups of individuals with defined roles who work together to achieve a collective goal, one can highlight two important factors for teams. The first is the emergence of team roles through the introduction of leadership structures (e.g., DeRue, Nahrgang, & Ashford, 2015; Ensari, Riggio, Christian, & Carslaw, 2011). However, even though teams may objectively have more resources at their disposal, simply putting individuals into a team hardly ensures that they act as a team or make better decisions (Mosier & Fischer, 2010). Despite this issue, investigations of how teams form leadership structures remain scarce.

The second factor relates to achieving collective goals, which is often equated to team agreement and compliance (Baron & Kerr, 2003). Agreeing within teams is considered central to harmonious team functioning (van Knippenberg & Mell, 2016). Team agreement often depends on tight discourse (Mosier & Fischer, 2010), which requires good team communication (Clark & Schaefer, 1989). However, there is also evidence that an alignment of opinions for the sake of coherence in teams often does not produce the desired results (Sunstein, Kahneman, Schkade, & Ritov, 2001). Partially responsible is that alignment processes tend to take a lot of work (van Knippenberg, De Dreu, & Homan, 2004) and incoherence in judgment processes can also produce good results (Gigerenzer, 2008). Often, individuals keep making decisions on an individual level, even though they are part of a team. Some researchers therefore argue that coherence in people's decisions is of comparably small importance (Mosier & Fischer, 2010) and that collective goals can be achieved many different ways.

Collectively, these two criteria about the functioning of individuals in teams – structure and alignment – present a promising and highly relevant direction for research. However, most research focuses on either the individual or team level and very few investigations consider the interaction between the layers (Mosier & Fischer, 2010).

1.2 Relevance of the Dissertation

Understanding how teams effectively utilize their members' unique skills is of practical and theoretical relevance. At a time when most analyses focus exclusively on individuals or teams (Bamberger, 2008), models that take into account individuals and teams become more and more important. Only they can consider the interaction between individuals and their teams: individuals don't collaborate without team structures and teams don't exist without the individuals who form them. Still, our understanding of their intertwined nature remains woefully incomplete. In order to address this, it is particularly helpful to understand three elements that are intrinsically connected to teams.

The first topic is leadership (e.g., Zaccaro, Rittman, & Marks, 2001). Effective team leadership has been shown to be a critical factor for firm performance (A. Srivastava, Bartol, & Locke, 2006), creativity (X. Zhang & Bartol, 2010), and team development (Dvir, Eden, Avolio, & Shamir, 2002). However, many parts of leadership emergence remain largely unexplored (Lanaj & Hollenbeck, 2015). This is especially true in entrepreneurship research, where much of the current conversation revolves around mavericks who develop a company alone, even though the majority of ventures are founded by teams (Chowdhury, 2005; Klotz, Hmieleski, Bradley, & Busenitz, 2014; Lechler, 2001). Moreover, most of the conversation has focused on existing leaders of new ventures (e.g., Chen, 2007; Kang et al., 2015), such as founding CEOs. This gives great relevance to investigations that explain how and under what conditions members of nascent venture teams emerge as leaders without pre-existing leadership structures.

The second topic is decision making. Even in teams, a lot of decisions are made at the individual level but are informed by the team background (e.g., Jackson, May, & Whitney, 1995). While decision making is a popular research topic, studies of team influences on individual-level outcomes are rare (Shepherd, 2011). This is unfortunate because individuals are almost always affected by other team members (Weiss & Cropanzano, 1996), team conversations (Kanze, Huang, Conley, & Higgins, 2018), and

the way their surroundings make them feel (Gasper & Clore, 2000). The way these outside influences affect team members is especially relevant for entrepreneurship, which is a highly emotional setting (Cardon, Foo, Shepherd, & Wiklund, 2012). This has led researchers to call for investigations of situational contexts that affect an individual's decisions in entrepreneurship (e.g., Shepherd, 2011).

The third topic is team diversity, which describes interpersonal differences (Joshi & Roh, 2009). Team diversity focuses on the importance of individual-level characteristics on teams. Current research in this field largely ignores idiosyncratic abilities of team members and focuses on team mean scores, even though they are not necessarily representative of the group (Kostopoulos, Spanos, & Prastacos, 2013). Let us consider an example of why intrateam differences may matter: A group of brilliant and terrible researchers is likely to produce different results than a group that consists only of utterly mediocre researchers, even though the two groups may have the same mean score. Ignoring individual contributions is especially problematic in entrepreneurship, where single individuals often take considerable influence on the overall results (Ensley, Carland, & Carland, 2000). This has led researchers such as Alexander and van Knippenberg (2014) to highlight the relevance of researching diversity in teams to understand how they may use their diversity most effectively.

These gaps highlight several ways in which our understanding of the interplay of the individual and the team level remains limited, especially in entrepreneurship. This dissertation contributes to these gaps in team research with three investigations. Collectively, the articles of this dissertation move along the team formation process, beginning with leadership emergence, passing individual decision making, and ultimately suggesting a way in which team diversity can be utilized.

1.3 Structure of the Dissertation

This dissertation contributes to filling the aforementioned research gaps in the areas of leadership, decision-making, and diversity with three investigations of entrepreneurial teams. In order to cover the formative phases of teams, each article addresses one of Tuckman's five phases of group development (forming, storming, norming, performing, and adjourning; Tuckman, 1965). More specifically, it focuses on the first three phases of the model (*forming*, *storming*, and *norming*) because this is the time of significant

interplay between the individual level and the team level (Bonebright, 2010). *Forming* describes how individuals find together to form a team, *storming* describes the friction they experience in the early stages, and *norming* describes how they use or align their difference for a shared good. In contrast, the focus of the later *performing* phase is a frictionless collaboration in the team (Bonebright, 2010) and that of the *adjourning* phase is the "death of the group" (Tuckman & Jensen, 1977, p. 426). This makes the two final phases less relevant to the theoretical focus of this dissertation and justifies a focus on *forming*, *storming*, and *norming*. Given the importance of teams for entrepreneurship research (Klotz et al., 2014), Tuckman's model presents an ideal overarching framework due to its comprehensive approach to groups that has made it the most widely recognized theoretical model in organizational literature (D. L. Miller, 2003). The three articles of this dissertation will follow the natural progression of the first three phases from Tuckman's model.

The first phase of Tuckman's model is *forming*. *Forming* describes the early stage of teams in which they create ground rules and relationships with leaders (Bonebright, 2010). In the corresponding article of this dissertation, the focus lies specifically on leadership emergence in the first days of the life of a team. Observing individuals as they grow into teams to collectively solve an entrepreneurial problem allows me to investigate the forming phase of nascent venture teams with a particular focus on the leadership relationships. This focus on leadership emergence is firmly aligned with the central tenets of the *forming* phase of Tuckman's model (Bonebright, 2010).

The second phase is *storming*. It describes a period of team formation in which team members have created the basic team but continue to resist team pressures (Bonebright, 2010). To address this phase, this dissertation highlights a setting in which individuals find themselves in a team setting but continue to make decisions individually. More specifically, the focus are business angels who sit on a panel with other business angels but invest their own money. These individual decisions are often made in ways that are of tune with the sentiment of other team members, leading to numerous conflicts and discussions. This approach of making individual decisions that are not necessarily in line with the general strategic direction of the team is central to the *storming* phase (Bonebright, 2010).

The third phase is *norming*. In this phase, team members develop shared mental models and discover the most effective ways of working with each other (Neuman and

Wright, 1999). It is in this phase that team members develop an "in-group feeling" that allows them to look past their differences to grow together (Bonebright, 2010). In the corresponding article in this dissertation, I highlight how behavioral asymmetries between individual team members can affect the overall team results. More precisely, I investigate how learning asymmetry in top management teams is associated with firm-level radical innovation. This is in line with the norming phase, in which teams express individual idiosyncrasies and opinions but begin to make collective decisions (Bonebright, 2010).

Collectively, these investigations into three formative team phases highlight the role of individuals in entrepreneurial teams during the teams' formative phases. Each article investigates a lower-level phenomenon of the Tuckman phase in a unique, entrepreneurial setting. Figure 1 depicts the connection between the phases from the original model (Tuckman, 1965), the investigated lower-level phenomenon, and the corresponding article from this dissertation.

Tuckman Phase	Phase 1: Forming	Phase 2: Storming	Phase 3: Norming
Observed Phenomenon	Individuals become a team and form leadership structures	Team members continue to make individual decisions inside the team	Team members keep acting in idiosyncratic ways but make team decisions
Article in Dissertation	Article 1: Leader Emergence in New Venture Teams	Article 2: I Want to Support You… But Business is Business	Article 3: TMT Learning Asymmetry and Radical Innovation

Figure 1: Dissertation Article Structure

The next section will provide overviews of the three articles in this dissertation.

1.3.1 Overview of Article 1

Title:

Leader Emergence in New Venture Teams: Team Emotions and Individual Emotion Regulation

Abstract:

This study advances a theory of how different aspects of emotion regulation influence individual leader emergence in the intensely emotional context of nascent venture teams. Despite the presence of seminal studies of leadership in the entrepreneurship literature, the emergence of leaders in nascent venture teams has rarely been explored. Drawing on theories and research on leadership emergence and emotion regulation, we argue that the two aspects of emotion regulation (i.e., reappraisal and suppression) exert opposite effects on the degree to which nascent venture team members perceive an individual as a leader. We also theorize that team emotions arising from affective events moderate the relationship between reappraisal and leader emergence in such teams. Data from 103 nascent venture teams without prior leaders show a negative relationship between individuals' dispositional tendencies to suppress emotions and their emergence as leaders, and a positive relationship between their dispositional tendencies to reappraise emotions and their emergence as leaders. Moreover, we find that negative team emotions magnify the positive association between reappraisal and leader emergence, while positive team emotions mitigate it. We discuss the implications of our findings for the literature on entrepreneurial leadership, entrepreneurial emotions, and leadership in general.

Authors:

Charlotta Sirén, Vivianna Fang He, Henrik Wesemann, Zoe Jonassen, Dietmar Grichnik, Georg von Krogh

1.3.2 Overview of Article 2

Title:

I Want to Support You… But Business is Business. Gender, Role Conflict, and Business Angel Investments

Abstract:

This study builds on Role Conflict Theory to advance a theory of how business angels engage in two paradoxical social roles in parallel. Using individual investment decisions made on the TV shows Shark Tank and Dragons' Den, it shows that business angels simultaneously act as supporters of female entrepreneurs (making investors more likely to fund women than to fund men) and as profit-oriented investors (using their position of power to offer women worse deals than they offer men). Moreover, these conflicting behaviors are associated with team-level conversations: male-centric team language is associated with more frequent funding but less attractive deal conditions for female entrepreneurs. This investigation of previously unexplored gender effects contributes to Role Conflict Theory, research on gender in entrepreneurship, and the entrepreneurial bias literature.

Author:

Henrik Wesemann

1.3.3 Overview of Article 3

Title:

Top Management Team Learning Asymmetry and Radical Innovation

Abstract:

We advance Upper Echelons Theory by unveiling the implications of differences in top management team (TMT) members' learning behavior to firm-level innovation. Using data from 241 TMT members in 77 information technology firms, collected over four years, we investigate how TMT learning affects radical innovation. We find support for an inverted U-shaped relationship between team learning asymmetry and firm-level radical innovation: Medium levels of team learning asymmetry are associated with the highest levels of firm-level radical innovation. Moreover, mean levels of learning moderate this relationship such that radical innovation is consistently high across all levels of team learning asymmetry under high mean levels of learning. Our findings contribute to Upper Echelons Theory by highlighting the importance of behavioral differences within the TMT.

Authors:

Henrik Wesemann, Charlotta Sirén, Vivianna Fang He, Dietmar Grichnik

1.4 Main Theoretical Perspectives

Highlighting the importance of individual perception to team processes, this dissertation combines different theoretical perspectives that connect individuals to their surroundings. This blend of theoretical lenses allows us to accompany team members through different parts of team processes.

The first article draws on a combination of Affective Events Theory and Affect-as-Information Theory. Affective Events Theory (AET, Weiss & Cropanzano, 1996) allows us to connect outside events to internal processes. We connect social context (Cacciotti, Hayton, Mitchell, & Giazitzoglu, 2016; Madera & Smith, 2009) to team emotions (Barsade & Knight, 2015; Cardon, Post, & Forster, 2017) to highlight the formative power of shared experiences. We then complement AET with Affect-as-Information Theory (AIT, Gasper & Clore, 2000), which posits that individuals partially determine their position on issues by interpreting their emotions. This connection between feelings and decisions highlights the power of the ability to shape emotions: Individuals who control the emotional state of their team can influence its direction (George, 1995). This also changes how that person is perceived; team members' assessments of how much they rely on an individual for leadership depend more on affective experiences with that individual than on cognitive beliefs about that individual's knowledge or skills (Gohm & Clore, 2002). Individuals' emotions in the team formation stage (Tuckman, 1965) therefore affect both their decisions and their leadership perception of other team members.

The second article applies Role Conflict Theory (RCT, Katz & Kahn, 1978) to demonstrate how business angels engage in different gender-related roles when making individual investment decisions (Ashforth, Kreiner, & Fugate, 2000; Horton, Bayerl, & Jacobs, 2014). These individual decisions in teams are typical of the storming phase (Tuckman, 1965). This study highlights two mechanisms by which this role conflict is triggered. One is gender biases that can lead to the engaging of two paradoxical roles at once. The second are gendered team-level conversations that are shown to affect the degree to which individuals engage in gender roles and biases. The article highlights that reconciling these two roles that can be challenging and result in a type of role conflict. The article suggests that business angels solve this challenge by engaging in their different roles during different parts of the decision-making process. This allows them to live out their conflicting roles without addressing the paradox between them.

The third article connects team processes to radical innovation as an organizational outcome by drawing from Upper Echelons Theory (UET, Hambrick & Mason, 1984). The focus is on behavioral integration, a meta-construct that describes the degree to which a team engages in mutual and collective interaction (Hambrick, 1994). A change in behavioral integration is connected to the norming phase (Tuckman, 1965), which signifies a phase of beginning comprehension of individual idiosyncrasies. While behavioral integration is central to UET (Hambrick, 1994), the conditions under which TMT behavioral integration helps build capacities remain poorly understood (Yitzhack Halevi, Carmeli, & Brueller, 2015). In this study, we investigate how different degrees of asymmetric behavior in teams affects outcomes. In combination, these theories allow us to show how outside influences affect individuals and how they base their perceptions and evaluations on these factors.

1.5 Methods

This dissertation uses different data collection approaches and methods for each of the articles. We collected the data for the first article at three-day startup events in Denmark, France, Germany, Norway, Sweden, and Switzerland. At these events, participants who did not know each other in advance would gather in a co-working space to form teams and develop startup ideas over the span of a weekend. These three-day startup events presented an ideal setting to collect data on leadership emergence because they allowed us to accompany more than 100 nascent venture teams from the moment of inception. I attended most of these events personally. At each event, we conducted four rounds of surveys (one pre-survey and one survey after each of the three event days), conducted interviews, recorded team work sessions, and filmed around 500 idea and venture pitches, collecting exceptionally multifaceted data. The resulting longitudinal data allowed us to investigate leadership emergence in groups in their moment of inception.

The second article is a push towards novel data collection and research methods. It relies on televised venture pitches from *Shark Tank* (Newbill, Burnett, Lingner, & Gurin, 2009) and *Dragons' Den* (Lewens & Thorman, 2005) to track venture investment decisions by business angels. I complemented the investment decision data with re-encoded subtitle files for all pitches for which data were available. Using LIWC2015 (Pennebaker, Boyd, Jordan, & Blackburn, 2015), a psycholinguistic software that

investigates word frequency, I then analyzed the underlying conversations of the 360.000 words that made up the transcripts. The software yielded individual scores for close to 100 different concepts for each pitch (e.g., how analytical the conversation was, how positive or negative the expressed emotions were, and how androcentric the conversation was). Combining the individual-level investment data with the team-level conversations allowed me to investigate the effect of shared team processes on individual decisions.

The third article uses longitudinal surveys, collected in two rounds over four years from the top management teams of Finnish IT firms. The survey structure permitted a longer time lag that was necessary for our focus on radical innovation, which takes notoriously long to materialize due to the high uncertainty (Christensen, 2013; Laurie, Doz, & Sheer, 2006; Talke, Salomo, & Rost, 2010).

In combination, this eclectic mix of methodological approaches highlights individual and team processes from different but complementary sides. The resulting view of the issue becomes more holistic and presents a strong foundation for future research. Table 1 lists a summary of the central methodological approaches. Table 2 provides an overview of the central variables that were used in the three research articles.

Article	Research method	Sample	Timeframe	Software
Article 1: Leader Emergence in New Venture Teams: Team Emotions and Individual Emotion Regulation				
1	OLS Regression	375 individuals in 103 venture teams at *Startup Weekend* events	2017-2018	Stata, R
Article 2: I Want to Support You… But Business is Business. Gender, Role Conflict, and Business Angel Investments				
2	OLS Regression Logistic Regression	1063 business angel investment decisions from the TV series *Shark Tank* and *Dragons' Den*	2005-2018	Stata
Article 3: Top Management Team Learning Asymmetry and Radical Innovation				
3	OLS Regression	241 Top Management Team members of 77 IT Firms	2012-2016	Stata

Table 1: Central Methodological Approaches

Artic-le	Variable Name	Variable Measurement	Refer-ence
		Article 1: Leader Emergence in New Venture Teams: Team Emotions and Individual Emotion Regulation	
1	Leader emergence	We measured leader emergence using the scale developed by Carson et al. (2007). More specifically, we asked all participants to assess each of their team members with the question, 'To what degree does your team rely on this individual for leadership?'	DeRue et al. (2015)
1	Positive & negative team emotions	We assessed each team's positive and negative emotions by asking participants to indicate the degree to which they felt a set of emotions in response to each of the specific affective events that happened during the day.	Conroy et al. (2017)
1	Emotion regulation	To capture an individual's general dispositional tendency to regulate his or her emotions in daily life, we used the 10-item Emotion Regulation Questionnaire (ERQ). Respondents were asked to rate the degree to which they used the two forms of emotion regulation on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree).	Gross and John (2003)
		Article 2: I Want to Support You… But Business is Business. Gender, Role Conflict, and Business Angel Investments	
2	Funding Decision	This variable is a dummy variable that assumed a value of one if the investor decided to fund the venture and zero otherwise.	Boulton et al. (2018)
2	Deal conditions	This variable represents how good the deal conditions are by comparing the valuation at which the business angel buys into the company to the prior valuation of the entrepreneur's company.	Pollack et al. (2012)
2	Andro-centrism	Androcentrism uses a psycholinguistic approach that measures the frequency of certain words to infer information about their thought processes. This allows us to reliably derive mental processes from the choice of words in a body of text. The used "male" category of the LIWC 2015 software measures 116 male-centric words such as "man", "he", and "husband".	Pennebak er et al. (2001)
		Article 3: Top Management Team Learning Asymmetry and Radical Innovation	
3	TMT mean level of learning	We relied on an adapted version for a highly cited learning scale that defines learning behavior as collective engagement in reflective decision making, asking questions, seeking feedback, and discussing.	Edmonds on (1999)
3	TMT Learning Asymmetry	TMT learning asymmetry is the degree to which team members differ in how they acquire, process, and integrate relevant information within the team.	Mason & Harrison (1997)
3	Radical Innovation	This scale has participants divide 100 points among four increasingly radical kinds of innovation to determine how radical their innovations activities are. Participants say to what part their innovation activities concern (1) existing output; (2) incremental change to existing output; (3) mix and match innovations that have been used by others; (4) develop entirely new, breakthrough innovation.	Miron-Spektor et al. (2011)

Table 2: Main Variables in the Dissertation

1.6 Paper Publication Strategy

All three articles in this dissertation are intended for publication in high-ranking journals. The article on leader emergence recently received an invitation to a second-round R&R at the Journal of Management Studies in a special issue on individual and team-based perspectives of leading entrepreneurial ventures. The article on business angel investments is currently under review at Entrepreneurship Theory and Practice. The article on learning asymmetry in top management teams is an adapted version of a paper that I presented to the Academy of Management General Meeting 2018. Since then, I have developed a separate version of the paper further with which we recently received an invitation to revise and resubmit from the Journal of Management. While I am first author on all versions of the paper and lead the revision process at the Journal of Management, I chose to use the Academy of Management General Meeting version for this dissertation. The current publication status is summarized in Table 3.

Article	Article Title	Authors	Publication Status
1	Leader Emergence in New Venture Teams: Team Emotions and Individual Emotion Regulation	Charlotta Sirén Vivianna Fang He Henrik Wesemann Zoe Jonassen Dietmar Grichnik Georg von Krogh	2nd round R&R at Journal of Management Studies
2	I Want to Support You… But Business is Business. Gender, Role Conflict, and Business Angel Investments	Henrik Wesemann	Under review at Entrepreneurship Theory and Practice
3	Top Management Team Learning Asymmetry and Radical Innovation	Henrik Wesemann Charlotta Sirén Fang He Dietmar Grichnik	R&R at Journal of Management (iterated version)

Table 3: Paper Publication Strategy

Chapter two to chapter four of this dissertation are the research articles. In chapter five, the dissertation discusses the collective insights of the research articles. Then, it briefly revisits the overarching research topic before concluding with a summary of the most important contributions and opportunities for future research.

2.

Leader Emergence
in New Venture Teams

Leader Emergence in New Venture Teams:
Team Emotions and Individual Emotion Regulation

Charlotta Sirén

Assistant Professor

University of St.Gallen; Institute of Technology Management

Vivianna Fang He

Senior Researcher and Lecturer

ETH Zurich; Strategic Management and Innovation

Henrik Wesemann

Ph.D. Candidate

University of St.Gallen; Institute of Technology Management

Zoe Jonassen

Ph.D. Candidate

ETH Zurich; Strategic Management and Innovation

Dietmar Grichnik

Professor

University of St.Gallen; Institute of Technology Management

Georg von Krogh

Professor

ETH Zurich; Strategic Management and Innovation

2.1 Abstract

This study advances a theory of how different aspects of emotion regulation influence individual leader emergence in the intensely emotional context of nascent venture teams. Despite the presence of seminal studies of leadership in the entrepreneurship literature, the emergence of leaders in nascent venture teams has rarely been explored. Drawing on theories and research on leadership emergence and emotion regulation, we argue that the two aspects of emotion regulation (i.e., reappraisal and suppression) exert opposite effects on the degree to which nascent venture team members perceive an individual as a leader. We also theorize that team emotions arising from affective events moderate the relationship between reappraisal and leader emergence in such teams. Data from 103 nascent venture teams without prior leaders show a negative relationship between individuals' dispositional tendencies to *suppress emotions* and their emergence as leaders, and a positive relationship between their dispositional tendencies to *reappraise emotions* and their emergence as leaders. Moreover, we find that negative team emotions magnify the positive association between reappraisal and leader emergence, while positive team emotions mitigate it. We discuss the implications of our findings for the literature on entrepreneurial leadership, entrepreneurial emotions, and leadership in general.

Keywords: appraisal, emotion regulation, leader emergence, nascent venture teams, suppression, team emotions

2.2 Introduction

Leadership plays a pivotal role in the formation and growth of nascent ventures (M. H. Chen, 2007; Eesley, Hsu, & Roberts, 2014; Kang, Solomon, & Choi, 2015). In particular, nascent ventures face scarcity of time, money, and human capital (Reynolds, Hay, Bygrave, Camp, & Autio, 2000), and leadership plays an instrumental role in amassing such resources. Moreover, as nascent ventures typically operate without clear organizational structures, formal authority, or incentive systems (Bryant, 2004), they require leaders to create a shared vision of their launch and survival (Foo, Sin, & Yiong, 2006).

The extant research on leadership in the entrepreneurial setting mostly focuses on the leadership style or behavior of the founder (Kang et al., 2015), while few studies simultaneously explore the individual- and team-level dynamics that underpin the process of leader emergence in teams (Dinh et al., 2014; Paunova, 2015). This oversight is problematic, as teams found and lead the majority of ventures (Klotz et al., 2014), and as entrepreneurship is rarely constrained to a solo, heroic leader (Harper, 2008). In this study, we depart from the commonly held assumption of a pre-existing 'lead entrepreneur,' and instead theorize and explain the phenomenon of 'leader emergence'—the degree to which an individual is perceived by other team members as a leader—in nascent venture teams.

Nascent venture teams constitute a qualitatively distinct and theoretical meaningful context (Jung, Vissa, & Pich, 2017). In contrast to teams in more mature firms, where a hierarchical structure typically distinguishes leadership roles, nascent venture teams lack structure and decision-making routines (Jung et al., 2017; Knipfer, Schreiner, Schmid, & Peus, 2018), as roles and norms are still in the process of being established (Klotz et al., 2014). Therefore, nascent venture teams constitute a particularly interesting context for studies of leader emergence.

As entrepreneurs, members of nascent venture teams often collectively embark on an 'emotional roller coaster.' The start-up process is replete with affective events—incidents that stir positive and negative emotions and shape team members' performance (Foo, Uy, & Baron, 2009; Weiss & Cropanzano, 1996). Time pressure, financial pressure, and personal consequences associated with the fate of the venture make entrepreneurs respond to these affective events with intense emotions (Cardon et al., 2012). In addition, the uncertainty about how to cope with challenges that arise within

the venture or from the market affects team members' daily lives (Blatt, 2009). In particular, the pre-founding stage features significant ambiguity and uncertainty (Knipfer et al., 2018), thereby generating a wide range of emotional experience (Fern, Cardinal, & O'Neill, 2012; Foo et al., 2006; McMullen & Shepherd, 2006).

