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Essays on brand equity and work design-based strategies to employee attraction, retention, and innovation management

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"It's all about finding and hiring people smarter than you. Getting them to join your business.

And giving them good work. Then getting out of their way, and trusting them.

You have to get out of the way so you can focus on the bigger vision. That's important.

And here's the main thing….you must make them see their work as a mission."

(Richard Branson, Founder of Virgin Group)

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Munich, September 2017

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List of abbreviations

ANOVA	Analysis of Variance
API	Application-Programming-Interface
BPTW	Best Places to Work
CATA	Computer-Aided Text Analysis
CEO	Chief Executive Officer
e.g.	exempli gratia
et al.	et alii
EVP	Employer Value Proposition
GDP	Gross Domestic Product
HLM	Hierarchical Linear Modeling
HRM	Human Resource Management
ICC	Intraclass Correlation
i.e.	id est
IWB	Innovative Work Behavior
JCR	Journal Citation Reports
LIWC	Linguistic Inquiry and Word Count
LMI	Labor Market Intermediary
p.	page
RIFS	Random Intercept Fixed Slope
RQ	Research Question
RIRS	Random Intercept Random Slope
SD	Standard Deviation

SHRM	Strategic Human Resource Management
URL	Uniform Resource Locator
U.S.	United States of America
vs.	versus

Abstract

Considering a rapidly changing work environment through technological and demographic shifts, this thesis investigates strategies to foster employee attraction and retention along with innovative work behavior among potential and current employees in organizations. To establish this, the thesis draws on theories related to brand equity and work design to address framework conditions under which employees are especially attracted to organizations, or are motivated as reflected through innovative work behaviors. The results of the thesis are based on three studies that show under which factors and mechanisms this is particularly the case. The first and second studies demonstrate that a well-defined image as an employer, along with strategies to convey and monitor it, are important to influence employees' attitudinal and behavioral outcomes. Yet, there is still confusion in the extant scholarly discourse around guiding theoretical concepts and more integrated approaches. To date, research has primarily investigated perceptions of organizational attractiveness among potential employees. Instead, prior research has neglected more organizational views and comprehensive strategies to build successful employer images and measure them. An integrative value chain model is therefore developed that guides future research in the field. The model describes pre-conditions for employers to define a strategy and identify related levers to establish and measure the success of a compelling employer value proposition. Moreover, an innovative method is being developed that enables the efficient measurement and monitoring of employers' projected website image from an organizational perspective. The empirical results indicate that organizationally projected and employee perceived images are not necessarily in line with each other, and that both image types predict individual and organizational outcomes. The study of the third essay focuses on the company-internal perspective and features of work design that foster employees' innovative work behavior.

The results reveal that under different types of autonomy, employees will display certain levels of innovative work behavior. In addition, it is investigated whether certain boundary conditions have a moderating influence on this relationship. Overall, the thesis contributes to an improved understanding of this image as an employer and employee motivation mechanism, and advances the field from both a theoretical and practical perspective. Finally, important avenues for future research in the areas of brand equity-based employer image and work design are derived.

Zusammenfassung (German abstract)

Im Zuge einer sich schnell verändernden Arbeitswelt durch technologischen und demografischen Wandel untersucht die vorliegende Dissertation Strategien zur Steigerung der Anziehungskraft und Bindung von Mitarbeitern, sowie deren innovativem Arbeitsverhalten in Organisationen. Um dies zu erreichen, stützt sich die Dissertation auf Theorien zum Markenwert und zur Arbeitsgestaltung. Diese adressieren spezifische Rahmenbedingungen, unter welchen Mitarbeiter sich besonders angezogen fühlen zu Organisationen, oder motiviert sind, wie sich beispielsweise durch innovatives Arbeitsverhalten zeigt. Die Ergebnisse der Dissertation basieren auf drei Studien, die darlegen, unter welchen bestimmten Faktoren und Mechanismen dies insbesondere der Fall ist. Die erste und zweite Studie zeigen, dass ein wohldefiniertes Arbeitgeberimage sowie Strategien um dieses zu übermitteln und zu kontrollieren, von besonderer Bedeutung sind um die Einstellung und Verhaltensweisen von Mitarbeitern zu beeinflussen. Im Rahmen des bisherigen wissenschaftlichen Diskurses hat sich jedoch herausgestellt, dass noch immer Verwirrung in Bezug auf richtungsweisende theoretische Konzepte und integrierte Ansätze herrscht. Wohingegen bisher überwiegend die wahrgenommene Attraktivität von Organisationen bei potenziellen Mitarbeiter untersucht wurde, wurde die organisationale Sichtweise und umfassende Strategien zum Aufbau erfolgreicher Arbeitgeberimages sowie deren Messung, bisher vernachlässigt. Um künftige Forschung in diesem Bereich anzuleiten, wird ein umfassendes Wertschöpfungsmodell entwickelt. Arbeitgeber können das Modell nutzen um eine Strategie und entsprechende Hebel für ein überzeugendes Nutzenversprechen als Arbeitgeber zu definieren und deren Erfolg zu messen. Ferner wird ein innovatives Messverfahren entwickelt, dass die effiziente Messung und Kontrolle des projizierten Arbeitgeberimage auf deren Webseiten aus organisationaler Sicht ermöglicht. Die empirischen

Ergebnisse deuten darauf hin, dass vom Unternehmen projizierte sowie von Mitarbeitern wahrgenommene Images nicht notwendigerweise miteinander übereinstimmen. Ferner haben beide Image-Typen einen Einfluss auf individuelle und organisationale Ergebnisse. Die Studie des dritten Aufsatzes fokussiert sich auf die unternehmensinterne Perspektive und Merkmale der Gestaltung des Arbeitsumfelds, welche innovatives Arbeitsverhalten von Mitarbeitern in Organisationen fördern. Die Ergebnisse zeigen, dass unterschiedliche Formen von Mitarbeiterautonomie, zu unterschiedlich innovativem Arbeitsverhalten führen kann. Weiterhin wird untersucht, wie sich bestimmte Rahmenbedingungen auf diesen Zusammenhang verstärkend bzw. abschwächend auswirken. Zusammenfassend trägt die hiesige Dissertation zu einem verbesserten Verständnis des Image als Arbeitgeber und Motivationsmechanismen von Mitarbeitern bei, und erweitert das Feld sowohl aus theoretischer als auch praktischer Sicht. Abschließend werden wichtige Wege für künftige Forschung im Bereich Markenwert-basiertes Arbeitgeberimage (Brand Equity) und zur Arbeitsgestaltung (Work Design) abgeleitet.

I Introduction[1]

1 Motivation and research questions

In recent years, there has been rising organizational and scholarly interest about marketing-based employee attraction strategies to address the growing talent shortages in contemporary organizations (Lievens & Slaughter, 2016; ManpowerGroup, 2014). Once an employee is attracted and on-boarded, organizations are furthermore challenged with retaining and motivating their precious employees through well-defined work designs (Brynjolfsson & McAfee, 2012; Colbert, Yee, & George, 2016). From a macro-level perspective, these issues have—among other factors—similar pressing root causes: First, rapidly changing framework conditions and technological developments influence how people work and collaborate (Colbert et al., 2016; Wegman, Hoffman, Carter, Twenge, & Guenole, 2016); second, there is an ongoing shift toward more knowledge-based work in developed economies (Cortada, 2009); and third, the demographic structure of mature societies causes growing labor market gaps among the younger generations (Beechler & Woodward, 2009). Given these challenges, comprehensive and integrated organizational strategies for enhancing employee attraction, retention, and innovation performance are therefore urgently needed to warrant organizational competitiveness (Brynjolfsson & McAfee, 2012; Colbert et al., 2016; Johns & Gratton, 2013; WorldEconomicForum, 2016).

With regard to addressing the attractiveness as an employer, extant theoretical and empirical research has identified various attributes/associations (i.e., dimensions of employer image) that foster organizational attraction among (potential) employees in numerous contexts (e.g., different industries, types of individuals; Lievens & Slaughter, 2016). Moreover, scholars

[1] This chapter is partly based on and includes elements of Theurer, Tumasjan, Welpe, & Lievens (2018a), Theurer, Tumasjan, Welpe, & Lievens (2018b), and Theurer, Tumasjan, & Welpe (2018).

have analyzed different mechanisms to effectively convey such image to their target groups (i.e., potential and current employees; Collins & Stevens, 2002; Dineen & Allen, 2016). During the past two decades, the image of an employer as related to organizational attractiveness has been addressed by multiple scientific disciplines (e.g., human resource management, brand marketing, psychology) and from various theoretical perspectives (Edwards, 2010; Lievens & Slaughter, 2016). However, extant research has primarily focused on the individual perspective of the employee (in contrast to organizational views), and has analyzed mainly external contexts (i.e., attraction of potential employees in contrast to current employee retention strategies). Consequently, research around this topic has developed into a heterogeneous and fragmented field, lacking guiding theoretical foundation, integration, and new perspectives from an organizational point of view. A first goal of this thesis was therefore to integrate the existing literature under a guiding theoretical framework (i.e., brand equity theory), and to distill the fragmented research streams under an overarching model. Therefore, based on the existing employer image and organizational attractiveness literature, this thesis seeks to address the following first research question:

Research question 1: How can the dispersed literature around employer image and organizational attractiveness be integrated on the basis of brand equity theory and what are the different research streams in the field?

Understanding employer image influence factors and relationships based on individual employee *perceptions* is undoubtedly an important element in the equation. There is, however, also the organizational perspective. Organizations initially define their desired image as an employer, which is subsequently perceived by (potential and current) employees, on the

individual level, and ultimately reflected again in outcomes on the organizational level (e.g., applicant pools, turnover ratios, financial performance). Existing research is particularly scant on taking the organizational perspective, both with regard to employer image definition and measurement, and with regard to analyzing outcomes on an organizational level (Dineen & Allen, 2016). To date, it is not entirely clear how organizations objectively position and structure their employer image (e.g., on their corporate and employment websites), primarily due to a lack of efficient measurement methods (Allen, Mahto, & Otondo, 2007; Nolan, Gohlke, Gilmore, & Rosiello, 2013). This thesis aims to close this gap by investigating an efficient method to measure and analyze projected employer image, by comparing both the projected and perceived image perspectives, and by assessing outcomes on an organizational level. Hence, the thesis extends the current perspective and understanding of the employer image construct from an organizational perspective and seeks to answer the following second research question:

Research question 2: How can a projected employer's webpage image be measured in an efficient way and how does projected and perceived employer image influence different individual and organizational outcomes?

Besides the investigation of different attraction and retention strategies related to the favorable image as an employer, this thesis also considers an internal motivation-based perspective targeted to enhancing employee productivity (e.g., innovation performance). Doing so, the thesis provides a more comprehensive picture that is not only related to the attraction and retention of employees, but also employees' motivation mechanisms when already working for an organization. From an internal work design perspective, prior research has investigated various job/task, social, and work context-related features and their effect on employees' attitudinal,

behavioral, cognitive, and well-being outcomes on an individual level (e.g., satisfaction, efficiency, turnover), as well as an organizational level (e.g., organizational performance; Humphrey, Nahrgang, & Morgeson, 2007; Morgeson & Humphrey, 2008; S. K. Parker, Wall, & Cordery, 2001).

Among the variety of motivation-based work design features, employee autonomy (i.e., individuals' sovereignty in conducting work; Hackman & Oldham, 1976) has been identified as a key factor in effective work designs. Enhanced employee discretion is also considered an important predictor of innovation performance and has thus recently experienced renewed interest among organizational scholars (Grant, Fried, & Juillerat, 2011). Traditional perspectives on autonomy have mainly considered it as a unidimensional construct (Fried & Ferris, 1987; Ramamoorthy, Flood, Slattery, & Sardessai, 2005). Newer perspectives have treated autonomy as a multifaceted construct consisting of—among other dimensions—work scheduling autonomy, work methods autonomy, and decision-making autonomy (Humphrey et al., 2007). Moreover, research has been scant on investigating how organizational context moderates the effect between features of work design and related outcomes (e.g., innovative work behavior; Morgeson, Dierdorff, & Hmurovic, 2010). An improved understanding of contextual moderators is important, because context can substantially inhibit or complement the evolution of well-designed jobs (Morgeson et al., 2010). To this end, the goal of this thesis is therefore to investigate the effect of different autonomy dimensions on employees' (perceived) innovative work behavior. Furthermore, the thesis investigates whether dimensions of organizational context have a moderating influence on this relationship and thereby gives an answer to the third research question:

***Research question 3**:* How do different dimensions of employee autonomy influence employees' perceived innovative work behavior and how does this relationship interact with dimensions of the organizational context?

In summary, the three research questions comprehensively address important approaches and organizational strategies related to both the attraction of potential employees, and the motivation and retention of current employees. Both areas need enhanced research and integrated approaches due to increasingly difficult framework conditions such as talent scarcity, and rapid technological change that influences how people work and collaborate with each other. Specifically, the thesis integrates the field of employer image and organizational attractiveness along the guiding theoretical construct of brand equity theory. Furthermore, the thesis extends current views of employer image by an increased focus on the organizational perspective regarding image building and outcomes on the firm level. Finally, the present thesis addresses the company-internal perspective and provides a more nuanced view of how features of work design (i.e., autonomy dimensions) influence employees' perceived innovation performance and how organizational context interacts with this relationship.

In order to address the main research questions, the thesis builds mainly on two guiding theories: Brand equity theory (Aaker, 1991; Keller, 1993) and work design theory (Hackman & Oldham, 1976). While brand equity theory is primarily related to research questions 1 and 2, work design theory builds the theoretical foundation for research question 3. Both theories will be introduced and presented in greater detail in the following sections.

2 Theoretical background

2.1 Brand equity theory

Brand equity theory is rooted in marketing research (Keller, 1993) and constitutes the core theoretical foundation for analyzing employer image in this thesis. This perspective is consistent with Ambler and Barrow (1996, p. 2), who initially classified the employer brand concept (i.e., image as an employer) at the intersection of human resource management and marketing with "possible application of marketing and brand management theory" (see also Gardner et al., 2011). Although extant employer image research draws on a multitude of related theories (e.g., information processing theories), most of them fundamentally draw on brand equity concepts. Thus, the thesis follows this focus. In the following sections, we lay the definitional groundwork for taking a consistent brand-equity theoretical approach.

The *brand* constitutes the basis, consisting of different *identifiers* such as name, sign, symbol, or a mix of these (Keller, 1993). These components serve as *differentiators* that distinguish a firm's goods and services from the competition (Keller, 1993). Closely connected to the brand, *brand equity*—consisting of a "set of assets and liabilities" associated with the brand identifiers—is the *added value* associated with a product or service (Aaker, 1991, p. 15). This has a differential effect on consumer response in comparison to an unnamed or unbranded version of a product/service (Farquhar, 1989).

In the branding literature, two brand equity conceptualizations with slightly different dimensions have been dominant. First, Aaker (1991, p.16) classifies brand equity assets and liabilities into five categories: *brand loyalty*, *name awareness*, *perceived quality*, *brand associations*, and *other proprietary assets* (e.g., patents). Second, Keller (1993) distinguishes two major components of *brand knowledge* (seen as the *brand equity* differentiator and comparable to

brand equity assets and liabilities, as defined by Aaker (1991): *brand awareness* and *brand image*. Brand awareness reflects brand node strength in memory and how easily the brand comes to mind, whereas brand image reflects *types of associations* with different levels of abstraction "determining the differential response" to brand equity (Keller, 1993). Association types that summarize certain information can, for example, be categorized into *product-* and *non-product-related attributes* (Keller, 1993). These two brand equity conceptualizations, having partially different dimensions, serve as the prime theoretical foundation for employer image conceptualizations in this thesis.

2.2 Recruitment equity and employer image

In an employment context, *recruitment equity* is "the value of job seekers' employer knowledge, which is derived from job seekers' responses to recruiting organizations during and after the recruitment process" (Cable & Turban, 2001, p. 121). *Employer image* is therefore conceptualized as a facet of *employer knowledge* (i.e., a "job seeker's memories and associations regarding and organization"; Cable & Turban, 2001, p. 123) and describes employees' "content of beliefs […] about an employer" (Cable & Turban, 2001, p. 125). Extant research has extensively analyzed the employer image dimension of employer knowledge (i.e., brand attributes), and how different job and organization-related attributes and combinations in various contexts predict individual and organizational outcomes, e.g., organizational attraction, job pursuit intentions, job satisfaction; and applicant pool quantity and quality (Cable & Turban, 2003; Collins & Han, 2004; Lievens, Van Hoye, & Schreurs, 2005; Schlager, Bodderas, Maas, & Cachelin, 2011). For example, there has been research on employer image attributes in different professional branches and industries, e.g., shipping, nursing, and military (Fréchette, Bourhis, & Stachura, 2013; Lievens, 2007; Thai & Latta, 2010); in companies of different size (e.g., start-ups; Tumasjan,

Strobel, & Welpe, 2011); or across organizations in different cultures, e.g., Atlantic vs. Asia-Pacific region (Baum & Kabst, 2013b).

Employer image attributes can be categorized in numerous ways. Marketing-based brand equity theory distinguishes between product-related (i.e., attributes directly related to the product or service), and non-product-related image attributes, i.e., external aspects related to the purchase or consumption of product or service (Aaker, 1991; Keller, 1993). Translated to an employment context, these image dimensions could be interpreted as job-related and non-job-related employer image attributes. Lievens and Highhouse (2003) have therefore translated and transferred the brand marketing-based view into the employment context (i.e., to a recruitment context), in which they have categorized employer image into *instrumental* image (i.e., functional, utilitarian job and organizational attributes) and *symbolic* image dimensions (i.e., self-expressive organizational attributes; B. B. Gardner & Levy, 1955; Keller, 1993, 2011).

Instrumental attributes objectively describe the job and the employing organization with tangible, factual, and concrete associations that the employer has or does not have; and therefore, allow employees to maximize their benefits and minimize their costs, e.g., pay, bonuses, location, flexible working hours (Lievens & Highhouse, 2003). However, employees' attraction to organizations cannot only be explained on the basis of instrumental job and organizational attributes (Lievens & Highhouse, 2003). Therefore, symbolic employer image attributes, in turn, depict the job and employing organization in terms of intangible (non-job/ organization-related), subjective attributes that (potential) employees assign to an employer (e.g., specific traits such as prestige, sincerity, or innovativeness; Lievens & Highhouse, 2003). Such traits allow employees to "express themselves, maintain their self-identity, or to increase their self-image" (Aaker, 1997; Lievens & Highhouse, 2003, p. 79). Many of the symbolic image dimensions build on

(organizational) brand personality conceptualizations (e.g., Aaker, 1997) and comprise dimensions such as sincerity, competence, or excitement.

2.3 Work design theory

Work design theory is based on the assumption that certain jobs, tasks or role characteristics, as well as the broader social and contextual aspects of work, engender psychological states such as intrinsic motivation that result in certain outcomes at the individual, group and organizational levels (Hackman & Oldham, 1976; Morgeson & Humphrey, 2008). The dominant underlying model is based on Hackman and Oldham's (1976) job characteristics model of work motivation. The model postulates that there are five core job dimensions (i.e., skill variety, task identity, task significance, autonomy, and feedback) that create three critical psychological states (i.e., experienced meaningfulness of the work, experienced responsibility for outcomes of the work, and knowledge of the results of work activities) which, in turn, lead to certain favorable individual and work outcomes (e.g., work motivation, quality, performance, satisfaction; Hackman & Oldham, 1975, 1976). This interrelationship also includes an implicit assumption that certain employee characteristics are present and that there is a match between the employee characteristics and organizational task requirements (Hackman & Oldham, 1976; Morgeson & Humphrey, 2008). In summary, work redesign strategies are aiming at "improving simultaneously the productivity and the quality of the work experience of employees in organizations" (Hackman & Oldham, 1976, p. 250). Work design in the context of this thesis, as opposed to *job* design, focuses both on the job and the "link between jobs and the broader environment" (Morgeson & Humphrey, 2006, p. 1322; Parker & Wall, 1998).

Of all the identified task-related work design features, *autonomy* or "the degree to which the job provides substantial freedom, independence and discretion to the individual" (Hackman & Oldham, 1976, p. 258) has been the most prominent and widely studied characteristic, and

therefore takes a central position in motivational work design studies (Morgeson & Humphrey, 2006). Autonomy has been found to strongly affect both subjective and objective employee performance (e.g., creativity) and attitudinal outcomes such as commitment and job satisfaction (Humphrey et al., 2007; Morgeson & Humphrey, 2008; Spector, 1986). For knowledge workers, in particular, autonomy has been found to be an important, essential aspect of their performance (Janz, Colquitt, & Noe, 1997). In particular, several studies have found a positive relationship between work design features such as autonomy and creativity and innovation at work (e.g., Amabile, 1988; Amabile, Schatzel, Moneta, & Kramer, 2004; Judge, Fryxell, & Dooley, 1997; Ramamoorthy et al., 2005). Further, it has been shown that *proximal* work environment characteristics such as job complexity and autonomy are more important than *distal* characteristics, such as organizational policies, in predicting employee creativity (Shalley, Gilson, & Blum, 2000).

In summary, the two underlying theoretical approaches based on brand equity and work design build the foundation for this thesis. Both theories explain concepts and mechanisms under which employees are specifically motivated or attracted to organizations. Hence, the two theories play an important role in assessing strategies to foster organizational attraction, retention, and innovation performance among potential and current employees.