Within this highly emotional context, members of nascent venture teams have different dispositions towards suppressing or expressing various emotions. We argue that these individual differences have important implications for leadership emergence. Prior research, which assumes preexisting leader roles, shows that leaders' emotional labor critically impacts not only on their own emotions but also those of their followers (Humphrey et al., 2008). Furthermore, leaders' emotional displays influence subordinates' impressions of their leaders' sincerity (Dasborough and Ashkanasy, 2002), charisma (Groves, 2005), and willingness to act entrepreneurially (Brundin et al., 2008). Thus, entrepreneurship scholars (e.g., Cardon et al., 2012) have long called for studies that explore relevant constructs, such as emotional labor and deliberate emotional displays that shape interactions among members of venture teams and other stakeholders. However, the entrepreneurship literature fails to provide a clear understanding of the extent to which nascent venture team members regulate their emotional displays and the role of that regulation in leader emergence within nascent venture teams without pre-defined leader roles.

The primary objective of our study is to investigate how emotion regulation—the degree to which individuals determine which emotions to have, when to have them, and how to express them (Gross, 1998)—influences leader emergence in nascent venture teams. We build on research on leader emergence in teams (Côté et al., 2010; Ensari et al., 2011; Wolff et al., 2002) and affect-related theories (e.g., Gohm and Clore, 2002; Weiss and Cropanzano, 1996) to develop a multi-level theoretical model that accounts for the individual and team dynamics underlying the process of leader emergence in nascent venture teams.

Our study makes three important contributions. First, we advance the entrepreneurial leadership literature, which has thus far focused on existing leaders (e.g., founding CEOs) of new ventures (e.g., Chen, 2007; Kang et al., 2015). We offer a theoretical model that explains how and under what conditions individuals emerge as leaders in nascent venture teams that have no pre-existing leaders. Our findings indicate that in addition to the conventional antecedents of leadership, such as personality and

competence (Ensari et al., 2011), the emotional dimension is key for understanding entrepreneurial leadership in the nascent venture context. Furthermore, we provide a novel explanation of the contrasting effects that different aspects of emotion regulation have on the degree to which one is recognized as a leader in nascent venture teams.

Second, our study contributes to the rapidly emerging body of research on entrepreneurial emotions (Cardon et al., 2012; Foo et al., 2009; Morris et al., 2012). While the extant literature offers critical insights into the role of emotions in entrepreneurship, our understanding of the influence of team emotions, which refers to the shared emotions in entrepreneurial teams remains limited (Cardon et al., 2017; Klotz et al., 2014). Such an understanding is important because shared emotional experiences bind the teams together and affect many important outcomes of their work (Foo et al., 2006). We investigate the emotional responses of nascent venture team members to a set of affective events, and we conceptualize these emotions as boundary conditions for the link between emotion regulation and individual leader emergence. Our theoretical model integrates emotional elements on the individual and team levels to explain how certain aspects of emotion regulation become more or less beneficial, given different levels of positive and negative emotions in the team.

Third, by examining leader emergence in nascent venture teams, the study also contributes to the leadership literature in general. Previous studies exploring the leader emergence often involved either temporary teams working on contrived, structured tasks in labs (e.g., Aime, Humphrey, DeRue, & Paul, 2014) or student teams working on defined projects (e.g., Côté, Lopes, Salovey, & Miners, 2010). This line of research has shown that personality traits associated with leadership stereotypes, as well as the knowledge, skills, and experiences that justify a leadership position consistently predict leader emergence (Ensari et al., 2011). However, prior findings may become less informative for explaining leader emergence in teams that deal with poorly specified tasks and in teams where all members have high personal stake in the group's goal— situations that characterize nascent venture teams (Klotz et al., 2014). We argue that under these circumstances, individual members' tendency to regulate their emotions in the face of affective events is a powerful predictor of their leader emergence. As such, this study expands the boundaries of established theories on leader emergence.

2.3 Literature Review and Hypothesis Development

Our study examines the relationship between individual entrepreneurs' emotion regulation and the degree to which their peers in nascent venture teams perceive them as leaders, as well as the moderating role of team emotions in this relationship. The theoretical arguments underpinning our hypotheses stem from research on leader emergence and social psychological theories on emotions. In particular, we draw on two related theories on emotions—affect-as-information theory (AIT, Gohm & Clore, 2002) and affective events theory (AET, Weiss & Cropanzano, 1996)—with the former guiding our choice of independent variable and the latter leading us to focus on team emotions as a moderator.

On the one hand, AIT contends that emotions play a central role in providing information for forming judgements and making decisions (Gasper & Clore, 2000). Furthermore, according to this theory, team members' assessments of whether they rely on an individual for leadership depend more on their affective experiences with that individual than on their cognitive beliefs about that individual's knowledge or skills (Gohm & Clore, 2002). As emotion regulation influences individuals' experienced emotions, it can affect the information a team gathers about them and team members' perceptions of them as leaders.

On the other hand, AET (Weiss & Cropanzano, 1996) sheds light on the emotions that may be generated in a nascent venture team's shared experiences and the influence of those team emotions on leader emergence. Recent research drawing on AET suggests that appropriate emotional responses during or after affective events hinge on a range of social contexts (Cacciotti et al., 2016; Madera & Smith, 2009), and that team emotions constitute one of the most important social contexts for nascent venture teams (Barsade & Knight, 2015; Cardon et al., 2017). Furthermore, AET (Weiss & Cropanzano, 1996) enables us to shed light on the emotions generated in a nascent venture team's shared experiences and the influence of those team emotions on leader emergence.

Overall, the integration of AIT and AET allows us to explore how different aspects of emotion regulation relate to leader emergence in nascent venture teams that lack pre-existing leadership structures, and how this relationship may be moderated by the positive and negative emotions prevailing in such teams. Figure 2 presents our theoretical model.
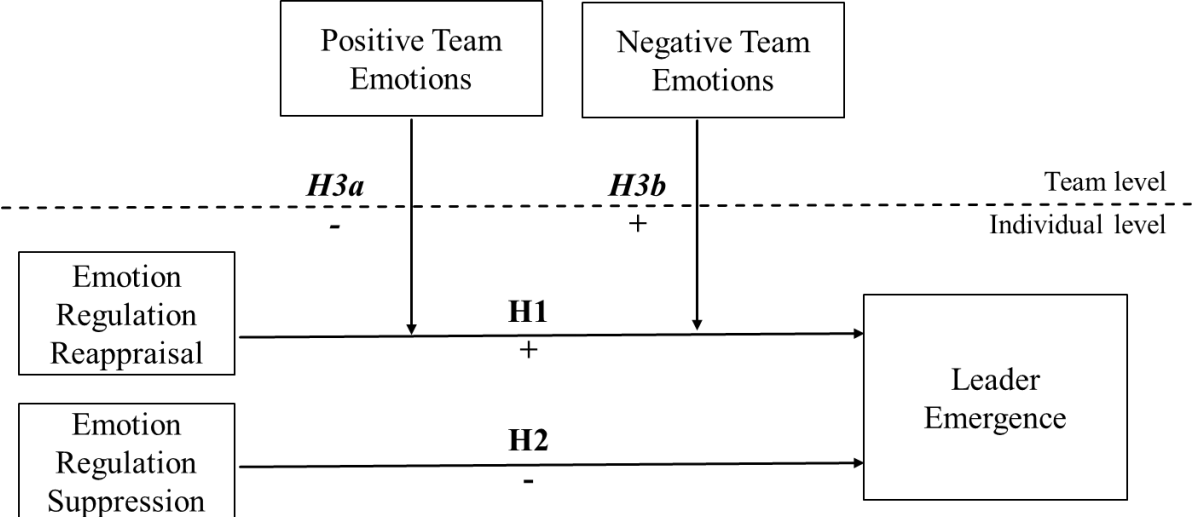
Figure 2: Research Model of Article 1

2.3.1 Leadership and Leader Emergence in Nascent Venture Teams

Consistent with previous research (Foo et al., 2006), we define nascent venture teams as teams consisting of individuals who are taking tentative steps towards firm formation. A salient feature of these teams is the limited formalization of roles, tasks, and responsibilities among their members (Foo et al., 2006). Unlike teams in established firms, nascent venture teams lack an ordering of authority rooted in formal organizational structures, such as boards of directors that grant leadership positions to specific individuals (e.g., CEO and CFO). In nascent venture teams, leadership serves as the 'glue' that keeps the founding members together, infuses the team with a vision, and guides it through the uncertain and unchartered territory of venture formation (Ensley, Hmieleski, & Pearce, 2006; Vecchio, 2003). Although formal organizational structures are largely absent, individual entrepreneurs in nascent venture teams remain highly interdependent (Blatt, 2009; Klotz et al., 2014). Consequently, the sharing of leadership responsibilities within nascent venture teams may be a better predictor of team effectiveness than the leadership exhibited by the official team leader (Ensley et al., 2006), while a focus on a single leader in new venture teams may divert attention from important team dynamics that underpin successful venture formation (Ensley, Pearson, & Pearce, 2003).

While scholars observe that 'the pattern of leadership in the group emerges over time and through interaction' (DeRue et al., 2015, p. 1192), work on leader emergence in nascent venture teams remains scarce. This omission creates a challenge for contemporary entrepreneurship research: while the 'idea owner' in nascent venture teams may initially be perceived as 'leader-like,' other team members may eventually emerge as leaders as the team responds to changing demands. As nascent venture teams are in the formation stage, they either lack established leadership or are in the process of determining who should be the team leader (Foo et al., 2006). In fact, one of the core tasks for nascent venture teams is to establish a leadership structure.

While leader emergence has rarely been studied in the entrepreneurship literature, a considerable body of leadership research offers insights into several aspects of leader emergence in teams (e.g., DeRue et al., 2015; Ensari et al., 2011). Certain personality traits (e.g., extraversion), leader stereotypes (e.g., authoritarian and masculine), and cognitive abilities (e.g., competence) have been found to explain the extent to which team members perceive an individual as a leader. However, the leadership literature has

yet to provide a clear understanding of the relationship between emotions and individual leader emergence. For example, while some studies indicate that positive emotions may be advantageous for leaders in terms of facilitating group performance (George, 1995) and creativity (Baron, 2008), others suggest that leaders who frequently experience positive emotions may fail to notice performance shortfalls (e.g., George, 2000). Similarly, although leaders can leverage negative emotions to motivate their employees to support each other (Madera & Smith, 2009) or engage in thorough and systematic information processing (e.g., George, 2000), they can also hinder deep reflection in a team (Edmondson, 1999).

The inconclusive findings regarding the role of emotions are particularly problematic in the context of nascent venture teams because emotions are often central for predicting an entrepreneur's cognition and behavior (Cardon et al., 2012). The mixed evidence on the effects of various emotions suggests that leadership may not hinge on whether an individual possesses the 'right' emotions but rather on the team members' emotional characteristics (e.g., emotional intelligence, Côté et al., 2010; emotional stability, Ensari et al., 2011; empathy, Kellett, Humphrey, & Sleeth, 2002; Wolff, Pescosolido, & Druskat, 2002) which may lead them to express or suppress certain emotions in particular social contexts.

2.3.2 Emotions and Emotion Regulation

In the formation stage, the members of a nascent venture team jointly experience a series of events. While many of these events may seem routine (e.g., regular team meetings), others, such as positive feedback, internal conflict, or the loss of a team member, represent affective events (Weiss & Cropanzano, 1996). Affective events are significant incidents that signal or precipitate change relevant to individuals' well-being (Conroy et al., 2017). Furthermore, affective events may trigger common knowledge about each member's strengths and weaknesses, and they may clarify expectations, roles, and responsibilities (Wegner, 1987). Affective events provide opportunities for team members to assess each other as leaders based on their awareness and regulation of emotions, which are among the most important factors influencing the quality of interactions in highly affective situations (Wong & Law, 2002).

Against this background, AET appears particularly useful for explaining leader emergence in nascent venture teams. AET stipulates that workplace environments produce events of significance (Weiss & Cropanzano, 1996) that accumulate, ultimately resulting in emotional and behavioral responses in individuals (Ashkanasy, 2002). Such events may catalyze rapid and radical change in group members' shared leadership schema, and give rise to different leadership structures (Wellman, 2017). Team members react to affective events with conscious or subconscious emotional responses, which provide other team members with information about their character and leadership potential.

Information about an individual's leadership potential may be derived from direct or observed interpersonal interactions (Ridgeway, Boyle, Kuipers, & Robinson, 1998), stereotypes (e.g., Cuddy, Fiske, & Glick, 2008), or reputations (Gould, 2002; West & Anderson, 1996), all of which can help teams members recognize individuals as leaders. In addition, AIT (Gohm & Clore, 2002) suggests that individuals' affective experiences provide information above and beyond team members' beliefs, and that these experiences inform their judgements and decisions. Accordingly, differences in how people appraise, generate, and express emotions have a profound impact on perceptions of their leadership qualities (Gasper & Clore, 2000). Furthermore, when individuals work in a team setting, affective experiences within the team are a key source of information. Collective emotions constitute an essential collective property of a team (Bartel & Saavedra, 2000), and understanding those emotions is a prerequisite for making sense of the behaviors and attitudes of team members.

2.3.3 Emotion Regulation and Leader Emergence

The extant research on leadership converges on the notion that understanding and managing emotions constitutes a core characteristic of effective leaders (e.g., Ensari et al., 2011; Erez, Misangyi, Johnson, LePine, & Halverson, 2008; Gaddis, Connelly, & Mumford, 2004; Kellett et al., 2002). An emerging body of research on leader emergence shows that individuals who are capable of understanding the emotional needs of team members (Côté et al., 2010) and modelling suitable emotional responses (Pescosolido, 2002) are more likely to be perceived as leaders by other team members. Côté et al. (2010) argue that emotional intelligence (of which emotion regulation is a

subdimension) may be more closely related to leader emergence than cognitive abilities, personality traits, or gender—factors traditionally linked to leader effectiveness. Building on this body of research, we expect emotion regulation to be associated with leader emergence in nascent venture teams.

Admittedly, in a highly affective, intense, and spontaneous context, individuals may not be able to fully regulate all aspects of their emotions. Yet, situational demands aside, individuals differ drastically in their disposition to modulate how they experience emotions, and whether and to what extent to show affective responses (Gross, 2001; Gross & John, 2003). Distinct from dispositional affect, which makes certain kinds of emotions more likely, individuals' dispositions towards emotion regulation can lead them to: a) perceive the same situation in different ways (e.g., view a glass as half full or half empty), and b) suppress certain emotions to different extents (Gross, 2001; Gross & John, 2003; Lazarus & Alfert, 1964). These differences influence the degree to which individuals genuinely feel and express those emotions beneficial to a leadership role in a particular context.

In line with Gross (2001), we distinguish between antecedent-focused and response-focused emotion regulation. As an antecedent-focused type of emotion regulation, reappraisal refers to a dispositional tendency to alter perceptions of a situation in order to modulate its emotional impact before emotions are generated (Gross & John, 2003). Reappraisal occurs before affective response behaviors are completely activated and can change an individual's internal emotional experience (Gross, 1998; Gross & John, 2003). For example, an entrepreneur may initially interpret critical feedback from a coach (e.g., 'your business idea is unrealistic') as a personal attack, and then reappraise it as an opportunity to learn and grow. According to Gross (2015), instances of hedonic emotion regulation (i.e., interpreting a negative event as positive) are common in everyday life. Counterhedonic regulation (i.e., perceiving a positive event as less positive) is also possible, albeit less frequent. For example, an entrepreneur may frame winning a venture pitch contest as the beginning of a significant personal investment rather than a victory that marks the end of an intensive period of work.

When faced with an affective event, individuals within a team tend to observe each other's behaviors and reactions, searching for cues that will help them interpret and react to the affective event (Pescosolido, 2002). Team members who interpret and then express the emotional response that best serves the needs of the team are likely to emerge

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as emotional leaders (Pescosolido, 2002). For example, a key leadership function is to help followers cope with negative events at work (Pirola-Merlo, Härtel, Mann, & Hirst, 2002). Similarly, research on entrepreneurship has shown that keeping negative emotions in check facilitates learning from failures and mistakes (e.g., He et al., 2017; Shepherd and Cardon, 2009), thereby enabling entrepreneurs to lead their ventures through turmoil. Consequently, an entrepreneur who interprets critical feedback as an opportunity to learn and grow will likely develop adaptive responses that are more in line with the leadership prototype.

To survive the particularly volatile and uncertain pre-founding phase, nascent venture teams need to remain motivated and committed (Foo et al., 2006). Therefore, a tendency to reappraise negative affective events may be particularly advantageous for leader emergence in nascent venture teams because it simultaneously reduces negative emotions and helps maintain positive emotions among team members. Taken together, these theoretical arguments and empirical evidence suggest:

Hypothesis 1: In nascent venture teams, individuals with a higher tendency towards reappraisal are more likely to emerge as leaders than those with a lower tendency towards reappraisal.

As a response-focused type of emotion regulation, suppression describes the dispositional tendency to avoid showing any emotions (Gross & John, 2003). Suppression is an aspect of emotion regulation that targets an emotion after it has been generated, and it has distinct impacts on the external expression of that emotion and the internal emotional experience (Gross & John, 2003). Individuals who tend to engage in suppression refrain from externally expressing any emotions (positive or negative). Internally, however, suppression does not change the valence or strength of already generated emotions (Gross & John, 2003). For example, as suppression only prevents emotions from showing on the surface, a member of a nascent venture team might attempt to appear composed even though he or she feels upset about critical feedback from a coach.

According to AIT, the suppression of emotions reduces the number of useful emotional cues, thereby creating ambiguity in the team whether things are going well and how one should express and react to emotions (S. Srivastava, Tamir, McGonigal, John, & Gross, 2009). During the uncertain pre-funding phase, nascent venture team members expect leaders to provide these emotional cues to maintain team morale (S. Srivastava et al., 2009). Furthermore, emotional displays together with responses to others' emotions (e.g., through reciprocity) have crucial functions within a team—they can signal support and facilitate communication (Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Individuals who have a high tendency to suppress their emotions make it difficult for others to infer the meaning of their actions and words (Fridlund, 1994).

In addition, by suppressing emotions individuals may also create emotional dissonance—a discrepancy between the emotions shown outside and emotions felt inside (Bono & Vey, 2005). Individuals who have high tendency to suppress their emotions can grow frustrated or exhausted over time because of the emotional dissonance (Bono & Vey, 2005). In addition, other team members who interact with these emotion-suppressing individuals may perceive their emotional dissonance as inauthentic. Such a lack of authenticity may hamper the development of trusting relations, and may thus decrease one's likelihood of being perceived as a leader (Côte & Hideg, 2011). Indeed, Caza et al. (2015) find that followers' trust in a leader depends on their perceptions of the leader's emotional sincerity. Aside from these general effects, suppression may have a particularly negative effect on leader emergence in the context of a nascent venture. Unlike a corporate environment that may value 'professionalism' (e.g., staying composed, Kramer & Hess, 2002), nascent venture teams appreciate the genuine emotions and authentic behaviors that are key for the foundation of new ventures (e.g., Hmieleski, Cole, & Baron, 2012).

To summarize, suppression not only creates ambiguity and hinders communication, but it also creates emotional dissonance and impedes the development of trusting relationships. Based on the foregoing discussion, we propose:

Hypothesis 2: In nascent venture teams, individuals with a higher tendency towards suppression are less likely to emerge as leaders than those with a lower tendency towards suppression.

2.3.4 Cross-level Moderation Effects of Team Emotions

Individuals' perceptions of leadership do not exist in a vacuum—they are rooted in a broader social context (Weiss & Cropanzano, 1996). Entrepreneurs' cognition is not only socially situated but also intertwined with the psychological processes that connect them to their external environments (Cacciotti et al., 2016). For entrepreneurs in a nascent venture team, the prevailing emotions in the team constitute an important contextual factor that influences their attitudes and behaviors (Barsade & Knight, 2015; Cardon et al., 2017). Consequently, team emotions influence the way team members react to the emotional expressions of others.

In contrast to reappraisal, which results in different expressions of positive or negative emotions, suppression inhibits the expression of emotions so that emotions are concealed to a great extent (Gross, 1998; Gross & John, 2003). Moreover, as suppression largely occurs internally, it does not interact with the external emotional environment. Given that suppression leaves relatively little room for the social context to alter its consequences, we expect team emotions to moderate only the relationship between reappraisal and leader emergence.

In addition, although reappraisal is commonly assumed to decrease negative emotions, it can also increase negative emotions as well as increase or decrease positive emotions (Gross, 2015). Thus, both positive and negative team emotions can provide a relevant social context in which the effects of reappraisal are situated. Accordingly, we examine the moderation effects of both positive and negative emotions in teams.

We expect teams' positive emotions to dampen the relationship between reappraisal and leader emergence. Positive emotions in a nascent venture team signal that things are going well for the team and/or the venture-formation process (Foo et al., 2009; Lyubomirsky, King, & Diener, 2005). Positive team emotions serve as a buffer that helps the team bounce back from challenges and difficulties (Cameron, Mora, Leutscher, & Calarco, 2011; Seppala & Cameron, 2015), and they reduce the team's need for leaders who can reappraise difficult situations. As a result, the association between a high tendency towards reappraisal and being perceived as leader is weakened in teams that experience high levels of positive emotions.

In contrast, we expect negative team emotions to amplify the positive relationship between reappraisal and leader emergence. A higher level of negative emotions

indicates that the nascent venture team has experienced affective events that provide fertile ground for reappraisal (Gross, 2015), making the effect of this aspect of emotion regulation more salient. When confronted with drawbacks and crises, emotion regulation through reappraisal becomes more critical (Lucero, Tan Teng Kwang, & Pang, 2009). If negative emotions dominate, they can quickly create a downward 'emotional spiral' within the team (Barsade, 2002). In response, team members desire leaders who work to counteract this downward spiral (Boin & Hart, 2003). More specifically, individuals with a greater tendency to engage in reappraisal are likely to see the 'silver lining' of negative affective events (Gross & John, 2003) and, more importantly, to stay motivated, pursue the project, and attempt to convince others to continue to work for the team. As a result, other team members tend to perceive them as more 'leader-like'. In sum, we hypothesize that:

Hypothesis 3a: Positive team emotions weaken the positive relationship between reappraisal and leader emergence in nascent venture teams, such that the relationship is less positive when the positive team emotions are higher than when they are lower.

Hypothesis 3b: Negative team emotions strengthen the positive relationship between reappraisal and leader emergence in nascent venture teams, such that the relationship is more positive when the negative team emotions are higher than when they are lower.

2.4 Methods

2.4.1 Research Context

To test our hypotheses, we collected survey data from nascent venture teams participating in 12 Startup Weekends in Western Europe between October 2017 and April 2018. All of these events share the same format. On Friday evening (day one), participants gather at the venue, meet the other participants, and have the opportunity to pitch their business ideas. Teams then form around the most popular ideas, with each team working on one idea. On Saturday (day two) and Sunday (day three), teams jointly develop their ideas, receive feedback from coaches, and engage in customer validation in a real market environment. On Sunday evening (day three), teams present their

business ideas to a jury panel consisting of angel investors and experienced entrepreneurs.

We chose to study leader emergence at Startup Weekends for several reasons. First, these events allowed us to observe nascent venture teams at the moment of their inception—an aspect that prior studies have been unable to capture (e.g., DeRue et al., 2015). In the nascent venture context, participants take steps to establish a new business but have not yet organized actual business ownership (Carter, Gartner, & Reynolds, 1996). Nascent ventures provide optimal conditions for a study of leader emergence, as their leadership structures are highly fragile (Foo et al., 2006) and team members' behaviors are not guided by formal organizational structure and routines (Ensley et al., 2006). Moreover, Startup Weekend participants generally do not know each other prior to the event, which minimizes the effect of unobserved factors that are known to affect peer ratings, such as pre-existing friendships (Boyd & Taylor, 1998).

Second, the standardized format of Startup Weekends minimizes unobserved variances caused by different event structures or sequences, which allowed us to gather and combine data across events. As a result, we could access a larger number of data points than would have been possible at any single event. The standardized format also enabled us to create an exhaustive list of affective events and to capture the related team emotions as they occurred on a daily basis.

Third, Startup Weekends closely resemble the entrepreneurial process, which is chaotic, complex, and compressed in time (Foo et al., 2009). As one participant reflected: "Startup Weekend provides a year's worth of challenges and lessons in a short three-day format. Hope, overcoming fear, pushing the limits, doing what people say can't be done, and most of all partnerships that can last beyond Startup Weekend" (Cardone, 2016). Furthermore, all the events happen within a confined space, which necessitates frequent communication and face-to-face interactions. The close proximity of the team members enhances emotional contagion (Fowler & Christakis, 2008), thereby intensifying the emotional nature of the entrepreneurship journey and, thus, providing fertile ground for research on nascent venture teams. The highly emotional nature of this context is evident in our data. For the majority of teams, several team members reported at least three affective events on days two and three of the event.

2.4.2 Data-collection Procedures and Sample

We surveyed participants on site at four points over the three days of the event. On day one, before the event officially started, we conducted a pre-survey that included a battery of questions covering participants' demographics and individual characteristics. Moreover, at the end of each day, participants completed a main questionnaire. In line with longitudinal studies that observe young ventures, we accepted survey responses that were returned within two hours of distribution (e.g., Foo et al., 2009). All surveys were conducted in English to maximize comparability between events. All 110 of our pilot-study participants indicated that their level of English was sufficient to understand the survey (data gathered in the pilot study is not included in the final sample).

In total, 599 of the 618 event participants completed at least one survey, giving an individual response rate of 97%. Each participant completed an average of 3.08 of the 4 surveys. To be included in the final sample, an individual had to complete the pre-survey and have at least two leadership ratings from other team members on the evenings of both day two and day three. For teams to be included, at least one member of the team had to participate in the entire event, the team's idea could not have been the subject of tangible work prior to the event, and the team had to have between three and nine members. On average, 92.5% of the event participants took part in all three days of the event. List-wise deletion for missing data rendered a final sample size of 375 individuals from 103 teams, resulting in an effective response rate of 62.6%. From those in the final sample, we obtained 1,310 surveys out of the possible maximum of 1,500.