3 Research methods and data sources

The empirical parts of the thesis apply different methods to answer the above-mentioned research questions. While Chapter II and partly Chapter III apply a qualitative approach, Chapters III and IV apply quantitative research approaches, as well. In terms of data, both primary and secondary data from different sources was collected and subjected to further analyses. The next

paragraphs will briefly summarize the advantages and disadvantages of each of the methods applied, and the data that was analyzed within the different chapters and approaches.

3.1 Qualitative approaches

To address research question 1 (see Chapter II), and partly research question 2 (see Chapter III), qualitative research approaches were applied. In contrast to quantitative approaches, qualitative approaches are used when knowledge is scarce, and to conduct an in-depth evaluation of a particular subject or field of study (Myers, 2013). Therefore, qualitative research is well suited for theory building and exploratory purposes (Myers, 2013). Moreover, it allows more holistic depictions beyond only a few selected variables (Myers, 2013). A disadvantage, though, is that results from qualitative research are usually difficult to generalize across larger populations by applying certain sampling logics, and results primarily depend on the researcher's interpretation and contextual judgments (Gephart, 2004; Myers, 2013).

Specifically, content analysis approaches have been applied to study the employer image literature as posited in research question 1, and to conduct an in-depth analysis of the employer image construct as addressed in research question 2. Content analysis is a technique "to make replicable and valid inferences by interpreting and coding textual material" and "objectively and systematically identifying specified characteristics of messages" (Holsti, 1969; Krippendorff, 2012; Terry, 2017, p. 14). To integrate and interpret the dispersed literature around the employer image construct based on brand equity conceptualizations (i.e., research question 1), we have conducted an exhaustive review of the literature. In line with similar approaches (e.g., Armstrong, Cools, & Sadler-Smith, 2012; Turner, Swart, & Maylor, 2013), an analytical, three-step approach was applied in which 187 peer-reviewed academic publications in the field were identified, (content-)analyzed, and integrated along different research streams, which finally resulted in a comprehensive value chain model.

Research question 2 also used a content analytical approach. In particular, computer-aided text analysis (CATA) was applied to investigate employers' projected webpage image. CATA is a specific form of content analysis that allows the processing of large, text-based data samples with high speeds and reliabilities (Short, Broberg, Cogliser, & Brigham, 2010). It is sometimes also referred to as template analysis, as text is coded on the basis of thematic templates (Cassell & Symon, 2004). The approach in this thesis followed the general content analytic procedure as outlined by Weber (1990), as well as best practices put forth by Short et al. (2010) when using CATA. In doing so, textual data of the corporate and employment websites from 486 U.S. Fortune 500 companies were collected and analyzed, comprising more than 11,000 individual webpages and more than 4.1 million words from the year 2014. In addition, further historical website content of the years 2010 and 2012 was retrieved. For these years, another 7,105 individual webpages of 163 companies from both years was collected. All content was then analyzed, applying the text analysis software "LIWC" (Linguistics Inquiry and Word Count), for which a customized and construct validated dictionary was developed (Pennebaker, Boyd, Jordan, & Blackburn, 2015; Pennebaker, Francis, & Booth, 2001; Tausczik & Pennebaker, 2010).

3.2 Quantitative approaches

While qualitative research has more of an inductive and interpretive nature, quantitative research usually applies a deductive approach based on hypotheses to analyze relationships of certain variables (Cooper, Schindler, & Sun, 2006; Gephart, 2004). Certain phenomena are quantified, coded, or counted to meaningfully present specific concepts, and thus, are based on mathematical and statistical analyses (Gephart, 2004). An advantage of quantitative research is the generalizability of results to a large population (e.g., many individuals or organizations), and to identify trends and patterns that apply in various situations (Myers, 2013). A disadvantage of

quantitative research is, however, that context is commonly "treated as noise" and therefore depicts a narrowed and simplified view of the reality (Myers, 2013, p. 8).

To address research question 3 (i.e., how different autonomy dimensions influence employees' innovative work behavior; Chapter IV) an *experimental* approach in the form of a conjoint analysis was applied. Conjoint analyses have been conducted in multiple disciplines (e.g., marketing, entrepreneurship) and are used to evaluate complex decision-making processes with a series of different, hypothetical profile sets (Shepherd, Patzelt, & Baron, 2013; Shepherd & Zacharakis, 1997). Compared to post-hoc methodologies such as surveys or interviews, conjoint analyses can overcome certain biases such as self-reporting bias when respondents answer in a way that "makes them look as good as possible" with regard to socially desirable behaviors (Donaldson & Grant-Vallone, 2002, p. 247); or retrospective/recall bias/telescoping, where respondents show differences when recalling information about a past experience or event by overstating recent events and understating more distant events (Brundin, Patzelt, & Shepherd, 2008; Zacharakis & Meyer, 1998). To study the effect of different autonomy dimensions on employees' innovative work behavior, a metric conjoint experiment with 9,440 assessments nested within 1,180 individual participants was conducted online.

Moreover, a *survey-based* method (i.e., questionnaire) was used to capture additional variables on the individual level (e.g., attitudes, personality characteristics), which is a core advantage of survey research. While experiments usually provide high internal validity, survey-based methods usually provide higher external validity and thus generalizability. The individual level variables were used for testing moderation effects in autonomy–innovative work behavior relationships. The underlying structure of the conjoint decisions and the moderating variables were analyzed using a 2-level hierarchical linear modeling (HLM) approach to account for the

decisions nested in the individual participants (Aguinis, Gottfredson, & Culpepper, 2013; Raudenbush, Bryk, & Congdon, 2004).

Regarding research question 2, the results of the qualitative approach based on computer-aided text analysis (i.e., relative occurrence scores of certain projected image dimensions) were subjected to hierarchical multiple linear regression. The regression analysis was conducted to test the predictive ability of both projected and perceived employer image regarding different individual and organizational outcomes. The perceived image and the outcome variables were collected from different secondary data sources, such as online available employer ranking data (i.e., Glassdoor, Great Place to Work), as well as a financial database (i.e., Thomson Reuters Datastream professional).

In summary, multiple research methods with both qualitative and quantitative approaches were used to answer the research questions of this thesis. Furthermore, different sources of data were collected, using primary and secondary data sources. Overall, the variety of both methodical approaches and data sources contributed to a comprehensive contemplation of the research questions of this thesis.

4 Structure, main results, and contributions

Apart from the introductory Chapter I, the thesis is comprised of four additional chapters that form the main part. Chapters II to IV are independent essays that focus on the specific elements of the previously described research questions. Each essay separately introduces and investigates a respective subtopic in detail, including sections on theoretical background, data (if applicable) and methodology, analysis and results, as well as a discussion section. The concluding Chapter V highlights and summarizes the overall findings and main contributions of

the thesis. The next paragraphs briefly summarize the theoretical foundation, main research questions, key results, and the contributions of each of the essays.

Chapter II specifically focuses on brand equity theory (Aaker, 1991; Keller, 1993) and based on this, comprehensively reviews the field of employer image and organizational attractiveness rooted in brand equity conceptualizations. The chapter addresses the gap that extant employer image research has been approached by multiple scientific disciplines (e.g., brand marketing, psychology, human resource management). Already Cable and Turban (2001, p. 118) noted, that "past recruitment research has been labeling similar concepts by different names, and has been labeling different concepts by the same name." This resulted in a heterogeneous and fragmented view on the topic without an integrative approach. The results of the comprehensive and systematic review of almost 200 articles in the field show that there are three main categories under which extant brand equity-based employer image research can be grouped. Namely, they comprise theoretical concepts and models, employer knowledge dimensions, and activities and strategies to promote a favorable employer image. Within each of the categories different findings and perspectives are contrasted with each other and set into perspective.

The second chapter contributes to the employer image and organizational attractiveness literature in the following ways: First, it clarifies existing research in the field by distilling the constructs used, by showing differences from and connections to related fields, and by focusing on the guiding theoretical construct of brand equity theory. Second, the chapter comprehensively reviews and systematizes brand equity-based employer image research by identifying, summarizing, and discussing its disciplines and related sub-fields. Third, the results are summarized into an integrative value chain model to provide a comprehensive picture of the field; and fourth, results are used to identify and derive areas for future research to refine and extend theory and empirical evidence in the field.

Chapter III focuses on developing a measurement method of employers' projected webpage image and comparing different image perspectives with each other (i.e., projected organizational image vs. perceived employee image). While previous research has mainly dealt with perceived employer image by potential and current employees, this chapter takes an organizational perspective and analyzes employer image as transmitted via corporate and employment webpages. Moreover, the predictive power of image types and certain dimensions regarding attitudinal outcomes (e.g., organizational attraction), as well as more distal organizational outcomes (e.g., firm performance, market value) is tested. Results show that there is a reliable and efficient way to measure employer image from corporate and employment webpages using computer-aided text analysis (CATA). Furthermore, the results indicate that organizationally projected images and employee-perceived images are not necessarily in line with each other. Finally, the study demonstrates that certain dimensions of projected employer webpage image (e.g., competence, innovation) differentially predict organizational attraction, firm performance, or market value, while a majority of the projected employer image dimensions do not indicate such predictive power.

The third chapter contributes to the employer image and organizational attractiveness literature in at least two important ways. First, the study provides an innovative and efficient measurement approach to analyze firms' projected employer image via their corporate and employment webpages. It is one of the first approaches to investigate employer image-building content on an organizational level, which makes use of large-scale text data of a widely used digital medium (i.e., company and employment webpages). Second, the study simultaneously contemplates different perspectives and types of employer image (i.e., projected vs. perceived image) and compares them with each other. Prior studies have mainly looked at perceived employer images only. Finally, from a practical perspective, the study provides organizations

with an efficient tool to monitor their desired employer image and to identify the need for adjustment if not in line with their desired employer value proposition (i.e., to-be employer image).

Chapter IV focuses on the company-internal perspective and is based on work design theory (Hackman & Oldham, 1976). The chapter deals with the question of how different levels of employee autonomy have an impact on employees' perceived innovative work behavior (IWB). Furthermore, it is investigated whether and how certain boundary conditions (e.g., psychological climate dimensions such as supervisor support) have a moderating influence on this relationship. The results indicate that all dimensions of autonomy have a significant positive effect on employee innovative work behavior. Moreover, the results demonstrate that work methods autonomy (i.e., control over the procedures and methods used to do the work) and work scheduling autonomy (i.e., control over the time and scheduling of work) have a significantly stronger effect on employees' perceived IWB than decision-making autonomy (i.e., freedom to make work-related decisions). Contrary to the hypotheses, the results do not show any significant moderating effect of organizational boundary conditions (e.g., psychological climate) on the relationship between autonomy dimensions and employees' perceived IWB

The fourth chapter contributes to the work design and innovation management literature as follows. First, the study examines multiple facets of autonomy concurrently, while previous studies have all viewed autonomy from a unidimensional perspective and tended to focus only on work scheduling autonomy. Therefore, this study is a response to the call for additional research in which autonomy is multi-faceted, and shows these different facets can differentially impact work outcomes beyond job satisfaction alone. Second, the study revisits research on work design, and specifically, autonomy from a context-contingent/boundary condition perspective. In such, the recent calls are answered for enhanced research to consider the contextual features that

enhance or constrain task/motivation-based relationships. Therefore, a more comprehensive understanding of the supportive and inhibitive factors that affect autonomy relationships in work design is illuminated. Third, the study contributes to a "bottom-up view" on work design features, which considers both adjustable work-design-based autonomy dimensions and adjustable organizational-level properties. Previously, the re-design of work through management to achieve certain organizational goals has assumed to have given or fixed organizational boundaries and properties that cannot be changed. Because this investigation considers both work design-based autonomy dimensions and adjustable organizational-level properties, it aims to improve the understanding of such reverse relationships; that is, how adjusted organizational boundaries impact work design. This additional insight is valuable, as prior research has tended to (over)simplify reality by assuming this dimension to be fixed.

The final Chapter V of the thesis discusses the overall findings from Chapters II – IV as well as key theoretical and practical implications. The chapter concludes by giving directions for future research in the analyzed fields.

II Essay 1: Employer branding – A brand equity-based literature review and research agenda[2]

Abstract

Over the past two decades, scholarly interest in employer branding has strongly increased. Simultaneously, however, employer branding research has developed into a fragmented field with heterogeneous interpretations of the employer branding concept and its scope, which has impeded further theoretical and empirical advancement. To strengthen the foundation for future work, our article takes a brand equity perspective to review the extant literature and create an integrative model of employer branding. Using an analytical approach, we identify 187 articles which we integrate along different employer brand dimensions and branding strategies: (i) conceptual, (ii) employer knowledge dimensions, (iii) employer branding activities and strategies. On the basis of our review, we develop an employer branding value chain model and derive future research avenues as well as practical implications.

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[2] *Acknowledgments*: This paper contains elements of joint work with Dr. Andranik Tumasjan, Prof. Dr. Isabell M. Welpe, and Prof. Filip Lievens, PhD.

III Essay 2: Substance or noise – Analyzing dimensions of employer image from corporate and employment webpages[3]

Abstract

Present employer image research has largely focused on the perspective of potential and current employees and, therefore, on *perceived* employer image beliefs. In contrast, the company view deals with *projected* employer images that are controlled by organizations. In particular, firms' actual image, as represented by organizational webpages, and an efficient method to measure it have been only marginally addressed. In this study, a method is developed to measure and analyze companies' employer image as presented on company webpages. Specifically, the study analyzes the projected employer image of the U.S. Fortune 500 companies via their corporate and employment webpages by applying computer-aided text analysis. Content validity as well as discriminant and predictive validity were tested using webpage data from a sample of 461 companies with more than 11,100 individual pages containing more than 4 million words. As a result, this study provides a reliable and efficient method for the measurement of employers' webpage image. Moreover, the study demonstrated that dimensions of projected employer image and selected perceived image dimensions are two image types that represent different constructs. Finally, there was evidence that different dimensions from both image types partially predicted organizational attraction, market value, and firm performance. The article contributes to the employer image literature through an innovative measurement approach. From a practical

[3] *Acknowledgments*: This paper contains elements of joint work with Dr. Andranik Tumasjan, Prof. Dr. Isabell M. Welpe, and Prof. Filip Lievens, PhD. I would also like to offer my special thanks to Lisa Christl, Andrea Zeller, Julian Mues, Georg Sonner, Tamur Lodhi, Simone Fetz, Tobias Schroll, and Annasofia Groenholm for their support in webpage data collection and documentation.

perspective, the study provides organizations with a method to efficiently monitor and (re)adjust their employer image.

Current status: Working paper (see also Appendix).

1 Introduction

In an increasingly digital world with rapidly changing employee requirements and an intensifying war for talent, effective ways for organizations to position themselves as desirable employers have become a core strategic target for organizations to compete in the digital world (Kane, Palmer, Phillips, & Kiron, 2017). Leading employers have successfully created images of encouraging and meaningful work environments and identified ways to best transmit their employer value proposition among potential and current employees (Kane et al., 2017; Saini, Rai, & Chaudhary, 2014). Simultaneously, employers are facing the challenge of continuously protecting their "ideal and desirable" image (Edlinger, 2015, p. 448). As a consequence, employers are facing the need for continued monitoring and protection of the use of their image, as well as its perception in the labor market (Edlinger, 2015).

Extant research on employer image has identified multiple image features in several contexts that foster organizational attraction and related outcomes among prospective and current employees (e.g., Davies, 2008; Lievens & Highhouse, 2003; Tumasjan, Strobel, & Welpe, 2011; Van Hoye & Saks, 2011). Particularly in the early recruitment stages, job and organizational image features have been considered particularly important to influence organizational attraction (Lievens, 2007; Lievens, Van Hoye, & Anseel, 2007; Uggerslev, Fassina, & Kraichy, 2012). This perceived employer image and related outcomes among potential and current employees are typically expressed through informal channels such as word-of-mouth (Van Hoye, Weijters, Lievens, & Stockman, 2015), best employer ratings (Love & Singh, 2011), or social media (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011).

The perceived image view, however, only mirrors the external perspective (i.e., employees' image beliefs; Cable & Turban, 2001) and therefore does not necessarily reflect

organizations' ideal image intentions. In contrast, a counter perspective pertains to firms' projected (to-be) images (i.e., employer identity; Robertson & Khatibi, 2012), which they can actively control and steer. Typically, this is expressed through organizations' online presence (e.g., company webpages; Williamson, King, Lepak, & Sarma, 2010) or other, more formal mass communication channels such as corporate advertising, brochures, or recruitment ads (Collins & Han, 2004; Collins & Stevens, 2002). In the past, traditional company-generated sources and channels such as mass media, annual reports, internal magazines, or mission statements have been content-analyzed to study constructs such as leadership image (Chen & Meindl, 1991), corporate values (Kabanoff, Waldersee, & Cohen, 1995), or corporate impressions (Arndt & Bigelow, 2000). However, existing research on the development of efficient methods to monitor projected employer image of companies' *webpage* representation remains scant (Duriau, Reger, & Pfarrer, 2007; Lombard, Snyder-Duch, & Bracken, 2002; Neuendorf, 2016).

Therefore, new methods to assess firms' projected employer webpage image and ways to efficiently monitor different image dimensions need to be established. Several important questions arising from this gap will be addressed in this article. First, can a reliable method be developed to measure firms' projected employer webpage image in an efficient way via computer-aided text analysis (CATA)? Second, is projected employer image different from company-independent, perceived image views of potential and current employees (i.e., construed employer image)? Finally, a third question pertains to the predictive validity of employer image and which of the two image types and related dimensions (i.e., projected vs. perceived employer image) best predicts individual and organizational outcomes such as organizational attraction, firm performance, or market value.

To answer these questions, we apply computer-aided text analysis through automated coding and processing of large amounts of webpage text. Specifically, we analyze company and employment webpage text of the U.S. Fortune 500 companies to measure and analyze firms' projected employer image. Perceived employer image is assessed through employee evaluations on the employer-rating platform Glassdoor. To evaluate organizational attraction, we build on the annual results of a well-established U.S.-based best employer ranking awarded by Fortune Magazine and Great Place to Work.

This paper contributes to the organizational attractiveness and employer image literature in several ways. First, it provides an innovative approach and method to analyze firms' projected employer image. This study is among the first to investigate employer image building content on an organizational level that analyzes large-scale text data of a widely used digital medium (i.e., company webpages) in a structured and efficient approach. To date, only a few studies have applied content analysis in this context (e.g., Nolan, Gohlke, Gilmore, & Rosiello, 2013).

Second, our study simultaneously contemplates and compares different perspectives and types of employer image (i.e., projected vs. perceived image). Whereas previous studies have predominantly focused on the construed perspective of employees, the current study connects both the firm's and the employees' perspective. Finally, from a practical perspective, the study provides organizations with an effective and efficient tool to monitor their ideally projected employer image and identify the need for adjustment, if that image is not in line with their desired employer value proposition (i.e., to-be employer image) or is non-distinguishable from labor market competition.

As an overarching conceptual framework to measure, analyze and structure employer image, we build on the marketing-based instrumental-symbolic framework that has been

transferred and translated to an employment context (Lievens & Highhouse, 2003). This framework has been applied in a variety of contexts to investigate and structure different image dimensions and attributes. These include *objective, tangible* image attributes/dimensions (i.e., instrumental), and *subjective, intangible* attributes/dimensions (i.e., symbolic; e.g., Kausel & Slaughter, 2011; Lievens & Highhouse, 2003; Slaughter & Greguras, 2009; Van Hoye, Bas, Cromheecke, & Lievens, 2013). Although we do not claim that the instrumental-symbolic framework is fully exhaustive to capture employer image in its entirety, we believe it is a good starting point to analyze employer image. Accordingly, the following sections will describe how a method is developed to reliably measure employer image based on the instrumental and symbolic image dimensions.

The remainder of this paper is structured as follows. We first introduce content analysis and computer-aided text analysis, including our research questions and theoretical background on extant employer image research. Next, we introduce our method, including data collection and the establishment of different types of construct validity. We then present our results to the related research questions. Finally, the paper concludes with a discussion of the results, the limitations of the current study, and an outline of future research suggestions.

2 Theoretical background

The following section describes the theoretical background of developing a measure on the basis of content analysis — specifically computer-aided text analysis. In the first part of this section we define our research questions related to the establishment of the measure. In part two of this section, we briefly describe the theoretical foundations of employer image and the instrumental-symbolic image framework.

2.1 Content analysis and computer-aided text analysis

Content analysis is a research technique used "to make replicable and valid inferences by interpreting and coding textual material" and "objectively and systematically identifying specified characteristics of messages" (Holsti, 1969; Krippendorff, 2012; Terry, 2017, p. 14). By applying content analysis, qualitative data can be converted into quantitative data through the systematic evaluation of text; therefore, this has been used as an effective method to capture constructs that are usually difficult to measure (Short, Broberg, Cogliser, & Brigham, 2010). Although traditionally and frequently used in the social sciences, the method has only recently become more widespread among organizational scholars and in the management research domain (Duriau et al., 2007; Short et al., 2010; Terry, 2017). For example, in order to study the interaction between firms and their environments, organizationally produced texts such as annual reports have been widely analyzed as a preferred data source (Duriau et al., 2007).

Generally, types of content analyses vary in terms of their different approaches and the techniques with which the underlying steps are conducted. A widely accepted protocol by Weber (1990) lists eight steps for creating, testing and implementing a text-coding scheme for content analysis. Specifically, these steps comprise: 1) Definition of the recording units (e.g., word, phrase); 2) Definition of the coding categories (e.g., instrumental and symbolic employer image dimensions); 3) Test of coding on a sample text (e.g., company webpage text); 4) Assessment of the accuracy and reliability of sample coding (e.g., human coder vs. computer-coded); 5) Revision of the coding rules; 6) Return to step 3 until sufficient reliability is reached; 7) Coding of all the text; and 8) Assessment of the achieved reliability and accuracy.