In our final sample, the average event had 58.77 participants (SD = 20.71) who formed 10.68 teams (SD = 2.88) with an average team size of 5.82 (SD = 1.51). Among the members of the nascent venture teams in our final sample, 30.56% had previous experience in founding a company. The average age was 29.33 years (SD = 7.00) and 62.67% of the participants were male. In their daily lives, 23.20% fulfilled expert tasks, 17.33% were senior or middle managers, 12% had supervisory responsibilities, 24% were involved in operational tasks, and 23.47% were not in paid employment (mostly students looking for startup ideas and teams). In terms of educational qualifications, 3.20% of the participants held a doctoral degree, 54.13% had a master's degree, 25.07% had a bachelor's degree, 3.73% held an associate's degree, and 13.87% had a high-school diploma. Of a subsample of 226 event participants, 87.16% said they intended to

continue working with the idea after the event, which represents a step towards business creation (Ajzen, 1991).

2.4.3 Measures

Leader emergence. We measured leader emergence using the scale developed by Carson et al. (2007). More specifically, we asked all participants to assess each of their team members with the question 'To what degree does your team rely on this individual for leadership?' (scale from 1 = not at all to 5 = to a very great extent). Following DeRue et al. (2015), we calculated individual leader emergence scores by averaging the ratings that each individual received on days two and three.

As we collected leadership ratings for each individual from multiple team members, we then calculated intraclass correlations (ICCs) for time periods 2 (ICC(1,1) = .51, $p < .001$; ICC(2,1) = .52, $p < .001$; ICC(1,k) = .86, $p < .001$; ICC(2,k) = .87, $p < .001$) and 3 (ICC(1,1) = .32, $p < .001$; ICC(2,1) = .34, $p < .001$; ICC(1,k) = .79, $p < .001$; ICC(2,k) = .81, $p < .001$). Our ICC values are similar to those reported in other leadership studies (e.g., Lin et al., 2018; ICC(1,1) = .28 and ICC(2,1) = .51; and Li et al., 2013; ICC(1,1) = .22 and ICC(2,1) = .50) and support the aggregation of the ratings. The small delta between our ICC(1) and ICC(2) values is explained in part by the within-group sample sizes (see Bliese, 2000).

In line with DeRue et al. (2015) we used leader emergence values at the end of day two as a baseline control. We controlled for baseline leadership emergence (time 2) for two main reasons. First, prior studies indicate that easily visible characteristics, such as physical strength (Kalish & Luria, 2016), gender (Collinson & Hearn, 1996; Eagly & Karau, 1991; Ensari et al., 2011), and dominance (Anderson & Kilduff, 2009), lead to initial perceptions of leadership. Less obvious characteristics (e.g., softer skills) start to affect leadership evaluations only after teams spend more time working together and, thus, lead to deviations from their respective initial anchors (Kalish & Luria, 2016). Therefore, we included the baseline level of the outcome variable to correct for a potential ceiling effect (i.e., if the initial leadership score level is high due to visible characteristics, there is less room for influence as a result of emotion regulation, which emerges only after the team has worked together for some time).

Second, the correlation between time 2 and time 3 is .56, which means that they share about 30% of the variance. Moreover, a t-test shows that leader emergence in time 2 and time 3 differ to a statistically significant extent (t = 2.09, p < .05). Thus, our data suggest that although the autocorrelation is relatively high, the leadership attributed to an individual changes between day 2 and the end of the event. Our decision to control for the baseline is in line with methodological recommendations (e.g., McKenzie, 2012), general practice in the management field (Sluss, Ployhart, Cobb, & Ashforth, 2012; Song et al., 2018), and research on leader emergence (DeRue et al., 2015). This practice is also recommended by Preacher (2015), who emphasizes that controlling for prior measurements of the dependent variable helps to separate out the stable variance in the variable that cannot be explained by other predictors. We report our results for the post hoc analysis without controlling for baseline leader emergence.

Positive and negative team emotions. We assessed each team's positive and negative emotions by asking participants to indicate the degree to which they felt a set of emotions in response to each of the specific affective events that happened during the day. Consistent with prior studies (e.g., Conroy et al., 2017), our choice of affective events was based on quantitative and qualitative participant feedback from our pilot study. We chose the affective events that were frequently reported in the interviews and pilot surveys, and to which all participants were exposed: idea pitches, coaching feedback, and pivots, as well as relationships, processes, and task conflicts in the team. Theoretically, we based our choice of the three conflict types (i.e., process, task, and relationship) on the distinction developed by Jehn and Mannix (2001). In line with previous studies (Conroy et al., 2017; Shaver, Schwartz, Kirson, & O'Connor, 1987; Weiss, Suckow, & Cropanzano, 1999), we presented participants with single emotion words and asked them to indicate the degree to which they had experienced each of those emotions in conjunction with an event using a scale from 1 (not at all) to 5 (to a very great extent). In addition to the participants' feedback, we based our final choice of emotions on Russell's circumplex model of affect (Russell, 1980). The model distributes emotions in a circumplex structure of core affect, which allows us to capture unique effects along both the valence and the arousal dimension. Prior leadership research recognizes both of these dimensions as important (Damen, Van Knippenberg, & Van Knippenberg, 2008). We followed the approach outlined by Liu and Maitlis (F. Liu & Maitlis, 2014) and included all quadrants of the circumplex model in our analysis. More specifically, we selected two emotions out of each quadrant, such that two

emotions indicated unpleasant high arousal ('anger' and 'afraid'), two indicated unpleasant low arousal ('depression' and 'bored'), two referred to pleasant high arousal ('excited' and 'happy'), and two related to pleasant low arousal ('calm' and 'satisfied').

To analyze the teams' positive and negative emotions, we used a three-step approach. First, we followed the common conceptualization of team affect and created mean aggregated scores by averaging each of the emotions the team experienced in response to each event (Drnovsek, Cardon, & Murnieks, 2009; George, 1995). Second, for each affective event experienced by the team, we summed the average scores for the emotions with a negative valence (i.e., angry, afraid, depressed, and bored). We did the same for the emotions with a positive valence (i.e., happy, excited, satisfied, and calm). This approach is in line with extant research indicating that combined emotions have a different effect than single emotions on leadership evaluations (Madera & Smith, 2009), and that people often experience combinations of positive and negative emotions as having unique effects (George and Zhou, 2007). Finally, in order to arrive at two overall scores that captured each team's positive and negative emotions resulting from all affective events, we summed the negative-emotion scores as well as the positive-emotion scores for the affective events. According to Conroy et al. (2017), summing is the most theoretically appropriate approach because it allows multiple high-intensity affective events to have stronger overall effects than a single high-intensity affective event.[1]

Emotion regulation. To capture an individual's general dispositional tendency to regulate his or her emotions in daily life, we used the 10-item Emotion Regulation Questionnaire (ERQ) developed by Gross and John (2003) and incorporated the items into our pre-survey. Respondents were asked to rate the degree to which they used the two forms of emotion regulation on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The antecedent-focused reappraisal measure focuses on an individual's tendency to adapt his or her perceptions of a situation in order to change its emotional impact before emotions are generated (Gross & John, 2003). This measure includes six items such as 'I control my emotions by changing the way I think about the situation' (Cronbach's alpha = .64). The response-focused suppression measure captures an individual's tendency to suppress the expression of emotions (Gross & John, 2003) and includes four items, such as 'I control my emotions by not expressing them' (Cronbach's alpha = .75).

Control variables. We controlled for several variables known to affect leader emergence and team emotions that are outside our theoretical model. Data on nearly all of the control variables were collected through the pre-survey. In addition, during the event, one researcher collected data on team sizes and noted who pitched each idea.

On the individual level, we controlled for *gender* (1 = male; 2 = female) because men and women may differ in their emergence as leaders (Collinson & Hearn, 1996; Ensari et al., 2011) and in their regulation of emotions (Côté et al., 2010). We also controlled for participants' *age,* which may affect leader emergence (DeRue et al., 2015). As previous research indicates that individuals who are perceived as intelligent and experienced are more likely to emerge as leaders within teams (Côté et al., 2010; Ensari et al., 2011), we controlled for these factors using *education level* as a proxy for cognitive intelligence (highest educational attainment, coded 1 = high school diploma, 2 = associate's degree, 3 = bachelor's degree, 4 = master's degree, and 5 = doctoral degree). We also asked participants about their *leadership experience* (0 = no; 1 = yes). Moreover, previous findings indicate that emergent leaders score high on *extraversion*, *agreeableness*, and *conscientiousness* (Côté et al., 2010; DeRue et al., 2015; Ensari et al., 2011). Therefore, we controlled for these personality traits using the short version of the Big Five Personality Inventory developed by Rammstedt and John (2007) (1 = disagree strongly, 5 = agree strongly). In addition, we controlled for whether the respondent *pitched the idea*, as people may gravitate toward an idea owner.

On the team level, we controlled for team composition in terms of gender, age, education, and team size. We controlled for *gender composition* because the relative representation of the different sexes may significantly affect leadership behavior in group activities (Karakowsky & Siegel, 1999). In line with prominent publications on leadership, we also controlled for *age diversity* (Hoch, Pearce, & Welzel, 2010) and *education diversity* (Pieterse, Van Knippenberg, Schippers, & Stam, 2010). We measured the compositional factors of gender, age, and education using Blau's (1977) index of heterogeneity (see DeRue et al., 2015; Kearney & Gebert, 2009, for similar approaches). In addition, we controlled for *team size* because larger teams may exhibit poorer performance on innovation-related tasks (Curral, Forrester, Dawson, & West, 2001) and because team size is relevant for leadership in teams engaged in innovative activities (Eisenbeiss, van Knippenberg, & Boerner, 2008). Moreover, larger teams may struggle more with interpersonal coordination and have an increased likelihood of

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subgroup formation (Mehra, Smith, Dixon, & Robertson, 2006), both of which may affect leader emergence.

Table 4 presents the means, standard deviations, and correlations for the individual- and team-level variables. To check for multicollinearity, we computed variance inflation factors (VIFs) for all variables in our model in addition to standardizing the variables. All VIFs were below the acceptable limit of 5 (O'Brien, 2007), with the highest mean VIF at 1.50. It can therefore be concluded that multicollinearity does not influence the results.

Given the nature of our data in which members are nested within teams, we utilized multilevel mixed-effects modeling to account for the random effects of the nested structures. A null model without predictors revealed that 36.0% of the variance (as indicated by the ICC value) in leader emergence resided between teams, necessitating the use of multilevel analysis.

Table 4: Article 1 - Descriptive Statistics and Correlations

(a) Individual-level Variables	Mean	*s.d.*	Min.	Max.	1	2	3	4	5	6	7	8	9	10	11
1. Gender	1.37	.48	1	2											
2. Age	29.33	7.00	19	57	.01										
3. Education level	3.29	1.09	1	5	.05	.31									
4. Leadership experience	.17	.38	0	1	.00	.23	.13								
5. Personality: Extraversion	3.47	.87	1	5	.15	.05	.02	.07							
6. Personality: Conscientiousness	3.70	.69	2	5	.15	.07	.14	.08	.12						
7. Personality: Agreeableness	3.76	.67	2	5	.08	.12	.13	.10	.13	.14					
8. Leader emergence (time 2)	3.44	.68	1	5	−.01	−.03	−.02	.07	.14	.03	.02				
9. Idea pitcher	.22	.41	0	1	−.02	.07	.12	.00	.03	−.01	.00	.26			
10. Emotion regulation: Reappraisal	3.37	.59	1.33	5	−.12	−.01	−.01	−.08	−.03	.06	.08	.03	.03		
11. Emotion regulation: Suppression	3.07	.81	1	4.75	.00	−.12	−.11	.12	−.08	.04	.12	.07	−.15	−.10	
12. Leader emergence (time 3)	3.52	.80	1	5	.08	−.02	.03	.06	.06	.02	−.03	.56	.26	.09	−.09

(b) Team-level Variables	Mean	*s.d.*	Min.	Max.	1	2	3	4	5						
1. Gender diversity	.35	.18	0	.50											
2. Age diversity	.71	.14	0	.88	.25										
3. Education diversity	.45	.20	0	.78	−.20	.04									
4. Team size	5.82	1.51	3	9	.29	.56	−.05								
5. Positive team emotions	86.81	14.44	82.00	262.17	.13	.20	.05	.36							
6. Negative team emotions	153.87	28.99	49.33	133.35	.01	.09	.01	.17	.33						

Note: Individual-level *n* = 375. Team-level *N* = 103. All correlations |.11| and above are significant at 0.05 or below (two-tailed).

Table 5: Article 1 - Results of Regression Analyses for Leader Emergence

	Model 1		Model 2		Model 3	
	β	SE	β	SE	β	SE
Individual level (Level 1)						
Gender	.11[†]	.07	.13[†]	.07	.13*	.06
Age	−.02	.04	−.02	.04	−.02	.04
Education level	.00	.03	−.01	.03	−.01	.03
Leadership experience	.11	.08	.14[†]	.08	.13	.08
Personality: Extraversion	−.02	.03	−.03	.03	−.03	.03
Personality: Conscientiousness	−.00	.03	−.00	.03	−.00	.03
Personality: Agreeableness	−.03	.03	−.03	.03	−.02	.03
Leader emergence (time 2)	.45***	.04	.46***	.04	.45***	.04
Idea pitcher	.22**	.07	.19**	.07	.20**	.07
Emo. regulation: Reappraisal [H1]			.07*	.03	.06[†]	.03
Emo. regulation: Suppression [H2]			−.07*	.03	−.07*	.03
Team level (Level 2)						
Gender diversity	−.14	.30	−.20	.29	−.21	.29
Age diversity	.62[†]	.36	.65[†]	.35	.57	.35
Education diversity	.11	.27	.06	.26	.04	.26
Team size	−.01	.07	.01	.07	−.01	.07
Positive team emotions					.09	.07
Negative team emotions					−.07	.07
Cross-level interactions						
Reappraisal × Positive team emotions [H3]					−.10*	.05
Reappraisal × Negative team emotions [H4]					.10*	.04
Random part estimates						
Variance of random intercept	.17	.04	.16	.04	.16	.04
Variance of overall residual	.26	.02	.26	.02	.26	.02
% of variance (ICC)	.39	.06	.38	.06	.38	.06
Model fit statistics						
Prob > χ2	***		***		***	
Log likelihood	−343.32		−339.08		−334.79	
AIC	718.64		714.16		713.58	
LR test of model fit	−		*		†	

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Table 5 presents the results of the regression analysis. Model 1 contains the individual- and team-level control variables. Model 2 evaluates Hypothesis 1, which proposes that in a nascent venture team, an individual with a higher tendency to reappraise emotions is more likely to emerge as a leader than an individual with a lower tendency to reappraise emotions. The results of Model 2 confirm that the relationship between reappraisal and leader emergence is positive and significant ($\beta = .07$, $p < .05$). Hypothesis 2 suggests that in a nascent venture team, an individual with higher tendency to suppress emotions is less likely to emerge as a leader than an individual with lower tendency to suppress emotions. The results of Model 2 confirm that the relationship between suppression and leader emergence is negative and significant ($\beta = -.07$, $p < .05$).

Model 3 evaluates Hypothesis 3a, which proposes that positive emotions within a nascent venture team mitigate the positive relationship between reappraisal and leader emergence. Model 3 confirms that positive team emotions negatively moderate the relationship between reappraisal and leader emergence ($\beta = -.10$, $p < .05$). Hypothesis 3b predicts that a team's negative emotions magnify the positive relationship between reappraisal and leader emergence, which is confirmed by the results of Model 3 ($\beta = .10$, $p < .05$).

Figure 3 and Figure 4 portray the shape of the cross-level interactions. Figure 3 shows that the effect of reappraisal on leader emergence is contingent on the level of positive team emotions. A simple slopes analysis (Preacher, Curran, & Bauer, 2006) reveals that the relationship between reappraisal and leader emergence is not significant when positive team emotions are high (+1 SD above the mean; simple slope coefficient = −.02, ns). However, the relationship is significant and positive when positive team emotions are low (−1 SD below the mean; simple slope coefficient = .18, $p < .01$). Figure 4 confirms that the effect of reappraisal on leader emergence is also contingent on the level of the negative team emotions. The relationship between reappraisal and leader emergence is positive and significant when negative team emotions are high (+1 SD above the mean; simple slope coefficient = .14, $p < .01$) but not significant when negative team emotions are low (−1 SD below the mean; simple slope coefficient = −.05, ns).
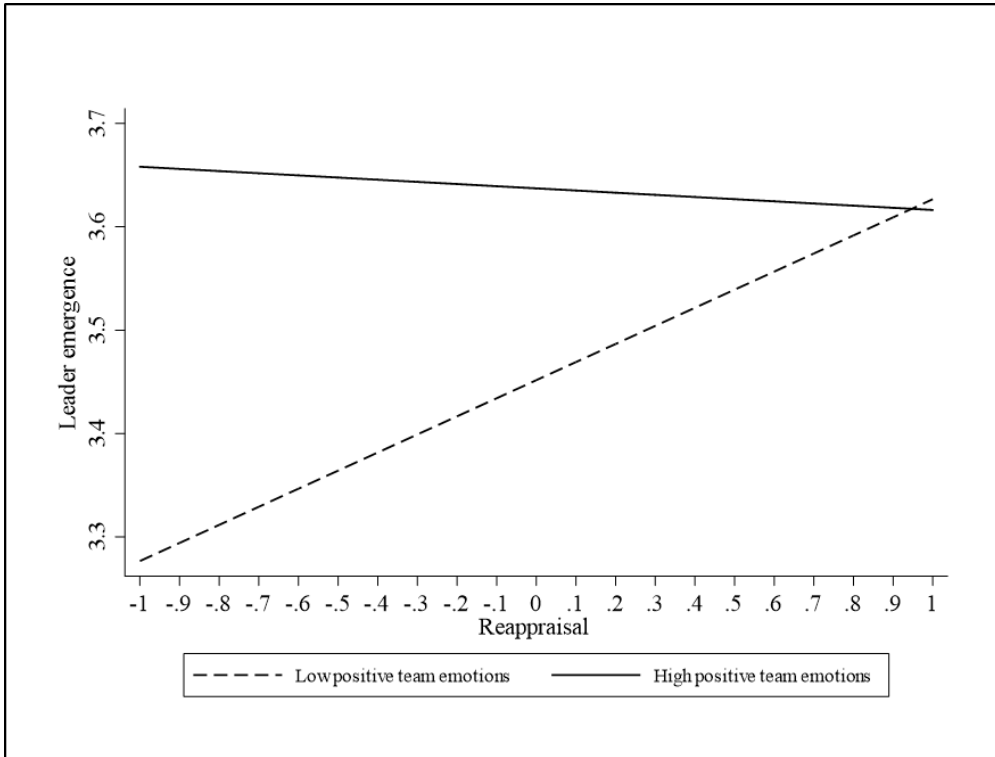
Figure 3: Moderating Effects of Positive Team Emotions on Leader Emergence
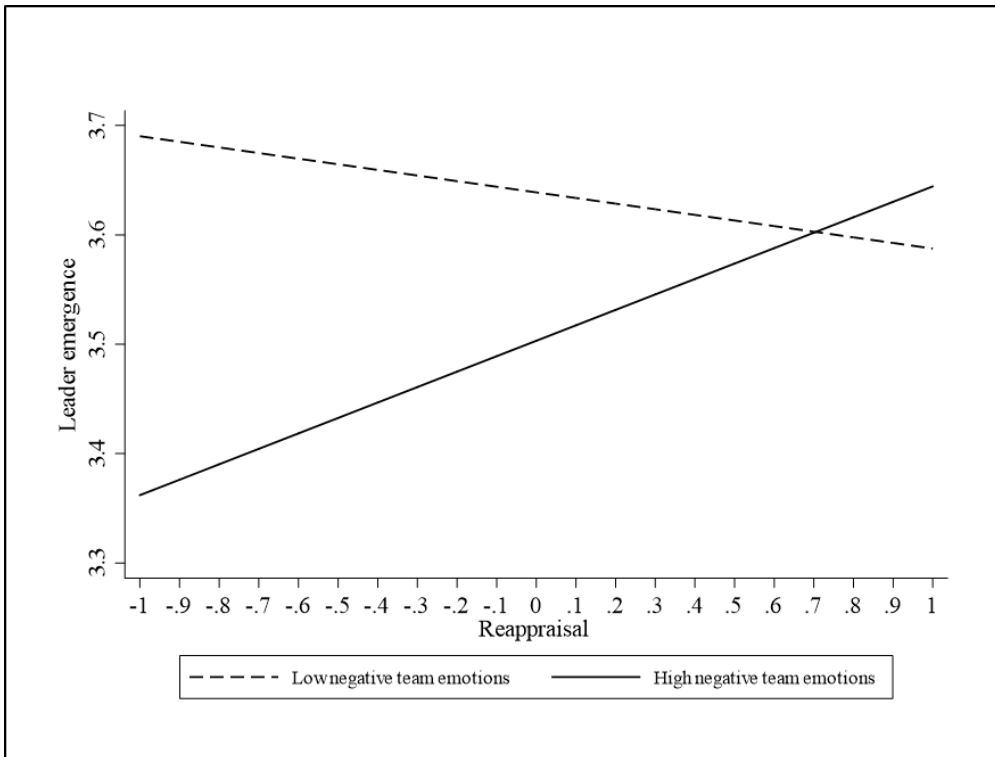
Figure 4: Moderating Effects of Negative Team Emotions on Leader Emergence

Post Hoc Analysis. We conducted two post hoc analyses. First, although we did not expect team emotions to moderate the relationship between suppression and leader emergence, we investigated the possibility of an interaction. In these tests, neither positive team emotions (β = –.02, ns) nor negative team emotions (β = .04, ns) moderated the negative relationship between suppression and leader emergence.

Second, because we found a strong and positive association between the baseline leader emergence (time 2) and leader emergence at time 3, we also tested the main models (Table 5) without controlling for the baseline leader emergence. All of the reappraisal relationships were qualitatively similar to those found in the main tests (reappraisal: β = .07, p < .1; reappraisal × positive team emotions: β = –.15, p < .01; reappraisal × negative team emotions: β = .10, p < .05). The direction of the relationship between suppression and leader emergence remained the same but lost its significance (β = –.03, p = ns). This analysis indicates that controlling for baseline leader emergence is important when the theoretical focus is on less visible attributes that influence leader emergence. Models that do not control for the baseline may mask the importance of factors that require some time to have an influence.

2.6 Discussion

Despite the widespread agreement that leadership is crucial to the survival and success of entrepreneurial ventures (e.g., M. H. Chen, 2007; Kang et al., 2015), individual leader emergence in nascent venture teams has been underexplored. In this study, we theorized about and empirically examined the link between individuals' emotion regulation and their leader emergence in nascent venture teams. We collected and analyzed data from 103 nascent venture teams, none of which had leadership structures in place prior to the team's establishment. Our analyses showed that reappraisal helped individual team members establish themselves as leaders, while suppression hindered leader emergence. Moreover, our data demonstrated that the benefit of reappraisal was only significant when the team's negative emotions were high or the positive team emotions were low. These findings suggest that an individual's tendency to engage in reappraisal is a particularly powerful predictor of his or her emergence as a leader when the nascent venture team experiences crisis, drawbacks, and failures, or when the team loses its enthusiasm in the course of daily, mundane tasks.

2.6.1 Theoretical Contribution

Our study offers novel insights into the opposite effects of two aspects of emotion regulation (reappraisal and suppression) on leader emergence in nascent venture teams. Furthermore, our theoretical model incorporates team emotions as an important contextual factor and explains how this factor alters the influence of reappraisal; an aspect of emotion regulation that depends on the social context (Cacciotti et al., 2016; Madera & Smith, 2009). Our study not only contributes to the entrepreneurship literature but also advances the prior work on leadership and emotions that informs our theoretical model.

First, our approach to examining the degree to which different individual nascent team members are perceived as leaders broadens the scope of entrepreneurial leadership research (e.g., M. H. Chen, 2007; Eesley et al., 2014; Kang et al., 2015). Consistent with recent theoretical developments on shared leadership (Dinh et al., 2014; Paunova, 2015), our approach does not constrain leader emergence in nascent venture teams to a single leader. Instead, we find that all members of such teams can be perceived as leaders, albeit to varied extents. Our findings imply that, aside from the 'idea owner' or the 'lead entrepreneur,' other members of nascent venture teams can emerge as leaders, which in turn underscores a need to update theories on and approaches to entrepreneurial leadership.

Second, our multi-level perspective, which incorporates both individual- and team-level emotional factors, advances research on entrepreneurial emotion (Cardon et al., 2012; Foo et al., 2009; Morris, Kuratko, Schindehutte, & Spivack, 2012). Previous research on entrepreneurial emotion has centered on the emotions (e.g., passion, X.-P. Chen, Yao, & Kotha, 2009) and emotional characteristics (e.g., emotion regulation, He et al., 2017) of individual entrepreneurs. With rare exceptions (Cacciotti et al., 2016; Madera & Smith, 2009), this line of research has not accounted for the emotional influence of the team in which the entrepreneur is situated. Our findings suggest that team emotions (positive and negative) constitute an affective environment in which reappraisal as an emotion regulation tendency is perceived and valued, thereby forming a boundary condition for the influence of individual entrepreneurs' reappraisals on their emergence as leaders. In this regard, our study represents an initial step towards a more comprehensive understanding of the interactions between entrepreneurs' emotional characteristics and their social contexts.

In addition, we found a positive and significant correlation between age diversity and positive team emotions, as well as gender diversity and positive team emotions. While these findings fall outside the scope of our theorizing, they provide interesting input for future research on diversity in nascent venture teams. Demographic diversity has typically been treated as a source of social categorization and in-group conflict (Garcia-Prieto, Bellard, & Schneider, 2003)—group processes that supposedly generate negative emotions. Our findings suggest a previously overlooked link between such diversity and positive team emotions. An investigation of the circumstances under which different types of diversity can improve the emotional environment of the team, would be highly relevant for an increasingly diverse work environment.