In this study, we apply computer-aided text analysis (CATA), a content analysis technique that allows for processing large text-based data samples with high speeds and reliabilities (i.e.,

high consistency in measuring the construct; Short et al., 2010). In essence, similarly to human coding schemes and approaches, CATA builds on word, sentence, or paragraph usage in a text to systematically make inferences about the author's mental models and intentions (Carley, 1997; Morris, 1994). However, in comparison to human coding, CATA provides both higher speed and greater reliability (Short et al., 2010). While human coding schemes are rather error-prone, CATA provides perfect coder reliability when applying certain coding rules to a text (Weber, 1990). Another advantage of CATA is that the same text can be easily analyzed with various category schemes (i.e., dictionaries), and these dictionaries can be simply modified in case of errors or required changes (Weber, 1990).

An often-occurring issue in content analyses pertains to assessing construct validity (i.e., whether a measure adequately quantifies the underlying concept; Bagozzi, Yi, & Phillips, 1991). In order to establish, assess, and enhance validity when using CATA, the management literature typically addresses four types of validity, which are further described in the following section and are later established in this paper: content, external, discriminant, and predictive validity (Short et al., 2010).

Content validity (i.e., the degree to which a measure captures the full area of a specific construct; Nunnally & Bernstein, 1994) can, for example, be established from both *deductively* and *inductively* derived word lists. Whereas deductively derived word lists are derived from theory to develop a coding scheme, inductively derived word lists are explorative and are based on relevant texts of interest, which are analyzed for potential words (Duriau et al., 2007). Next, in order to ensure *external* validity (i.e., the generalizability of findings across multiple settings; Cook, Campbell, & Day, 1979), organizational researchers should both select appropriate text in which the relevant construct can be practically expected and use two or more additional sampling

frames in which the measure can be tested (e.g., application to different populations; Short et al., 2010).

Next, assessing *discriminant* validity (i.e., the degree to which a construct is distinct from other constructs; Campbell & Fiske, 1959) involves assessing construct dimensionality (i.e., in cases when multiple measures belong to one construct). A visual inspection of content analysis results from multiple word lists in a correlation matrix is therefore recommended (Short et al., 2010). Finally, predictive (i.e., nomological) validity (i.e., the degree to which a measure predicts another construct to which it is theoretically connected; Cronbach & Meehl, 1955) has only been addressed to a limited extent in research using content analysis (Short et al., 2010). In order to test the predictive validity of a measure, best practices propose to assess variables not captured by content analysis in order to avoid common method bias (e.g., archival data; Short et al., 2010).

Given the above-mentioned approach for applying content analysis and specifically computer-aided text analysis, as well as the construct of interest (i.e., firms' projected employer image), this paper will address the following research questions:

Research Question 1*: Using CATA, is it possible to establish a new method that reliably and efficiently measures firms' projected employer image as communicated by their company and employment webpages?*

Research Question 2*: Is projected employer image as measured through firms' company and employment webpages distinct from perceived employer image views of (potential) employees?*

Research Question 3: *Does projected employer image as expressed through company and employment webpages predict other constructs, such as organizational attractiveness, firms' market capitalization and performance? If so, what type of employer image (i.e., firms' projected employer image vs. perceived employer image) better predicts these constructs?*

Table III-1 summarizes the research questions and provides an overview of how the different questions will be addressed in the following sections using CATA.

Table III-1: Overview of research questions and methodical approach using CATA

Research Question (RQ)	Methodical Approach Using CATA
RQ1: Using CATA, is it possible to establish a new method that reliably and efficiently measures firms' projected employer image as communicated by their company and employment webpages?	**Content validity** - Generation of deductively derived word lists based on definitions of theoretical construct and sub-constructs in literature, as well as synonym dictionaries - Generation of inductively derived word lists based on inspection and exploration of sample text, as well as identification of frequently-used words matching construct of interest - Validation of exhaustive word lists by experts and assessment of interrater reliability - Refinement and finalization of word list/dictionary **External validity** - Assessment of different samples not previously included in establishing content validity (e.g., different sub-sample, text from different points in time) **Dimensionality** - Assessment of correlation matrix of sub-dimensions due to multidimensionality of employer image construct (i.e., instrumental-symbolic image dimensions) **Reliability** - Analysis and coding of text with LIWC (linguistic inquiry and word count) software (Pennebaker & Graybeal, 2001) based on previously defined word lists per image dimension

RQ2: Is projected employer image as measured through firms' company and employment webpages distinct from perceived/self-reported employer image views of (potential) employees?	**Discriminant validity** - Assessment of correlation matrix for projected employer image dimensions (i.e., generated from webpage text) and employee perceived employer image dimensions (obtained from employer ratings via Glassdoor) - Assessment of correlations and potential discrepancies
RQ3: Does projected employer image as expressed through company and employment webpages predict other constructs, such as organizational attractiveness, firms' market capitalization and performance? If so, what type of employer image (i.e., firms' projected employer image vs. perceived employer image) better predicts these constructs?	**Predictive (nomological) validity** - Best employer ratings (i.e., Fortune Best Places to Work For), firm value (i.e., market capitalization), and firm performance (i.e., Tobin's *q*) used as dependent variables - Hierarchical multiple linear regression analysis testing predictive validity of projected employer image (generated from webpage text) and perceived employer image (obtained from employer ratings via Glassdoor)

The following part will briefly describe the construct of interest (i.e., employer image) and extant research in the field for which construct validity using CATA will be established in this article.

2.2 Employer image and the instrumental-symbolic framework

Employer image is conceptualized as a facet of *employer knowledge* (i.e., a "job seeker's memories and associations regarding an organization"; Cable & Turban, 2001, p. 123) and describes an employees' "content of beliefs […] about an employer" (Cable & Turban, 2001, p. 125). Extant research has extensively analyzed the employer image dimension of employer knowledge, as well as how different job and organization-related attributes and combinations in various contexts predict individual and organizational outcomes (e.g., organizational attraction, job pursuit intentions, job satisfaction, applicant pool quantity and quality; Cable & Turban, 2003; Collins & Han, 2004; Lievens, Van Hoye, & Schreurs, 2005; Schlager, Bodderas, Maas, & Cachelin, 2011). For example, there has been research on employer image attributes in different professional branches and industries (e.g., shipping, nursing, military; Fréchette, Bourhis, & Stachura, 2013; Lievens, 2007; Thai & Latta, 2010), in companies of different size (e.g., start-

ups; Tumasjan et al., 2011), or across organizations in different cultures (e.g., Atlantic vs. Asia-Pacific region; Baum & Kabst, 2013b).

Employer image attributes can be categorized in numerous ways. Marketing-based brand image theory, for example, distinguishes between product-related (i.e., attributes directly related to the product or service), and non-product-related image attributes (i.e., external aspects related to the purchase or consumption of a product or service; D. A. Aaker, 1991; Keller, 1993). Translated to an employment context, these image dimensions could be interpreted as job-related and non-job-related employer image attributes. Lievens and Highhouse (2003) have therefore translated and transferred the brand marketing-based view into the employment context (i.e., in particular to a recruitment context), in which they have categorized employer image into *instrumental* image (i.e., functional, utilitarian job and organizational attributes) and *symbolic* image dimensions (i.e., self-expressive organizational attributes; Gardner & Levy, 1955; Keller, 1993, 2011).

Instrumental attributes objectively describe the job and the employing organization in terms of tangible, factual, and concrete associations that the employer has or does not have, thus allowing employees to maximize their benefits and minimize their costs (e.g., pay, bonuses, location, working hours; Lievens & Highhouse, 2003). However, employees' attraction to organizations cannot be explained solely on the basis of instrumental job and organizational attributes (Lievens & Highhouse, 2003). Therefore, symbolic employer image attributes in turn depict the job and employing organization in terms of intangible (non-job/organization-related), subjective attributes that (potential) employees assign to an employer (e.g., specific traits such as prestige, sincerity, or innovativeness; Lievens & Highhouse, 2003). Such traits allow employees to "express themselves, maintain their self-identity, or to increase their self-image" (J. Aaker,

1997; Lievens & Highhouse, 2003, p. 79). Many of the symbolic image dimensions are based on (organizational) brand personality conceptualizations (e.g., J. Aaker, 1997) and comprise dimensions such as sincerity, competence, or excitement.

Overall, current research has shown that the instrumental-symbolic framework, as adopted from brand marketing, is an effective and valuable categorization to analyze and structure dimensions of employer image. As a general conclusion, both dimensions were found to positively predict both attitudinal and behavioral outcomes, such as employer attractiveness or job pursuit intentions (e.g., Lemmink, Schuijf, & Streukens, 2003; Lievens et al., 2005; Van Hoye & Saks, 2011). Research has shown that symbolic attributes are almost equally effective across different groups of (potential) employees, whereas instrumental attributes explained the highest variance among actual applicants because they have specific information collection needs in a pre-employment phase (Lievens, 2007). However, symbolic traits are of particular relevance in an internal context (i.e., current employees), in which, for example, competence predicts employees' organizational identification (Lievens et al., 2007). Moreover, both employer image dimensions are moderated by contextual elements, such as individual characteristics (Baum & Kabst, 2013a) or culture (Baum & Kabst, 2013b), in their effect on individual and organizational recruitment and retention outcomes. The following measurement approach therefore builds on the instrumental-symbolic dimensions of employer image.

The majority of research in the field of employer image and organizational attractiveness has mainly focused on the image perspective of potential employees and how certain (instrumental-symbolic) employer value propositions affect attitudinal and behavioral outcomes among (potential) employees (Lievens & Slaughter, 2016). In contrast, little research has focused on the signaling effect of image attributes from an employer's perspective or on how a distinctive

image can be measured and monitored to ensure image clarity and consistency (Theurer, Tumasjan, Welpe, & Lievens, 2018). Nonetheless, both image clarity and image consistency are of importance to enhance credibility and perceived quality, as well as to lower perceived risk and employee information cost (Wilden, Gudergan, & Lings, 2010). In summary, it is pivotal to develop methods to measure projected image in order to better understand employees' reactions and adjust image dimensions in a targeted manner.

3 Data and method

In the following sections, we will present our detailed approach and samples for each of the previously introduced research questions.

3.1 Research question 1: Establishing construct validity

The next paragraphs will describe our sample and the different steps to establish content and external validity using CATA to address research question 1.

3.1.1 Company and employment webpage sample

For the purpose of this study, corporate and employment webpage data of the U.S. Fortune 500 companies were evaluated. The Fortune 500, which comprises a list of the 500 largest U.S. corporations by total revenue in a fiscal year, is published on an annual basis by the Fortune magazine (Fortune, 2016). With a total of around $12 trillion in revenues and $840 billion in profits, the Fortune 500 companies represented around two thirds of the U.S. GDP in 2016 (Fortune, 2016). For this study, the Fortune 500 list of companies from 2013 was chosen (Fortune, 2014). Actual webpage data (text only) were collected in the period from May 3rd, 2014, to December 29th, 2014.

Text data were collected in a stepwise approach. In a first step, broad webpage categories with employer-relevant information were mutually defined by screening webpage content of

selected companies. The initial categorization included the following six areas, which were related to the typical naming of common webpage sections: 1) “About”, 2) “Careers”, 3) “Diversity and Inclusion”, 4) “Community”, 5) “Values and Responsibility”, and 6) “Culture”. All pages that included product-relevant information were excluded due to their company-specific and non-comparable nature. An extensive list of the categories included in and excluded from the analysis can be found in Appendix A.

In a second step, all relevant sub-categories were identified, satisfying the following criteria: Only information in the above-mentioned areas relevant to build employer image and having the potential to influence (prospective) employees’ attraction was included (e.g., Uggerslev et al., 2012). Moreover, data needed to be directly analyzable through text mining (i.e., only pages with text were analyzed, while graphics, images, PDFs, and similar content were omitted). As a result, a total of 80 subgroups were identified: “About” (20 sub-groups), “Careers” (16 sub-groups), “Diversity and Inclusion” (six sub-groups), “Community” (19 sub-groups), “Values and Responsibility” (16 sub-groups), and “Culture” (three sub-groups).

Overall, 41 out of a total of 80 identified and possible sub-groups were ultimately used in the sample (51.3%). For example, within the “About” category, 16 sub-categories were excluded due to non-relevance or non-analyzability through text mining (e.g., “Investor Relations”, “Legal Information”, “SEC Guidelines”, “Subsidiaries”, and “Website Privacy Policy”). In the “Careers” category, eight categories were kept, while another eight were excluded (e.g., “Hiring Process”, “Recruiting, “Events”, “FAQ”, and “Requirements”). The complete list of initially identified and chosen sub-groups can also be found in Appendix A.

The third step focused on the actual gathering of the text data. For each sub-group and webpage, four research assistants collected all hyperlinks and text data across the companies in

scope. Text was collected in both the original ".html" format and a plain-text-only format (i.e., ".txt"). For the subsequent content analysis, only the plain-text files were used and aggregated on a firm level. Companies with non-accessible webpages (e.g., pages that were offline due to recent mergers or non-loading due to technical restrictions), as well as limited company online presence not including the aforementioned categories, were excluded (e.g., http://www.berkshirehathaway.com). These steps resulted in an initial text dataset based on a list of 486 companies.

In a final step, companies with websites containing less than a total of 1,000 words were excluded to ensure sufficient input data per company and comparability across organizations. This threshold led to a further reduction of companies, resulting in a final sample of 461 corporations (92%) with a total of more than 11,100 individual webpages and more than 4.1 million words. On average, each analyzed company website consisted of around 24 distinct, individual webpages (*SD* = 18.42) and a total of 8,923 words (*SD* = 8,581), ranging from 1,000 to 95,689 words per company website. In terms of industries, the final sample comprised nine industry divisions based on the U.S. Standard Industrial Classification (SIC) system (Labor, 2017): Agriculture, Forestry and Fishing (*n* = 1; 0.2%); Mining (*n* = 13; 2.8%); Construction (*n* = 6; 1.3%); Manufacturing (*n* = 176; 38.2%); Transportation, Communications, Electric, Gas and Sanitary Service (*n* = 73; 15.8%); Wholesale Trade (*n* = 25; 5.4%); Retail Trade (*n* = 52; 11.3%); Finance, Insurance and Real Estate (*n* = 69; 15.0%); and Services (*n* = 46; 10.0%).

3.1.2 Content validity: Dictionary development

In the following section, a measure is developed that builds on a dictionary of instrumental and symbolic employer image attributes with which the webpage text was analyzed.

3.1.2.1 Deductively derived dictionary

In a first step, it was important to unambiguously define the construct of interest and to assess its dimensionality in line with the relevant literature (Short et al., 2010). Employer image has been defined as the "set of beliefs that a job seeker holds about the attributes of an organization" (Cable & Turban, 2001, p. 125). Although there exist numerous ways to categorize image attribute dimensions, we followed the frequently-used categorization of Lievens and Highhouse (2003), who broadly distinguish between instrumental (i.e., objective, tangible job and organizational attributes) and symbolic (i.e., subjective, intangible, non-job/organization-related attributes) employer image dimensions. We therefore treat employer image as a multidimensional construct.

In the second step, we collected sub-dimensions from the formal definitions of the instrumental and symbolic employer image constructs in the literature. For example, Lievens (2007), in his study about attractiveness in the Belgian army, identified nine instrumental factors (i.e., social/team activities, physical activities, structure, advancement, travel opportunities, pay and benefits, job security, educational opportunities, and task diversity) and six symbolic dimensions (i.e., sincerity, cheerfulness, excitement, competence, prestige, and ruggedness). Whereas the instrumental dimensions were based on semi-structured interviews, the symbolic trait dimensions originated in the (consumer) brand personality scale developed by J. Aaker (1997).

To identify a comprehensive range of image sub-dimensions, we analyzed 13 studies in the field of employer image and organizational attractiveness. Overall, we identified 12 instrumental and eight symbolic image dimensions that have been mentioned by at least two or more studies. A complete list of the identified literature and image dimensions can be found in

Appendix B. Our final selection consisted of six symbolic image dimensions (i.e., sincerity, innovativeness, competence, prestige, ruggedness, and cheerfulness) and four instrumental image dimensions (i.e., pay, benefits, advancement, and teamwork).

For the instrumental dimension, we had to omit several sub-dimensions that either represent combined terms that cannot technically be captured via CATA, as we used single words as the unit of analysis (e.g., "challenging work", "task demand", "job security", "working conditions", "working atmosphere", "customer orientation"), or are too diverse to include all potential words (e.g., "location", for which all potentially available cities and countries would need to be captured). For the symbolic dimension, we have treated "excitement" in the same way as "innovativeness", and we have treated "robustness" in the same way as "ruggedness" because they build on similar measures and are often used interchangeably (e.g., Schreurs, Druart, Proost, & De Witte, 2009; Van Hoye et al., 2013).

In line with recommended approaches in management and psychological research, we decided to use CATA with *single* words as the unit of analysis (Pennebaker, Mehl, & Niederhoffer, 2003; Short et al., 2010). The third step therefore comprised the collection of exhaustive, discrete word lists for each of the theoretical sub-dimensions. We collected related words from the online lexical database WordNet (Miller, 1995; Miller, Beckwith, Fellbaum, Gross, & Miller, 1990) and the website thesaurus.com to identify meaningfully related words and synonyms. This was done with all terms associated with a dimension in the literature (e.g., competence, including adjectives such as "competent, "reliable", "intelligent", and "successful"). The benefits dimension was further complemented by frequently quoted fringe benefits on the employer review website Glassdoor.com[4] (e.g., maternity, childcare, sabbatical). The expert raters

[4] URL: https://www.glassdoor.com/blog/top-20-employee-benefits-perks/ (accessed: 16.04.2017).

then validated the word lists by comparing the identified words with the theoretical definition of each dimension.

Of the 595 words initially generated from the literature, the lexical databases, Glassdoor.com, and words added by the raters, 437 words were retained for further analyses (sincerity = 36 words; innovativeness = 45 words; competence = 37 words; prestige = 32 words; ruggedness = 62 words; cheerfulness = 66 words; pay = 35 words; benefits = 44 words; advancement = 47 words; and teamwork = 27 words). Interrater reliability for the initial in-/out-of-scope rating across all dimensions using Cohen's kappa (Landis & Koch, 1977) ranged from .20 to .47, demonstrating on average a "fair" agreement between the raters (i.e., .30; Landis & Koch, 1977, p. 165). In cases of dissent, final agreement on the inclusion of a word in a category was reached through joint discussion among the raters.

3.1.2.2 Inductively derived dictionary

The deductive approach was afterwards complemented with an inductive approach. On the basis of a randomly generated sub-sample of our Fortune 500 sample, representing 80% of the full sample of organizations and therefore content (i.e., 369 corporations with 8,869 webpages and almost 3.4 million words), we generated a comprehensive list of frequently used words (Short et al., 2010). To do this, we used a functionality of the text analysis program DICTION (Short & Palmer, 2008), which can return a list of so-called "insistence words". Insistence words include all nouns and noun-derived adjectives that occur three or more times in a standard 500-word section.[5] Ultimately, insistence words determine the dependence of a text on often-repeated words. The program returned a list of 5,890 words from our sample texts (including company

[5] As stated in the manual of DICTION version 7.1.3 (http://www.dictionsoftware.com).

names and nonsense words due to writing mistakes) that were again subjected to the rating of experts in the field.

Each of the raters was asked to independently determine whether a word was in or out of scope and to assign it to one of the 10 instrumental or symbolic image dimensions. The coding was again guided by the definitions of the relevant instrumental-symbolic image dimensions, which also formed the basis for the generation of the initial deductively derived word lists.

This process resulted in a list of 201 additional words that previously had not been included in the deductive approach and had the potential to be included. We again measured interrater reliability using Cohen's kappa (Landis & Koch, 1977) for whether a word was considered in or out of scope. Across all dimensions, interrater reliability on average was .52, indicating a "moderate" strength of agreement (Landis & Koch, 1977, p. 165). Finally, the list was refined through an iterative discussion process between the raters in cases where a word was identified by one or two but not all raters, as well as in cases where different dimensions were assigned. In summary, this process resulted in a list of an additional 126 words from the inductive approach.

3.1.3 External validity

To test the external validity and generalize the findings of our measure across multiple settings, we looked at different samples to assess employer image using CATA. Although external validity is typically tested with similar data samples of *other* sources in which the construct of interest is expected, this approach was not viable for the current study. As the webpage sample already comprised the 500 largest U.S. companies, there was nothing comparable available. Therefore, we decided to split the overall sample and consider a sub-sample of it as an equivalent 'external' source to generalize our results.

While the total sample consisted of 461 companies, we used only 369 companies (i.e., 80% of the companies and around 80% of the webpage content; see previous section) for the development of the inductive word list. The remaining, thus far unused sample of n = 92 companies was used to assess external validity. We therefore ensured that our constructs of interest (i.e., instrumental-symbolic employer image dimensions) could be well expected in the chosen sample because of comparable content (Short et al., 2010). It is important to note that the companies and thus webpage text from the sub-sample were explicitly *excluded* from the creation of the inductive dictionary. For the assessment of external validity, we then compared our sub-sample with a randomly selected sample from the remaining companies. To ensure that differences between samples were not influenced by the different sample sizes, we selected a sample of the same size in terms of selected companies (N = 92).