Third, although our study is guided by leadership research and affect-related theories, it also offers numerous new insights that have important implications for these streams of literature. Our study contributes to the leadership literature by exploring leader emergence in the novel context of nascent venture teams. Unlike groups in established organizations, leaders in such teams cannot rely on formal hierarchical structures or explicit incentive systems to generate influence. As individual entrepreneurs gather to form a nascent venture team, they experience a series of affective events that stimulate intense emotional responses (J. Zhou & George, 2003). Therefore, a nascent venture team's formation stage provides a unique opportunity to study emotion regulation as an explanation for leader emergence (Ensari et al., 2011).

Moreover, the affective nature of nascent venture teams' experience and the creative nature of their work enable us to contribute to the creative leadership literature (e.g., Mainemelis, Kark, & Epitropaki, 2015; Mumford, Scott, Gaddis, & Strange, 2002) by showing the importance of emotion regulation for leading creative people in addition to such established factors as personality traits and the ability to convey a vision. Furthermore, new venture teams may share characteristics with other organizational settings that demand an extraordinary adaptability to novel events and changing stimuli (Uhl-Bien & Arena, 2018).

In contrast to prior work suggesting that individuals need to stay composed in order to be perceived as leaders (e.g., Kramer and Hess, 2002), we find that suppression reduces the degree to which individuals are perceived as leaders in nascent venture teams. Explanations for this counterintuitive finding lie in our more nuanced conceptualization of the two aspects of emotion regulation and their effects, as well as

in the nascent venture team context. For example, certain heightened emotions, such as anger, may generally hinder leader effectiveness (e.g., Lerner and Shonk, 2010). However, the manner in which individuals regulate these emotions likely determines whether these emotions will prevent them from being perceived as leaders. Given a negative affective event (e.g., team conflict), suppression focuses solely on avoiding expression of the non-adaptive emotions (e.g., anger) that are already present. As suppression creates a discrepancy between the internal emotional experience and the external emotional expression, team members may perceive an individual with a higher tendency for emotion suppression as less authentic and, thus, less of a leader. Displays of authenticity in the form of emotional expressions are particularly important in the nascent venture team context (e.g., Hmieleski et al., 2012) where authenticity is valued. Conversely, reappraisal allows for interpretations that prevent the generation of non-adaptive emotions (e.g., anger), such that the resulting emotional expressions (e.g., calm) are genuine.

A notion related to the phenomenon we observe is the differentiated effects of surface acting versus deep acting (Hochschild, 1983). When individuals practice surface acting, they change their outward emotional expressions without changing their inner emotions. When they practice deep acting, they first attempt to feel the emotions they are displaying (Hochschild, 1983). Although both surface and deep acting require emotional labor, the former creates more tension and emotional dissonance, thereby reducing the individual's emotional influence in the team (Humphrey et al., 2008). Similar to surface acting, suppression may have unintended consequences that can prevent an individual from being perceived as a leader. Our explanation of the opposing effects of the two aspects of reappraisal and suppression deepens our understanding of emotion regulation's multifaceted implications for leader emergence.

2.6.2 Practical Contribution

Our findings also have important implications for practice. First, members of nascent venture teams may benefit from a better understanding of emotion regulation and its effects. Our results strongly suggest that members of such teams should reassess the notion of suppression. As the expression of emotions is often frowned upon and considered 'unprofessional' in established organizational settings (Kramer and Hess,

2002), controlling one's emotions is generally believed to be desirable (Cole et al., 1994). Our findings challenge the applicability of this rule in the nascent venture context by highlighting the negative impact of emotion suppression on individual leader emergence in nascent venture teams. Instead of suppressing one's emotions, it is beneficial for entrepreneurs who aspire to become leaders in such teams to remain authentic by expressing their genuine emotions to lead with true passion and purpose.

Second, entrepreneurship coaches and educators should consider incorporating the element of emotion regulation through reappraisal into training and education programs. As new ventures are replete with (emotional) ups and downs, aspiring entrepreneurial leaders would benefit from an understanding of strategies that can help them make sense of affective events. Furthermore, reappraisal is more influential in the presence of negative team emotions. Our findings suggest that the tendency to see the 'silver lining' may be beneficial in nascent venture teams, especially in times of crisis. These findings call for an additional focus on the management of emotions in entrepreneurship coaching and education.

2.6.3 Limitations and Future Research Opportunities

Despite its strengths, this study has limitations that call for additional research. First, our measure of leader emergence (Carson et al., 2007), which is among the most established in the field, offers a 360-degree appraisal of leadership (each team member assesses the leadership of everyone else on the team). However, it can neither capture team members' individual contributions to tasks, roles, and responsibilities nor track shifts in those contributions over time (Aime et al., 2014; DeRue et al., 2015; Wellmann, 2017). As our data-collection setting did not permit the use of a more extensive measure, we encourage future studies that complement perceptions of leadership with measures of demonstrated contributions.

Second, we follow Gross and John's (2003) conceptualization and operationalization of the construct of suppression, which refers to a dispositional tendency to avoid showing emotion. However, literature on surface acting (Grandey, 2003) suggests that people can also suppress negative emotions by externally displaying positive emotions that they do not actually feel. Such suppression may require

considerable emotional labor, which plays an important role in leaders' influence on followers (Humphrey et al., 2008). We encourage future studies that empirically examine the roles of surface and deep acting as well as emotional labor in leader emergence.

Third, this study focuses on the very early stages of venture creation in order to observe leadership at its inception within nascent venture teams. Although some evidence indicates that the leadership established in these early stages prevails over time (Epitropaki and Martin, 2004), the leadership structure may change over the course of a venture's life cycle. Relatedly, attributes that influence leader emergence can also vary according to the stages of team development (e.g., Kalish and Luria, 2016). For example, Anderson and Kilduff (2009) argue that extraversion is connected to dominance, making it a trait that affects leadership emergence in the very early phases of team building (first impression) but loses its significance as the process unfolds. Interestingly, our results indicate that extraversion was significantly correlated with leader emergence at the midpoint of Startup Weekends but not at the end. Thus, we call for longitudinal research that follows the unfolding of nascent venture teams after such entrepreneurial events. This line of research should study the evolution of team leadership and the changes in key predictors in different stages of the team's and/or the venture's lifecycle.

Fourth, our sample consists of a specific type of teams: nascent venture teams without any formal leadership. This setting is ideal for studying the natural emergence of leaders in the earliest phase of new ventures. However, our findings may not necessarily apply to teams with pre-existing leadership structures. For example, teams with an assigned leader may be more resilient to the impact of affective events because formal leadership structures can serve as a safety net for team members (Ensley et al., 2006). Alternatively, a team may grow reliant on an existing strong leader and become less adaptive in the face of uncertainty. Future research can build on our findings in the nascent venture team setting, and further compare and contrast leader-emergence mechanisms in teams with and without existing leaders.

2.7 Conclusion

We develop a theoretical model that accounts for both individual- and team-level dynamics to explain individual leader emergence in nascent venture teams.

This multilevel perspective explains not only the link between individuals' emotion regulation and their emergence as leaders in teams, but also stipulates how the strength of this link decreases or increases given different levels of positive and negative emotions in the team. In a sample of nascent venture teams without existing leaders, we found that while the reappraisal aspect of emotion regulation helps individuals establish themselves as leaders, the suppression aspect hinders leader emergence. Moreover, our data suggest that the effects of individual entrepreneurs' reappraisals depend on the emotions of their teams: positive team emotions mitigate the positive effect, whereas negative team emotions magnify it. With these findings, we contribute to the literature on entrepreneurial leadership, entrepreneurial emotions, and leadership emergence research in general.

2.8 Notes

[1] Consider the following example of two teams. In the course of the three-day event, Team A experienced three affective events: task conflict, coaching feedback, and pivoting. Team B only experienced one affective event: task conflict. On average, the members of Team A felt moderately angry and afraid, and a little bored and depressed in response to each of the three events. For Team A, the event-specific score for negative team emotions (angry, afraid, bored, and depressed) for each of the three affective events is $3 + 3 + 2 + 2 = 10$. The overall score for negative team emotions is $10 + 10 + 10 = 30$, as the emotional responses to each of the affective events in this hypothetical example were the same. In contrast, as a response to task conflict (the only affective event experienced by the Team B), members of Team B felt moderately angry and afraid, and a little bored and depressed. For Team B, the event-specific score for negative team emotions would also be $3 + 3 + 2 + 2 = 10$. However, the overall score for negative team emotions would be 10. If we had taken the average of all affective events, Teams A and B would have had the same score for negative team emotions despite the difference in their experiences of affective events.

3.

I Want to Support You…

But Business is Business

I Want to Support You… But Business is Business.
Gender, Role Conflict, and Business Angel Investments

Henrik Wesemann

University of St.Gallen

Dufourstrasse 40a

9000 St.Gallen, Switzerland

3.1 Abstract

This study builds on Role Conflict Theory to advance a theory of how business angels engage in two paradoxical social roles in parallel. Using individual investment decisions made on the TV shows *Shark Tank* and *Dragons' Den,* it shows that business angels simultaneously act as supporters of female entrepreneurs (making investors more likely to fund women than to fund men) and as profit-oriented investors (using their position of power to offer women worse deals than they offer men). Moreover, these conflicting behaviors are associated with team-level conversations: male-centric team language is associated with more frequent funding but less attractive deal conditions for female entrepreneurs. This investigation of previously unexplored gender effects contributes to Role Conflict Theory, research on gender in entrepreneurship, and the entrepreneurial bias literature.

Keywords: Business Angels; Gender; Investment; Role Conflict

3.2 Introduction

Gender issues in entrepreneurship are hard to ignore. While female- and male-led companies are equal in quality (Malmström, Johansson, & Wincent, 2015), female entrepreneurs face more difficulties and receive less funding (Alsos, Isaksen, & Ljunggren, 2006; Malmström, Johansson, & Wincent, 2017). Industry actors know about this injustice and business angels who are confronted with female investors often experience an inner conflict: They simultaneously want to support the underrepresented minority of female entrepreneurs (Kanze et al., 2018) and make profitable deals (Ramadani, 2009). This results in paradoxical roles: that of a supporter of female entrepreneurs (henceforth: supporter) and that of a profit-oriented investor (henceforth: investor). How and under what conditions venture investors engage in these conflicting roles is important for female entrepreneurship (Brush, Carter, Greene, Hart, & Gatewood, 2002) and entrepreneurial bias research (S. X. Zhang & Cueto, 2017) but remains largely unexplored.

Outside conditions can also affect the degree to which individuals engage in these conflicting roles (Ashforth et al., 2000). This is especially true for information relating to salient criteria such as gender (Kanze et al., 2018) in very personal processes such as entrepreneurial investments (Mollick, 2013). As a result, outside factors such as gendered conversations may affect the degree to which business angels act in accordance with their roles as supporter and as investor of female entrepreneurs. However, extant investigations of business angel funding have largely left out the conversational frame of investment decisions, missing important information (Kanze et al., 2018).

These gaps relating to conflicting roles and the influence of gendered conversations offer a research opportunity. I help fill this void with an investigation of business angel investment decisions in the context of the TV shows Shark Tank and Dragons' Den, two of the most visible investment platforms of the entrepreneurial sector (Boyle & Magor, 2008; Keren, 2016; Maxwell, Jeffrey, & Lévesque, 2011). More specifically, I theoretically explicate and empirically demonstrate how investors engage gender and investor roles. One investigation highlights how female investors consistently engage in conflicting roles as supporter and investor; the other links the salience of androcentrism to funding decisions.

This article makes four main contributions. First, the link between individual idiosyncrasies and larger team processes contributes to multilevel research in entrepreneurship. While extant research largely focuses on either individual entrepreneurs or investors (Kanze et al., 2018), few studies address the importance of outside factors such as team conversations on individual decisions. By investigating the association of team-level conditions and individual investor behavior, this article highlights how social context affects the behavioral strategies of business angels. This addresses calls to research situational contexts that affect an individual's decisions in entrepreneurship (Shepherd, 2011).

Second, I break methodological ground with a psycholinguistic analysis (Linguistic Inquiry and Word Count - LIWC) of gender in entrepreneurship. While there is some evidence that language in entrepreneurship creates an androcentric mentality that alienates female entrepreneurs (e.g., Bruni, Gherardi, & Poggio, 2004; Malmström et al., 2017), entrepreneurial androcentrism has not been quantified in any standardized way. LIWC scores are an increasingly popular way to investigate latent tendencies in entrepreneurship (e.g., Antretter, Blohm, Grichnik, & Wincent, 2019) that address this gap. This measurement of gender bias in entrepreneurship answers recent calls for notations that characterize gender in entrepreneurial finance decision-making (Malmström et al., 2017).

Third, I contribute to practice by disentangling gender effects in entrepreneurial finance. I suggest that more gender salience increases female entrepreneurs' chances to acquire funding but worsens their deal conditions. This addresses calls to investigate business angel investment decisions and gender (e.g., Malmström et al., 2017; Riding, Madill, & Haines Jr, 2007) as well as entrepreneurial biases (S. X. Zhang & Cueto, 2017).

Lastly, this article contributes to Role Conflict Theory. Extant role conflict research generally assumes spatial or temporal separations between different roles (Ashforth et al., 2000). This works for clearly distinct settings such as office life and home life but makes it challenging to explain how individuals deal with conflicting role requirements that they experience in parallel (e.g., Matthews, Winkel, & Wayne, 2014). This article suggests that individuals can devote parts of their decisions to different roles, allowing them to act in accordance with several conflicting roles at the same time. This

connects to a promising emerging stream of research on paradoxical social roles (Matthews et al., 2014; Miron-Spektor, Gino, & Argote, 2011).

3.3 Literature Review and Hypothesis Development

3.3.1 Role Conflict Theory

Focus of this article is how business angels deal with cognitive dissonance that is caused by conflicting roles. Like all individuals, business angels have a number of roles that depend on their social identities (Biddle, 1986). Because people *act* in accordance with different identities at different times, the related research is called "*role theory*" (Biddle, 1986, p. 68). These roles are defined as the portfolios of social behaviors, parts or identities, and behavioral expectations that make up an individual. Their combination describes a persona with goals, values, beliefs, and norms (Ashforth et al., 2000).

This project draws on Role Conflict Theory (RCT; Katz & Kahn, 1978) to explain how business angels experience internal conflicts in their values and norms (Horton et al., 2014). More specifically, business angel role conflict materializes between the role as a *supporter* of the marginalized female minority and the role as an *investor* in search of profit. The divergent requirements of these two roles make it impossible to fully engage in both simultaneously.

Often, these irreconcilable requirements lead individuals to split their roles along temporal lines (Ashforth et al., 2000) in the way that work and family are separated by a commute between the office and home (e.g., Lobel, 1991). However, the roles of business angels cannot be split as clearly. Instead, situations may force individuals to simultaneously act in accordance with several contradictory roles that need to be resolved (Festinger, 1957). Recent research on paradoxes in individual cognition (e.g., Miron-Spektor, Gino, et al., 2011; Miron-Spektor, Ingram, Keller, Smith, & Lewis, 2018) suggests that this may be achieved by accepting a paradox between conflicting roles, rather than prioritize role goals. In line with this research, I suggest that business angels channel their conflicting roles (*supporter* vs. *investor*) into different parts of the investment decision. By splitting the investment process into two parts, investors avoid confronting paradoxical role requirements. This selective perception viewing seeing behavior as entirely consistent with conflicting identities.

The next section will address the two roles separately before proposing a way of splitting the investment process into two parts, which allows individuals to avoid role conflict.

3.3.2 Role 1: Supporter of Female Entrepreneurs

Entrepreneurship has always been branded as distinctly male discipline (e.g., O. F. Collins & Moore, 1964). While both practitioners and researchers are trying to fight this gender bias (e.g., M. Lee & Huang, 2018), eliminating it altogether has been surprisingly challenging. Extant research highlights that simply removing discriminatory structural elements often does not eliminate funding gaps (Malmström et al., 2017). Even when men and women have equal access to funding, female investors receive smaller loans than male entrepreneurs (Bardasi, Sabarwal, & Terrell, 2011). This is even true in Sweden, often considered one of the least gender-biased countries in the world (F. D. Blau & Kahn, 1996), where female entrepreneurs face more difficulties when attempting to obtain funding than male entrepreneurs (Malmström et al., 2017).

Different explanations attempt to explain this prevalence of gender inequality in entrepreneurial finance. One stream focuses on descriptions of female entrepreneurs to suggest that female entrepreneurs' traits and personal circumstances are at fault for their underwhelming funding results (Kanze et al., 2018). For example, Coleman (2000) proposes that female entrepreneurs may have less appetite for external funding. Verheul and Thurik (2001) suggest female entrepreneurs have a lower tolerance for risk. Manolova, Brush, and Edelmann (2008) highlight that female entrepreneurs are less motivated by monetary incentives than men. Yang and Aldrich (2014) find that family circumstances such as a husband's employment or domestic responsibilities prevent large-scale female entrepreneurship.

A second stream of research focuses on stereotypes espoused by investors. Here, a belief that "male" traits and preferences are more appropriate to the realm of entrepreneurship explains higher funding for men. Men are thought to be more agentic (masterful, assertive, competitive, and dominant) whereas women are thought to be more communal (friendly, unselfish, concerned with others, and emotionally expressive) (Eagly & Mladinic, 1994; Eagly & Wood, 2011). Investors believe that these traits make

women less likely to grow a venture, invest less in their own venture, and are less likely to be successful (Malmström et al., 2017). This challenge becomes augmented by the fact that leadership behaviors are evaluated less favorably when they come from a woman (Eagly & Karau, 2002). Ultimately, this makes women in male-dominated industries outsiders who constantly need to prove their commitment (Konrad & Cannings, 1997).

An influx of studies that address the issues of female entrepreneurship and gender biases in venture financing is starting to rectify these issues. For example, Alsos et al. (2006) highlight differences in venture funding behavior to develop strategies to release the underutilized potential of female-led ventures. Similarly, Malmström et al. (2017) investigate gender stereotypes to see how women can gain credibility in venture funding. Similarly, many major practitioners have begun highlighting the achievements of and opportunities for women (e.g., Au-Yeung, 2018).

Support of female entrepreneurship is especially noticeable in the most visible parts of the field, such as in the TV shows *Shark Tank* and *Dragons' Den*. The investors explicitly disavow gender bias (e.g., Montag, 2018) and highlight that female entrepreneurs on the show are more likely to get a deal than men (53% closing rate for women; 48% for men; Keren, 2016). The unapologetically neoliberal mindset of the show highlights an image of natural and glamorous gender equality (Keren, 2016) and fields investors who have become paragons of female representation in entrepreneurship.

3.3.3 Role 2: Profit-Oriented Investor

A second role of business angels is that of an objective investor in search of profit (Huang & Pearce, 2015). This role requires individuals to invest in rational ways that focus on future payoffs of the ventures they invest in (Gerber, Vogt, & Hens, 2002).

However, given the complexity and uncertainty of financial decisions, investors often have to reply on simple heuristics and intuitions when making decisions (Kahneman & Riepe, 1998). As a result, business angels base their decisions on a variety of explicit and implicit factors (Huang & Pearce, 2015) that provide cornerstones for decision heuristics (Maxwell et al., 2011). The most important explicit factors are financial data (Feeney, Haines Jr, & Riding, 1999) and market data (Mason & Harrison,

1997). These factors are akin to traditional investment criteria such as those used on the stock market as they hardly depend on a personal understanding of the venture or entrepreneur. In contrast, implicit factors highlight the entrepreneur in a way that attempts to quantify espoused qualities in order to be more objective. Here, Mason and Stark (2004) highlight the importance of honesty, a strong work ethic, and a business understanding to convince business angels. Sudek (2006) contributes trustworthiness, management quality, enthusiasm, and exit opportunities to this list. Martens et al. (2007) underline that the quality of entrepreneurial storytelling conveys the logic behind the proposed exploitation of opportunities. Maxwell et al. (2011) add the importance of relevant experience. These factors are especially important in entrepreneurship, where entrepreneur and venture are deeply intertwined.

In combination, these explicit and implicit factors add up to a portfolio of venture-focused criteria that quantify the quality of an investment opportunity. Business angels who focus on their *investor* role limit their decision process to factors such as these to maximize by financial returns (Huang & Pearce, 2015). This implies the investors use their leverage to squeeze the best deals out of entrepreneurs. Because female entrepreneurs struggle more than male entrepreneurs to obtain funding (Malmström et al., 2017), profit-oriented investors can use the situation to get more equity for less investment. Prioritizing female-led ventures out of a sense of justice is not in line with pure search for profit.

3.3.4 Business Angel Gender and Role Conflict

The aforementioned roles stand in conflict with one another: The *supporter* role attempts to rectify larger issues in the industry by giving female entrepreneurs an advantage. The *investor* role tries to avoid these outside factors and focuses on the objective facts regarding the investment opportunity. While the *investor* role is one that all investors engage in (it is their track record as investors that earned them a spot on the panel), I propose that only female investors consistently see themselves as an active *supporter* of female entrepreneurs.

Female investors are very aware of gender discrimination (Pichevin & Hurtig, 1996). For example, women are much more aware of the gender of the person they are

talking to and base their decisions on that gender (Pichevin & Hurtig, 1996). Similarly, they are more aware of the benefits and costs of being a member of a group that is dominated by one or the other gender and are more equipped to deal with the differences (Chatman & O'Reilly, 2004). Women also have a very nuanced perception of the meaning of their minority status (Chatman & Flynn, 2001), and the similarity of their predicament in the male-dominated industry can increase attraction, trust, and understanding between women (Kanter, 2008; Ruef, Aldrich, & Carter, 2003). In a study of female business angels, they indicated that they are more willing to help female than male entrepreneurs and are willing to "relax their investment criteria" (R. T. Harrison & Mason, 2007). As a result, female investors are likely to actively engage in their *supporter* role.

In contrast, male investors are generally unaware of ongoing gender discrimination (Chatman & O'Reilly, 2004). Men's dominance in entrepreneurship normalizes their experience (Stahlberg, Braun, Irmen, & Sczesny, 2007) such that men are insensitive to gender discrimination. This lack of sensitivity towards gender discrimination (Pichevin & Hurtig, 1996) keeps male investors oblivious to the challenges that female entrepreneurs face. As a result, male investors are not likely to actively engage in the *supporter* role. Instead, they will support male and female entrepreneurs equally.

I therefore expect that female investors consistently engage in the conflicting *supporter* role and *investor* role. In contrast, male investors are less likely to notice the gender of and discrimination against the female entrepreneurs and will simply act as profit-oriented *investor* (therefore not experiencing role conflict).

3.3.5 Dealing with the Role Conflict

When trying to accommodate the two conflicting roles of supporter and investor, business angels are likely to center their roles on different parts of the investment decision.

The *supporter* role is likely to materialize in the decision to invest. The decision to invest is a yes/no decision of whether the business angel and the entrepreneur enter a deal. Investing in a person signals support, trust in the competence of the other person,

and a desire to enter a work relationship that will last five years or longer (Morrissette, 2007). Hard negotiation can be considered part of the "tough love" (p.7) that is often part of mentoring relationships (Elliott, Leck, Orser, & Mossop, 2007) and does not signify a lack of support. I therefore expect that the *supporter* role centers on the decision of whether to invest in an entrepreneur.

In contrast, the *investor* role is likely to influence the deal conditions. These deal conditions can be quantified as the premium or discount that investors put on an initial company valuation. Good deal conditions mean that investors "buy in" at a company valuation that is close to or higher than the initial asking price; bad deal conditions indicate that the company valuation was pushed down greatly. Profit-oriented investors focus on good deals (Maxwell et al., 2011) that bring future payoffs (Gerber et al., 2002; Huang & Pearce, 2015). As a result, someone acting in the *investor* role is likely to push down the valuation of the company to maximize profits.

The paradoxical nature of these two roles results in cognitive dissonance (Festinger, 1957). Individuals engage in different behaviors that are incompatible and therefore cognitively dissatisfying. Gender has been shown to result in these types of dissonance; extant psychology research shows that preconceptions of gender can lead individuals to take ever more extreme viewpoints on their cognitively dissonant positions (Glick, Diebold, Bailey-Werner, & Zhu, 1997).

Applying this to business angel decision making, I expect that engaging in the two paradoxical roles of supporter and investor will lead business angels to take more extreme positions on both dimensions. This would show in two contrasting actions from female investors. First, I expect them to invest in female entrepreneurs with a higher probability than in male entrepreneurs. Second, I expect them compensate their supportive stance in the decision to invest by being extra-tough when setting the deal conditions. In order to meet their own expectations regarding their investor role, they make up for the previously shown leniency by giving female entrepreneurs deal conditions that are worse than those they give to male entrepreneurs.

H1: Female investors are more likely to invest in female entrepreneurs than to invest in male entrepreneurs.

H2: Female investors give female entrepreneurs worse deals than they give male entrepreneurs.

3.3.6 Androcentric Language Triggers

The previous differentiating factors between female and male investors was that female but not male investors are consistently aware of gender issues (Chatman & O'Reilly, 2004; Pichevin & Hurtig, 1996). As a result, only female investors were hypothesized to be subject to a role conflict between the roles of *supporter* and *investor*.

However, investment decisions are not made in a vacuum, and investors are subject to countless outside influences besides the pitch that can raise gender awareness (Kanze et al., 2018). When confronted with a large gap between the female investor and a male-centric discussion, investors may thus become increasingly aware of their role as *supporter* and the resulting role conflict with their *investor* role. In this study, I focus on the analysis of language because it allows a glimpse into the psychology of actors because it shapes the way we think (Boroditsky, 2011) and moves stereotypes in and out of focus in a way that informs decision making (Kahneman & Egan, 2011).

Androcentrism is the practice of focusing on the masculine viewpoint while marginalizing the female one. Androcentrism comes in a number of different forms. For example, many generic words use the masculine form to refer to mixed-gender groups. This can come in form of actual words such as *mankind* or *chairman* or in a seemingly generic sentence such as: "If an entrepreneur wants to receive financial support, *he* must first apply for it." Androcentric language marks men as the standard and women as "the other" (Bruni et al., 2004, p. 256) and thereby "equate maleness and humanness" (Stahlberg et al., 2007, p. 169). This marks anything that is not the default as an inferior group (Schwalbe, 2000). An example of the negative effect this has on women is job applications: Otherwise identical applications with female job titles are evaluated worse than those with male job titles (Formanowicz, Bedynska, Cisłak, Braun, & Sczesny, 2013).

In entrepreneurship, androcentric language makes male qualities the norm (Dey, 2007). These gendered linguistic structures contribute to gender stereotypes and discourage female entrepreneurship (Hechavarría, Terjesen, Stenholm, Brännback, &

Lång, 2017). Moreover, it creates a gendered understanding of entrepreneurship that marginalizes women's involvement in innovation (Alsos, Hytti, & Ljunggren, 2016). This has concrete effects on venturing results because linguistic frames partially determine which ventures are able to obtain funding (Pan, Li, Chen, & Chen, 2019). This puts female entrepreneurs at a disadvantage. For example, androcentric language permeates investor evaluation processes such that it builds on stereotypes that are condescending towards women (Malmström et al., 2017).

As language can "trigger" related roles (Ashforth et al., 2000, pp. 475, 478), I propose that excessively androcentric language can trigger gender awareness and a *supporter* role. While most triggers lie along temporal lines (e.g., commute home from work, Matthews et al., 2014) and organizational lines (e.g., conversation with supervisor vs. subordinate, Ashforth et al., 2000), mental space research shows that vocabulary can also trigger roles (Sweetser & Fauconnier, 1996). I suggest that that androcentric language in entrepreneurship highlights the outsider role of female entrepreneurs to all investors. As a result, investors who witness a female investor being subjected to a highly androcentric group discussion are likely to act in a supporter role.

Androcentric conversation thus triggers role conflict between supporter and investor roles in both male and female investors. In line with the previous hypotheses, the resulting role conflict makes investors more likely to invest in women at worse deal conditions.

Figure 5 depicts the research model of the article.

H3: Androcentric conversations in the investor team increase the likelihood of funding for female entrepreneurs.

H4: Androcentric conversations in the investor team worsen deal conditions for female entrepreneurs.

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Team
Level        [ Androcentric Conversation ]

............................................................................

Individual   [ Probability to    ] [ Deal Conditions ]
Level        [ Invest in Female  ] [ Given to Female ]
             [ Entrepreneurs     ] [ Entrepreneurs   ]

                      [ Female Investor ]
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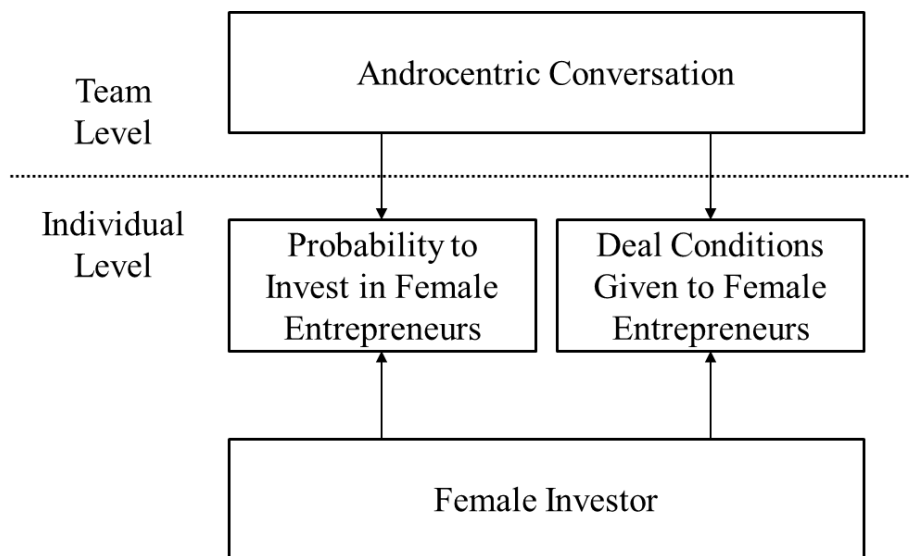
Figure 5: Research Model of Article 2

3.4 Methods

3.4.1 Setting and Data

In this study, I focus on the role identity and conflict of female investors when making investment decisions. This context is highly relevant for three reasons: First, women are especially likely to experience conflict when subjected to contradictory gender and professional roles (Biddle 1986). Second, taking two contrasting roles allows them to keep conceptually separate. In society, the female role is largely defined by communal traits such as warmth, sensitivity, and nurturance (Koenig & Eagly, 2014). In contrast, taking on a role as a professional investor is tantamount to committing to the hunt for profit (Huang & Pearce, 2015). Third, there is both a strong financial incentive and a strong gender bias in entrepreneurship (Malmström et al., 2017).

I use data from the startup investment TV shows *Shark Tank* from the United States (US) and *Dragons' Den* from the United Kingdom (UK) that have also been used as a source of data by other influential papers in the field (e.g., Bates, Bradford, & Seamans, 2018; Boulton et al., 2018; Daly & Davy, 2016; Maxwell et al., 2011; Pollack et al., 2012; B. Smith & Viceisza, 2018). While the actual pitch sessions tend to be

longer than the televised segments, the edited version of this TV show tends to focus on the most crucial parts of the conversation and therefore serves as an appropriate foundation for research (e.g., Boulton et al., 2018).

The setting is ideal for investigating individual decisions in a team as it allows for the observation of individual decisions in what is a clear team setting. The business angels have years of experience of working together, every day of filming they spent eight to nine hours together, and they trust the other team members (Shontell, 2014). Further, Hayes (1997) describes a group and team setting with two psychological criteria: social identification and social representation. These require a recognition of an "other" and shared values, ideas, and beliefs (Levi, 2015). Both are given in this setting as the business angels have a clear collective identity as "sharks" or "dragons" and share their value structures and ideas about the entrepreneurial industry. The difference between groups and teams is that size limitation (a group can, as in the case of political parties, have thousands of members whereas teams are typically composed of three to twelve people (Levi, 2015) and that teams are generally work or sports related. All these criteria confirm that the business angels on *Shark Tank* and *Dragons Den* are teams.

This setting has the advantage that the business angels decide whether to invest their own money individually. This is rare; alternative entrepreneurial finance studies typically feature teams that collectively make a decision (e.g., Drover et al., 2017; Hsu, 2004). This would obfuscate a clear view on individual decisions because the team would be forced to reach a consensus. These shows are also appropriate for a gender investigation as the show gender ratio is almost identical to that in the business world; industry reports show that around 30% of businesses are owned by women, which is very similar to female representation to the representation on the show (29% of investors, 26% of entrepreneurs) (Keren, 2016).

3.4.2 Data Collection

Data were collected at three levels: First, I compiled a database of 4599 individual investment decisions on *Shark Tank* and *Dragon's Den* of which 652 decisions were positive (14%). In addition, I conducted an extensive search for episode transcripts, which I then connected to the individual investment decisions. My search for episodes

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for which transcripts in the form of subtitles are available resulted in a dataset of 1063 investment decisions of which 126 were positive (12%). The *Shark Tank* data are from seasons 1,2,3,4,5,6,7,8, 9, and 10 (recorded between 2009 and 2019); the *Dragons' Den* data are from seasons 1, 2, 3, 10, 11, 12, 13, 14, 15 (recorded between 2005 and 2018). In every episode, the investment decisions are made by a team of five to six investors. Due to some changes in the teams, the total number of investors who are included in the compiled data set is 31 (20 male, 11 female).

3.4.3 Measures

Funding Decision. This variable is a dummy variable that assumed a value of one if the investor decided to provide funding to the entrepreneur and zero otherwise. Using deals made on Shark Tank as a binary outcome variable is an approach that has recently been used by Boulton et al. (JSBM; 2018).

  Deal conditions. This variable represents how good the deal conditions were when a deal was made. This is modeled by measuring the actual investment valuation while controlling the requested valuation. Overall, the average discount of deals was 35%. This would mean that an average deal would have the entrepreneur ask for a $1.000.000 valuation, but the investment values the business at $650.000. Good deal conditions would thus have business angels invest at a valuation similar to the requested one (e.g., requested valuation $1.000.000, actual investment valuation: $1.000.000) while bad deal conditions are indicative of large discounts (e.g., requested valuation $1.000.000, actual investment valuation: $200.000). Considering the amount of funding from Shark Tank and Dragons' Den as an outcome variable is a popular approach employed by publications such as Pollack et al. (2012).

  Investor Gender. This variable represents the gender of the investor. It assumed the value of zero when the investor was male and the value of one if she was female.

  Androcentrism. I measure androcentrism with a psycholinguistic approach that measures the frequency of certain words to infer information about their thought processes and allows to reliably derive mental processes from the choice of words in a body of text (Pennebaker, Mehl, & Niederhoffer, 2003). Using Computer-Aided Text Analysis is also in line with the recommendation by Short et al. (2010) and Mathias et

al. (2015). I ran a LIWC text analysis to allocate a score to each conversation, based on how androcentric the conversation was. I did this by using the category "male" from the LIWC 2015 software package by Pennebaker et al. (2015). In the LIWC 2015 package that was used for this project, Pennebaker et al. (2001) specify a list of 116 male-centric words such as "man", "he", and "husband". The words in this category have a general internal consistency rating of α=0.87 (Pennebaker et al., 2015). I base this psycholinguistic analysis on complete transcripts of the televised version of 1077 investment decisions by business angels in *Shark Tank* and *Dragons' Den*. In these pitches, 354.662 words were spoken during pitches and the corresponding Q&A sessions that yield an androcentrism score for each of the conversations.

The highest and lowest androcentrism scores illustrate how the assigned values connect to actual androcentrism. In the female-led venture that scored the highest on male-centric vocabulary, the solo entrepreneur was suggested to leave the room to ask her husband whether she should accept an offer: *"I gotta tell you, these people are offering you ten times valuation. It's a very, very good offer that you should think about. And I also think - as a husband of 19 years - you should call your husband"* (Newbill et al., 2009). In contrast, the least male-centric vocabulary was in pitches focused on selling women's shoes. An outtake from this conversation is: "*Do you think that's a problem in this economy, that women are gonna have a challenge finding $100.000 to buy a pink SUV? Absolutely not. This is geared towards the professional woman*" (Newbill et al., 2009).

3.4.4 Controls

I control for the initial valuation of the business. Controlling for the valuation is essential because female entrepreneurs ask for lower valuations, resulting in lower evaluations (B. Smith & Viceisza, 2018).

I control for the industry of the pitched venture because the gender bias may differ across industries (Anna, Chandler, Jansen, & Mero, 2000). Moreover, ventures from different industries may have different probabilities of getting funded. Industry sector includes all official sectors from *Shark Tank* (Newbill et al., 2009). As *Dragons' Den* has no such categorizations, I applied the same *Shark Tank* categories to all *Dragons'*

Den episodes. The included sectors and the number of investment decisions in this category are: Software/Tech (86), Children/Education (100), Fitness/Sports (129), Fashion/Beauty (190), Consumer Products (31), Lifestyle/Home (182), Food and Beverage (206), Media/Entertainment (26), Pet Products (32), Healthcare (42), Green/CleanTech (20).

I control for the show and season the pitch was given at. The reason for this is that funding is significantly more likely at Shark Tank than at Dragons' Den. Moreover, the different seasons of both shows often feature different investor boards and occasionally different themes. The variable is categorical, sorting all pitches by TV show (884 *Shark Tank* and 180 *Dragons' Den* pitches) and season.

I control for investor age in years because prior studies have shown that older investors have different trading intensity and are less biased (Talpsepp, 2013).

In the androcentrism analysis, I control for gynocentrism (the degree to which language is centered on the female experience) to isolate the phenomenon of male-centric speech. This analysis was performed with the LIWC 2015 software package by Pennebaker et al. (2015). In the tool, LIWC lists 124 words that are indicative of gynocentric speech such as "girl", "her", and "mom". The most gynocentric pitch was for a funeral business led by a female entrepreneur who retold the challenges she faced when organizing her mother's funeral. The least gynocentric pitch was for anti-flatulence underwear.

3.5 Results

Due to the research design, this study applies a combination of logistic regression (logit) and ordinary least squares (OLS) regression. Hypotheses 1 and 3 were tested with logistic regression; hypotheses 2 and 4 were tested with OLS regression. All continuous variables were standardized before inclusion in the research model (Aiken, West, & Reno, 1991).

In the OLS models, one outlier observation caused multicollinearity issues due to a high VIF value. After dropping this single observation, all VIF values were within the acceptable limit of 5 (O'Brien, 2007). The significance of the independent variables remains the same for analyses that include or exclude the single outlier observation,

suggesting that the results are robust. I report the analysis that is based on the sample that excludes the outlier.

The number of observations included in the different models depends on the frame of the research question. Models 1 and 2 (related to hypothesis 1) run on all decisions of female investors to invest in a given venture. Model 3 and 4 (related to hypothesis 2) run on all positive investment decisions of female investors. The low R2 in the analyses relating to hypotheses 1 and 3 (McFadden pseudo R2 = 0.05 and 0.13) result from the fact that the main population of investments is heavily skewed towards zero (in 85% of all cases, the investors choose not to invest). The analyses for hypothesis 2 and 4 run on the subsample of positive investment decisions and are not as skewed (Adj. R2 = 0.46 & 0.61).

The funding decision (funded / not funded) is analyzed with logistic regression as a discrete measure; the amount of funding is analyzed with OLS regression as a continuous measure. In the logistic regression models (1, 2, 5, and 6), the dependent variable is whether an entrepreneur is funded. In the OLS regression models (3, 4, 7, and 8), the dependent variable is the natural logarithm of the funding amount. These models run only on funded pitches to avoid a sample that would be heavily skewed towards zero (85% of investment decisions are negative). This approach is in line with common practice that centers on funded pitches with the natural log transformation as outcome to "escape from the straightjacket of using a binary outcome (i.e., funded vs. not funded)" (Pollack et al., 2012, p. 929).

Table 6 presents the descriptive statistics and correlations. Table 7 reports the results for hypothesis 1, which suggested that female entrepreneurs are more likely to invest in female entrepreneurs. This analysis runs on all available decisions made by female investors. The results show that female investors are significantly more likely to choose to invest when facing a female entrepreneur instead of a male entrepreneur (β = .68, p<0.000, n=1063). This supports hypothesis 1.

Table 8 *reports the results for hypothesis 2. Hypothesis 2 suggested that female investors are likely to give worse deals to female entrepreneurs than to male entrepreneurs. This analysis (models 3 and 4) runs on all investments by female investors. The results show that female investors push down the evaluations of female-led businesses more than those of male-led businesses (β = -.32, p<0.05, n=179), supporting hypothesis 2.*

Table 9 reports the results for hypothesis 3, which suggested that androcentric team-level conversations led both male and female investors to invest more often in female entrepreneurs. The corresponding models (5 and 6) run on all decisions by male and female investors to invest in a female entrepreneurs' venture in case a transcript of the corresponding conversation existed (n=339). The results show that investors are indeed more likely to invest in female entrepreneurs when the team conversations are more androcentric (β = .87, p<0.01, n=339), providing support to hypothesis 3.

Table 10 reports the results for hypothesis 4. This hypothesis argued that both male and female investors would give worse deals to female entrepreneurs than male entrepreneurs. The model runs on all investments made by female and male investors in female-led ventures for which full transcripts were available. The results indicate that investors push the valuations of female-led ventures down more when acting under a situation of high androcentrism (β = -.38, p<0.05, n=48). This supports hypothesis 4.

Table 6: Article 2 - Descriptive Statistics and Correlations

	Variable	Obs	Mean	Std. Dev.	Min	Max	1	2	3	4	5	6	7
1	Invested	1063	0.17	0.37	0	1							
2	Deal Conditions	178	13.39	1.13	11.42	17.15	-						
3	Entrepreneur Gender	1063	0.3	0.46	0	1	0.13	-0.28					
4	Androcentricsm	304	0.7	0.46	0	2.88	0.13	-0.19	-0.31				
5	Gynocentrism	304	0.3	0.37	0	2.2	0.17	-0.39	0.52	-0.17			
6	Investor Age	1063	57.45	5.99	43	68	0.01	-0.16	0.01	0.16	0.1		
7	Requested Valuation	1063	2.758m	4.58m	0.4m	40m	-0.06	0.75	-0.12	-0.05	-0.16	0.05	
8	I: Software/Tech	1063	0.08	0.27	0	1	-0.02	0.08	-0.1	-0.1	-0.07	0	0.08
9	I: Children/Education	1063	0.09	0.29	0	1	0.03	-0.02	0.18	-0.1	0.21	-0.02	-0.06
10	I: Fitness/Sports	1063	0.12	0.33	0	1	-0.04	0.09	-0.16	-0.03	-0.05	0.01	0.03
11	I: Fashion/Beauty	1063	0.18	0.38	0	1	0	-0.17	0.21	-0.04	0.2	-0.04	-0.09
12	I: Consumer Products	1063	0.03	0.17	0	1	-0.02	0.02	-0.06	-0.07	-0.1	-0.1	0.02
13	I: Lifestyle/Home	1063	0.17	0.38	0	1	0.05	0.02	-0.09	0.03	-0.13	0.04	-0.04
14	I: Food and Beverage	1063	0.19	0.4	0	1	0.01	-0.07	0.03	0.05	-0.13	0.02	0.03
15	I: Media/Entertainment	1063	0.02	0.15	0	1	-0.02	0.12	-0.06	0.06	0	0.07	0.04
16	I: Pet Products	1063	0.03	0.17	0	1	0.04	0.05	0.02	0.03	0.03	-0.05	-0.02
17	I: Healthcare	1063	0.04	0.19	0	1	-0.01	-0.02	0.01	0.04	0.03	0.03	0.1
18	I: Green/CleanTech	1063	0.02	0.14	0	1	-0.04	0.09	-0.06	0.12	0	-0.02	0
19	I: Business Services	1063	0.02	0.13	0	1	-0.02	0.13	-0.03	0.14	0.08	0.04	-0.02

Article 2 - Descriptive Statistics and Correlations (continued)

	Variable	8	9	10	11	12	13	14	15	16	17	18
9	I: Children/Education	-0.1										
10	I: Fitness/Sports	-0.11	-0.12									
11	I: Fashion/Beauty	-0.14	-0.15	-0.17								
12	I: Consumer Products	-0.05	-0.06	-0.06	-0.08							
13	I: Lifestyle/Home	-0.13	-0.15	-0.17	-0.21	-0.08						
14	I: Food and Beverage	-0.15	-0.16	-0.18	-0.23	-0.09	-0.22					
15	I: Media/Entertainment	-0.05	-0.05	-0.06	-0.07	-0.03	-0.07	-0.08				
16	I: Pet Products	-0.05	-0.06	-0.07	-0.08	-0.03	-0.08	-0.09	-0.03			
17	I: Healthcare	-0.06	-0.07	-0.08	-0.09	-0.04	-0.09	-0.1	-0.03	-0.04		
18	I: Green/CleanTech	-0.04	-0.04	-0.05	-0.06	-0.02	-0.06	-0.07	-0.02	-0.02	-0.03	
19	I: Business Services	-0.04	-0.04	-0.05	-0.06	-0.02	-0.06	-0.07	-0.02	-0.02	-0.03	-0.02

†<0.10, *<0.05, **<0.01 ***<0.000, respectively (in two-tailed tests).

In line with common procedures in leading journals (Thorgren, Sirén, Nordström, & Wincent, 2016), I omitted control variables referring to the different TV segments since they have no clear interpretation and make the table too large.

All correlations |.06| and above are significant at 0.05 or below (two-tailed).

"I:" stands for "Industry:"

Table 7: Article 2 - Logistic Regression Relating to Hypothesis 1

Dependent variable: Investment decision (0 = no; 1 = yes)	Model 1		Model 2	
	β	SE	β	SE
Individual level				
Entrepreneur Gender (H1)			0.68***	0.19
Requested Valuation	-0.24†	0.11	-0.21†	0.11
Investor Age	-0.01	0.02	-0.01	0.02
Industry: Children / Education	0.25	0.41	0.01	0.42
Industry: Fitness / Sports	-0.25	0.42	-0.19	0.42
Industry: Fashion / Beauty	0.04	0.38	-0.20	0.39
Industry: Consumer Products	0.24	0.65	0.28	0.65
Industry: Lifestyle / Home	0.35	0.37	0.34	0.37
Industry: Food and Beverage	0.15	0.37	0.02	0.37
Industry: Media / Entertainment	-0.37	0.70	-0.30	0.70
Industry: Pet Products	0.48	0.52	0.36	0.53
Industry: Healthcare	-0.04	0.55	-0.17	0.56
Industry: Green/CleanTech	-1.02	1.08	-0.99	1.08
Industry: Business Services	-0.59	0.82	-0.65	0.83
Shark Tank Season 2	-0.61	0.59	-0.65	0.60
Shark Tank Season 3	-0.72	0.53	-0.71	0.53
Shark Tank Season 4	-0.29	0.41	-0.28	0.42
Shark Tank Season 5	-0.63	0.41	-0.62	0.42
Shark Tank Season 6	-0.71†	0.41	-0.75†	0.42
Shark Tank Season 7	-0.06	0.39	-0.06	0.40
Shark Tank Season 8	-0.21	0.41	-0.25	0.41
Shark Tank Season 9	-0.30	0.40	-0.30	0.4
Dragons' Den Season 13	-1.44†	0.84	-1.37	0.84
Dragons' Den Season 14	-1.64**	0.53	-1.58**	0.54
Dragons' Den Season 15	-0.97	0.55	-1.11†	0.55
Log-likelihood	-462.04		-455.34	
LR-statistics	36.5		49.89	
McFadden pseudo R2	0.04		0.05	
Δ McFadden pseudo R2			0.01	
†<0.10, *<0.05, **<0.01 ***<0.000, respectively (in two-tailed tests), n=1063				

Table 8: Article 2 - OLS Regression Relating to Hypothesis 2

Dependent variable: Deal conditions	Model 3		Model 4	
	β	SE	β	SE
Individual level				
Entrepreneur Gender (H2)			-0.32*	0.12
Requested Valuation	1.03***	0.08	1.00***	0.07
Investor Age	-0.08	0.07	-0.06	0.07
Industry: Children / Education	-0.47*	0.27	-0.28	0.28
Industry: Fitness / Sports	-0.20	0.28	-0.19	0.28
Industry: Fashion / Beauty	-0.57*	0.26	-0.38	0.26
Industry: Consumer Products	-0.09	0.46	-0.02	0.45
Industry: Lifestyle / Home	-0.59*	0.25	-0.53*	0.25
Industry: Food and Beverage	-0.57*	0.25	-0.48†	0.25
Industry: Media / Entertainment	0.12	0.48	0.21	0.47
Industry: Pet Products	-0.58*	0.34	-0.48	0.33
Industry: Healthcare	-0.65*	0.37	-0.52	0.36
Industry: Green / CleanTech	-0.17	0.76	-0.15	0.75
Industry: Business Services	0.29	0.58	0.63	0.58
TV Segment 2	-0.05	0.38	-0.10	0.38
TV Segment 3	0.05	0.35	0.06	0.34
TV Segment 4	0.59*	0.26	0.56*	0.26
TV Segment 5	0.57*	0.27	0.54*	0.26
TV Segment 6	0.43	0.26	0.47†	0.26
TV Segment 7	0.77**	0.24	0.75**	0.24
TV Segment 8	0.57*	0.26	0.61*	0.25
TV Segment 9	0.57*	0.26	0.53*	0.25
TV Segment 10	1.55*	0.75	1.43	0.74
TV Segment 13	0.08	0.56	0.18	0.55
TV Segment 14	0.28	0.37	0.24	0.37
TV Segment 15	0.31	0.36	0.36	0.35
Log-likelihood	-180.30		-176.34	
LR-statistics	191.14		199.07	
Adjusted R2	0.60		0.61	
Δ Adjusted R2			0.01	
†<0.10, *<0.05, **<0.01 ***<0.000, respectively (in two-tailed tests), n=179				

Table 9: Article 2 - Logistic Regression Relating to Hypothesis 3

Dependent variable: Investment decision (0 = no; 1 = yes)	Model 5		Model 6	
	β	SE	β	SE
Team level				
Androcentrism (H3)			0.87**	0.26
Gynocentrism	-0.07	0.17	0.14	0.21
Individual level				
Requested Valuation	0.16	1.24	0.05	1.26
Investor Age	0.11	0.17	0.12	0.18
Investor Gender	0.71*	0.35	0.74*	0.36
Industry: Children / Education	0.04	0.98	0.04	0.96
Industry: Fitness / Sports	-1.40	1.45	-0.62	1.48
Industry: Fashion / Beauty	0.28	0.90	0.57	0.89
Industry: Consumer Products	0.08	1.05	0.07	1.05
Industry: Lifestyle / Home	1.64	1.08	2.27*	1.10
Industry: Food and Beverage	-0.24	0.96	0.57	1.00
Industry: Pet Products	1.35	1.16	1.48	1.16
Shark Tank Season 2	0.64	0.64	0.13	0.67
Shark Tank Season 3	0.25	1.21	0.76	1.25
Shark Tank Season 4	0.12	0.73	0.65	0.83
Shark Tank Season 5	-0.79	0.68	-1.65*	0.75
Shark Tank Season 6	0.29	0.91	0.16	0.92
Dragons' Den Season 13	0.00	0.77	0.56	0.81
Dragons' Den Season 14	-0.79	0.57	-0.38	0.64
Dragons' Den Season 15	-0.48	0.54	-0.24	0.57
Log-likelihood	-126.92		-120.37	
LR-statistics	22.679		35.771	
McFadden pseudo R2	0.08		0.13	
Δ McFadden pseudo R2			0.05	
†<0.10, *<0.05, **<0.01 ***<0.000, respectively (in two-tailed tests), n=339				

Table 10: Article 2 - OLS Regression Relating to Hypothesis 4

Dependent variable: Deal conditions	Model 7		Model 8	
	β	SE	β	SE
Team level				
Androcentrism (H4)			-0.38*	0.16
Gynocentrism	-0.09	0.11	-0.21†	0.11
Individual level				
Requested Valuation	3.16**	0.83	3.24***	0.77
Investor Age	0.02	0.09	0.03	0.08
Investor Gender	0.15	0.18	0.12	0.16
Industry: Children / Education	-0.07	0.52	-0.22	0.48
Industry: Fitness / Sports	-0.15	0.76	-0.37	0.71
Industry: Fashion / Beauty	-0.12	0.44	-0.26	0.41
Industry: Consumer Products	0.09	0.53	0.33	0.51
Industry: Lifestyle / Home	-0.58	0.53	-1.07	0.53
Industry: Food and Beverage	-0.56	0.49	-0.97	0.49
Industry: Pet Products	-0.07	0.54	-0.28	0.51
TV Segment 2	0.37	0.31	0.48	0.29
TV Segment 3	0.45	0.56	-0.03	0.56
TV Segment 4	0.32	0.37	-0.20	0.41
TV Segment 5	0.17	0.29	0.43	0.29
TV Segment 6	0.71	0.40	0.55	0.38
TV Segment 13	-0.01	0.38	-0.46	0.40
TV Segment 14	0.10	0.34	-0.18	0.34
TV Segment 15	0.11	0.25	-0.16	0.25
Log-likelihood	-21.83		-17.29	
LR-statistics	45.97		55.04	
Adjusted R2	0.36		0.45	
Δ Adjusted R2			0.09	
†<0.10, *<0.05, **<0.01 ***<0.000, respectively (in two-tailed tests), n=48				

Post Hoc Analysis. In order to ensure that the observed relationships are really related to the gender topic that forms the center of this investigation, I reran all models with samples that are related but lie outside the research model. The individual-level hypotheses 1 and 2 specifically focus on female investors. In order to show that the results are distinct for female investors, I therefore reran the analysis with a sample of investment decisions made by male business angels. Unlike female investors, male investors do not have a significantly different propensity to invest in male and female entrepreneurs (corresponds to H1; $\beta = -.17$, ns; n=2522). Similarly, they do not push the valuations of the ventures of female entrepreneurs down more than those of male entrepreneurs (corresponds to H2; $\beta = -.07$, ns; n=356). The team-level hypotheses 3 and 4 investigated to what degree androcentrism increases the funding for female entrepreneurs. I also ran an analysis for the sample of male entrepreneurs. Androcentrism neither significantly increases male entrepreneurs' likelihood of receiving funding (corresponding to H3; ns; n=702) nor does it worsen their deal conditions (corresponding to H4; $\beta = .08$, ns; n=77). This confirms the gender-specific nature of the investigated phenomena.