Moreover, we also established a comparison over time to generalize our findings even further and to increase confidence in our measure. In addition to the 2014 webpage sample, we collected, where possible, webpage data from the same companies and webpage categories in the past (i.e., before 2014). We were therefore able to measure and compare image changes over time and used historical data as an additional source to establish external validity. To obtain historical webpage data, we used the "Wayback Machine"[6], a freely accessible digital archive of the World Wide Web created by the Internet Archive, a nonprofit organization based in San Francisco, California. The engine randomly revisits webpages every few weeks or months and archives them. To date, the organization has archived more than 20 years of web history, comprising more than 279 billion webpages (Archive, 2017).

[6] Further information available under URL: https://web.archive.org.

We initially conducted random checks on different companies and realized that the further back in time we went, the less data was available. In order to capture a relatively large webpage text sample and compare companies across different points in time, we decided to focus on the years 2010 and 2012. The historical webpage data was collected between March and June 2015. To access the 2010 and 2012 webpages, we pasted the 2014 URLs (uniform resource locator) of our previously described 2014 sample pages into the search field of the Wayback Machine. As different points in time throughout the year were available, we chose to access the earliest possible date in the respective years. In the best case, the link already existed and we copied the text of both years as we had done for 2014. Alternatively, we faced two possible scenarios: Either the specific page was not available ("page not archived"), or the Wayback Machine returned that the page could not be crawled (i.e., "page cannot displayed due to robots.txt"). In the first case, we started from the historical home page, then navigated through the relevant categories (where available) and finally recorded the text and alternative links. Companies in the latter case had to be excluded due to ("crawl") blockers restricting the archiving of their pages.

The initial search returned available webpage data from 244 of the 461 companies across all three points in time (i.e., 2010, 2012, and 2014). The further back in time we went, the fewer pages were available. In 2010, only 2,420 pages, with a total of around 700,000 words and an average of 2,831 words per company, were available. In 2012, 4,685 pages, with a total of more than 1.1 million words and an average of 4,494 words per company, were available. In a second step, we again excluded companies with less than a total of 1,000 words. This resulted in a final "historical" sample of 163 companies across the years 2010, 2012, and 2014. On average, for these companies and points in time, 13 pages with 4,024 words (year 2010), and 17 pages with

5,676 words (year 2012) were available. For the year 2012, this reflected around 55% of the total words identified in 2014, and for 2010 this reflected around 39% of the total words in 2014.

3.1.4 Dimensionality

Due to the multidimensional nature of the employer image construct, we created multiple dictionaries for the different instrumental and symbolic sub-dimensions (specifically, we created four instrumental image word lists and six symbolic image word lists). In order to assess the dimensionality of employer image, we created a correlation matrix of the different sub-dimensions based on the CATA scores and thus the different dictionaries. Uncorrelated dimensions generally imply that potentially different constructs are being assessed. On the other side, excessively high correlations (i.e., more than .80) imply that it might make sense to merge the sub-dimensions into a single dimension (Short et al., 2010). In a final step, we also aggregated and compared the different sub-dimensions per image category (i.e., instrumental vs. symbolic) to make a higher-level comparison.

3.1.5 Reliability

For the large-scale coding of the company and employment webpage sample with instrumental and symbolic employer image categories, we relied on computer-aided text analysis to ensure reliability. CATA is particularly beneficial, as it minimizes potential errors made by human coders, usually due to insufficient coder training or fatigue, particularly in the case of larger samples (Krippendorff, 2012). CATA therefore provides an efficient and effective method to process large text-based data with high speeds, at low costs, and without any coder bias (Stevenson, 2001).

For this study, we applied the text analysis software “LIWC” (Linguistic Inquiry and Word Count; Pennebaker, Boyd, Jordan, & Blackburn, 2015; Pennebaker, Francis, & Booth,

2001; Tausczik & Pennebaker, 2010). LIWC has been frequently used to examine psychological constructs, such as emotional expression or personality traits, across various psychological domains (e.g., Fast & Funder, 2008; Kahn, Tobin, Massey, & Anderson, 2007). In line with similar programs (e.g., DICTION; Short & Palmer, 2008), LIWC builds on single word counting based on either pre-defined and validated dictionaries and scales or, as in our case, custom-made dictionaries (i.e., word lists; Boyd & Pennebaker, 2015). Our final custom-made dictionary to measure projected employer image dimensions was based on the word lists that were generated in the deductive and inductive steps described in the previous sections of this article.

3.2 Research question 2: Discriminant validity of the employer image dictionary

The next section addresses the question of whether different types and perspectives of the employer image construct are distinct from each other (i.e., firms' projected vs. employees' perceived employer image). Although the two image types are conceptually similar with each other, we expect that there is a difference between the image that companies communicate and the employer image that (potential) employees perceive (Allen, Mahto, & Otondo, 2007). The reasons for this lie in a sequential process, individual differences, and other contextual factors. First, employers define their ideal image based on what they *believe* is attractive to (potential) employees. Second, (potential) employees receive the message and react differently to it based on both individual differences (i.e., person-organization fit), as well as other contextual factors such as the relative image of a competitor (Slaughter & Greguras, 2009; Theurer et al., 2018). As a consequence, the two images are not necessarily in line with each other.

We first describe our sample related to the perceived employer image perspective. Perceived employer image dimensions were based on the employer review website

Glassdoor.com, on which current and past employees can rate their employers. Afterwards, we will explain our approach to test discriminant validity between the two image measures.

3.2.1 Perceived employer image

To assess (potential) employees' perceived employer image views and compare them with firms' projected webpage image, we collected employer rating data from the website Glassdoor.com.[7] Glassdoor is one of the fastest-growing job and recruitment websites, holding a rapidly growing database of millions of company reviews (Glassdoor, 2017a). Current and former employees can anonymously review their (former and current) company, including, but not limited to, experience reports; ratings of senior leadership, culture and values; and salary and other employee benefits (Glassdoor, 2017a).

Although companies can flag and respond to the reviews, they cannot manipulate or remove reviews. Glassdoor ensures that reviews are truthful but does not allow disclosure of confidential, non-public internal information (Glassdoor, 2017b). Each reviewer can only submit one review per employer, per year, per review type (e.g., company review; Glassdoor, 2017c). Reviews are verified by checking, for example, employees' (company) email addresses (Glassdoor, 2017c). Glassdoor therefore promises to have the most authentic, transparent and valuable information about employers (Glassdoor, 2017c).

Comprehensive ratings for the companies in the scope of this study were obtained in July 2015 by downloading employer-based rating data via the Glassdoor API[8] (Application-Programming-Interface). After selecting the companies in scope, the API returns a .csv output file, which includes review scores for all potential matches to a company name until the download date. To ensure that the right company was selected, we compared website URLs as

[7] URL: https://www.glassdoor.com/index.htm (accessed: 07.07.2015).
[8] URL: https://www.glassdoor.com/developer/index.htm (accessed: 07.07.2015).

stated in the reviews by company and our Fortune 500 sample. In cases where subsidiaries were listed as well, we always selected the reviews of the U.S.-based holding company, where the majority of the reviews were usually available. Data were collected in the following categories: Company name, website, industry, overall number of ratings, overall rating, rating description, culture and values rating, senior leadership rating, compensation and benefits rating, career opportunities rating, work-life balance rating, recommend-to-friend rating, CEO name, CEO number of ratings, and CEO-approve and disapprove rating. Not all of the collected categories were used in the subsequent analysis.

From the 461 companies in the scope of our 2014-webpage sample, employer ratings for 446 companies (97%) were obtained. Overall, data for the 446 companies comprised 460,117 individual reviews with an average of 1,032 reviews per company (*SD* = 1,860). The ratings in the above-mentioned categories were based on a 5-point Likert-type scale (1 = "very dissatisfied; 5 = "very satisfied"; Glassdoor, 2017d). Across all companies in scope, the overall average rating was 3.29 (*SD* = .43), while, for example, the average culture and values rating was 3.25 (*SD* = .51) and the senior leadership rating was 2.87 (*SD* = .44)

To analyze the discriminant validity of projected employer webpage image dimensions, we ensured that similar categories (i.e., image dimensions) from the perceived employer image measure (e.g., Glassdoor dimensions) were compared with each other. Unfortunately, not all of the selected instrumental-symbolic categories from the employer webpage image dictionary were available in the Glassdoor ratings. Therefore, we could not compare employer image measures across all of the (projected) instrumental and symbolic dimensions. Specifically, only the following instrumental-like categories from Glassdoor were used to initially assess discriminant validity and make inferences about the two image measures: "Career opportunities rating"

(representing the *advancement* dimension), "compensation and benefits rating" (representing the *pay* and *benefits* dimensions), "work-life balance rating" (representing the *benefits* dimension only), and the "overall rating" (representing all employer instrumental-symbolic employer image dimensions).

We do, however, acknowledge the limitations in the comparison of the respective dimensions and thus the approach used to compare the two measures of image. First, not all of the dimensions are available in the perceived employer image measure. Second, the categories may not be a perfect fit; however, they should give a good comparative indication of employee evaluations in the respective image dimensions.

3.3 Research question 3: Predictive validity of projected and perceived employer image

Content analysis researchers have asserted that testing the predictive validity of measured constructs has often been neglected in content analysis studies (Duriau et al., 2007; Neuendorf, 2002; Short et al., 2010). Therefore, the following section will focus on how the predictive validity of projected employer (webpage) image was established.

3.3.1 Employer image as a predictor of organizational attractiveness

Prior research has shown that employer image predicts various attitudinal and behavioral outcomes among potential and current employees (e.g., organizational attractiveness, application intentions, and job satisfaction; e.g., Baum & Kabst, 2013b; Ito, Brotheridge, & McFarland, 2013; Slaughter & Greguras, 2009). In particularly, organizational attractiveness has been frequently used as a popular outcome variable to test relationships in a pre-employment context (e.g., Uggerslev et al., 2012). We therefore expect that increases in both projected and perceived instrumental-symbolic image dimensions will be associated with increases in organizational attractiveness among prospective and current employees.

We relied on the results of "Best Places to Work" (BPTW) competitions (e.g., Dineen & Allen, 2016) as the dependent variable and measure for organizational attractiveness. BPTW competitions represent a benchmarking of employers by their employees against certain criteria (e.g., working conditions) and can therefore be considered a signal and indicator of organizational attractiveness (Carvalho & Areal, 2015; Dineen & Allen, 2016; Love & Singh, 2011). Qualified employers strategically use them to enhance familiarity through their positive public signaling effect and to highlight certain image attributes (Love & Singh, 2011). Previous studies have also used BPTW competitions, amongst other rankings, as a measure of firm reputation (e.g., Turban & Cable, 2003). In summary, BPTW competitions provide evaluations of companies that demonstrate outstanding employee relations practices and are typically awarded "as a function of employee engagement and company HR practice assessments" (Dineen & Allen, 2016, p. 6).

For this study, we have obtained historical ranking data from one of the most comprehensive BPTW employee evaluations in Corporate America, namely the *100 Best Companies to Work For* (Fortune, 2017). The ranking is established on an annual basis by "Fortune" magazine in cooperation with "Great Place to Work" and is based on the feedback of more than 200,000 randomly selected employees from companies with a minimum of 1,000 employees (Fortune, 2017; Work, 2017). According to Great Place to Work, the survey results can be considered "highly reliable" with a "margin of error of 5% or less" (Work, 2017).

BPTW ranking data was obtained between the years 2010 – 2015[9]. Similar to the approach by Turban and Cable (2003), companies received a score of 1 if they were listed in one of the respective years and 0 if they were not. For each company, organizational attractiveness

[9] Results are freely accessible via URL: http://fortune.com/best-companies/ (accessed: 16.10.2016), or URL: https://www.greatplacetowork.com/best-workplaces/100-best (accessed: 16.10.2016).

was operationalized as the sum of the annual scores between the years 2010 and 2015. Overall, attractiveness scores could range from 0 to 6. On average, companies in the scope of our sample received a score of .3 (*SD* = 1.21). Actual scores ranged from 0 to 6; specifically, 93% (*n* = 429) of companies had a score of 0, .9% (*n* = 4) had a score of 1, .7% (*n* = 3) had a score of 2, .4% (*n* = 2) had a score of 3, .7% (*n* = 3) had a score of 4, 1.7% (*n* = 8) had a score of 5, and 2.6% (*n* = 12) had a score of 6.

3.3.2 Employer image as a predictor of market capitalization

While employer image research has mainly focused on proximal (individual and organizational) outcomes, the strategic human resource management (SHRM) literature has also looked at more distal organizational outcomes of human resource management practices (e.g., operational and financial outcomes; Fulmer, Gerhart, & Scott, 2003; K. Jiang, D. Lepak, J. Hu, & J. Baer, 2012a; Wright & Nishii, 2007). For example, both skill-enhancing and motivation-enhancing HR practices were found to directly and indirectly influence firms' financial outcomes (Jiang et al., 2012a).

Therefore, we introduced an additional outcome variable to test the predictive ability of employer image — namely, firms' total market capitalization (i.e., market value), which is defined as the number of ordinary shares multiplied by their share price (Bontis, Wu, Chen, Cheng, & Hwang, 2005). The link between image and market value is based on the assumption that (initially intangible) HR practices and related outcomes (i.e., favorable employer image and related attraction and motivation of competent and committed people) ultimately have an influence on investors' confidence in the future earnings of a company and, thus, on their investment behavior (Theurer et al., 2018; Ulrich & Smallwood, 2004, 2005). This may be particularly true for employer (webpage) image, which has become increasingly salient to the

public with the proliferation of the Internet. Prior and related studies have found, for example, a positive relationship between corporate reputation and stock performance (e.g., Vergin & Qoronfleh, 1998).

Total market capitalization for the companies in scope was obtained through Thomson Reuters Datastream Professional. Specifically, we used the Thomson Reuters Spreadsheet Link[10] (TRSL), through which large (historical and real-time) financial data can be retrieved via an Excel plugin. Market capitalization was obtained for the years 2014 and 2010, the years from which we collected our main webpage sample. In the year 2014 (2010), from the 330 (142) companies in scope, the companies had an average market capitalization of 45.5 billion USD (*SD* = 68.7) (36.5 billion USD; *SD* = 51.7).

3.3.3 Employer image as a predictor of firm performance

In addition to testing market capitalization only as a more distal outcome variable, we also tested the relationship between image and firm performance. Prior research has shown that motivation-enhancing HR practices both directly and indirectly influence financial firm outcomes (K. Jiang, D. P. Lepak, J. Hu, & J. C. Baer, 2012b). Motivation-enhancing practices comprise, for example, compensation, incentives, and rewards, which are also commonly highlighted in employer image projections. To measure firm performance, we calculated Tobin's *q*, which expresses the value added by management and is calculated by dividing a firm's market value by its replacement value (i.e., assets; Huselid, 1995). A value greater than 1 indicates that a firm's market value is greater than its book value and thus indicates that a firm's market value reflects some unmeasured company assets (e.g., employer image).

[10] Further information available under URL: http://trsl.thomsonreuters.com/.

Both market capitalization and asset value were again obtained through Thomson Reuters Datastream professional. In 2014 (2010), Tobin's *q* value was 1.24 on average (*SD* = 1.04) across a sample of 330 companies (1.36 on average, *SD* = 1.19, across a sample of 142 companies).

4 Analysis and results

On the basis of the three research questions to establish the construct validity of projected employer webpage image, the following sections will describe the results of the related analyses.

4.1 Research question 1: Establishing construct validity

First, we start by describing the outcomes of establishing the content validity and external validity of the employer webpage image dictionary.

4.1.1 Content validity

The final dictionary from both the deductive and inductive approaches consisted of 557 words (sincerity = 43 words; innovativeness = 57 words; competence = 57 words; prestige = 48 words; ruggedness = 66 words; cheerfulness = 69 words; pay = 39 words; benefits = 61 words; advancement = 80 words; and teamwork = 37 words). The combined word lists for every instrumental and symbolic image dimension served as the basis and input for the CATA dictionary. Table III-2 presents the detailed word lists for each of the selected employer image attributes.

Table III-2: Word lists for projected instrumental and symbolic employer image dimensions

Employer Image Attribute/ Dimension	Content Analysis Word Lists with Expert Validation
Sincerity (symbolic)	aboveboard, anti-corruption, anticorruption, artless, authentic, bona-fide, dependable, disciplined, down-to-earth, earnest, earnestness, faithful, forthright, frank, genuine, honest, honestly, honesty, natural, no-nonsense, outspoken, plain, pretensionless, real, righteous, serious, serious-mindedness, seriousness, sincere, sincerity, transparency, transparent, true, true-blue, trustworthy, truthful, unaffected, unassumingness, undesigning, unfeigned, unpretentious, up-front, wholehearted
Innovativeness (symbolic)	advanced, all-new, audacious, boldness, breakthrough, conception, contemporary, creation, cutting-edge, dare, daring, enlivened, entrepreneurial, entrepreneurship, excited, excitement, exciting, excogitation, forward-looking, gamy, groundbreaking, hardihood, ingenious, ingenuity, innovate, innovation, innovations, innovator, innovators, inspirit, invention, inventions, inventive, leading-edge, mettlesome, modern, new, newfangled, next-generation, origination, originative, reinventing, spirit, spunky, state-of-the-art, stimulate, transform, transformation, transforming, untested, untried, venturesome, venturous, vernal, young, youthful, zippy
Competence (symbolic)	accurately, achiever, adapted, adequate, analytical, appropriate, capable, certificates, certifications, clever, competence, competencies, competency, competency-based, competent, decent, efficient, endowed, experiences, expertise, functional, high-efficiency, high-performance, high-performing, high-quality, information-driven, intelligence, intelligent, knowing, level-headed, levelheaded, pertinent, polished, practiced, proficient, qualified, quality, reliability, reliable, satisfactory, savvy, schooled, seasoned, secure, skilled, skills-based, skillset, specialists, specialized, studied, succeeder, success, successes, successful, suitable, talented, well-informed
Prestige (symbolic)	ace, award-winning, awarded, awardees, awards, benchmark, celebrated, cool, cultivated, distinguished, doctor, elegance, eminent, esteemed, exalted, famed, great, honorable, honored, illustrious, important, imposing, impressive, invaluable, leading, mundaneness, mundanity, notable, premium, prestige, prestigious, prominent, refinement, renowned, reputable, reputation, respected, respectful, respecting, sophisticated, three-star, top-ranked, valued, winner, winners, world-class, worldliness, worldly
Ruggedness (symbolic)	able-bodied, athletic, athletics, boisterous, brawny, built, bully, full-bodied, goon, hale, hard, hardiness, hardness, hardy, heavy, hefty, hoodlum, hooligan, huskiness, husky, impregnable, inviolable, lustiness, lusty, masculine, muscular, potent, powerful, powerhouse, prosperous, punk, racy, resilient, rigorous, roaring, robust, robustious, robustness, robustuous, rough, roughneck, rowdy, ruffian, ruffianly, rugged, ruggedness, sinewy, snappy, solid, stiff, stout, strong, strong-armer, sturdy, substantial, thug, tough, toughened, toughie, toughness, unattackable, vigorous, vital, yob, yobbo, yobo

Cheerfulness (symbolic)	affable, affectionate, amiable, animated, animation, attentive, beneficial, blitheness, bright, buoyancy, buoyant, cheer, cheerful, cheerfulness, cheery, chipper, chirpy, chummy, comfort, cordial, delight, effervescent, enthusiastic, exuberance, favorable, fraternal, friendly, gaiety, geniality, gladness, glee, good-natured, helpful, hilarity, jauntiness, jaunty, jocundity, jolly, joy, joyful, joyousness, lighthearted, liveliness, lively, loving, loyal, merriment, merry, mirth, neighborly, optimism, optimistic, original, peaceful, peppy, perky, philanthropic, pleasant, rosy, sanguine, smooth, socially, sunniness, sunny, sunshine, sympathetic, upbeat, welcoming, well-disposed
Pay (instrumental)	allowance, bacon, bread, co-pay, commission, compensation, defrayal, defrayment, earnings, emoluments, fee, honorarium, income, indemnity, meed, pay, paycheck, paychecks, payment, perquisite, pittance, proceeds, recompensation, recompense, redress, reimbursement, remuneration, requital, return, reward, salaried, salary, settlement, stipend, stipendium, take-home, takings, wage, wages
Benefits (instrumental)	401, 401k, acupuncture, aerobics, aid, annuities, asset, assistance, beneficiary, benefit, benefit-eligible, benefits, betterment, bonus, book, canteen, childcare, classes, co-insurance, company-paid, courses, daycare, dental, discount, donation, ergonomic, ergonomics, extras, favor, gravy, gym, healthcare, holidays, insurance, loan, massage, massages, maternity, medical, medicare, parental, part-time, paternity, pension, perk, profitsharing, PTO, retirement, rewarding, sabbatical, ski, travel, vacation, volunteer, welfare, wellness, work-life, worklife, worth, yayday, yoga
Advancement (instrumental)	acceleration, achievable, achievers, acquire, advance, advancement, amelioration, betterment, boost, career, careers, careersteps, chance, coaching, coursework, develop, development, educate, education, elevation, empower, empowered, empowering, empowerment, establish, evolution, evolve, expand, expansion, flourish, forward, foster, furtherance, future, gain, grow, growth, guidance, headway, high-potential, improvement, increase, internship, internships, learning, manager-in-training, maturate, maturation, mentor, mentored, mentoring,, mentorplace, mentorship, modernise, modernize, ontogenesis, ontogeny, opportunities, opportunity, preferment, prepare, professional-development, progress, progression, promote, promote-from-within, promotes, promoting, promotion, raise, ripen, rise, succession, successors, train, trainee,
Teamwork (instrumental)	alliance, assistance, associate, co-worker, co-workers, coalition, cohort, collaborating, collaborative, communities, community, community-based, companion, confederacy, confederation, cowork, coworker, coworkers, cross-collaborate, federation, harmony, intergenerational, lineup, partisanship, partnered, partnering, partnership, symbiosis, synergism, synergy, team, teams, teamwork, teamworks, union, unit, unity

Note. Deductively derived word lists were based on theoretical definitions of the employer image dimensions in the literature, as well as synonym dictionaries (i.e., WordNet, thesaurus.com). Inductively derived word lists were based on commonly used words from suitable text. The final combined word lists were subjected to expert assessment and rating. Of the 790 words initially generated by the deductive and inductive approaches, 557 words were selected by the raters and retained for subsequent analyses.

4.1.2 External validity

On the basis of the word lists presented above, for each webpage and instrumental-symbolic dimension, we were able to calculate relative occurrence scores via CATA using LIWC software. The scores were then aggregated on a company level and divided by the overall number of words per company. We standardized the scores by the number of words in the webpages per company to control for discrepancies in text length and make the results comparable across all companies in the 2014 Fortune 500 sample (Short et al., 2010).

Tables III-3 and III-4 depict comparisons of the CATA results between the 2014 main sample (N = 369) and the 2014 sub-sample (N = 92; used as equivalent to adequate 'external' sources due to non-availability of comparable webpage text), as well as the randomly chosen sub-set of companies from our main sample to control for sample size (n = 92). First, we conducted one-sample t tests (compared to a test statistic of zero) for each instrumental-symbolic image dimension as well as the aggregated instrumental-symbolic scores, to assess the presence of language in line with firms' projected employer image attributes in company and employment webpages. While a zero result would have indicated that language in line with the chosen employer image attributes was not present, the results clearly showed that all of the image dimensions were present and significant across all samples, indicating that the constructs could also be generally detected and measured in 'external', comparable samples. In addition, the same test was conducted with the webpage samples across different points in time (i.e., 2010 and 2012 webpage samples of the same companies). Again, the results indicated the presence of instrumental and symbolic employer image dimensions, both in the main sample and in the comparable (external) sample (see Table III-5).

Table III-3: Evidence of language representing projected employer image dimensions in company and employment webpages (2014 samples)

Employer Image Dimension	2014 Main Sample Full (*N* = 369)				2014 Sub-Sample (*N* = 92)			
	N	*M*	*SD*	*t* Test	*N*	*M*	*SD*	*t* Test
Sincerity	369	.14	.13	21.58**	92	.16	.12	12.53**
Innovativeness	369	.36	.17	40.82**	92	.34	.18	18.79**
Competence	369	.46	.19	47.59**	92	.47	.17	27.27**
Prestige	369	.30	.15	39.43**	92	.31	.16	18.78**
Ruggedness	369	.15	.08	33.33**	92	.15	.10	15.26**
Cheerfulness	369	.07	.05	23.51**	92	.08	.09	8.29**
Total symbolic	369	1.48	.38	75.44**	92	1.52	.37	39.66**
Pay	369	.17	.15	21.74**	92	.15	.13	10.62**
Benefits	369	.67	.48	26.97**	92	.66	.58	10.86**
Advancement	369	1.69	.65	50.09**	92	1.54	.61	24.31**
Teamwork	369	.79	.35	42.94**	92	.75	.44	16.55**
Total instrumental	369	3.31	1.05	60.88**	92	3.09	1.12	26.46**

Note. The results of this table were based on the computer-aided text analysis using the word lists for employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2. A one-sample *t* test was conducted compared to a test statistic of zero. The sub-sample was used as equivalent to an external data source due to non-availability of other comparable data of this size. *$p < .05$. **$p < .01$.

Table III-4: Evidence of language representing projected employer image dimensions in company and employment webpages (2014 samples)

Employer Image Dimension	2014 Main Sample Reduced (*n* = 92)				2014 Sub-Sample (*N* = 92)			
	N	*M*	*SD*	*t* Test	*N*	*M*	*SD*	*t* Test
Sincerity	92	.14	.10	12.63**	92	.16	.12	12.53**
Innovativeness	92	.36	.18	18.64**	92	.34	.18	18.79**
Competence	92	.50	.23	20.69**	92	.47	.17	27.27**
Prestige	92	.31	.20	14.97**	92	.31	.16	18.78**
Ruggedness	92	.15	.08	17.38**	92	.15	.10	15.26**
Cheerfulness	92	.07	.06	10.71**	92	.08	.09	8.29**
Total symbolic	92	1.52	.44	33.06**	92	1.52	.37	39.66**
Pay	92	.18	.16	10.72**	92	.15	.13	10.62**
Benefits	92	.77	.62	11.87**	92	.66	.58	10.86**
Advancement	92	1.71	.66	24.99**	92	1.54	.61	24.31**
Teamwork	92	.73	.36	19.24**	92	.75	.44	16.55**
Total instrumental	92	3.39	1.22	26.63**	92	3.09	1.12	26.46**

Note. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2. A one-sample *t* test was conducted compared to a test statistic of zero. The sub-sample was used as equivalent to an external data source due to non-availability of other comparable data of this size. *$p < .05$. **$p < .01$.

Table III-5: Evidence of language representing projected employer image dimensions in company and employment webpages (2010 and 2012 Samples)

Employer Image Dimension	2010 Sample (*N* = 163)				2012 Sample (*N* = 163)			
	N	*M*	*SD*	*t* Test	*N*	*M*	*SD*	*t* Test
Sincerity	163	.15	.18	10.68**	163	.15	.16	12.05**
Innovativeness	163	.37	.26	18.29**	163	.36	.21	21.47**
Competence	163	.46	.20	29.14**	163	.46	.18	32.13**
Prestige	163	.32	.17	23.93**	163	.32	.15	26.84**
Ruggedness	163	.15	.13	15.08**	163	.15	.13	14.53**
Cheerfulness	163	.08	.11	8.96**	163	.07	.10	9.08**
Total symbolic	163	1.52	.50	38.65**	163	1.51	.45	43.08**
Pay	163	.22	.23	12.55**	163	.21	.20	12.98**
Benefits	163	.82	.64	16.35**	163	.77	.59	16.66**
Advancement	163	1.58	.72	27.76**	163	1.70	.74	29.38**
Teamwork	163	.75	.42	22.62**	163	.73	.35	26.53**
Total instrumental	163	3.37	1.19	36.06**	163	3.40	1.14	38.24**

Note. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2. A one-sample *t* test was conducted compared to a test statistic of zero. The sub-sample was used as equivalent to an external data source due to non-availability of other comparable data of this size. *$p < .05$. **$p < .01$.

We further analyzed the mean differences between the samples by conducting one-way analyses of variance (ANOVA). First, we conducted a one-way ANOVA between the reduced 2014 main sample ($n = 92$) and the 2014 sub-sample ($N = 92$; equivalent to appropriate external data source). As presented in Table III-6, for all image dimensions there were no statistically significant differences in mean values between the samples (i.e., main sample and other appropriate samples), indicating that language consistent with instrumental and symbolic employer image dimensions was consistently communicated and measured in different samples. The results therefore prove that the dictionary is also generally applicable to other populations.

Table III-6: ANOVA comparisons of 2014 reduced main sample with 2014 sub-sample on projected employer image dimensions

Employer Image Dimension		Sum of Squares	*df*	Mean Square	*F* Test	*p*
Sincerity	Between Groups	.02	1	.02	1.78	.18
	Within Groups	2.31	182	.01		
	Total	2.33	183			
Innovativeness	Between Groups	.01	1	.01	.28	.60
	Within Groups	5.88	182	.03		
	Total	5.89	183			
Competence	Between Groups	.02	1	.02	.51	.47
	Within Groups	7.35	182	.04		
	Total	7.37	183			
Prestige	Between Groups	.00	1	.00	.00	.99
	Within Groups	5.84	182	.03		
	Total	5.84	183			
Ruggedness	Between Groups	.00	1	.00	.08	.78
	Within Groups	1.49	182	.01		
	Total	1.49	183			
Cheerfulness	Between Groups	.00	1	.00	.66	.42
	Within Groups	1.02	182	.01		
	Total	1.03	183			
Total symbolic	Between Groups	.00	1	.00	.00	1.00
	Within Groups	29.85	182	.16		
	Total	29.85	183			
Pay	Between Groups	.06	1	.06	2.71	.10
	Within Groups	.00	182	.02		
	Total	.06	183			
Benefits	Between Groups	.56	1	.56	1.55	.21
	Within Groups	65.34	182	.36		
	Total	65.90	183			
Advancement	Between Groups	1.46	1	1.46	3.64	.06
	Within Groups	72.80	182	.40		
	Total	74.26	183			
Teamwork	Between Groups	.03	1	.03	.16	.69
	Within Groups	29.31	182	.16		
	Total	29.33	183			
Total instrumental	Between Groups	4.15	1	4.15	3.02	.08
	Within Groups	249.87	182	1.37		
	Total	254.02	183			

Note. $n = 92$. ANOVA = analysis of variance. df = degrees of freedom. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2. $*p < .05$. $**p < .01$.

Moreover, to further generalize our findings and assess external validity in terms of temporal validity, we conducted additional ANOVAs by comparing samples over time (i.e., 2010, 2012, and 2014). We started with a comparison between the years 2010 and 2014. Table III-7 depicts the results of a one-way ANOVA between the two samples and thus webpage text from both years (N = 163). Generally, most of the instrumental-symbolic image dimensions showed no significant differences in mean values between the years, with the exception of two instrumental dimensions. The pay image dimension in 2010 had an average value of .22 (SD = .23), while the pay image dimension in 2014 had an average value of .17 (SD = .15). The time effect was therefore significant for the pay dimension (F(1, 324) = 5.50, p = .02). Furthermore, the benefits dimension also showed significant differences in mean values between the 2010 sample (M = .82, SD = .64) and the 2014 sample (M = .69, SD = .47), indicating a significant effect of time (F(1, 324) = 4.42, p = .04). From an overall perspective, neither the aggregated instrumental dimension values, nor the aggregated symbolic dimension values showed statistically significant differences in mean values over time.

Table III-7: ANOVA comparisons of samples over time on projected image dimensions (2014 sample vs. 2010 sample)

Employer Image Dimension		Sum of Squares	*df*	Mean Square	*F* Test	*p*
Sincerity	Between Groups	.00	1	.00	.12	.73
	Within Groups	7.48	324	.02		
	Total	7.48	325			
Innovativeness	Between Groups	.02	1	.02	.47	.49
	Within Groups	14.64	324	.05		
	Total	14.66	325			
Competence	Between Groups	.03	1	.03	.87	.35
	Within Groups	9.44	324	.03		
	Total	9.47	325			
Prestige	Between Groups	0.04	1	.04	1.83	.18
	Within Groups	6.55	324	.02		
	Total	6.58	325			
Ruggedness	Between Groups	.01	1	.01	1.21	.27
	Within Groups	3.61	324	.01		
	Total	3.62	325			
Cheerfulness	Between Groups	.00	1	.00	.07	.79
	Within Groups	2.77	324	.01		
	Total	2.77	325			
Total symbolic	Between Groups	.34	1	.34	2.00	.16
	Within Groups	55.38	324	.17		
	Total	55.72	325			
Pay	Between Groups	.21	1	.21	5.50*	.02
	Within Groups	12.18	324	.04		
	Total	12.39	325			
Benefits	Between Groups	1.38	1	1.38	4.42*	.04
	Within Groups	101.38	324	.31		
	Total	102.77	325			
Advancement	Between Groups	.04	1	.04	.10	.75
	Within Groups	136.04	324	.42		
	Total	136.08	325			
Teamwork	Between Groups	.00	1	.00	.02	.90
	Within Groups	45.13	324	.14		
	Total	45.14	325			
Total instrumental	Between Groups	1.90	1	1.90	1.60	.21
	Within Groups	386.10	324	1.19		
	Total	388.00	325			

Note. $n = 163$. ANOVA = analysis of variance. df = degrees of freedom. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2. $*p < .05$. $**p < .01$.

Similar results were found for the comparisons between the years 2010 and 2012, as well as between the years 2012 and 2014 (see Tables III-8 and III-9). However, in neither of the other comparisons over time did any of the instrumental-symbolic dimensions differ significantly from each other in terms of their mean values. These results indicate two important findings. First, companies do not seem to frequently change their projected employer webpage; second, few (if any) dimensions are subject to changes over time. On the one hand, these findings are in line with propositions that companies need to have an enduring and consistent image to increase credibility and lower perceived risk among (prospective) employees (Wilden et al., 2010). On the other hand, the findings imply that companies slowly but selectively adjust their image over time (i.e., specific dimensions such as pay and benefits). Especially as labor market competition is becoming more intense, employers are under pressure to maintain a sufficiently unique and attractive value proposition.

Table III-8: ANOVA comparisons of samples over time on projected image dimensions (2010 sample vs. 2012 sample)

Employer Image Dimension		Sum of Squares	*df*	Mean Square	*F* Test	*p*
Sincerity	Between Groups	.00	1	.00	.02	.89
	Within Groups	9.14	324	.03		
	Total	9.14	325			
Innovativeness	Between Groups	.01	1	.01	.20	.65
	Within Groups	17.93	324	.06		
	Total	17.95	325			
Competence	Between Groups	.00	1	.00	.00	.96
	Within Groups	11.94	324	.04		
	Total	11.94	325			
Prestige	Between Groups	.00	1	.00	.01	.90
	Within Groups	8.32	324	.03		
	Total	8.32	325			
Ruggedness	Between Groups	.00	1	.00	.01	.92
	Within Groups	5.63	324	.02		
	Total	5.63	325			
Cheerfulness	Between Groups	.00	1	.00	.13	.72
	Within Groups	3.64	324	.01		
	Total	3.64	325			
Total symbolic	Between Groups	.01	1	.01	.04	.84
	Within Groups	73.24	324	0.23		
	Total	73.25	325			
Pay	Between Groups	.03	1	.03	.62	.43
	Within Groups	15.04	324	.05		
	Total	15.07	325			
Benefits	Between Groups	.20	1	.20	.53	.47
	Within Groups	122.42	324	.38		
	Total	122.62	325			
Advancement	Between Groups	1.16	1	1.16	2.16	.14
	Within Groups	173.06	324	.53		
	Total	174.22	325			
Teamwork	Between Groups	.02	1	.02	.15	.70
	Within Groups	49.42	324	.15		
	Total	49.44	325			
Total instrumental	Between Groups	.09	1	.09	.07	.79
	Within Groups	440.08	324	1.36		
	Total	440.17	325			

Note. $n = 163$. ANOVA = analysis of variance. df = degrees of freedom. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2. $*p < .05$. $**p < .01$.

Table III-9: ANOVA comparisons of samples over time on projected image dimensions (2012 sample vs. 2014 sample)

Employer Image Dimension		Sum of Squares	*df*	Mean Square	*F* Test	*p*
Sincerity	Between Groups	.00	1	.00	.04	.83
	Within Groups	6.54	324	.02		
	Total	6.54	325			
Innovativeness	Between Groups	.00	1	.00	.05	.83
	Within Groups	11.23	324	.03		
	Total	11.23	325			
Competence	Between Groups	.02	1	.02	.87	.35
	Within Groups	8.25	324	.03		
	Total	8.27	325			
Prestige	Between Groups	.04	1	.04	2.56	.11
	Within Groups	5.65	324	.02		
	Total	5.70	325			
Ruggedness	Between Groups	.02	1	.02	1.39	.24
	Within Groups	3.87	324	.01		
	Total	3.89	325			
Cheerfulness	Between Groups	.00	1	.00	.02	.88
	Within Groups	2.51	324	.01		
	Total	2.51	325			
Total symbolic	Between Groups	.24	1	.24	1.63	.20
	Within Groups	46.95	324	.14		
	Total	47.18	325			
Pay	Between Groups	.08	1	.08	2.54	.11
	Within Groups	10.37	324	.03		
	Total	10.46	325			
Benefits	Between Groups	.53	1	.53	1.88	.17
	Within Groups	91.46	324	.28		
	Total	91.99	325			
Advancement	Between Groups	.76	1	.76	1.78	.18
	Within Groups	138.82	324	.43		
	Total	139.58	325			
Teamwork	Between Groups	.04	1	.04	.36	.55
	Within Groups	36.22	324	.11		
	Total	36.26	325			
Total instrumental	Between Groups	2.84	1	2.84	2.52	.11
	Within Groups	364.65	324	1.13		
	Total	367.49	325			

Note. $n = 163$. ANOVA = analysis of variance. df = degrees of freedom. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2. $*p < .05$. $**p < .01$.

4.1.3 Dimensionality

In line with recommended procedures to assess construct dimensionality (e.g., Short et al., 2010), we examined the correlation matrix of the standardized LIWC scores of each instrumental and symbolic employer image dimension. Table III-10 depicts the bivariate correlations of the instrumental-symbolic LIWC scores for the 2014 main sample (N = 369), the 2014 main sample reduced (N = 92), and the 2010 sample (N = 163).

Overall, not all attributes were significantly and positively correlated with each other within each of the instrumental and symbolic dimensions. Most of the dimensions actually showed only (very) weak correlations. For example, while in the 2014 main sample ruggedness was positively correlated with sincerity (r = .11, p < .05), competence (r = .26, p < .01), and prestige (r = .14, p < .01), sincerity was negatively correlated with innovativeness (r = -.16, p < .01), prestige (r = -.13, p < .01), and cheerfulness (r = -.12, p < .01). Similar results of, for example, partly negative correlations within the instrumental and/or symbolic category were also found in prior research (Lievens, 2007; Lievens & Highhouse, 2003; Lievens et al., 2005).

Table III-10: Intercorrelations of projected employer image dimensions to assess dimensionality

	Employer Image Dimension	1	2	3	4	5	6	7	8	9	10
2014 Main Sample: N = 369											
Instrumental	1. Sincerity	-									
	2. Innovativeness	-.16**	-								
	3. Competence	.02	.02	-							
	4. Prestige	-.13*	.16**	.28**	-						
	5. Ruggedness	.11*	.08	.26**	.14**	-					
	6. Cheerfulness	-.12*	.02	.01	.10*	.04	-				
Symbolic	7. Pay	-.10	-.09	.01	-.02	-.04	-.04	-			
	8. Benefits	-.13*	-.09	.05	.08	.02	.08	.60**	-		
	9. Advancement	-.14**	.20**	.38**	.25**	.16**	.10	.04	.12*	-	
	10. Teamwork	-.15**	.01	-.03	.04	-.01	.18**	.04	.25**	.10*	-

	Employer Image Dimension	1	2	3	4	5	6	7	8	9	10
2014 Main Sample Reduced: N = 92											
Instrumental	1. Sincerity	-									
	2. Innovativeness	-.08	-								
	3. Competence	-.10	.19	-							
	4. Prestige	-.06	.11	.02	-						
	5. Ruggedness	.17	-.09	.02	.05	-					
	6. Cheerfulness	-.08	.08	.13	-.05	.22*	-				
Symbolic	7. Pay	-.08	-.19	.00	-.04	-.12	-.03	-			
	8. Benefits	-.21*	.07	-.09	.28**	-.01	-.08	.40**	-		
	9. Advancement	-.04	.41**	.29**	.22*	.12	-.04	-.20	.16	-	
	10. Teamwork	.01	.03	-.16	-.04	.21*	-.06	-.05	.19	.22*	-

	Employer Image Dimension	1	2	3	4	5	6	7	8	9	10
2010 Sample: N = 163											
Instrumental	1. Sincerity	-									
	2. Innovativeness	-.10	-								
	3. Competence	.13	.18*	-							
	4. Prestige	-.06	.14	.16*	-						
	5. Ruggedness	.07	-.03	.16*	.22**	-					
	6. Cheerfulness	.03	.05	-.08	-.03	.02	-				
Symbolic	7. Pay	.03	-.15	-.04	-.05	-.01	.11	-			
	8. Benefits	-.11	-.18*	.01	-.01	.01	-.01	.57**	-		
	9. Advancement	.02	.19*	.20*	.05	.06	.05	.06	.09	-	
	10. Teamwork	-.10	-.01	-.09	-.06	-.01	.01	.01	.11	-.12	-

Note. The results of these tables were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2.
*p < .05. **p < .01.

For the instrumental image, all dimensions were significantly correlated with each other, with the exception of pay and advancement (r = .04, p < n.s.) and pay and teamwork (r = .04, p < n.s.). Across all three samples, pay was always most strongly correlated with benefits. This was expected, as pay and benefits are often considered together, with some prior studies treating the two attributes as one dimension (e.g., Lievens, 2007). As the correlations in the three samples ranged between .40 and .60 (i.e., moderate to strong correlation), we did not see a need to collapse the two dimensions into a single "pay and benefits" measure. Furthermore, while most of the instrumental dimensions did not significantly correlate with symbolic dimensions, advancement was significantly correlated with most of the symbolic dimensions (see Table III-10).

In summary, the results of the dimensionality analysis are somewhat ambiguous. First, the correlations do not provide evidence for employer image as a multidimensional construct in terms of instrumental and symbolic image dimensions, as previously outlined in this article. If employer image were in fact a multidimensional construct in terms of instrumental and symbolic image dimensions, then all respective sub-dimensions would be related to each other, which was not found to be the case. On the basis of these results, therefore, we cannot distinguish between instrumental and symbolic employer image (webpage) dimensions.