In order to test the robustness of the model, I tested all hypothesis models without control variables. In the cases of hypotheses 1, 2, and 3, the level of significance remained the same. Hypothesis 4 maintains the same direction but becomes insignificant, most likely due to the relatively small sample size (n=48).

In addition, I address the possibility that female entrepreneurs are simply more likely to accept the offers of female investors. I tested this by checking whether entrepreneurs gravitated towards the best offer in financial terms (highest valuation for their company) or the one by an investor of their gender (maybe female only). In all 207 cases for which transcripts were available, the entrepreneurs accepted the offer with the best valuation for their company. This shows that entrepreneurs do not simply gravitate towards investors of their own gender but prioritize better financial deals. I focus on the investment deals that were made, rather than offers proposed, to exclude potential lowball offers that may not be based on realistic valuations. This is also an appropriate outcome variable because the deal completion rates are similar for both genders (Canal, 2016).

3.6 Discussion

The results demonstrate that female investor behavior is biased in predictable ways: Female investors are more likely to invest in female entrepreneurs but also give them deal conditions that are worse than those they extend to male entrepreneurs. These results are particularly interesting as they go in the opposite direction: The former is an endorsement of female entrepreneurship; the latter is a repudiation of it.

The results of this study offer a potential reconciliation of two conflicting viewpoints regarding gender bias in entrepreneurship. This study highlights that supporting female entrepreneurs and taking advantage of them are not necessarily alternatives to each other–they can coexist. By selectively focusing on different roles for different parts of a decision, investors can paradoxically engage in two seemingly mutually exclusive roles at once.

The second half of the investigation demonstrated that androcentric team conversations affect the degree to which gender bias affects individual decision making of investors. Higher degrees of androcentrism highlight the outsider role of female entrepreneurs, accentuating the opposing behaviors: For female entrepreneurs, androcentrism increases funding probabilities but worsens deal conditions. While some authors suggest that women in entrepreneurship may embrace male values and adopt male behavior to fit in (Redien-Collot, 2009), the results of this study suggest a more complex relationship. Androcentric language may highlight the underrepresentation of female entrepreneurs in a way that makes investors want to support them. However, androcentrism simultaneously highlights the opportunity that female entrepreneurs present in terms of forcing a profitable business deal. As a result, companies of female entrepreneurs tend to get worse deal conditions with pushed-down company valuations.

Additionally, the analysis also showed that the average score for androcentrism was twice as high as that for gynocentrism. This supports the general assumption of a male-centric focus in entrepreneurship.

Overall, the results of this study paint a somewhat bleak picture of the state of gender in entrepreneurship. While many of us have interpreted increased funding rates for female entrepreneurs as a general sign of improvement, it appears to be connected to worse deal conditions. The principled support, from female investors as well as male investors in androcentric situations, is likely meant to support female entrepreneurs.

However, if the attached deal conditions are too bad, the result may be the opposite: Through their tough deals for women, business angels lower the valuations of women-led companies and take the lion's share of equity, leaving female entrepreneurs worse off.

3.6.1 Theoretical Contributions

This study makes contributions to multilevel research in entrepreneurship, methods in gender research, entrepreneurial finance, and role conflict theory.

First, the article contributes multilevel research in entrepreneurship. Unlike most extant research, this study does not focus exclusively on individuals or groups. Instead, it takes into account the effect of team-level conversations on individual investor behavior. This connects to research calls to explore individuals' decisions in entrepreneurship (Shepherd, 2011).

Second, I make a methods contribution to entrepreneurial team research. The introduction of psycholinguistic analysis (LIWC) offers a quantitative approach to measure latent behaviors such as androcentrism. While androcentrism has long been identified as an issue for female entrepreneurship (Bruni et al., 2004; Malmström et al., 2017), research does not offer standardized ways of assessing it. Introducing psycholinguistic analysis in the form of LIWC answers recent calls for notations that characterize gender in entrepreneurial finance decision-making (Malmström et al., 2017).

Third, this article contributes to gender research in entrepreneurship. Following calls to investigate business angel investment decisions and gender (e.g., Malmström et al., 2017; Riding et al., 2007), I suggest that gender affects investment decisions in paradoxical ways: Female entrepreneurs receive funding more often but receive lower valuations. Moreover, gender salience in team conversations exacerbates this effect.

Fourth, this study's multilevel analysis also contributes to Role Conflict Theory. Although multilevel dynamics in identity research are starting to get theoretical recognition, "empirical research lags sorely behind" (Ashforth, Rogers, & Corley, 2011; Horton et al., 2014, p. 17). While role theory generally focuses on consecutive role engagement (Ashforth et al., 2000), this study proposes a mechanism by which

individuals can engage in paradoxical role requirements at the same time. Given our increasingly complex business environments, research into this type of paradoxical cognition is a promising research direction (Matthews et al., 2014; Miron-Spektor, Gino, et al., 2011). This is especially true in the field of entrepreneurship, which needs investigations of how situational contexts affect individuals' decisions (Shepherd, 2011), especially in connection to entrepreneurial biases (S. X. Zhang & Cueto, 2017).

3.6.2 Practical Contribution

This study makes a practice contribution by disentangling gender-effects in entrepreneurial finance. Previous publications such as Harrison and Mason (2007) suggest that homophily may be a driving force in investment differences: because male investors favor male entrepreneurs and female investors favor female entrepreneurs, the underrepresentation of female investors leads to an underrepresentation of female entrepreneurs in funding results. I show that the relationship is more complex: Female investors show a gender bias that leads them to invest in women more frequently but also worsens deal conditions for female-led companies. Understanding the intertwined nature of these behaviors may help investors stay true to their objectives and improve entrepreneurs' negotiating position.

3.6.3 Limitations and Future Research Opportunities

This study has several limitations that offer an opportunity for future research. First, an alternative interpretation of the results relates to the findings that female mentors are simply hard on female entrepreneurs because they perceive it as part of "tough love" mentoring to help them establish themselves in the male-dominated environment (Elliott et al., 2007). Consistent with this line of reasoning, a female investor may feel genuinely supportive of a female entrepreneur across the entire investment process. Future research may investigate how business angels explain their contrasting decision pattern.

Second, investor experience and the type of the idea may also influence the results. For example, it is conceivable that investors who have been in the business for a longer time have more firmly held mental models that they are unlikely to deviate from, even in case of androcentric conversations. While parts of this are accounted for by the

inclusion of the age of the investor and the industry of the idea as control variables, future research should also investigate the specific effects of experience and idea type.

Third, this study focuses on investment decisions, some of which may not actually result in actual investments. However, in the chosen setting, existing analyses have shown that deal completion rates of female and male investors are similar, making gender-related data issues that are related to this point unlikely (Canal, 2016).

Fourth, the data collection is limited to televised pitches. While investors, entrepreneurs, and the invested money are real, being observed is still likely to change the behavior of investors and entrepreneurs. Given the highly sensitive nature of gender bias, investors may change their behavior because they are watched. Future research should explore these relationships using investment databases or an experimental setting.

Fifth, while the extensiveness of the LIWC language analysis makes the tool very powerful, a lot of interpersonal communication happens outside the realm of language and is communicated by means of things such as body language or facial expressions. While this analysis is oblivious to these clues, they may also convey relevant information about business angels' attitudes to gender. Future research should thus complement a language analysis with other tools that analyze body language or emotional facial expressions.

Lastly, the investment decisions were made by relatively few investors. The study sample includes investment decisions by 31 investors of whom 11 were female. While this exceeds the sample of recent gender-related investment papers (e.g., Malmström et al., 2017 includes seven investors of whom two are female, published in ETP), future research with a more varied sample of decision makers would be valuable. The same holds for the overall dataset, which exceeds that of most published works (Pollack et al. (2012) looked at 113 funded pitches from *Shark Tank*; Daly and Davy (2016) looked at 14 pitch cases from *Dragons' Den)* but can be grown substantially.

3.7 Conclusion

This study investigated the gender gap in venture financing decisions in *Shark Tank* and *Dragons' Den*. It found that while female entrepreneurs are indeed more likely to receive funding, they are also more likely to get pushed into worse deal conditions. This contributes to RCT by proposing a way in which individuals may engage in conflicting roles in parallel. I complemented this investigation with a team-level analysis of psycholinguistic speech patterns that showed linked team-level androcentrism to individual decisions. Taken together, these findings offer a fresh impulse to research on gender in entrepreneurship. Connecting individual biases to higher-level processes appears to be a promising direction to further our understanding of nuanced gender relationships that can help us counteract gender biases more effectively in the future to create a more equal ground on which to stand.

4.

Top Management Team Learning Asymmetry and Radical Innovation

Top Management Team Learning Asymmetry
and Radical Innovation

Henrik Wesemann

University of St.Gallen

Charlotta Sirén

University of St.Gallen

Fang He

ETH Zürich

Dietmar Grichnik

University of St.Gallen

4.1 Abstract

We advance Upper Echelons Theory by unveiling the implications of differences in top management team (TMT) members' learning behavior to firm-level innovation. Using data from 241 TMT members in 77 information technology firms, collected over four years, we investigate how TMT learning affects radical innovation. We find support for an inverted U-shaped relationship between team learning asymmetry and firm-level radical innovation: medium levels of team learning asymmetry are associated with the highest levels of firm-level radical innovation. Moreover, mean levels of learning moderate this relationship such that radical innovation is consistently high across all levels of team learning asymmetry under high mean levels of learning. Our findings contribute to Upper Echelons Theory by highlighting the importance of behavioral differences within the TMT.

Keywords: Team Learning; Radical Innovation; TMT; Learning Asymmetry

4.2 Introduction

The high-technology sector operates under conditions of constant change, which forces companies to introduce new products and services that are radically innovative by deviating significantly from existing products, processes, and procedures (McDermott & O'Connor, 2002). However, the great novelty which gives them such a high impact (Miron-Spektor, Erez, et al., 2011) also brings development and commercialization challenges that make radical innovations notoriously risky (e.g., Chiesa & Frattini, 2011; Cooper & Kleinschmidt, 2011). More than any other type of innovation, radical innovation depends on the acquisition of new knowledge and skills (Alexander & van Knippenberg, 2014) by being flexible (McCarthy, Tsinopoulos, Allen, & Rose-Anderssen, 2006), tapping into knowledge that resides outside their organizational boundaries (Teece, 2007), and by combining new and existing knowledge (Kotha et al., 2013). In other words, changing market environments require firms to keep learning (Edmondson, 2002). Therefore, learning is becoming "the central game" of innovation in radically innovative sectors such as information technology (Bartlett & Ghoshal, 2002, p. 73). These learning processes help them develop new technologies, break into nonexistent markets, and introduce substantial changes to current practice (Alexander & van Knippenberg, 2014; Dewar & Dutton, 1986).

The fundamental unit of learning in organizations are teams (Senge, 1990), the most important of which is the top-management team (TMT). The TMT has considerable discretion in determining the companies' innovation strategy (West & Anderson, 1996). Its internal processes, such as TMT behavioral dynamics, that play an important role in influencing the firm's radical innovation (e.g., Alexiev, Jansen, Van den Bosch, & Volberda, 2010). The importance of team learning is well-accepted: higher average team learning is associated positively with outcomes such as team effectiveness (Edmondson, 1999), better technology implementation (Edmondson, Bohmer, & Pisano, 2001), and task performance (Zellmer-Bruhn & Gibson, 2006). All of these investigations assume that team members are sufficiently similar to disregard their differences and aggregate individual member values to team averages (Kostopoulos et al., 2013).

But what if this assumption of similarity is violated? Not all teams will consist of members who will all equally engage in much of the learning behavior or contribute

equally to the development of new radical innovations. Teams of individuals who engage in identical learning behaviors have different learning processes than a team that consists of individuals who engage in learning behaviors to varying degrees, even if they share the same mean level of learning. Behavioral integration (Hambrick, 1994), which describes to what degree teams engage in mutual and collective interaction, illustrates the importance of these differences. It shows that behaviorally integration of the TMT affects organizational synergies (W. K. Smith & Tushman, 2005) in a way that changes firm-level outcomes (Hambrick, Nadler, & Tushman, 1997).

Using a sample of 77 TMTs of information technology (IT) firms, we developed a model that accounts for differences in TMT learning and linked them to firm-level radical innovation. Combining Upper Echelons Theory and the team learning literature, we can link radical innovation to TMT learning behavior with three investigations. First, we link mean levels of learning on radical innovation. Second, we move beyond mean levels, which are the focus of most extant research (Kostopoulos et al., 2013), and investigate in what way TMT learning asymmetry—the degree to which TMT members differ in their learning behaviors—is associated with radical innovation. Third, we demonstrate that mean levels of learning moderate the relationship between TMT learning asymmetry and radical innovation.

Within this study, we make four contributions. First, we add a more nuanced understanding of team learning by exploring the two dimensions of team learning behavior – mean and asymmetry – and investigate their interaction. Conceptualizing team learning from the asymmetry perspective allows us to theoretically explicate and empirically demonstrate how the differences in learning behaviors among TMT members influence firm outcomes. This addresses the calls by scholars such as Alexander and van Knippenberg (2014) who highlighted that diversity of learning and performance orientations may enable teams to reap the benefits of both ends of the spectrum.

Second, we advance upper echelons research by investigating whether an increased TMT diversity is associated with an increase in innovativeness (Talke et al., 2010). Our insight that TMT learning asymmetry can help firms achieve the highest levels of radical innovation emphasizes the need to move from shared TMT properties to compositional TMT learning properties that reflect actual differences among team members.

Third, showcasing that very high behavioral integration may be undesirable adds to the investigation of specific outcomes of behavioral integration called for by Simsek et al. (2005). While Simsek et al. (2005) argue that behavioral integration is positively associated with innovation, we show that this is not the case when looking at learning behavior: integrating learning behavior (reducing learning asymmetry) leads to more radical innovation up to a turning point, beyond which the additional integration is associated with a decrease in radical innovation.

Lastly, our research can assist firms in becoming more radically innovative. Although kindling virtuous behavior (in our case learning behavior) generally benefits the firm, managers should still be aware that they may have to choose between consistently high TMT mean levels of learning and the benefits of behavioral diversity. A more nuanced understanding of the trade-offs they are facing will help managers optimize the use of levers at their disposal.

4.3 Literature Review and Hypothesis Development

4.3.1 Upper Echelons Theory

Upper Echelons Theory (Hambrick & Mason, 1984) links TMTs and firm-level outcomes by highlighting that the experiences, values, and personalities of TMT affect how they interpret situations and how they make choices (Hambrick, 2007). Central is the investigation of psychological and social processes inside the behavioral "black box" of diversity (Hambrick, 2007, p. 335). An essential element for understanding these processes is behavioral integration, a meta-construct that describes the degree to which a team engages in mutual and collective interaction (Hambrick, 1994). Behavioral integration focuses on three elements: quantity and quality of information exchanged among executives, collaborative behavior, and joint decision-making (Hambrick et al., 1997). However, while behavioral integration describes mechanisms by which team members affect each other (Hambrick, Humphrey, & Gupta, 2015) and contrasting agendas are integrated (W. K. Smith & Tushman, 2005), how and when TMT behavioral integration helps build capacities remains poorly understood (Yitzhack Halevi et al., 2015).

The groundwork in this area has been done by researchers such as Simons, Pelled, and Smith (1999), who discovered that team diversity is associated with a change in team debates, which, in turn, is associated with different organizational performance. Similarly, Lubatkin et al. (2006) contributed an investigation that links behavioral integration to better TMT coordination. In this study, the concept of behavioral integration was used to investigate how different degrees of behavioral alignment affect outcomes.

4.3.2 Top Management Team Learning and Learning Asymmetry

Organizational learning theory posits that large mismatches between an organizational routine and its environment are the impulses that makes organizations learn (Levitt & March, 1988). However, as Edmondson (2002) points out, it is common for some teams but not all in an organization to learn. This difference is not explained by traditional organizational learning theory and requires a shift of focus on the teams, which have been described as the fundamental units of learning (Senge, 1990). Teams learn in an iterative process of problem-solving and reflection (Edmondson, 1999, 2002; Edmondson, Dillon, & Roloff, 2007) that takes place in the daily actions and interactions that affect outcomes (Amason, Shrader, & Tompson, 2006). We follow Edmondson (1999) in defining learning behavior as team members seeking new information, reflecting on past experience, encouraging colleagues to challenge one's assumptions, and handling differences of opinion offline. Scoring high on learning behavior thus means that team members stop to reflect on processes, investigate issues to discover new information, and discuss working assumptions. Conversely, scoring low on learning behavior means that group members mostly work with existing information and assumptions, focusing on current tasks.

Our approach differs from most extant team learning research, which assumes that team members are sufficiently homogeneous to aggregate individual perceptions to a mean score (Kostopoulos et al., 2013). By applying the concept of separation (D. A. Harrison & Klein, 2007) to learning behavior (Edmondson, 1999), we define TMT learning asymmetry as the degree to which team members differ in how they acquire, process, and integrate relevant information within the team. Low TMT learning asymmetry denotes that all TMT members are consistent in their learning behavior

(independent of whether the level of learning behavior is high or low) while having high TMT learning asymmetry entails that members differ in how much they engage in learning behavior.

Diversity is a complex phenomenon with both benefits and costs (see van Knippenberg & Mell, 2016 for a review). On the one hand, diversity can increase access to information (van Knippenberg et al., 2004) and chances of identifying opportunities that are more novel and promising (Talke et al., 2010), fostering radical innovation (Baker & Sinkula, 2007). On the other hand, diversity can also lead to behavioral disintegration and emotional conflict (Li & Hambrick, 2005) in a way that reduces team innovation (Gibson & Gibbs, 2006). In light of these conflicting results, the meta-analysis on job-related types of diversity by van Dijk et al. (2012) concludes that "innovation as a function of diversity cannot be taken for granted" (p.49). In order to avoid these problems, van Knippenberg and Mell (2016) recommend focussing on within-team heterogeneity in member behavior or team processes. This is especially important in the case of team learning, because learning is not simply the sum of each member's learning (Fiol & Lyles, 1985) but emerges from the "ground up, with individual members' interactions being the building blocks of the emerging collective structure" (Kostopoulos et al., 2013, p. 1434).

To illustrate why team differences matter, let us consider two teams. One consists of individuals that all engage in a medium amount of learning behavior. In the other, half of the individuals engage in a considerable amount of learning behavior, whereas the other half engages in practically none. The two groups may well have the same mean levels but means capture only a part of the available information. These team differences that would be cloaked by mean scores have been shown to affect the team innovativeness (e.g., Talke et al., 2010). Although both team learning models and diversity models focus on the sharing and combining of different perspectives (van Veelen & Ufkes, 2017), research that integrates both approaches is rare. Addressing this shortage, we complement our mean level analysis with an investigation of how differences in TMT members' learning behaviors influence radical innovation.TMT Mean Levels of Learning and Radical Innovation.

Radical innovations require TMTs to navigate "uncharted waters" (Amason et al., 2006, p. 126) to acquire, share, and use knowledge (Alexander & van Knippenberg, 2014; Edmondson, 2003). This connects learning to innovation, which is by definition

the creation of something new and stems from acquiring new knowledge or recombining existing knowledge. Empirical studies also connect team learning to innovation. For example, Lynn, Skov, and Abel (1999) show that new product development team learning processes, such as reviewing available information, are associated with new product success. Similarly, Sarin and McDermott (2003) connect team learning to higher levels of firm innovativeness and speed to market. This link shows that innovative industry sectors such as information technology depend on learning (Bartlett & Ghoshal, 2002, p. 73), especially the most radically innovative ones that require the acquisition of new knowledge and skills (Alexander & van Knippenberg, 2014).

Central agents in these innovation processes are TMT members, who bear the biggest responsibility for organizational goals (West & Anderson, 1996). This requires the TMT to consider different outcomes and be ready to change their innovation initiatives (Edmondson, 1999). If TMT fails to engage in learning behavior, their companies may miss out on innovative opportunities (Edmondson, 2002).

More than any other type of innovation, radical innovation is dependent on new knowledge and skills (Alexander & van Knippenberg, 2014; Dewar & Dutton, 1986). TMTs that engage in learning behaviors seek new information and search for ways to improve work processes (Edmondson, 1999), increasing their likelihood to acquire new knowledge that is relevant to future radical innovation.

In addition, teams that engage in learning invite outsiders to discussions to tap into knowledge that resides outside the organizational boundaries but is crucial for radical innovation (Edmondson, 1999; Teece, 2007). This broadens the exploration of the solution space to the chances of discovering promising new opportunities that are unrelated to current operations (Hong & Page, 2004; Lumpkin & Lichtenstein, 2005). This is very important for innovation processes (Lundvall, 2010). By engaging in learning behaviors, TMT thus creates the necessary knowledge to recognize radically innovative opportunities.

Moreover, one way to engage in learning behavior is to reflect on one's circumstances (Edmondson, 1999), which can correct distortions in beliefs and errors in problem-solving (Mezirow, 1990). Reflection allows TMTs to identify risks and potential drawbacks early on, taking away some of the risk related to radical innovation.

Connecting these points, we thus hypothesize that a higher TMT mean level of learning is associated with higher levels of radical innovation.

Hypothesis 1: TMT mean level of learning has a positive effect on radical innovation.

4.3.3 TMT Learning Asymmetry and Radical Innovation

Cognitive diversity can be both curse and blessing (Kilduff, Angelmar, & Mehra, 2000) and one also needs to consider the degree to which teams engage in mutual action. We follow in the footsteps of Bunderson and Sutcliffe (2003) as well as Uy, Sun, and Foo (2017) in their challenge to the unquestioning commitment to "more learning behavior is better" that is at the core of most learning research. More specifically, we expect that radical innovation surges with initial increases in TMT learning asymmetry, has a turning point at medium levels of diversity, and decreases as asymmetry becomes excessive. We base this hypothesis on examples of low, medium, and high levels of learning asymmetry:

Low TMT learning asymmetry (when team members are very similar in their learning behavior) likely leads to lower levels of radical innovation. While high behavioral integration can lead towards more collaborative behavior (Hambrick, 1994), excessive team homogeneity also leads to problems like groupthink that reduce experimentation (Baron, 2005; Hambrick, 1995; Janis, 1972). Reason for this is that homogeneity in groups fosters adherence to norms (Hogg & Terry, 2000), which directly prevents radical innovation processes (Lundvall, 2010). A lack of minority dissent is associated with poorer decision quality (Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006) and low levels of innovation (De Dreu & West, 2001). Hajro et al. (2017) provide an example of this, showing that emphasizing harmonious behavior compromises knowledge exchange, obscures information flows, and diminishes the potential to engage in mutual learning. This is particularly problematic in the case of radical innovation, where the ability to learn from and about customers is crucial (Salomo, Steinhoff, & Trommsdorff, 2003). Lower learning asymmetry may thus prevent the TMT from challenging the current practices or critically reflecting on tasks.