Second, however, the results are explainable. To date, there does not exist a consistent view about the definitive dimensions of the employer image construct and sub-dimensions (Theurer et al., 2018). Employer image should therefore be considered an "amalgamation of mental representations and associations regarding an organization as an employer […] made up of *specific* attributes that an individual associates with the organization as a place to work" (Lievens & Slaughter, 2016, p. 411). As these attributes can vary from case to case, one should

contemplate the specific image attributes only, depending on where companies and employees place their focus. Therefore, in the context of this article, the instrumental-symbolic framework may only be used to conceptually cluster attributes into higher-level dimensions to indicate affiliation with each other.

To sum up, the preceding section has illustrated the possibility of establishing a reliable and efficient method to measure firms' projected employer webpage image based on the textual content of company and employment webpages. Although the initial conceptualization of image into instrumental and symbolic image dimensions did not hold, research question 1 can be answered 'yes', as it was possible to efficiently measure dimensions of webpage employer image using CATA.

4.2 Research question 2: Discriminant validity of the dictionary

To test the discriminant validity of the webpage employer image dictionary (i.e., projected employer image dimensions), we again computed and analyzed the intercorrelations of the CATA scores (i.e., lexical occurrence of employer image dimensions) with selected dimensions of perceived employer image as rated on Glassdoor.com (i.e., compensation and benefits rating, work-life balance rating, career opportunities rating, and overall rating). By doing so, we were able to test whether the two image types that we expected to be distinct from each other were in fact two different constructs. Thus, discriminant validity existed if the relationships between the two measures were low.

Since the perceived image categories (i.e., Glassdoor rating dimensions) did not fully reflect all the image dimensions that were captured through the webpage image dictionary, we only tested discriminant validity for a reduced set of mainly instrumental employer image dimensions (i.e., career opportunities rating = advancement; compensation and benefits rating =

pay and benefits; work-life balance rating = benefits; and overall employer rating = total instrumental and symbolic image). Although the Glassdoor categories did not provide a full fit to all of the respective instrumental-symbolic dimensions, we considered them as an indicative equivalent for some of the respective webpage image categories.

The results of the correlation analyses are summarized in Tables III-11 and III-12. Overall, the correlation analysis evidenced that the two measures were not related to each other (i.e., discriminant validity could be established). For example, in the 2014 data, both pay (r = -.01, n.s.) and benefits (r = -.07, n.s.) were only very weakly and negatively correlated to the combined compensation and benefits rating. Similar results were found between benefits and the work-life balance rating (r = -.03, n.s.), as well as between advancement and the career opportunities rating (r = .11, p < .05) that showed a weak relationship too. Also from an overall instrumental-symbolic perspective, both the combined symbolic dimensions scores (r = -.11, p < .05), and the combined instrumental scores (r = -.05, n.s.) only showed (very) weak and negative relationships with the overall Glassdoor rating. This was confirmed by similar results when using the 2010 sample.

Table III-11: Correlations between projected employer webpage image and perceived employer image dimensions to assess discriminant validity (2014 sample)

Projected Employer Image Dimensions	Perceived Image Dimensions (i.e., Glassdoor Rating Categories)			
	Compensation and Benefits Rating (= pay and benefits)	Work-Life Balance Rating (= benefits)	Career Opportunities Rating (= advancement)	Overall Rating (= total instrumental and symbolic image)
2014 Main Sample: *N* = 361				
Sincerity	-.04	.01	-.13*	-.09
Innovativeness	.08	.04	.09	.10*
Competence	-.06	-.13*	-.10	-.16**
Prestige	-.03	-.09	-.05	-.09
Ruggedness	-.01	-.09	-.02	-.05
Cheerfulness	-.10	-.01	-.08	-.03
Total symbolic	-.03	-.10	-.09	-.11*
Pay	-.01	-.01	-.02	-.03
Benefits	-.07	-.03	-.01	-.07
Advancement	.02	.05	.11*	.02
Teamwork	-.05	-.03	.01	-.07
Total instrumental	-.04	.01	.06	-.05

Note. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2.
*$p < .05$. **$p < .01$.

Table III-12: Correlations between projected employer webpage image and perceived employer image dimensions to assess discriminant validity (2010 sample)

Projected Employer Image Dimensions	Perceived Image Dimensions (i.e., Glassdoor Rating Categories)			
	Compensation and Benefits Rating (= pay and benefits)	Work-Life Balance Rating (= benefits)	Career Opportunities Rating (= advancement)	Overall Rating (= total instrumental and symbolic image)
2010 Sample: n = 158				
Sincerity	.10	.11	-.01	.06
Innovativeness	.09	-.04	-.03	-.03
Competence	.02	-.11	-.04	-.12
Prestige	-.02	-.11	-.06	-.18*
Ruggedness	.01	-.09	-.04	-.12
Cheerfulness	-.07	.02	-.08	-.09
Total symbolic	.07	-.08	-.08	-.15
Pay	.03	-.06	-.04	.01
Benefits	-.04	.01	.05	.03
Advancement	.09	.04	.11	.08
Teamwork	-.02	.05	.07	.03
Total instrumental	.03	.04	.11	.08

Note. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2.
*p < .05. **p < .01.

Interestingly, and contrary to our expectations, in the 2014 sample we found even weak significant negative correlations between sincerity and career opportunities rating (r = -.13, p < .05), and between competence and work life balance rating (r = -.13, p < .05). Furthermore, competence was also significantly and negatively correlated with the overall rating (r = -.16, p < .01), indicating that projected competence and other symbolic images on employers' webpages leads to a downgrade of the perceived employer image. In contrast, in the 2010 webpage sample, only prestige was significantly correlated with the overall (employer) rating (r = -.18, p < .05).

As a summary of the previous section and thus research question 2, the results showed that the two image types (i.e., projected employer webpage image vs. perceived employer image)

discriminated from each other. On the basis of the selected image sub-dimensions and their respective operationalization, we concluded that the two image types showed different patterns, which indicated that we were looking at two distinct constructs.

4.3 Research question 3: Predictive validity of projected and perceived employer image

The last part of the results section addresses predictive capabilities of webpage employer image dimensions. In the first section, the relationship between dimensions of employer image and organizational attractiveness is evaluated. The second part focuses on more distal outcomes (i.e., financial outcomes) and thus the ability of employer image to predict market value and firm performance.

4.3.1 Organizational attractiveness as an outcome variable

Extant employer image research has frequently investigated organizational attractiveness as an outcome of employer image attributes and has found positive relationships between employer image attributes and organizational attractiveness (e.g., Lievens et al., 2005; Slaughter & Greguras, 2009; Uggerslev et al., 2012; Van Hoye & Saks, 2011). We used hierarchical multiple linear regression to test the predictive ability of projected employer webpage image dimensions and perceived image dimensions as expressed through BPTW rankings on organizational attraction. The model was tested using CATA results from both the main company webpage sample of the year 2014 (N = 369) and the sample of the year 2010 (N = 163) as a predictor of projected employer image. Due to the non-availability of data related to perceived image and control variables (i.e., total assets) for some companies, the final webpage samples had to be reduced to n = 330 (year 2014) and n = 142 (year 2010) companies. Means, standard deviations and Pearson correlations (two-tailed) are described in Tables III-13 and III-14.

Table III-13: Intercorrelations of variables in hierarchical multiple linear regression analysis (2014 projected webpage image sample)

Employer Image Dimension	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Total assets	93,545,738	316,007,777	-																
2. Sincerity	.14	.13	-.07	-															
3. Innovativeness	.36	.17	-.03	-.16**	-														
4. Competence	.46	.19	-.03	.00	.03	-													
5. Prestige	.30	.15	.00	-.13*	.15**	.28**	-												
6. Ruggedness	.15	.08	.02	.14*	.05	.26**	.11*	-											
7. Cheerfulness	.07	.05	-.06	-.14*	.05	.01	.12*	.05	-										
8. Pay	.16	.15	.07	-.09	-.14*	.02	-.06	-.05	-.01	-									
9. Advancement	1.67	.65	.06	-.14*	.22**	.41**	.25**	.16**	.12*	.00	-								
10. Teamwork	.79	.35	.04	-.16**	.05	-.05	.04	-.01	.19**	.06	.09	-							
11. Benefits	.65	.47	.02	-.15**	-.10	.06	.06	.02	.09	.59**	.09	.29**	-						
12. Comp. and benefits rating	3.39	.51	.05	-.06	.10	-.05	-.02	-.01	-.07	.00	.04	-.05	-.07	-					
13. Career opportunities rating	3.10	.42	.04	-.14*	.10	-.10	-.05	-.04	-.09	-.02	.09	.00	-.02	.73**	-				
14. Work-life balance rating	3.22	.48	.09	-.01	.07	-.11	-.07	-.08	-.03	.00	.04	-.04	-.06	.64**	.64**	-			
15. Organizational attractiveness	.37	1.34	.01	.05	-.01	-.16**	.02	-.10	.01	.03	-.07	.05	.01	.17**	.22**	.15**	-		
16. Market capitalization	45,505,809	68,717,764	.29**	-.05	.11*	-.10	-.06	-.11*	-.06	-.07	-.01	-.10	-.10	.20**	.23**	.11	.14*	-	
17. Firm performance	1.24	1.04	-.22**	-.08	.13*	-.07	-.06	-.10	.08	-.02	.01	-.04	-.03	.07	.13*	-.03	.12	.24**	-

Note. n = 330. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2.
*p < .05. **p < .01.

Table III-14: Intercorrelations of variables in hierarchical multiple linear regression analysis (2010 projected webpage image sample)

Employer Image Dimension	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Total assets	63,863,959	235,903,202	-																
2. Sincerity	.15	0.8	-.05	-															
3. Innovativeness	.37	.24	-.02	-.13	-														
4. Competence	.45	.19	-.08	.12	.13	-													
5. Prestige	.32	.16	-.05	-.05	.19*	.15	-												
6. Ruggedness	.15	.13	.00	.08	.02	.15	.25**	-											
7. Cheerfulness	.07	.10	.06	.04	.08	-.13	-.01	.00	-										
8. Pay	.23	.23	-.07	.04	-.23**	-.07	-.07	.01	-.01	-									
9. Advancement	1.57	.72	.03	.02	.16	.18*	.05	.08	.02	-.01	-								
10. Teamwork	.73	.41	.02	-.10	.07	-.05	.00	.02	-.02	.07	-.06	-							
11. Benefits	.80	.63	-.07	-.08	-.23**	.09	-.04	.04	-.11	.60**	.08	.05	-						
12. Comp. and benefits rating	3.43	.50	.03	.11	.07	.02	-.01	.00	-.02	.06	.12	-.01	-.01	-					
13. Career opportunities rating	3.12	.44	.09	.01	.02	.03	-.10	-.05	-.09	-.03	.13	.06	.04	.72**	-				
14. Work-life balance rating	3.24	.48	.06	.12	.00	-.08	-.09	-.11	-.04	-.07	.06	.03	-.01	.64**	.69**	-			
15. Organizational attractiveness	.43	1.37	.00	.07	.00	-.07	-.01	-.06	.01	.01	.03	.18*	-.04	.17*	.20*	.18*	-		
16. Market capitalization	36,461,286	51,672,568	.41**	-.04	.09	-.01	.09	-.06	-.06	-.05	.13	-.02	-.13	.21*	.18*	.12	.17*	-	
17. Firm performance	1.36	1.19	-18*	-.09	.10	-.05	-.11	-.07	-.07	.06	.14	-.04	-.04	.11	.09	-.01	.10	.30**	-

Note. n = 142. The results of this table were based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2.
*p < .05. **p < .01.

We conducted preliminary analyses to ensure that assumptions of normality, linearity and homoscedasticity were not violated. The results of our hierarchical regression are summarized in Table III-15. In step one of the hierarchical regression model, the control variable was entered. We controlled for firm size, as measured through total assets at year-end 2014 (Hansen & Wernerfelt, 1989). This model was not significant. After entry of the instrumental and symbolic image dimensions in step two, and controlling for firm size, the total variance explained by the model in the 2014 sample as a whole was 4%. The model was again not significant ($F(11, 318) = 1.24$; $p = .26$). In the 2014 sample, however, competence showed a significant negative relationship with organizational attractiveness ($\beta = -.16$, $p < .05$), while teamwork in the 2010 sample demonstrated a significant positive relationship with organizational attractiveness ($\beta = .19$, $p < .05$). All other image dimensions were not significantly related to organizational attractiveness in either sample.

In the final step, we introduced Glassdoor ratings representing perceived employer image in selected dimensions. The 2014 model was statistically significant and explained another 5% of variance in organizational attractiveness ($R^2 = .09$, $F(14, 315) = 2.31$; $p < .01$). From the perceived employer image dimensions, career opportunities rating had a significant positive relationship with organizational attractiveness in the 2014 sample ($\beta = .24$, $p < .01$). Compensation and benefits, as well as work-life balance were not significantly related to organizational attractiveness. The same was true for all ratings in the 2010 sample, in which none of the perceived employer image predictors in step three became significant. Overall, our results showed that most dimensions of both the projected employer webpage image and the perceived employer image did not seem to predict organizational attractiveness. Surprisingly, however, competence was significantly and negatively related to organizational attractiveness. In fact, we

would have expected the opposite, as competence is generally a positive thing that fosters organizational attraction.

Table III-15: Hierarchical regression analyses for employer image dimensions predicting organizational attractiveness

Variable	2014 Sample (n = 330)						2010 Sample (n = 142)					
	R^2	ΔR^2	B	$SE\ B$	β	t	R^2	ΔR^2	B	$SE\ B$	β	t
Step 1: Controls	.00						.00					
Firm size (total assets)			.00	.00	.01	.11			.00	.00	.00	-.01
Step 2: Projected employer image	.04	.04					.05	.05				
Firm size (total assets)			.00	.00	.00	.08			.00	.00	-.01	-.01
Sincerity			.83	.61	.08	1.37			.69	.66	.09	1.05
Innovativeness			.01	.47	.00	.01			-.03	.53	-.01	-.06
Competence			-1.13	.45	-.16*	-2.50			-.51	.65	-.07	-.79
Prestige			.79	.54	.09	1.45			.16	.77	.02	.21
Ruggedness			-1.17	.92	-.07	-1.27			-.69	.92	-.07	-.75
Cheerfulness			.26	1.48	.01	.18			-.02	1.25	.00	-.02
Pay			.39	.64	.04	.61			.13	.65	.02	.20
Benefits			-.04	.21	-.01	-.19			-.11	.24	-.05	-.46
Advancement			-.01	.13	.00	-.06			.11	.17	.06	.65
Teamwork			.17	.23	.05	.78			.63	.29	.19*	2.17
Step 3: Perceived employer image	.09**	.05					.09	.04				
Firm size (total assets)			.00	.00	.00	.02			.00	.00	-.03	-.31
Sincerity			1.17	.60	.11*	1.95			.60	.67	.08	.89
Innovativeness			-.11	.46	-.01	-.24			-.07	.52	-.01	-.14
Competence			-.90	.45	-.13*	-2.00			-.50	.65	-.07	-.76
Prestige			.92	.53	.10	1.72			.31	.77	.04	.41
Ruggedness			-1.18	.91	-.07	-1.31			-.59	.92	-.06	-.64
Cheerfulness			.96	1.46	.04	.66			.25	1.24	.02	.20
Pay			.47	.63	.05	.74			.20	.66	.03	.30
Benefits			-.04	.21	-.02	-.21			-.14	.24	-.06	-.56
Advancement			-.08	.13	-.04	-.60			.06	.17	.03	.37
Teamwork			.20	.22	.05	.89			.59	.29	.18*	2.03
Compens. and benefits rating			.03	.23	.01	.15			.06	.37	.02	.16
Work-life balance rating			-.06	.21	-.02	-.29			.07	.36	.03	.20
Career opportunities rating			.76	.27	.24**	2.78			.51	.43	.17	1.19

Note. Dependent variable = organizational attractiveness. SE = Standard Error. Measurement of instrumental and symbolic employer image dimensions was based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2.
*p < .05. **p < .01.

4.3.2 Market capitalization as an outcome variable

We conducted further regression analyses in which we tested firms' market capitalization (i.e., number of shares x share price) as the dependent variable. We again applied hierarchical multiple linear regression to test the predictive power of different (projected and perceived) employer image dimensions. Projected employer webpage image was again taken from the two samples in the years 2010 and 2014. Perceived employer image was operationalized through the same dimensions of Glassdoor ratings as used in the previous regressions. Preliminary analyses showed that assumptions of normality, linearity, and homoscedasticity were again met.

The summary of the regression results can be found in Table III-16. Step one again included entering the control variable (i.e., firm size as expressed through total assets). As expected, firm size significantly predicted market capitalization in both cases (year 2014: R^2 = .08, $F(1, 328) = 28.94$; $p < .01$; year 2010: R^2 = .08, $F(1, 140) = 28.65$; $p < .01$). In step two, we again entered the projected webpage image dimensions and controlled for firm size. The 2014-based model was significant and explained another 6% in total variance of firms' market capitalization (R^2 = .14, $F(11, 318) = 4.62$; $p < .01$). It was found that innovativeness significantly predicted market capitalization (β = .12, $p < .05$), as well as teamwork, which significantly (negatively) predicted market capitalization (β = -.11, $p < .05$). In the 2010 model none of the projected image dimensions significantly predicted market capitalization.

In the final step, we added the perceived image dimensions to the model. The 2014 model was again significant and explained another 5% of changes in total variance of firms' market capitalization (R^2 = .19, $F(14, 315) = 5.15$; $p < .01$.). Of the perceived image dimensions, work-life balance significantly negatively predicted market capitalization (β = -.15, $p < .05$), while career opportunities significantly positively predicted market capitalization (β = .20, $p < .05$).

Compensation and benefits was not significant. Also, none of the 2010 sample model image dimensions significantly predicted firm value.

Table III-16: Hierarchical regression analyses for employer image dimensions predicting market capitalization

Variable	2014 Sample (n = 330)						2010 Sample (n = 142)					
	R^2	ΔR^2	*B*	*SE B*	β	*t*	R^2	ΔR^2	*B*	*SE B*	β	*t*
Step 1: Controls	.08**						.17**					
Firm size (total assets)			.06	.01	.28**	5.38			.09	.02	.41**	5.35
Step 2: Projected employer (webpage) image	.14**	.06					.23**	.06				
Firm size (total assets)			.06	.01	.29**	5.58			.09	.02	.42**	5.37
Sincerity			-16,114,306	29,394,843	-.03	-.55			-3,728,465	22,579,969	-.01	-.17
Innovativeness			50,786,464	22,925,305	.12*	2.22			11,614,053	17,897,028	.05	.65
Competence			-21,502,377	20,073,983	-.06	-.97			-477,312	22,132,498	.00	-.02
Prestige			-24,901,970	26,395,171	-.05	-.94			36,243,928	26,128,416	.11	1.39
Ruggedness			-81,812,583	44,752,364	-.10	-1.83			-36,223,462	31,486,416	-.09	-1.15
Cheerfulness			-31,130,761	71,678,845	-.02	-.43			-61,733,439	42,443,701	-.11	-1.45
Pay			-29,935,015	31,235,328	-.06	-.96			22,255,886	22,129,471	.10	1.01
Benefits			-3,300,831	10,199,618	-.02	-.32			-12,955,350	8,213,697	-.16	-1.58
Advancement			1,631,529	6,394,764	.02	.26			9,153,959	5,710,297	.13	1.60
Teamwork			-21,351,608	10,940,984	-.11*	-1.95			-3,541,975	9,853,108	-.03	-.36
Step 3: Perceived employer image	.19**	.05					.26**	.03				
Firm size (total assets)			.06	.01	.30**	5.76			.09	.02	.41**	5.29
Sincerity			3,352,744	28,143,400	.01	.12			-7,862,662	22,832,608	-.03	-.34
Innovativeness			45,577,958	22,454,758	.11*	2.03			8,342,504	17,812,090	.04	.47
Competence			-14,219,385	21,765,841	-.04	-.65			-923,432	22,152,658	.00	-.04
Prestige			-21,922,419	25,856851	-.05	-.85			37,518,394	26,076,245	.12	1.44
Ruggedness			-91,359,242	43,894,490	-.11*	2.08			-36,950,252	31,459,490	-.09	-1.17
Cheerfulness			6,558,917	70,564,386	.00	.09			-56,839,333	42,302,410	-.11	-1.34
Pay			-28,207,220	30,700,565	-.06	-.92			17,372,420	22,527,510	.08	.77
Benefits			-3,051,466	10,019,567	-.02	-.30			-12,096,312	8,224,787	-.15	-1.47
Advancement			-517,498	6,317,370	.00	-.08			7,655,026	5,706,836	.11	1.34
Teamwork			-20,586,794	10,686,503	-.11*	-1.93			-3,389,169	9,826,001	-.03	-.34

Compensation and benefits rating	16,296,889	10,974,772	.12	1.48		18,879,018	12,458,243	.18	1.52
Work-life balance rating	-22.092,626	10,189,044	-.15*	-2.17		-4,888,430	12,353,972	-.04	-.40
Career opportunities rating	32,911,476	13,242,547	.20*	2.49		4,017,317	14,698,325	.03	.27

Note. Dependent variable = market capitalization. SE = Standard Error. Measurement of instrumental and symbolic employer image dimensions was based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2.
*$p < .05$. **$p < .01$.

4.3.3 Firm performance as an outcome variable

In a final step, we tested the relationship between employer image and firm performance as measure by Tobin's *q*. The relationship was again tested for both years (i.e., 2014 and 2010). Initial analyses showed that assumptions of normality, linearity, and homoscedasticity were not violated. As in the previous analysis, a hierarchical multiple linear regression was conducted (see Table III-17).

In step one, we controlled for firm size as measured by total assets that significantly and negatively predicted Tobin's *q* in both years (year 2014: $R^2 = .05$, $F(1, 328) = 16.23$; $p < .01$; year 2010: $R^2 = .03$, $F(1, 140) = 4.74$; $p < .05$). In step two, when projected image dimensions were added, only the 2014 model was significant (year 2014: $R^2 = .09$, $F(11, 318) = 2.95$; $p < .01$; year 2010: $R^2 = .12$, $F(11, 130) = 1.59$; $p = .11$). As in the previous regression testing market capitalization as a dependent variable, innovativeness was the only significant predictor, but it was only significant in the 2014 sample model ($\beta = .12$, $p < .05$). Finally, the perceived image dimensions were added to the model, which resulted in a significant model with the 2014 sample, but not with the 2010 sample. While the 2014 model explained another 3% in total variance of firms' performance ($R^2 = .12$, $F(14, 315) = 3.13$; $p < .01$), the 2010 model explained another 2% in total variance ($R^2 = .14$, $F(14, 127) = 1.45$; $p = .14$). In the 2014 model, work-life balance significantly negatively predicted firm performance ($\beta = -.19$, $p < .05$), while career opportunities were again significantly positively related to firm performance ($\beta = -.21$, $p < .05$). Compensation and benefits did not show a significant effect. In the 2010 model, none of the perceived image dimensions had a significant effect.

Table III-17: Hierarchical regression analyses for employer image dimensions predicting firm performance (Tobin's q)

Variable	2014 Sample (n = 330)						2010 Sample (n = 142)					
	R^2	ΔR^2	*B*	*SE B*	β	*t*	R^2	ΔR^2	*B*	*SE B*	β	*t*
Step 1: Controls	.05**						.03*					
Firm size (total assets)			.00	.00	-.22**	-4.03			.00	.00	-.18*	-2.18
Step 2: Projected employer image	.09**	.04					.12	.09				
Firm size (total assets)			.00	.00	-.21**	-3.97			.00	.00	-.19*	-2.31
Sincerity			-.58	.45	-.07	-1.29			-.66	.56	-.10	-1.18
Innovativeness			.74	.35	.12*	2.09			.49	.44	.10	1.11
Competence			-.34	.34	-.06	-1.01			-.39	.54	-.06	-.72
Prestige			-.53	.41	-.07	-1.29			-.99	.64	-.13	-1.53
Ruggedness			-.89	.69	-.07	-1.28			-.24	.78	-.03	-.31
Cheerfulness			1.46	1.11	.07	1.32			-1.13	1.04	-.09	-1.08
Pay			.07	.48	.01	.15			.76	.54	.15	1.40
Benefits			-.03	.16	-.01	-.16			-.26	.20	-.14	-1.30
Advancement			.07	.10	.04	.69			.26	.14	.16	1.87
Teamwork			-.18	.17	-.06	-1.08			-.15	.24	-.05	-.63
Step 3: Perceived employer image	.12**	.03					.14	.02				
Firm size (total assets)			.00	.00	-.21**	-3.82			.00	.00	-.20*	-2.36
Sincerity			-.33	.46	-.04	-.72			-.60	.57	-.09	-1.06
Innovativeness			.72	.35	.11*	2.05			.44	.44	.09	1.00
Competence			-.29	.34	-.05	-.84			-.49	.55	-.08	-.88
Prestige			-.50	.41	-.07	-1.24			-.96	.65	-.13	-1.49
Ruggedness			-1.04	.69	-.09	-1.52			-.34	.78	-.04	-.44
Cheerfulness			1.91	1.11	.10	1.72			-1.06	1.05	-.09	-1.01
Pay			.15	.48	.02	.31			.63	.56	.12	1.12
Benefits			-.04	.16	-.02	-.28			-.24	.20	-.13	-1.17
Advancement			.05	.10	.03	.49			.24	.14	.15	1.70
Teamwork			-.18	.17	-.06	-1.10			-.15	.24	-.05	-.60
Compens. and benefits rating			.06	.17	.03	.37			.29	.31	.12	.94
Work-life balance rating			-.40	.16	-.19*	-2.51			-.40	.31	-.16	-1.31
Career opportunities rating			.50	.21	.21*	2.42			.26	.37	.10	.72

Note. Dependent variable = firm performance (Tobin's *q*). SE = Standard Error. Measurement of instrumental and symbolic employer image dimensions was based on the computer-aided text analysis using the word lists for projected employer image (i.e., instrumental and symbolic image dimensions) presented in Table III-2.
*p < .05. **p < .01.

In summary, we identified only limited predictive power of certain projected and perceived image dimensions in explaining firms' market capitalization and performance. From investors' point of view, some of the results are not surprising and are in line with prior research identifying indicators of displayed innovation, such as disclosure of intellectual capital, or research and development activity as an indicator of stock market performance (e.g., Abdolmohammadi, 2005; Lev & Sougiannis, 1996). Furthermore, the negative relationship between higher levels of perceived work-life balance and market capitalization/firm performance can be partially explained, as there is mixed evidence regarding whether work-life balance policies positively or negatively affect business performance and thus investors' valuation (Yasbek, 2004). With regard to perceived career opportunities, the results are in line with prior research that suggested a positive relationship between HR practices (e.g., internal labor markets and promotion opportunities) and firm performance (e.g., Delaney & Huselid, 1996).

Returning to the initial research question of whether projected employer image predicts other constructs such as organizational attractiveness, market value, or firm performance, the answer is that it does so to a limited extent. First of all, only few dimensions showed significant effects with regard to the different outcome variables, partially also with negative relationships (i.e., competence, sincerity, teamwork, and innovativeness). Interestingly, however, pay/compensation and benefits did not have a significant effect in any of the tested models, neither from a projected employer image perspective, nor from a perceived image perspective.

Second, although the comparability between projected and perceived image predictors is somewhat limited due to the incomplete availability of perceived image dimensions, perceived image dimensions had slightly higher predictive power than the dimensions of projected employer images. This result is explainable, as perceived employer image could be seen as a

mediator between the initial firm-generated, projected employer webpage image and related individual and organization-level outcomes (Backhaus & Tikoo, 2004; Cable & Turban, 2001; Celani & Singh, 2011).

5 Discussion

The present article has demonstrated and developed a reliable and efficient method to measure projected employer image from company and employment webpages. This was achieved by using computer-aided text analysis building on validated dictionaries of selected instrumental and symbolic employer image dimensions. Results, however, have also provided evidence that a conceptualization of the employer image construct into instrumental and symbolic dimensions did not hold true but, rather, represented an amalgamation of conceptually similar attributes that could be loosely clustered into one of the two image dimensions.

Furthermore, in this article, we have shown that projected employer image (as expressed through company and employment webpages) and perceived image (as expressed through Glassdoor employer ratings) are two different kinds of constructs. Finally, the predictive abilities of both image types were tested. Contrary to our expectations, only a few of the projected image dimensions significantly predicted organizational attractiveness (e.g. competence, sincerity), market capitalization (i.e., innovativeness, teamwork), or firm performance (i.e., innovativeness). Similar results were found for perceived employer image dimensions, while the few significant dimensions showed stronger effects than the projected image dimensions.

5.1 Theoretical contributions

This article has contributed to employer image theory in various important ways. Specifically, the article contributes to the literature on employer image and organizational attractiveness as follows. First of all, the findings enhance our knowledge and understanding

about *actually* communicated employer images that companies transmit through one of their most important communication channels (i.e., their webpages). Previous research has mainly dealt with how certain image attributes will be perceived by potential and current employees, as well as image attributes that companies ideally need to display. Prior research has rarely analyzed what images companies *actually* communicate to prospective and current employees. Relatedly, it has also been unclear, for example, how projected images develop over time and how different firms belonging to, for example, the same industry position themselves relative to each other. The current article is among the first to provide an in-depth insight and a method to overcome this gap.

Second, the present article highlights conceptual differences between projected and perceived image as a construct. While dimensions of projected and perceived employer image theoretically converge with each other, our findings showed that this was actually not the case and indicated that projection and perception are not in congruence. Extant research has implicitly assumed that these two employer image types are two sides of the same coin. Our findings indicate that this is not the case; therefore, further research is needed to investigate the gap between the two image types.

Third, our results have shown that dimensions of projected employer webpage image have limited predictive ability with regard to organizational attractiveness and more distal outcomes such as firms' market capitalization and performance. While dimensions of perceived image value showed stronger relationships with the tested outcome variables (in line with previous research), the dimension of projected image showed comparatively weak predictive power. As both images follow a sequential order in which employers first define their projected

images, which are then interpreted by potential and current employees, there may be an enhanced need for mediated regression models.

5.2 Practical implications

Beyond its theoretical contributions, the current study also provides various practical contributions. In this article, we also made a methodical contribution in that we have introduced a newly developed approach with which projected employer image can be measured in a reliable and efficient way. Using CATA and the newly developed and validated image dictionaries, both researchers and practitioners can efficiently and quickly measure and monitor dimensions of employer image within large-scale text data. In our example, this was done on the basis of the U.S. Fortune 500 company and employment webpages, which were aggregated on an organizational level.

Moreover, the availability of the new measurement method opens up a variety of opportunities in the evaluation of employers. For example, the innovative method could serve as an additional part of employer image audits (i.e., as a further input to best employer competitions). Simultaneously, organizations will be able to quickly assess their (labor market) competition and analyze their relative employer value proposition across a variety of image dimensions. This is valuable insofar as content and information between employers and employees is nowadays increasingly exchanged online (Cappelli, 2001; Nolan et al., 2013).

Relatedly, the improved measurability and transparency is likely to unveil “image gaps” between espoused and perceived image (e.g., via Glassdoor ratings) that will become more and more apparent and visible. As shown in the comparison of the two image types of this study, there may be large(r) gaps between image projection and perception, and companies will thus be able to better adjust and fine-tune their aspired image. The issue applies not only to a recruitment

context but also to an internal perspective with regard to current employees. Companies could, for example, compare their initially projected image with dimensions of their internal culture. Therefore, it would be interesting to identify and analyze potential vision vs. culture gaps and potentially related impacts of such gaps. Although the current study does not suggest what to do in such cases, it provides a useful tool to identify such gaps.

5.3 Limitations and future research suggestions

Like every study, the current study has some limitations. First, there are limitations with regard to our methodical approach. In terms of sampling, the study only analyzed website text and therefore neglected other media content and webpage features, such as pictures, interactive elements such as videos, or website aesthetics, which also convey valuable image information about an employer (e.g., Dineen, Ling, Ash, & DelVecchio, 2007). Whereas CATA as applied in this article is only based on textual data, future research should take into consideration how other media content could be efficiently measured and complement a purely text-based approach. Moreover, other online resources that are rich in text could be analyzed as well. Both projected and perceived image could be further assessed through an analysis of different social media channels in which firms are present (e.g., Facebook, LinkedIn).

Second, the current study has only looked at large corporations, which usually have sufficient webpage content to measure and analyze. The observations from this study are therefore not generalizable to firms of different size (e.g., small and medium-sized enterprises). In addition, it may also be challenging to fully measure the webpage image of companies that do not provide sufficient textual webpage data. Although this has not been the case for most of the large corporations, smaller firms may require a different approach.

Third, the CATA approach as applied in this article is based on the analysis of single word usage in sample texts to make inferences about the mental models of a text's author. Although this method is in line with recommended procedures, the approach neglects the greater context based on the co-occurrences of specific words, as well as negations or negative meanings. Simultaneously, the single word approach leads to limitations in the constructs and dimensions that can be investigated. For example, some of the instrumental dimensions had to be excluded since they could not be expressed in a single word or term (e.g., "challenging work" or "customer orientation"). Moreover, the approach assumes that potential and current employees always search and process all of the available webpages. Clearly, this is probably not the case, as typical readers probably only see a fraction of the overall webpage content. Future research therefore needs to develop ways to take this restriction into consideration.

Fourth, it would be interesting to simultaneously analyze employees' individual background and information processing when reading webpage content. Image is usually created through multiple impressions from different sources, of which webpage content is only one of many aspects that determine attitudinal and behavioral outcomes (e.g., site visit, interviews, etc.). Future research could therefore try to combine analyses of individual information processing to better understand how different content loads onto different outcomes. Relatedly, there has also been no information about the demographic background of prospective applicants. Such data would provide valuable information about how different types of individuals process such information.

Finally, the approach predominantly addresses external audiences (i.e., prospective applicants). Although current employees should be exposed to the analyzed webpage content as well, one can assume that they would rather consider internal media such as company-specific

Intranets. In order to extend the view, it would therefore be interesting to conduct similar approaches directed toward the internal perspective (i.e., current employees through collection of data from company Intranets).

6 Conclusion

Previous perspectives on employer image have predominantly focused on employees' views and interpretations. The current article is among the first to analyze projected employer image as transmitted through company and employment websites. The authors have developed an innovative approach, which allows for efficiently measuring and analyzing large-scale textual data with regard to projected employer image. From a theoretical perspective, the study provides researchers with an improved and more nuanced understanding of the employer image construct. From a practical perspective, the study provides organizations with a useful and efficient tool for analyzing, monitoring, and (re)adjusting their external communication as an employer of choice.

7 Appendix

7.1 Appendix A

Table III-18: Categories of included and excluded webpage categories

Website Category Definition	Included Webpage Categories	Excluded Webpage Categories	Why excluded?
1. About	About	Divisions	Contemplation of company as a whole
	Our Company	History	Mostly presented in tables, not usable
	Strategy	Investor Relations	Not considered relevant for employer image
	Who We Are	Leadership	Not considered relevant for employer image
		Legal Information	Not considered relevant for employer image
		Offices & Locations	Not usable in CATA
		Operations	Not considered relevant for employer image
		Product Development	Not considered relevant for employer image
		Products	Not considered relevant for employer image
		Research	Not considered relevant for employer image
		SEC Guidelines	Not considered relevant for employer image
		Services	Not considered relevant for employer image
		Social Channels	Sample restricted to company webpages only
		Stock Information	Not considered relevant for employer image
		Subsidiaries	Focus on Fortune 500 webpages only
		Website Privacy	Not considered relevant for employer image
2. Careers	Benefits	FAQ	Not considered relevant for employer image
	Compensation	Awards & Recognition	Not usable in CATA
	Health & Wellness	Hiring Process	Generic information only
	Military & Veterans	Job Descriptions	Generic information only
	Training & Development	Locations	Not usable in CATA
	Why This Company?	Recruiting Evens	Not usable in CATA
	Our People	Recruitment	Generic information only
	Testimonials	Requirement	Generic information only
3. Diversity & Inclusion	Diversity	Supplier Guidelines	Not considered relevant for employer image
	Diversity Statements		
	Inclusion		
	Supplier Diversity		
	EEO Statement		
4. Community	Community	Awards & Recognition	Not usable in CATA
	Community Engagement	Business Solutions	Not considered relevant for employer image
	Community Investment	Consumer Solutions	Not considered relevant for employer image
	Community Involvement	FAQ	Not considered relevant for employer image

	Company Foundation	Giving Guidelines	Not considered relevant for employer image
	Corporate Citizenship	Grant Criteria	Not considered relevant for employer image
	Giving	New Releases	Not considered relevant for employer image
	Philantrophy	Partner Description	Not considered relevant for employer image
	Serving the Community	Third-Party Websites	Focus on Fortune 500 webpages only
	Volunteerism		
5. Values & Responsibility	Code of Conduct	Business Solutions	Not considered relevant for employer image
	Corporate Responsibility	Consumer Solutions	Not considered relevant for employer image
	Environment	Corporate Governance	Not considered relevant for employer image
	Ethics	FAQ	Not considered relevant for employer image
	Human Rights	Internal Processes	Not considered relevant for employer image
	Safety	News Releases	Not considered relevant for employer image
	Sustainability	Political Involvement	Not considered relevant for employer image
	Values		
	What We Believe		

7.2 Appendix B

Table III-19: Instrumental and symbolic image dimensions as mentioned in the literature

Article	Instrumental Image Dimensions as Mentioned in the Literature	Symbolic Image Dimensions as Mentioned in the Literature
Lievens and Highhouse (2003)	Pay, advancement, job security, task demands, location, benefits, flexible working hours, working with customers	Sincerity, innovativeness, competence, prestige, robustness
Lievens et al. (2005)	Pay and benefits, advancement, job security, task diversity, structure, social/team activities, travel opportunities, educational opportunities, physical activities	Sincerity, excitement, cheerfulness, competence, prestige, ruggedness
Lievens (2007)	Pay and benefits, job security, task diversity, educational opportunities	Sincerity, excitement, cheerfulness, competence, prestige, ruggedness
Lievens et al. (2007)	Provision of good salaries, advancement opportunities, job security, task diversity, opportunity to work in structured environment, opportunity for social/team activities, travel opportunities, opportunity	Sincerity, excitement, cheerfulness, competence, prestige, ruggedness
Carless and Imber (2007)	Pay and promotion opportunities, challenging work, location, co-workers, reputation	n/a
Van Hoye (2008)	Pay, advancement, task diversity, teamwork, helping people	Sincerity, innovativeness, competence, prestige
Slaughter and Greguras (2009)	Income, opportunity, promotion, challenge, interesting work, working hours, power, freedom and autonomy, location, commute, coworkers, leadership, supervisor, dress code	Conscientiousness, agreeableness, openness, neuroticism, boy scout, innovativeness, dominance, thrift, style
Schreurs et al. (2009)	n/a	Sincerity, excitement, competence, prestige, ruggedness
Van Hoye and Saks (2011)	Pay, advancement, job security, structure, social activities, travel, education	Sincerity, excitement, competence, prestige, ruggedness
Kausel and Slaughter (2011)	Salary and benefits, opportunities for promotion, job security, challenging work, interesting work, authority, autonomy, flexible work hours, recognition, geographic location, leadership, competent co-workers, competent supervisors	Trustworthiness, dominance, innovativeness

Baum and Kabst (2013b)	Payment attractiveness, career opportunities, task attractiveness, working atmosphere, work-life comfort	n/a
Van Hoye et al. (2013)	Pay/security, advancement, task demands, working conditions	Sincerity, innovativeness, competence, prestige, robustness
Van Hoye et al. (2014)	Interpersonal activities, advancement, task diversity, employment	Sincerity, innovativeness, competence, prestige, robustness

8 References

Aaker, D. A. (1991). *Managing Brand Equity*. New York: Free Press.

Aaker, J. (1997). Dimensions of brand personality. *Journal of Marketing Research*, 347-356.

Abdolmohammadi, M. J. (2005). Intellectual capital disclosure and market capitalization. *Journal of Intellectual Capital, 6*(3), 397-416.

Allen, D. G., Mahto, R. V., & Otondo, R. F. (2007). Web-based recruitment: effects of information, organizational brand, and attitudes toward a Web site on applicant attraction. *Journal of Applied Psychology, 92*(6), 1696-1708.

Archive, I. (2017). *About the Internet Archive*. Retrieved 08.05.2017, from https://archive.org/about/

Arndt, M., & Bigelow, B. (2000). Presenting structural innovation in an institutional environment: Hospitals' use of impression management. *Administrative Science Quarterly, 45*(3), 494-522.

Backhaus, K. B., & Tikoo, S. (2004). Conceptualizing and researching employer branding. *Career Development International, 9*(5), 501-517.

Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, 421-458.

Baum, M., & Kabst, R. (2013a). Conjoint implications on job preferences: The moderating role of involvement. *The International Journal of Human Resource Management, 24*(7), 1393-1417.

Baum, M., & Kabst, R. (2013b). How to attract applicants in the Atlantic versus the Asia-Pacific region? A cross-national analysis on China, India, Germany, and Hungary. *Journal of World Business, 48*(2), 175-185.

Bontis, N., Wu, S., Chen, M.-C., Cheng, S.-J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital, 6*(2), 159-176.

Boyd, R., & Pennebaker, J. (2015). A way with words: Using language for psychological science in modern era. *Consumer Psychology in a Social Media World*, 222-236.

Cable, D. M., & Turban, D. B. (2001). Establishing the dimensions, sources and value of job seekers' employer knowledge during recruitment. *Research in Personnel and Human Resources Management, 20*, 115-163.

Cable, D. M., & Turban, D. B. (2003). The Value of Organizational Reputation in the Recruitment Context: A Brand‐Equity Perspective. *Journal of Applied Social Psychology, 33*(11), 2244-2266.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56*(2), 81.

Cappelli, P. (2001). On-line recruiting. *Harvard Business Review, 79*(3), 139-146.

Carless, S. A., & Imber, A. (2007). Job and organizational characteristics: A construct evaluation of applicant perceptions. *Educational and Psychological Measurement, 67*(2), 328-341.

Carley, K. M. (1997). Extracting team mental models through textual analysis. *Journal of Organizational Behavior, 18*, 533-558.

Carvalho, A., & Areal, N. (2015). Great Places to Work®: Resilience in Times of Crisis. *Human Resource Management*. Advance online publication. doi: 10.1002/hrm.21676

Celani, A., & Singh, P. (2011). Signaling theory and applicant attraction outcomes. *Personnel Review, 40*(2), 222-238.