In contrast, medium TMT learning asymmetry likely leads to high levels of radical innovation because behavioral differences may alleviate the aforementioned

risks of homogeneity and kindle synergies. Asymmetry alleviates groupthink costs associated with excessive homogeneity because teams have to reconcile conflicting viewpoints. This leads to a more elaborate discussion and prevents premature decisions (van Knippenberg et al., 2004), a type of groupthink (Janis, 1982). Moreover, team asymmetries can create synergies (van Knippenberg et al., 2004) when team members elaborate on their ideas to create a shared understanding. This creates kaleidoscopic thinking (Kanter, 1968; K. Z. Zhou & Li, 2012), a process in which different fragments of knowledge from individual team members are shaken up to create new constellations of knowledge that nobody was aware of. These uncontrolled processes can produce serendipitous incidents that create innovation (Zahra & George, 2002). Deviating from the rest of the team in learning behavior might lead members to cover different parts of the solution space and discover more innovative insights (Hong & Page, 2004).

Additionally, we believe that radical innovations are likely to benefit from the complementary nature of diverse teams: TMT members with high learning behavior are more likely to contribute new radical innovation ideas, whereas TMT members who show little learning behavior keep the group in check and align innovative ideas with reality (Edmondson, 1999). Teams that combine both sides of the spectrum neither fail to keep their eyes open for radical innovations that break with the status quo, nor do they overlook workable solutions and practicality for the sake of novelty (Bunderson & Sutcliffe, 2003). Combining both approaches can maximize both the development and implementation of radically innovative ideas. There is some empirical evidence for this. For example, Hoogendoorn, Parker, and van Praag (2017) find that ability dispersion increases performance. Bantel and Jackson (1989) find that heterogeneity with respect to functional experience makes teams more innovative. Lopez-Cabrales, Pérez-Luño, and Cabrera (2009) show that unique knowledge of team members can increase innovation activity and performance. Leiponen and Helfat (2010) find that firms must diversify their knowledge to innovate successfully. As a result, medium levels of learning asymmetry are likely to be associated with achieving high levels of radical innovation.

However, once TMT learning asymmetry becomes too high, it will result in less radical innovation. When team members have fundamentally different mental representations of their situation, it becomes a challenge to integrate diverse perspectives and conflicting alternatives into a meaningful decision (Olson, Parayitam,

& Yongjian, 2007). This complete lack of behavioral integration can, in extreme cases, lead to the collapse of the team's communication (Hoogendoorn et al., 2017), preventing knowledge integration altogether (Cronin & Weingart, 2007). A shared framework is necessary for the implementation of strategic plans (DeChurch & Mesmer-Magnus, 2010; Stasser, 1999). Moreover, substantial differences require an excessive allocation of time to task structuring, which is time-consuming and adversely affects the firm's performance (Kilduff et al., 2000). This can be especially problematic for radical innovation, where the speed of decision-making is critical to influencing events as they unfold. Instead, team members that do not feel like their group supports dissenting opinions rarely share their thoughts (Lovelace, Shapiro, & Weingart, 2001), thus reducing the chances of coming up with radical innovation. Collectively, these arguments lead us to believe that high levels of learning asymmetry are associated with low levels of radical innovation.

Hypothesis 2: The relationship between TMT learning asymmetry and radical innovation has an inverted U-shape: firm radical innovation increases with TMT learning asymmetry up to an inflection point and then decreases with TMT learning asymmetry.

4.3.4 TMT Mean Level of Learning Moderation

Hypothesis 1 and 2 discuss the impacts of TMT mean level of learning and TMT learning asymmetry separately. As the final investigation of this project, we connect the two with a moderation hypothesis: we believe that the mean level of learning moderates the inverted U-shaped relationship between learning assymetry and radical innovation. More specifically, we expect that under low TMT mean levels of learning, the relationship between TMT learning asymmetry and radical innovation follows the previously described inverted U-shaped relationship. However, under high mean levels of learning we expect radical innovation to be consistently high, independent of the level of TMT learning asymmetry. High TMT mean levels of learning substitute the virtuous effects of learning asymmetry and alleviate its harmful effects.

The benefits of TMT learning asymmetry that are kindled by team diversity (van Knippenberg et al., 2004) can also be created through learning behavior. For example, we argued that TMT asymmetry increases the coverage of the solution space. However, learning behavior in itself also encourages team members to obtain as much information as possible from others (Edmondson, 1999), making it unnecessary to cover all parts of the solution space with the own TMT. Similarly, one type of learning behavior is to encourage colleagues to challenge assumptions (Edmondson, 1999), preventing premature consensuses that could result from groupthink (Janis, 1982).

In addition, costs of diversity, such as team conflict, are less likely to materialize in teams that score higher on learning behavior. Learning behavior can prevent the adverse categorization and conversation collapse associated with overly diverse groups. Learning behavior includes handling interpersonal differences directly, encouraging colleagues to challenge assumptions, and having open discussions. These type of learning behaviors reduce harmful knowledge fragmentation (Hambrick, 1995). When team members go out of their way to understand their colleagues better, they become the bridge-builders between behaviorally different team members. Some empirical support to this alleviation of adverse effects comes from Moreland (1999), who found that strategic learning fixes coordination problems that arise in groups.

Moreover, large differences between team members usually consume much time and energy because they are difficult to reconcile (Kilduff et al., 2000). However, learning behavior includes discussing assumptions (Edmondson, 1999) which creates a foundation on which even diverse teams can discuss their members' points of view. Therefore, we expect that groups with high levels of learning behavior can prevent the downsides of large team asymmetries.

Hypothesis 3: TMT mean level of learning moderates the inverse U-shaped relationship between TMT learning asymmetry and radical innovation: under low TMT mean levels of learning, low and high levels of learning asymmetry are associated with lower radical innovation than medium levels of learning asymmetry; under high TMT mean levels of learning, radical innovation is consistently high across all levels of learning asymmetry.

4.4 Methods

4.4.1 Study Context

We selected the information technology sector in Finland for this study because Finland is a small, knowledge-intensive economy that excels in innovation. According to the Global Innovation Index 2017, Finland ranked eighth globally for innovation due to having a strong focus on Information and Communication Technology (Dutta et al., 2018). Considering our focus on radical innovation, we limited our sample to information technology companies that use innovation as a cornerstone of strategy. In general, the information technology industry is characterized by high-velocity innovation, technological change, and turbulence in revenues, market shares, and profits of firms (Brown & Eisenhardt, 1997; C.-H. Lee, Venkatraman, Tanriverdi, & Iyer, 2010), making it a rich context to test the impact of TMT learning on radical innovation. Moreover, we focused on small and medium-sized enterprises (SME). Most of these companies do not have dedicated R&D departments, creating a more direct link between the leaders of a company and its performance (Ling, Simsek, Lubatkin, & Veiga, 2008). In these firms, TMTs need to correctly recognize and execute the initiatives that hold the highest potential to become radical innovations. In addition, SME have fewer resources than larger companies to deal with the delays and failures associated with radical innovation, making their TMT highly sensitive to the companies' innovation strategies.

4.4.2 Data Collection and Sample

We collected the data by conducting two consecutive surveys. In the first round of data collection, we collected information on the levels of learning behavior of the different TMT members. In the second round, we collected information on the current levels of radical innovation from the CEOs of the companies.

The first round of data collection took place in 2012. The initial frame for the sample came from the Statistics Finland database; a public authority that manages a register of all Finnish companies that pay value-added tax.

Next, we focused on small and medium-sized software companies (firms with 5–499 employees). The importance of TMT learning for innovation processes is augmented in SMEs, whose TMTs do not have designated innovation teams that they can make responsible for innovation activities (Lubatkin et al., 2006). Therefore, they need to personally recognize and execute the initiatives that hold the highest potential to become radical innovations. Moreover, the focus on relatively small enterprises helped us to reduce size-related issues because larger organizations tend to have less behavioral integration within their TMT (Hambrick, 1994) and are in a better position to engage in learning behavior. For example, collective discussions, a type of learning behavior (Edmondson, 1999), are especially likely to materialize in the TMT of SME, since they are small enough for TMT members to control all different parts of the business (Gruber & Henkel, 2006).

In addition, we focused on specific sectors to reduce unobserved variance. We restricted our search to companies in the Standard Industrial Classification 2008 class 62 (Computer programming, consultancy, and related activities). This classification allowed us to focus on highly innovative companies, almost all of which had a focus on software development and IT consulting. In this category, 1,089 software firms were listed in 2012. Using the information provided on the respective company websites, we confirmed the CEOs' email addresses and the industry sector. In this process, 314 companies were excluded because their focus area was outside of software development. Next, we contacted the CEOs of the remaining 775 companies via the phone and invited them to take part in the study. The 287 CEOs who agreed to take part in our study were provided with a link to the web-based survey.

The surveys were disseminated in the respondents' native language after using a back-translation from English to Finnish and back to English (Brislin, 1986). Two reminders were sent out at three-week intervals. In total, 149 CEOs responded to the survey, giving us a total response rate of 51.92% among those who agreed to take part and 19.22% of the initial sampling pool of 775 firms. In the survey, CEOs were asked to provide contact information for two or three top management team members, defined as being senior managers with whom the CEO shares the strategic decision-making process (Hambrick & Mason, 1984). Next, we sent a second survey to the identified top management team members (see C. J. Collins & Clark, 2003 for a similar approach). Of 292 identified top management team members, 217 responded, yielding a response rate

of 74.32%. T-tests compared age, profit, and revenue among responding and non-responding firms. Further, we saw no statistically significant difference between the groups of early and late respondents.

For the second round, we approached the firms four years after the first survey to collect information regarding the current levels of radical innovation in the companies and perceived environmental dynamism in the industry. We chose a four year time lag because radical innovation takes a notoriously long time to materialize due to its barriers and high uncertainty (Christensen, 2013; Laurie et al., 2006; Talke et al., 2010). Our decision to consider this is based on the recommendation that the time lag length should correspond to the process under observation (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Out of the 149 firms in our dataset, 138 were still operating in July 2016. In the firms that had changed their CEO, we contacted the new one. Of the 138 CEOs, 101 completed our survey, resulting in a response rate of 73.18%. In 77 of these cases, we had gathered enough data from the TMT members from the first round to use the data. Therefore, the final sample consists of these 77 TMTs, represented by 241 team members. This sample size is consistent with other longitudinal diversity studies (Polzer, Milton, & Swarm, 2002). Respondents (N = 241) were predominantly male (83.8%). Their average age was 41.99 years (SD = 9.38), and they had seven years of industry experience (SD = 4.94). An average firm in the sample had 20.17 employees (SD =22.24).

4.4.3 Measures

In the first round of data collection, we collected data on TMT learning behavior, TMT education, and TMT age, and firm age. In the second round of data collection four years on from the first round, we gathered information on firm radical innovation and perceived environmental dynamism.

TMT mean level of learning. Learning behavior is the process that makes up the behaviors through which teams adapt to change and improve their understanding and performance (Argyris & Schon, 1978; Edmondson, 1999). We relied on an adapted version for this study of the highly cited learning scale by Edmondson (1999) that defines learning behavior as collective engagement in reflective decision-making,

asking questions, seeking feedback, and discussing. We chose this scale due to its popularity and the fact that it focuses on the behavioral aspects that all team members can experience individually. Following He et al. (2017) and Liu et al. (2014), we changed the reference point of the original scale to the individual level. The reason we did this was to meet our research aim of looking into the differences between the individuals that make up a team. TMT mean level of learning is the mean of the scores that team members allocated to the seven items in the adapted Edmondson (1999) scale.

TMT learning asymmetry. Following the past research which measuring dispersion within teams (e.g., Dineen, Noe, Shaw, Duffy, & Wiethoff, 2007; Jehn, Rispens, & Thatcher, 2010) as well as theoretical considerations of diversity research (D. A. Harrison & Klein, 2007), we assessed the spread in TMT learning behavior as separation. Separation is a type of diversity that focuses on the "composition of differences in (lateral) position or opinion among unit members" (D. A. Harrison & Klein, 2007, p. 1203). In line with the suggestion by Harrison and Klein (D. A. Harrison & Klein, 2007), we measured separation as the standard deviation among team members' learning behavior scores and follow Jehn et al. (2010) in coining the concept an "asymmetry." Teams that consist of members with very different learning behavior scores are very asymmetric (high TMT learning asymmetry), while teams that consist of members that are much alike regarding learning behavior (all high or all low) are very symmetric (low TMT learning asymmetry). We reported the results for mean Euclidean Distance score in the post-hoc analysis.

Radical Innovation. We adopted the firm radical innovation measure from Miron-Spektor et al. (2011) for this study. The scale asked the participants to divide 100 points among on four increasingly radical kinds of innovation to determine how central radical innovation is for operations. A greater number of points is allocated to the levels that describe the team activities best. The four categories are (1) existing output; (2) incremental change to existing output; (3) mix and match innovations that have been used by others; (4) develop entirely new, breakthrough innovation. Miron-Spektor et al. (2011) use two approaches to turn the resulting point distribution to a single radical innovation score. The first approach is categorical and assesses the sum of innovation of kind 3 and 4 as radical innovation. The weighted approach assigns relative weights to all four categories, ranging from 1 for category 1 to 4 for category 4. After multiplying

the distributed points with their respective weight, we summed up the scores[1]. We copied their approach and used the categorical score for our primary analysis and the weighted scores for the robustness analysis. We were most interested in discovering whether the team produces innovation that diverges from the current portfolio, a distinction that matches the categorical approach (Dewar & Dutton, 1986; Miron-Spektor, Erez, et al., 2011). Thus, we used the categorical approach for our primary analysis and the weighted scores for the robustness test.

Control Variables. We included variables that are commonly associated with our core constructs but outside of our theoretical framework. First, TMT education is an important factor. TMT educational diversity has been connected to the likelihood of firm innovation (Østergaard, Timmermans, & Kristinsson, 2011). To account for this effect, we thus control for educational diversity in our models. Highest educational attainment was coded as 1=high school diploma, 2=associate's degree, 3=bachelor's degree, 4=master's degree, and 5=doctoral degree. The higher the value of B, the greater is the diversity on education. For the study participants, the highest degree was a high school degree for 23%, associate's degree for 27%, bachelor's degree for 45% of participants, and master's degree for 4% of participants. In order to calculate TMT educational diversity, we follow Harrison and Klein (2007) in applying Blau's (1977) index, where p is the percentage of members in the ith group (i.e., education):

$$B = [1 - \sum (p_i)^2]$$

Second, TMT age diversity has an adverse effect on firm innovation (Auh & Menguc, 2005). We thus control for TMT age diversity by following the recommendation of Harrison and Klein (2007) to measure average Euclidean Distance with the formula:

$$\frac{\sqrt{\sum (S_i - S_j)^2 / n}}{n}$$

Third, one needs to consider that older firms tend to be more inert (Hannan & Freeman, 1984) and feature lower levels of innovativeness than younger firms (Huergo

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[1] To give an example, if a CEO were to assign 25 points to each category, the corresponding radical innovation score would be 25*1+25*2+25*3+25*4=250. If a CEO were to assign 100 points to category four, the score would be 0*1+0*2+0*3+100*4=400.

& Jaumandreu, 2004). Thus, we controlled the age of the firm at the time during the 2nd round data collection.

Fourth, we control for CEOs' perceived environmental dynamism with the five-item scale by Green, Covin, and Slevin (2008). Dynamic environments demand rapid innovations for products and services (Eisenhardt, 1989). Behavioral integration helps TMT to cope with dynamic environments (Yitzhack Halevi et al., 2015) and TMT that operate in dynamic environments tend to be more behaviorally integrated (Hambrick, 1994). Higher environmental dynamism makes existing knowledge less useful when facing the new market demands that cannot be predicted with existing knowledge within the organization (Heyden, van Doorn, Reimer, van den Bosch, & Volberda, 2013). To account for this moderating effect on both organizational learning and innovation (Jansen, Vera, & Crossan, 2009), we control for perceived environmental dynamism.

4.4.4 Analytical Approach

To test our hypotheses, we used hierarchical regression analysis using Stata 14 software. We used clustered robust standard errors by 4-digit industry NACE codes in all regressions to mitigate concerns about heteroscedasticity and to control for industry-level influences (Rogers, 1994; Williams, 2000; Wooldridge, 2010). To check for the presence of multicollinearity, we calculated the variance inflation factors (VIFs) for each regression model. All VIFs are below the acceptable limit of 5 (O'Brien, 2007), with the highest mean VIF at 2.13. These values suggest that multicollinearity does not influence the model results.

4.5 Results

Table 11 presents descriptive statistics and correlations among all variables. Table 12 presents the results of the regression analysis.

	Variables	Mean	S.D.	Min	Max	1	2	3	4	5	6
1	Firm radical innovation	38.82	22.93	0.00	100	1.00					
2	TMT mean level of learning	3.76	0.49	2.57	4.86	0.18*	1.00				
3	TMT learning asymmetry	0.74	0.20	0.20	1.21	-0.12	0.11	1.00			
4	TMT Age diversity	8.41	5.80	0.00	36.77	-0.22	0.01	-0.16	1.00		
5	TMT Education diversity	0.39	0.20	0.00	0.67	-0.12	0.01	-0.02	0.00	1.00	
6	Firm age	16.42	6.76	5.00	34.00	-0.15	0.08	-0.05	0.25*	-0.11	1.00
7	Perceived environ. dynamism	2.87	0.59	1.6	4.60	0.18	0.06	0.07	-0.15	-0.11	-0.09

Table 11: Article 3 - Means, Standard Deviations, and Correlations

As a baseline model, model 1 in Table 12 only includes the control variables. Model 2 evaluates hypothesis 1, which proposes a positive relationship between the TMT mean level of learning and firm radical innovations. Results for Model 2 show that TMT mean level of learning is positively associated with radical innovation (Model 2; $\beta = 8.52$, $p < .01$), supporting hypotheses 1.

Model 3 includes the linear effect of TMT learning asymmetry when controlling for the TMT mean level of learning. In this linear model (Model 3), TMT learning asymmetry is negatively and marginally significantly associated with radical innovation ($\beta = -22.31$, $p < .1$). Model 4 tests hypothesis 2, which proposes an inverted U-shaped relationship between TMT learning asymmetry and firm radical innovations. This model explains 19% of the variance in firm radical innovations, and the Wald linear restriction test showed it improves significantly on Model 3 ($\Delta R^2 = .03$, $F = 12.46$, $p < .01$). Results from Model 4 confirm that the relationship between TMT learning asymmetry and radical innovation is inverted U-shaped ($\beta = -79.14$, $p < .001$). Figure 6 visualizes the marginal effect of TMT learning asymmetry at the full range of its values (Brambor, Clark, & Golder, 2005). None of the 90% confidence intervals of these marginal effects contains zero, which signifies the proposed relationship is significant at all levels of TMT learning asymmetry, supporting hypothesis 2. The plot shows that the positive effect of TMT learning asymmetry increases initially and then starts to diminish after the level of learning asymmetry exceeds –.13 (standardized value), revealing an inverted

U-shaped relationship between TMT learning asymmetry and radical innovation. The results of Model 4 and the plotted marginal effects in Figure 6 fully support hypothesis 2.

Dependent variable:										
Radical innovation	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**	
	β	SE	β	SE	β	SE	β	SE	β	SE
Control variables										
TMT Age diversity	$-0.66^{\dagger}$	0.34	$-0.67^{\dagger}$	0.32	-0.78^*	0.25	$-0.47^{\dagger}$	0.22	0.01	0.20
TMT Education diversity	-13.57^{***}	1.91	-14.08^{***}	1.62	-14.41^{***}	2.74	-15.65^{***}	2.96	-25.84^{**}	5.97
Firm age	$-0.39^{\dagger}$	0.17	-0.44^*	0.14	-0.45^*	0.15	-0.42^*	0.15	$-0.32^{\dagger}$	0.15
Perceived environ. dynam.	5.08	5.47	4.59	5.15	4.85	5.13	6.20	5.73	7.28	6.56
Direct effects										
TMT mean level of learning			8.52^{**}	2.40	9.50^{***}	1.71	11.39^{***}	1.55	0.01	4.26
TMT learning asymmetry					$-22.31^{\dagger}$	11.91	$-20.48^{\dagger}$	9.27	-28.40^*	10.74
TMT learning asymmetry squared							-79.14^{***}	12.43	-252.90^{***}	48.00
Moderation effects										
TMT learning asymmetry × TMT mean level of learning									-26.92^*	11.61
TMT learning asymmetry squared × TMT mean level of learning									567.20^*	173.90
Log-likelihood	-346.20		-344.80		-343.20		-342.00		-338.30	
LR-statistics	7.50		$10.34^{\dagger}$		13.48^*		15.85^*		23.30^{**}	
R^2	0.09		0.13		0.16		0.19		0.26	
ΔR^2			0.04^*		0.03^*		0.03^*		0.07^*	

Note: N = 77 in all models; Huber-White sandwich robust standard errors clustered by NACE codes in parentheses; † < .10, *$p < .05$, **$p < .01$, ***$p < .001$ (two-tailed tests)

Table 12: Article 3 - Hierarchical Regression Analysis Results

Hypothesis 3, which predicts a moderating effect of TMT average learning behavior, is evaluated in Model 5. This model explains 26% of the variance in radical innovation and shows a significant increase in explanatory power on Model 4 ($\Delta R2 = .07$, F = 131.97, p < .001). Results from Model 4 confirm that the coefficient associated with this interaction term is significant (β = 567.2, p < .05). Figure 7 illustrates the plotted marginal effects of the interaction. The different relationships for TMTs with high versus low level of average learning behavior show that the effect of TMT learning asymmetry on radical innovation is contingent on the overall of learning behavior in TMTs. Figure 7 is discussed in detail in the discussion section below. Together, these results fully support hypothesis 3.
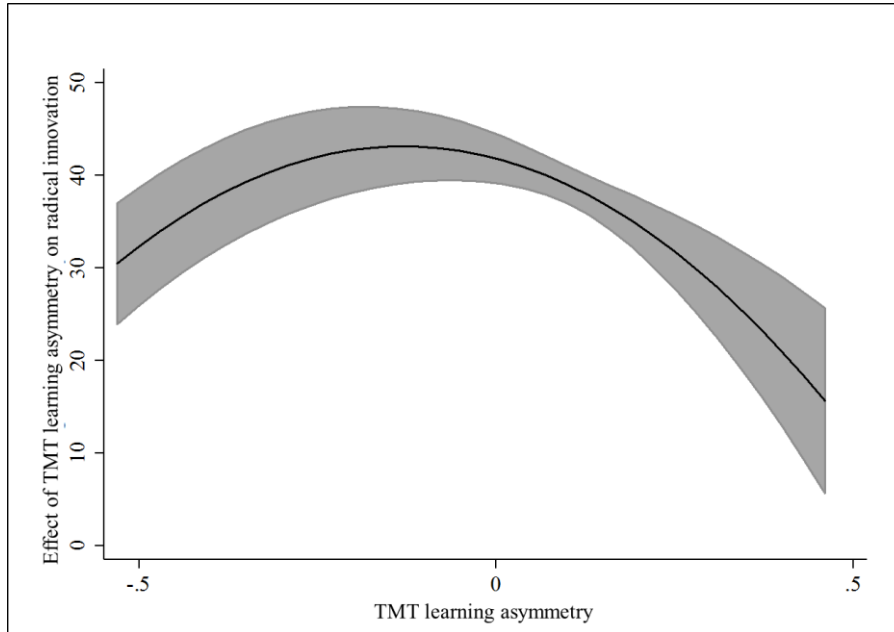
Figure 6: Curvilinear Effect of TMT Learning Asymmetry on Radical Innovation.
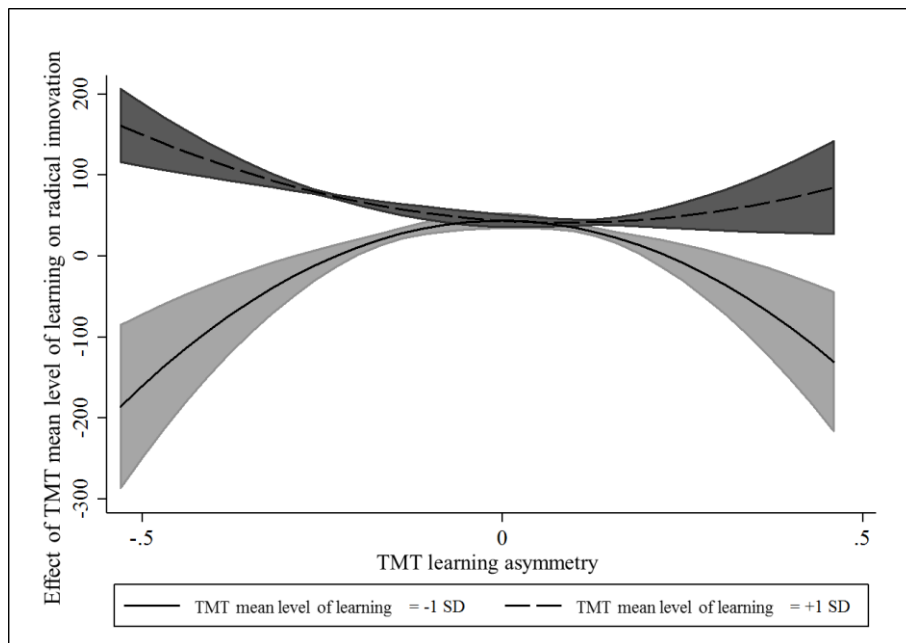*Note: 90% confidence intervals. Based on standardized values.*

Figure 7: Moderation Effect of Mean Learning Behavior on Radical Innovation.
Note: The gray areas around the curves represent 90% confidence intervals.

Post Hoc Analysis. We conducted additional analyses to check the robustness of our findings. Following Miron-Spektor et al. (2011), we used the weighted approach, which allocates more weight to the most radically innovative ideas to measure radical innovation. This test confirmed our main results: TMT mean level of learning has a positive relationship to radical innovation (β = 12.39, p < .05), TMT learning asymmetry has an inverted U-shaped relationship with radical innovation (β = –209.95, p < .01), and the interaction term of TMT learning asymmetry and TMT mean level of learning is positive and significant (β = 1138.23, p < .05).

Second, we tested our hypothesis 2 and 3 by calculating TMT learning asymmetry with Euclidean Distance measure as an alternative measure for team asymmetry (see D. A. Harrison & Klein, 2007 for discussion). As the results obtained with the standard deviation measure, the relationship between TMT learning asymmetry and radical innovation is inverted U-shaped (β = –138.69, p < .05). TMT mean level of learning positively moderates this relationship (β = 659.05, p < .05) when TMT learning asymmetry is measured as a mean Euclidean distance score, calculated as the root mean squared distance between each pair of TMT members (D. A. Harrison & Klein, 2007).

Third, we tested our hypotheses independently of the control variables. In these tests, TMT mean level of learning has a positive relationship to radical innovation (β = 8.20, p < .01), TMT learning asymmetry has an inverted U-shaped relationship with radical innovation (β = – 93.74, p < .01), and the interaction term of TMT learning asymmetry and TMT mean level of learning is positive and significant (β = 458.32, p < .05). Thus, these results are consistent with those obtained in the models with control variables included.

Fourth, we tested the marginal effects of the curvilinear relationship using the three steps outlined by Lind and Mehlum (2010). First, we confirmed that the second-order term has the expected negative sign and is significant. Second, we tested the slope at the end of the data ranges and found that the slope at the lower end of the data range is 242.7923 and that at the upper end of the data range is -268.2231. Third, we confirm that the turning point is within the data range. The data indicates that it lies at -0.13, which is almost in the middle of the data range of -0.536 to 0.474. Also, we ran the additional tests specified by Haans and colleagues (2016). We discovered that a cubic specification does not improve the fit and that the findings are robust to the exclusion of outliers and winsorizing.

Lastly, we validated the radical innovation findings by asking CEOs about their relative R&D intensity. Here, they answered what quintile they view their R&D investments in comparison to the industry average. We found a significant positive relationship between our radical innovation measures and R&D investments.

4.6 Discussion

Despite many studies that investigate learning behavior, we have yet to develop an understanding of how these factors function in teams. We analyzed accounts for underlying factors by accounting for behavioral diversity within the team. Our results support several conclusions. First, our examination of the impact of the TMT mean level of learning and radical innovation underlines that learning behavior has a considerable impact on firm outcomes. Within this investigation, we addressed the problem with the traditional conceptualization of group learning. Many studies do not distinguish learning as an outcome from related constructs (Wilson, Goodman, & Cronin, 2007). For example, studies have conceptualized learning in vastly different ways, using proxies such as innovation and process improvements (Edmondson et al., 2007). Unlike these studies, we measured learning by asking TMT members about their learning behavior directly, thereby remaining close to the theoretical construct. With this construct, we found that teams with high mean levels of TMT learning are more radically innovative.

Next, we investigated the effect of TMT learning asymmetry and found an inverted U-shaped relationship between TMT learning asymmetry and radical innovation: radical innovation increases with TMT learning asymmetry up to the standardized value of –0.13 before starting to fall off again. This is evidence that the search for non-linear effects can be extended to deep-level characteristics. Moreover, our findings challenge the orthodoxy of learning research, which generally assumes that more is always better, and thereby follow in the tracks of Bunderson and Sutcliffe (2003) as well as Uy, Sun, and Foo (2017), who challenge an unquestioning commitment to learning goal orientation.

Last, we discovered support for a meaningful interaction effect between TMT mean level of learning and asymmetry. TMT mean levels of learning moderates the relationship between TMT learning asymmetry and radical innovation such that high levels of TMTs mitigate the adverse effect of high TMT learning asymmetry on radical

innovation. TMTs with a low TMT mean level of learning see an inverted U-shaped relationship between TMT learning asymmetry and radical innovation. Initial increases in TMT learning asymmetry has a positive relationship with radical innovation up to an inflection point, beyond which additional asymmetry has a negative relationship with radical innovation. This inverted U-shaped relationship disappears for teams with a high TMT mean level of learning: here, the relationship between TMT learning asymmetry and radical innovation is consistently more positive. Surprisingly, the relationship between TMT learning asymmetry and radical innovation even experiences a shape flip through the introduction of TMT mean level of learning as a moderator (see Figure 7). The initial increase in the TMT mean level of learning weaken the relationship between TMT learning asymmetry and radical innovation. A possible explanation for this could be that the degree to which overall learning can alleviate the issues related to very low and very high heterogeneity is stronger than expected. Moreover, medium levels of learning asymmetry may already harbor a significant number of costs that make the interactions between team members more challenging. Still, this shape flip deserves additional exploration.

Although diversity research is thriving (Bell et al., 2011), most Upper Echelons Theory and behavioral research operationalize team variables in terms of simple team means. While we have shown through our hypothesis one that mean values allow some insights into outcome variables, using the available breadth of information on intra-team differences across the variable improves our predictions substantially. Thus, with this, we further build on Bell et al. (2011) who point out that studies on diverse teams can benefit from an investigation of asymmetric behavior. A recent push towards this direction was made by Heavey and Simsek (2017), who focused on the investigation of how one can interrelate distinct elements within members of the TMT. In the specific case of learning asymmetry, we argue that differences among team members matter. First, team differences prevent the groupthink problems in overly homogeneous teams. Whereas excessive similarities between team members can limit the horizon of a team, the introduction of diverse perspectives can broaden team horizons. Second, asymmetry may kindle virtuous behaviors like task elaboration that can serendipitously produce new insights. This is somewhat counterintuitive from the perspective of Upper Echelons Theory, which considers behavioral integration almost exclusively as being positive (Hambrick, Cho, & Chen, 1996). Because quality increases in joint decision making of

behaviorally integrated teams (Lubatkin et al., 2006), this line of research highlights the importance of mutuality and collectivity (Hambrick et al., 1996). The general sense of agreement in this field is that behavioral integration is a desirable achievement for most companies. In contrast, we highlight the benefits of asymmetric behavior.

4.6.1 Theoretical Contribution

This study makes three theoretical contributions. First, we advance the understanding of the link between TMT characteristics and firm radical innovation. Despite its potential to increase innovation (e.g., Hoegl & Proserpio, 2004; Keller, 2001), studies on the impact of TMT traits on innovation have produced highly inconsistent outcomes (Hirst, van Knippenberg, & Zhou, 2009). Consequently, some of the leading researchers have requested for additional research and exploration to be conducted into "the actual information processing behaviors of managers" (Hambrick, 2007, p. 337). Additionally, they have called for further research into "whether firms that have increased the diversity of their TMT were also able to increase their innovativeness and performance" (Talke et al., 2010, p. 915). Recognizing the "highly inconsistent" (van Knippenberg & Schippers, 2007, p. 521) findings of diversity research may be due to the prevailing assumption of linear diversity effects (Talke, Salomo, & Kock, 2011), so, this study investigated TMT learning asymmetry, which was previously an unexamined dimension of deep-level diversity. To our knowledge, existing research that observes the non-linear effects of diversity is restricted to demographic diversity (Luan, Ling, & Xie, 2016).

Second, we address Hambrick's (2007) call to expand the application of Upper Echelons Theory beyond its current focus on compositional diversity. Data on deep-level diversity are relatively difficult to obtain (Pfeffer, 1985; Talke et al., 2010; Tyran & Gibson, 2008) but tend to be impactful (Hajro et al., 2017, p. 3) due to their influence on innovation (Edmondson & Harvey, 2017) and creative processes (Shin et al., 2012).

Third, we contributed to a more nuanced understanding of the two different dimensions of TMT learning. Our findings reveal that the TMT mean level of learning could remedy costs related to high TMT learning asymmetry. Although some extant diversity research investigates ways to decrease the costs of diversity (see Joshi & Roh, 2009), this study contributes a new supplanting effect: we show that individual-level

behaviors (learning behavior) can replace team-level characteristics (asymmetry). This connects the learning and diversity literature, which breaks ground between two fields that have developed in mostly separate paths.

4.6.2 Practical Contribution

Radical innovations predict firm performance (Tellis, Prabhu, & Chandy, 2009) and are essential for the long-term success of a firm (McDermott & O'Connor, 2002). Our research assists managers in achieving radical innovation: first, the results show that high mean levels of learning can foster radical innovation. Second, although kindling virtuous behavior (in our case learning behavior) generally benefits the firm, the managers should be aware that they may have to choose between consistently high TMT mean levels of learning and the benefits of behavioral diversity. Depending on other benefits or costs of diversity, management may benefit from more encouraging an eclectic TMT to act according to their natural, heterogeneous dispositions.

4.6.3 Limitations and Future Research Opportunities

This study has limitations that call for future research. For example, we did not explore time-related effects on TMT learning asymmetry. Kilduff et al. (2000) created a simulation which showed the relationship between cognitive diversity and performance change as reciprocal. Towards the end, teams with improving performance exhibited decreasing cognitive diversity (Kilduff et al., 2000). Contrarily, Miller et al. (1998) argued that cognitive diversity is stable over time. We encourage future studies to consider how the passage of time relates to TMT learning asymmetry.

Moreover, our study was conducted in a single country. While Finland's cultural and economic homogeneity makes it an excellent place to measure abstract variables that are based on knowledge (Autio, Sapienza, & Almeida, 2000; Spender & Grant, 1996), it also makes the generalizability of the results more challenging.

Similarly, we restricted our analysis on a single industry, namely the IT sector. The reason we made this choice was to have a consistent sample from a sector that is novel and forces TMTs to facilitate an open discussion to create knowledge and consensus

(Amason et al., 2006). However, it also implies that future research needs to validate our findings for other industries. For example, learning may be less important in other industries that rely less heavily on TMT member knowledge.

4.7 Conclusion

In rapidly changing business environments, radical innovation is crucial to firm survival and growth. This study uncovered an asymmetry effect related to learning, one of the best-known antecedents of innovation. First, we looked at the effect of mean level TMT learning on radical innovation and found a positive effect. Second, we investigated the effect of asymmetric learning in TMT and found an inverted U-shape relationship with radical innovation. TMTs that are highly homogeneous or heterogeneous in their learning are less radically innovative than firms with medium levels of TMT learning asymmetry. Third, we investigated the interaction effect of TMT mean level of learning and TMT learning asymmetry. We found that TMT with high mean levels of learning are consistently radically innovative, whereas TMT with low mean levels of learning are subject to the inverted U-shaped effect. Collectively, our findings illustrate that not all TMT members have to behave in the same way, but that learning asymmetry can foster to radical innovation. Diversity makes teams stronger.

5. Discussion

This dissertation presented three vantage points from which to observe innovation teams at different evolutionary stages. Accompanying teams at three exemplary stages of the team process, we first witnessed how leadership emerges in nascent venture teams. Next, we saw that individuals in teams still act in accordance with their individual dispositions and biases, and that team-level conversations shape their individual decision-making processes. The third article investigated top management teams in more established IT firms to investigate the impact of differences within the team on firm-level outcomes.

5.1 Summary of Key Findings

Traveling along the *forming*, *storming*, and *norming* phases of teams, this dissertation delved into the areas of team leadership emergence, individual decision making in teams, and team asymmetry.

The first article demonstrates that emotion regulation processes affect leadership emergence in new venture teams. The ability to reappraise one's emotions, such as seeing the silver lining, makes one more likely to emerge as a leader. In contrast, suppressing one's true emotions turned out to make one less likely to emerge as a leader. The relationship between reappraisal and leadership emergence is moderated by the degree to which the team feels positive and negative emotions. In a team that already has a very positive emotive background, the ability to change emotions becomes less important. In a team that feels many negative emotions, the ability to change these feelings to more positive ones is more important.

The second article examines individual business angel decisions as they are subjected to entrepreneurs of both genders and different team conversations among the investors. Focusing on gender biases of female investors, I show that female investors are more likely to invest in female than in male entrepreneurs but simultaneously give them worse deals. Moreover, androcentric team conversations increase the degree to which both male and female investors engage in these paradoxical behaviors (invest in female entrepreneurs more often but push their valuations down more).

The third article focused on radical innovation in top management teams. It showed that learning asymmetry, differences in learning behavior among team members, has an inverted U-shaped relationship with firm level radical innovation: Medium levels of learning asymmetry are associated with higher levels of radical innovation than low and medium levels of learning asymmetry. This relationship is moderated by the mean levels of learning. Under low mean levels of learning, learning asymmetry has the described inverted U-shaped relationship with radical innovation; under high mean levels of learning, radical innovation is consistently high. This suggests that learning can prevent effects that stunt radical innovation and kindle effects that increase radical innovation.

Collectively, the articles improve our understanding of the interplay of the individual and the team. They all highlight the importance of individual characteristics across the lifespan of teams. Individual team member characteristics play a pivotal role not only when teams first form but also as teams discuss decisions and collectively innovate. The three articles differed from each other is their respective mix of theories, empirical setting, and data collection methods. As a result, they produced an eclectic mix of findings that highlight the intricate nature of team processes. Employing a mixture of management-oriented literature (e.g., Upper Echelons Theory) and psychology-oriented literature (e.g., Affect-as-Information Theory) connects this dissertation to a variety of fields that investigate the interface of individuals and teams.

5.2 Theoretical Contribution

5.2.1 Contribution to Affective Events Theory

The first article demonstrated how outside influences in the form of affective events influence leadership emergence processes. This contributes to the Affective Events Theory's emerging stream on links between affective events in teams (Ilies, Wagner, & Morgeson, 2007).

5.2.2 Contribution to Affect-as-Information Theory

The first article also contributed to Affect-as-Information Theory by improving our understanding of how emotions shape team leadership perceptions. This connection had not been made by previous applications of the theory, which mostly focused on individual-level outcomes such as effort (Foo et al., 2009).

5.2.3 Contribution to Role Conflict Theory

The second article applied Role Conflict Theory to explain how business angels engage in paradoxical roles. By proposing that business angels split their decision not temporally (engaging in one role first and the other second) but in parallel by devoting sub-decisions to the particular role, I show a way in which people can deal with conflicting roles in parallel rather than consecutively (Ashforth et al., 2000). This is a new direction for Role Conflict Theory that connects it to recent paradox research (Miron-Spektor et al., 2018).

5.2.4 Contribution to Upper Echelons Theory

The final article applied Upper Echelons Theory to link TMT behavior to firm-level outcomes. While the majority of Upper Echelons Theory research focuses on the effects of the qualities that are present in one or all team members, we focused on the way that a combination of different behaviors affects firm-level outcomes, connecting to the insight that most TMT are not homogeneous but "consist of semiautonomous barons" (Hambrick, 2007, p. 336).

5.3 Practical Contribution

The dissertation generates valuable insights for practitioners. While we spent most of our organizational lives in teams, very little time is spent on dissecting exactly how we should work in teams (Levi, 2015).

First, members of nascent venture teams may benefit from understanding the importance of emotion regulation. Especially in the case of emotion suppression, a

reassessment would be useful. Established organizational contexts often consider showing emotions unprofessional (Kramer and Hess, 2002) and individuals are encouraged to control their emotions (Cole et al., 1994). We challenge this approach in the nascent venture context by highlighting the negative impact of emotion suppression on leader emergence. Further, we provide an alternative: Rather than suppressing emotions, individuals who aspire to leadership should actively shape the emotions in the team.

Second, we contribute to our understanding of complex business angel investments by disentangling paradoxical biases in investment decisions. More specifically, I show that business angels do not simply come down on one side of the gender debate (either as supporter or as opponent of female entrepreneurs). Instead, I show that business angels make conflicting decisions in different parts of the investment process. Further, I show that these paradoxical decisions are associated with androcentrism on the team level. This better understanding of gender bias in entrepreneurial finance can help us address issues of gender integration and representation in entrepreneurship.

Third, the investigation of team learning asymmetry highlighted the importance of behavioral differences in teams. Building on the suggestion that individual differences in teams remain important, we showed that medium levels of learning asymmetry can lead to improved results. This leads to a practice recommendation: Rather than just encouraging TMT members to engage in learning, organizations should attempt to mobilize behavioral differences between TMT members to improve their outcomes.

5.4 Limitations and Future Research Opportunities

As with all research projects, it is important to discuss the research limitations in order to provide a comprehensive understanding and highlight avenues for future research. This dissertation has several limitations.

First, this dissertation distributed the three studies along the lifecycle of teams to build a more well-rounded impression of teams. However, given the complexity of the investigated phenomena, it would be important to replicate our insights in tangentially related settings to see to what degree they are context specific.

Second, while all teams were arguably entrepreneurial, their respective focus and structure differed. The first study focuses on nascent venture teams, the second on business angel teams that have known each other for several years, and the final study on established top management teams. While not feasible in the timeframe of a Ph.D. dissertation, it would be interesting to see how single nascent venture teams experience the investigated phenomena as they evolve to top management teams.

Third, the dissertation applied a series of different theories for the projects. This theoretical variety allowed me to anchor this work in several different literatures, giving future researchers from different fields the opportunity to develop the results further. However, the theoretical variety also means that the results, while complementary, are not easily consolidated into a single representation. Given the importance of team research, I therefore also encourage researchers to explore the longitudinal process of teams with single theories to see how processes change as teams form, develop, and ultimately produce outcomes.

5.5 Conclusion

This dissertation presented a varied account of how individuals act in teams. In the process, the three articles highlighted several important elements of teams: The first article showed how nascent venture team members' ability to regulate their emotions makes them leaders; the second articles showed how business angel investment decisions are informed but not ruled by team-level discussion; the third article highlighted how differences in learning behavior among top management team members can kindle firm-level radical innovation.

When revisiting the title question "Is There No 'I' in Team?" we can confidently endorse individual differences of team members as important qualities of the team. Much of what makes us great is not reflected in team averages but idiosyncrasies. We should thus take pride in our differences. Our goal as a team should not be that everybody plays the same melody; it should be that we use what makes each of us special to harmonize.

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7. Resume Henrik Wesemann

Education

2015 – 2020	**Ph.D. in General Management at the University of St.Gallen (Switzerland)** Distinction: Very Good. Defense in August 2019, Graduation in February 2020. Supervisor: Dietmar Grichnik.
2012 – 2016	**M.A. in Strategy and International Management at the University of St.Gallen (Switzerland)** GMAT: 750 – Top 2% Worldwide 1 term at *Yonsei University,* South Korea.
2009 – 2012	**B.Sc. Economics and Business at the University of Amsterdam (Netherlands)** Distinction: Honors. Specialization in International Economics. 3 terms at *Yonsei University,* South Korea.

Work Experience

2015 – Present	**Research Associate at University of St. Gallen (Switzerland)** I research leadership and learning in venture teams, develop key performance indicators for large corporations, co-teach on bachelor and master level, coach startups, supervise corporate collaborations, write journal reviews, manage project budgets, and co-author research grant applications that were awarded more than CHF 500.000 over the past three years. I worked on projects in Switzerland, France, Germany, Denmark, Norway, Sweden, Finland, and the US.
2019 – Present	**Assc. Editor at the Entrepreneurship Division of the Academy of Management (USA)** In my role as associate editor, I oversee the publishing of division materials such as the Newsblast, going out to several thousand researchers. I also write a column that advises Ph.D. candidates on how to improve their research and job market prospects.

2012 – Present	**Member of the Board at KAKO Cambodia (Cambodia)**
	I co-manage finances and strategy at this medium-sized NGO. We focus on non-formal education, general health, and sanitation.
2018 – 2019	**Ph.D. Representative on the Executive Board of the Entrepreneurship Division of the Academy of Management (USA)**
	I represented all Ph.D. students in the Academy of Management executive committee of the Entrepreneurship Division from September 2018 to September 2019.

Teaching Activities

2017 – Present	**Startup Mentor**
	Mentor at startup events in Switzerland, Germany, France, Sweden, and Norway, coaching more than 150 nascent venture teams.
2016 – Present	**Course Instructor**
	In line with the regulations of the University of St.Gallen, all courses were headed by full professors. However, I led the majority of sessions in the following courses:

- Paper Development Workshop (Ph.D. level, 2019)

- Foundations of Entrepreneurship (bachelor level, 2016-2018)

- International Entrepreneurship (master level, 2018)

- Technology Entrepreneurship (master level, 2017-2018)

- Entrepreneurship in Tech Enterprises (master level, 2016)

| 2016 – Present | **Thesis Supervisor** |
| | Bachelor's and master's theses (~4 students at any point in time) |

Awards

2019	**Best Reviewer Award 2019**

Entrepreneurship Division of the Academy of Management

Entrepreneurship Division Scholarship

For the participation in activities of the executive board (Travel Stipend)

2018   **Kauffman Scholarship Recipient**

For the participation in the Doctoral Consortium 2018 of the Entrepreneurship Division of the Academy of Management

SAGW Scholarship

For the participation in the Academy of Management General Meeting (Travel Stipend)

Papers   Malmström, M., Wesemann, H., Wincent, J., (Accepted at *MIT Sloan Management Review*). How Successful Entrepreneurial Women Circumvent Gender Bias in Pitch Situations – Three Tactics to Improve Chances of Funding.

Siren, C., He, F., Wesemann, H., Jonassen, Z., Grichnik, D., von Krogh, G. (2nd R&R at *Journal of Management Studies*). Leader Emergence in Nascent Venture Teams: The Critical Role of Individual Emotion Regulation and Team Emotions. Presented at the *Academy of Management Specialized Conference: From Start-up to Scale-up*, Tel Aviv, Israel. (2018).

Wesemann, H., Siren, C., He, F., Grichnik, D., (R&R at *Journal of Management*). Learn, Learn, but Not the Same Way: How does TMT Learning Influence Radical Innovation in SME? Presented at the Seventy-sixth *Annual Meeting of the Academy of Management,* Chicago, USA (2018).

Wesemann, H. (work in progress). I Want to Support You… But Business is Business. Gender, Role Conflict, and Angel Investments. Planned journal submission: December 2019.

He, F., Siren, C., Jonassen, Z., Wesemann, H., von Krogh, G., Grichnik, D. (work in progress). Feeling close to the idea and the team: A cross-level model of the impact of emotional attachment and team learning on idea development. Planned journal submission: December 2019.

Wesemann, H., Malmström, M., Wincent, J., (work in progress). Discrimination in male dominated sectors: the difference between getting funded and getting a good deal. Planned submission to special issue of *Gender Work and Organisation* on Gender, Bodies and Identities in Organisation in December 2020.

Wesemann, H., Wincent, J., (work in progress). Finding the Right Words. Regulatory focus in Entrepreneurial Communication and the Media. Planned first submission: January 2021.

Wesemann, H., Stroe, S., Wincent, J., (work in progress). Overpromise and Underdeliver: Entrepreneurial overconfidence leads to more funding but lower survival. Planned first submission: March 2021.

Books   Contributing author to: Grichnik, D., Brettel, M., Koropp, C. and Mauer, R. (2017). *Entrepreneurship*. (2nd ed.). Germany: Schäffer Poeschel.

Reviews Reviewer for the *International Small Business Journal*, *Annual Meeting of the Academy of Management*, and *SAGE Open*.

Additional review services provided during my Ph.D. for the *Journal of Business Venturing*, the *Journal of Small Business Management*, *Small Business Economics*, and *Journal of Business Venturing Insights*.

Conference Contributions

2019   Wesemann, H. (2019). The PhD Perspective on the Entrepreneurship Division. *Academy of Management General Meeting*. Boston, USA.

2019   Wesemann, H. (2019). The PhD Perspective on the Entrepreneurship Division. *Academy of Management Entrepreneurship Division Mid-Winter Meeting*. Boca Raton, USA.

2018   Wesemann, H., Sirén, C., He, F., Grichnik, D. (2018). Learn, but Not the Same Way: How does TMT Learning Influence Radical Innovation in SME? In: *Annual Meeting of the Academy of Management 2018*, Chicago, USA.

2018   Siren, C.; Wesemann, H.; Grichnik, D.; Fang He, V.; Jonassen, Z.; von Krogh, G. (2018): Leader Emergence in Nascent Venture Teams: The Critical Role of Individual Emotion Regulation and Team Emotions. In: *Rencontres de St-Gall*, St. Gallen (Switzerland).

2018   Sirén, C., He, F., Wesemann, H., Jonassen, Z., Grichnik, D., & von Krogh, G. (2018). Leader emergence in nascent venture teams: The critical role of individual emotion regulation and team emotions. In: *Academy of Management Specialized Conference: From Start-up to Scale-up*, Tel Aviv, Israel.

2018   Sirén, C., He, F., Wesemann, H., Jonassen, Z., Grichnik, D., & von Krogh, G. (2018). Leader emergence in nascent venture teams: The critical role of individual emotion regulation and team emotions. In: *Journal of Management Studies Special Issue Workshop,* Raleigh, USA.

2015   Wesemann, H., Casas, T. (2015). The Financing of Entrepreneurship in China, the US, Germany, Japan and Korea: Comparative Analysis of Government Support, Institutions and Markets. In: *6th World Forum on China Studies*, Shanghai, China.

Practice Publications

2019   Wesemann, H. (2019). Takeaway from the AoM General Meeting in Boston. In: *Academy of Management Entrepreneurship Division Newsblast September 2019*.

2019   Wesemann, H. (2019). Prepare Yourself For The Annual AoM Meeting. In: *Academy of Management Entrepreneurship Division Newsblast June 2019*.

2019   Wesemann, H. (2019). Mid-winter Meeting 2019 Insights for Ph.D. Candidates. In: *Academy of Management Entrepreneurship Division Newsblast March 2019*.

2018   Wesemann, H. (2018). 2 Tips to Starting a Successful Entrepreneurial Research Project. In: *Academy of Management Entrepreneurship Division Newsblast December 2018*.