Chen, C. C., & Meindl, J. R. (1991). The construction of leadership images in the popular press: The case of Donald Burr and People Express. *Administrative Science Quarterly*, 521-551.

Collins, C. J., & Han, J. (2004). Exploring applicant pool quantity and quality: The effects of early recruitment practice strategies, corporate advertising, and firm reputation. *Personnel Psychology, 57*(3), 685-717.

Collins, C. J., & Stevens, C. K. (2002). The relationship between early recruitment-related activities and the application decisions of new labor-market entrants: A brand equity approach to recruitment. *Journal of Applied Psychology, 87*(6), 1121-1133.

Cook, T. D., Campbell, D. T., & Day, A. (1979). *Quasi-experimentation: Design & analysis issues for field settings* (Vol. 351). Boston: Houghton Mifflin Company

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52*(4), 281-302.

Davies, G. (2008). Employer branding and its influence on managers. *European Journal of Marketing, 42*(5/6), 667-681.

Delaney, J. T., & Huselid, M. A. (1996). The impact of human resource management practices on perceptions of organizational performance. *Academy of Management Journal, 39*(4), 949-969.

Dineen, B. R., & Allen, D. G. (2016). Third Party Employment Branding: Human Capital Inflows and Outflows Following "Best Places to Work" Certifications. *Academy of Management Journal*. Advance online publication. doi: 10.5465/amj.2013.1091.

Dineen, B. R., Ling, J., Ash, S. R., & DelVecchio, D. (2007). Aesthetic properties and message customization: Navigating the dark side of web recruitment. *Journal of Applied Psychology, 92*(2), 356-372.

Duriau, V. J., Reger, R. K., & Pfarrer, M. D. (2007). A content analysis of the content analysis literature in organization studies: Research themes, data sources, and methodological refinements. *Organizational Research Methods, 10*(1), 5-34.

Edlinger, G. (2015). Employer brand management as boundary‐work: a grounded theory analysis of employer brand managers' narrative accounts. *Human Resource Management Journal, 25*(4), 443-457.

Fast, L. A., & Funder, D. C. (2008). Personality as manifest in word use: correlations with self-report, acquaintance report, and behavior. *Journal of Personality and Social Psychology, 94*(2), 334.

Fortune (2014). *Fortune 500 2013 List*. Retrieved 03.05.2014, from http://fortune.com/fortune500/2013/

Fortune (2016). *Fortune 500 List*. Retrieved 13.01.2017, from http://beta.fortune.com/fortune500/list/

Fortune (2017). *100 Best Companies To Work For - Methodology*. Retrieved 16.04.2017, from http://fortune.com/best-companies/

Fréchette, J., Bourhis, A., & Stachura, M. (2013). The Organizational Attraction of Nursing Graduates: Using Research to Guide Employer Branding. *The Health Care Manager, 32*(4), 303-313.

Fulmer, I. S., Gerhart, B., & Scott, K. S. (2003). Are the 100 best better? An empirical investigation of the relationship between being a “great place to work” and firm performance. *Personnel Psychology, 56*(4), 965-993.

Gardner, B. B., & Levy, S. J. (1955). The product and the brand. *Harvard Business Review, 33*(2), 33-39.

Glassdoor (2017a). *About Us*. Retrieved 16.04.2017, from https://www.glassdoor.com/about/index_input.htm

Glassdoor (2017b). *Common Questions*. Retrieved 16.04.2017, from https://www.glassdoor.com/employers/start/common-questions.htm

Glassdoor (2017c). *Community Guidelines.* Retrieved 16.04.2017, from http://help.glassdoor.com/article/Community-Guidelines/en_US

Glassdoor (2017d). *Ratings on Glassdoor*. Retrieved 15.04.2017, from http://help.glassdoor.com/article/Ratings-on-Glassdoor/en_US

Hansen, G. S., & Wernerfelt, B. (1989). Determinants of firm performance: The relative importance of economic and organizational factors. *Strategic Management Journal, 10*(5), 399-411.

Holsti, O. R. (1969). *Content analysis for the social sciences and humanities*. Don Mills: Addison-Wesley.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal, 38*(3), 635-672.

Ito, J. K., Brotheridge, C. M., & McFarland, K. (2013). Examining how preferences for employer branding attributes differ from entry to exit and how they relate to commitment, satisfaction, and retention. *Career Development International, 18*(7), 732-752.

Jiang, K., Lepak, D., Hu, J., & Baer, J. (2012a). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, amj. 2011.0088.

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012b). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal, 55*(6), 1264-1294.

Kabanoff, B., Waldersee, R., & Cohen, M. (1995). Espoused values and organizational change themes. *Academy of Management Journal, 38*(4), 1075-1104.

Kahn, J. H., Tobin, R. M., Massey, A. E., & Anderson, J. A. (2007). Measuring emotional expression with the Linguistic Inquiry and Word Count. *The American journal of psychology, 120*(2), 263-286.

Kane, G. C., Palmer, D., Phillips, A. N., & Kiron, D. (2017). Winning the digital war for talent. *MIT Sloan Management Review, 58*(2), 17-19.

Kausel, E. E., & Slaughter, J. E. (2011). Narrow personality traits and organizational attraction: Evidence for the complementary hypothesis. *Organizational Behavior and Human Decision Processes, 114*(1), 3-14.

Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *The Journal of Marketing*, 1-22.

Keller, K. L. (2011). *Strategic Brand Management: Building, Measuring, and Managing Brand Equity*. Harlow: Pearson Education.

Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons, 54*(3), 241-251.

Krippendorff, K. (2012). *Content analysis: An introduction to its methodology*. Thousand Oaks, CA: Sage.

Labor, US Department of (2017). SIC Division Structure. Retrieved 12.03.2017, from https://www.osha.gov/pls/imis/sic_manual.html

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159-174.

Lemmink, J., Schuijf, A., & Streukens, S. (2003). The role of corporate image and company employment image in explaining application intentions. *Journal of Economic Psychology, 24*(1), 1-15.

Lev, B., & Sougiannis, T. (1996). The capitalization, amortization, and value-relevance of R&D. *Journal of accounting and economics, 21*(1), 107-138.

Lievens, F. (2007). Employer branding in the Belgian Army: The importance of instrumental and symbolic beliefs for potential applicants, actual applicants, and military employees. *Human Resource Management, 46*(1), 51-69.

Lievens, F., & Highhouse, S. (2003). The relation of instrumental and symbolic attributes to a company's attractiveness as an employer. *Personnel Psychology, 56*(1), 75-102.

Lievens, F., & Slaughter, J. E. (2016). Employer image and employer branding: What we know and what we need to know. *Annual Review of Organizational Psychology and Organizational Behavior, 3*, 407-440.

Lievens, F., Van Hoye, G., & Anseel, F. (2007). Organizational Identity and Employer Image: Towards a Unifying Framework. *British Journal of Management, 18*(S1), S45-S59.

Lievens, F., Van Hoye, G., & Schreurs, B. (2005). Examining the relationship between employer knowledge dimensions and organizational attractiveness: An application in a military context. *Journal of Occupational and Organizational Psychology, 78*(4), 553-572.

Lombard, M., Snyder‐Duch, J., & Bracken, C. C. (2002). Content analysis in mass communication: Assessment and reporting of intercoder reliability. *Human Communication Research, 28*(4), 587-604.

Love, L. F., & Singh, P. (2011). Workplace Branding: Leveraging Human Resources Management Practices for Competitive Advantage Through "Best Employer" Surveys. *Journal of Business and Psychology, 26*(2), 175-181.

Miller, G. A. (1995). WordNet: a lexical database for English. *Communications of the ACM, 38*(11), 39-41.

Miller, G. A., Beckwith, R., Fellbaum, C., Gross, D., & Miller, K. J. (1990). Introduction to WordNet: An on-line lexical database. *International journal of lexicography, 3*(4), 235-244.

Morris, R. (1994). Computerized content analysis in management research: A demonstration of advantages & limitations. *Journal of Management, 20*(4), 903-931.

Neuendorf, K. A. (2002). *The content analysis guidebook* (Vol. 300). Thousand Oaks, CA: Sage

Neuendorf, K. A. (2016). *The content analysis guidebook*. Thousand Oaks, CA: Sage.

Nolan, K. P., Gohlke, M., Gilmore, J., & Rosiello, R. (2013). Examining How Corporations Use Online Job Ads to Communicate Employer Brand Image Information. *Corporate Reputation Review, 16*(4), 300-312.

Nunnally, J. C., & Bernstein, I. (1994). The assessment of reliability. *Psychometric theory, 3*(1), 248-292.

Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). *The development and psychometric properties of LIWC2015*. Austin, TX: The University of Texas at Austin.

Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2001). Linguistic inquiry and word count: LIWC 2001. *Mahway: Lawrence Erlbaum Associates, 71*, 2001.

Pennebaker, J. W., & Graybeal, A. (2001). Patterns of natural language use: Disclosure, personality, and social integration. *Current Directions in Psychological Science, 10*(3), 90-93.

Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology, 54*(1), 547-577.

Robertson, A., & Khatibi, A. (2012). By design or By Default: Creating the Employer Identity. *IUP Journal of Brand Management, IX*(4), 31-47.

Saini, G. K., Rai, P., & Chaudhary, M. K. (2014). What do best employer surveys reveal about employer branding and intention to apply? *Journal of Brand Management, 21*(2), 95-111.

Schlager, T., Bodderas, M., Maas, P., & Cachelin, J. L. (2011). The influence of the employer brand on employee attitudes relevant for service branding: An empirical investigation. *Journal of Services Marketing, 25*(7), 497-508.

Schreurs, B., Druart, C., Proost, K., & De Witte, K. (2009). Symbolic attributes and organizational attractiveness: The moderating effects of applicant personality. *International Journal of Selection and Assessment, 17*(1), 35-46.

Short, J. C., Broberg, J. C., Cogliser, C. C., & Brigham, K. C. (2010). Construct validation using computer-aided text analysis (CATA): An illustration using entrepreneurial orientation. *Organizational Research Methods, 13*(2), 320-347.

Short, J. C., & Palmer, T. B. (2008). The application of DICTION to content analysis research in strategic management. *Organizational Research Methods, 11*(4), 727-752.

Slaughter, J. E., & Greguras, G. J. (2009). Initial attraction to organizations: The influence of trait inferences. *International Journal of Selection and Assessment, 17*(1), 1-18.

Stevenson, R. L. (2001). In Praise of Dumb Clerks: Computer-Assisted Content. In M. West (Ed.), *Theory, method, and practice in computer content analysis* (Vol. 16, pp. 4-12). Westport, CI: Ablex Publishing.

Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology, 29*(1), 24-54.

Terry, U. (2017). *Research and Methodolody – Content Analysis as a Research Technique.* Retrieved 14.01.2017, from https://www.terry.uga.edu/management/contentanalysis/research/

Thai, V. V., & Latta, T. (2010). Employment brand strategy for the shortage of seafarers. *International Journal of Shipping and Transport Logistics, 2*(4), 411-428.

Theurer, C. P., Tumasjan, A., Welpe, I. M., & Lievens, F. (2018). Employer branding: A brand equity-based literature review and research agenda. *International Journal of Management Reviews, 20*(1), 155-179.

Tumasjan, A., Strobel, M., & Welpe, I. M. (2011). Employer brand building for start-ups: which job attributes do employees value most? *Journal of Business Economics (formerly: Zeitschrift für Betriebswirtschaft), 81*(6), 111-136.

Turban, D. B., & Cable, D. M. (2003). Firm reputation and applicant pool characteristics. *Journal of Organizational Behavior, 24*(6), 733-751.

Uggerslev, K. L., Fassina, N. E., & Kraichy, D. (2012). Recruiting through the stages: A meta‐analytic test of predictors of applicant attraction at different stages of the recruiting process. *Personnel Psychology, 65*(3), 597-660.

Ulrich, D., & Smallwood, N. (2004). Capitalizing on capabilities. *Harvard Business Review,* 119-128.

Ulrich, D., & Smallwood, N. (2005). HR's new ROI: Return on intangibles. *Human Resource Management, 44*(2), 137-142.

Van Hoye, G. (2008). Nursing recruitment: relationship between perceived employer image and nursing employees' recommendations. *Journal of Advanced Nursing, 63*(4), 366-375.

Van Hoye, G., Bas, T., Cromheecke, S., & Lievens, F. (2013). The Instrumental and Symbolic Dimensions of Organisations' Image as an Employer: A Large‐Scale Field Study on Employer Branding in Turkey. *Applied Psychology, 62*(4), 543-557.

Van Hoye, G., Lievens, F., De Soete, B., Libbrecht, N., Schollaert, E., & Baligant, D. (2014). The image of psychology programs: the value of the instrumental–symbolic framework. *The Journal of Psychology, 148*, 457-475.

Van Hoye, G., & Saks, A. M. (2011). The Instrumental‐Symbolic Framework: Organisational Image and Attractiveness of Potential Applicants and their Companions at a Job Fair. *Applied Psychology, 60*(2), 311-335.

Van Hoye, G., Weijters, B., Lievens, F., & Stockman, S. (2016). Social Influences in Recruitment: When is Word-of-Mouth Most Effective? *International Journal of Selection and Assessment, 24*(1), 42-53.

Vergin, R. C., & Qoronfleh, M. W. (1998). Corporate reputation and the stock market. *Business Horizons, 41*(1), 19-26.

Weber, R. P. (1990). *Basic content analysis*. Newbury Park, CA: Sage.

Wilden, R., Gudergan, S., & Lings, I. (2010). Employer branding: strategic implications for staff recruitment. *Journal of Marketing Management, 26*(1-2), 56-73.

Williamson, I. O., King, J. E., Lepak, D., & Sarma, A. (2010). Firm reputation, recruitment web sites, and attracting applicants. *Human Resource Management, 49*(4), 669-687.

Work, G. P. t. (2017). *100 Best Companies To Work For - How the Best are Measured*. Retrieved 16.04.2017, from https://www.greatplacetowork.com/best-workplaces/100-best/2017

Wright, P. M., & Nishii, L. H. (2007). Strategic HRM and organizational behavior: Integrating multiple levels of analysis. *CAHRS Working Paper Series*, 468.

Yasbek, P. (2004). *The business case for firm-level work-life balance policies: a review of the literature*. Retrieved 26.04.2016, from http://thehub.superu.govt.nz/publication/business-case-firm-level-work-life-balance-policies-review-literature-pdf

IV Essay 3: Contextual work design and employee innovative work behavior – When does autonomy matter?[11]

Abstract

In environments experiencing fast technological change in which innovative performance is expected, work design research has found that the degree of autonomy positively predicts behavioral and attitudinal work outcomes. Because extant work design research has tended to examine the direct and mediating effects of autonomy on work outcomes such as job satisfaction, examinations of more situational elements and the degree to which the organizational context strengthens or weakens this relationship has been neglected. This study, therefore, takes a context-contingent perspective to investigate the degree to which psychological climate dimensions such as supervisor support, organizational structure and organizational innovation moderate the effects of autonomy (work scheduling autonomy, work methods autonomy, decision-making autonomy) on employee perceived innovative work behavior (IWB). Using a conjoint experiment based on 9,440 assessments nested within 1,180 employees, it was found that all autonomy dimensions had a significant direct effect on employee perceived IWB. Contrary to the hypotheses, the multi-level analysis did not reveal any moderating effect of the climate dimensions on the relationship between autonomy and employee IWB. This study provides a context-contingent view for the features of work design and gives a more detailed analysis of autonomy, which has previously been seen primarily as a unidimensional construct.

Current status: Revise and resubmit for publication at *PLOS ONE* (see also Appendix).

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1 Introduction

"It doesn't make sense to hire smart people and tell them what to do; we hire smart people so they can tell us what to do" (Steve Jobs, former CEO of Apple).

As the "increasing prevalence of technology" and the fast "changing nature of work" (Colbert, Yee, & George, 2016, p. 732; Wegman, Hoffman, Carter, Twenge, & Guenole, 2016, p. 2) are impacting work processes and occupational structures in contemporary organizations (e.g., virtual teams), firms have been seeking to dynamically adapt work designs to best capitalize on their growing digitally aware workforce by leveraging their "digital fluency" (Briggs & Makice, 2012; Brynjolfsson & McAfee, 2012; Colbert et al., 2016, p. 732; Dedrick, Gurbaxani, & Kraemer, 2003; Grant & Parker, 2009; T. Johns & Gratton, 2013; S. K. Parker, Wall, & Cordery, 2001; WorldEconomicForum, 2016). At the same time, employees are seeking greater flexibility and self-determination and more individualized work schedules (Carnoy, Castells, & Benner, 1997; Castells, 2011; Grant, Fried, & Juillerat, 2011; Kastelle, 2013). Therefore, organizations and especially organizations that have "loose alliances of [more] *autonomous* and multidisciplinary teams" are finding ways to foster greater innovation (Bouée, 2015; Gottlieb & Willmott, 2014; McCord, 2014).

Especially fast-growing technology firms and today's 'digital star' firms put a high emphasis on employee autonomy to spur creativity (Mankins & Garton, 2017; McCord, 2014). Netflix, for example, explicitly fosters a culture of creativity and self-discipline, freedom and responsibility as opposed to a culture of process adherence to attract and nourish innovative people and to sustain their success (McCord, 2014). In doing so, Netflix has been highly successful and just achieved another record high with almost 110 million global subscribers in a

business that has traditionally been with the large television networks and media conglomerates (status October 2017; (Bradshaw, 2017)).

During the past few decades, research on work design has found that task/motivational, social and work context factors can significantly influence employee attitudinal, behavioral, cognitive, or organizational work outcomes (Yitzhak Fried & Ferris, 1987; Humphrey, Nahrgang, & Morgeson, 2007; Morgeson & Humphrey, 2008; S. K. Parker et al., 2001). Of the task/motivational factors, *autonomy,* which is the individuals' sovereignty when working (Hackman & Oldham, 1976), has been studied intensively and found to strongly predict positive attitudinal and subjective and objective behavioral work outcomes (Humphrey et al., 2007; Kirkman, Rosen, Tesluk, & Gibson, 2004; Morgeson & Humphrey, 2008).

Even though workplace autonomy has had a long history in work design research, there has recently been renewed interest in this area (e.g., Bouée, 2015; Kastelle, 2013; Lammers, Stoker, Rink, & Galinsky, 2016; Mazmanian, Orlikowski, & Yates, 2013) primarily because of the increase in knowledge-based organizations in which enhanced employee discretion has been found to be an important predictor of innovative performance (Y Fried, Levi, & Laurence, 2008; Grant et al., 2011). Further, recent studies have found that autonomy can drive employee aspirations for power, in contrast to using power to gain influence over others (Lammers et al., 2016).

Prior research has tended to focus on the fit (i.e., person-organization fit) between occupational demand and individual competence (e.g., Morgeson, Dierdorff, & Hmurovic, 2010; Ostroff, 1993). However, there has been much less focus on the extent to which organizational context inhibits or complements the evolution of a well-designed job or whether "certain job designs [i.e., degree of autonomy] may be more appropriate in certain contexts than in others"

(Morgeson et al., 2010; Oldham & Hackman, 2010, p. 472; Wegman et al., 2016). This paper proposes that only through a joint understanding of how autonomy and the broader organizational contexts or certain boundary conditions interact can a comprehensive understanding of employee attitudes, behaviors, and related work outcomes (G. Johns, 2010; Morgeson et al., 2010) be achieved.

As the organizational context can either be treated as a main effect on work design features, or as a cross-level interaction/moderation effect with work design characteristics on work design outcomes (G. Johns, 2006; Morgeson et al., 2010), in this paper, the focus is on the latter interpretation. Extant and emerging research taking a more contextual approach to work design has closely examined the social context of work design, such as the interpersonal interactions and relationships that are influenced by the work environment and the type of job. However, broader work context characteristics such as working conditions have not been widely examined (Grant & Parker, 2009; Humphrey et al., 2007; S. K. Parker et al., 2001). To go some way to filling this gap, in this paper, the organizational context, or the "broader organizational environment in which employees work" (Morgeson et al., 2010, p. 352) is viewed as an important moderator in the relationship between work design and related outcomes (Morgeson et al., 2010; Oldham & Hackman, 2010).

In particular, this paper examines how employee perceptions of the *psychological climate* dimensions (i.e., an individual's perception of the work environment with regard to the broader organizational environmental dimensions) moderate the relationship between individual autonomy and employee perceived behavioral work outcomes such as innovative work behavior (C. P. Parker et al., 2003). In line with these context-contingent perspectives, the specific climate conditions that moderate the influence of autonomy on employee perceived innovative work

behavior (IWB) are examined. A conjoint analysis is conducted to test the different facets of autonomy and the impact they may have on the employee's perception of their own innovative work behavior. Using a multi-level analysis, the moderating effects of selected psychological climate dimensions on this relationship are analyzed. As relatively few studies have addressed the effects of autonomy on entrepreneurial outcomes (Lumpkin, Cogliser, & Schneider, 2009), this paper provides some guidance to employee support in the knowledge economy.

This paper contributes to the literature in at least two important ways. First, research on work design and specifically on autonomy is revisited from a context-contingent/boundary condition perspective. In doing, the recent calls are answered for enhanced research to consider the contextual features "that most powerfully constrain or enhance the emergence of well-designed jobs" within the broader organizational context (Morgeson et al., 2010; Oldham & Hackman, 2010, p. 473). Therefore, a more comprehensive understanding of the supportive and inhibitive factors that affect autonomy relationships in task/motivational work design is illuminated.

Second, this study examines several dimensions of autonomy concurrently, thereby taking a different perspective than more recent studies (e.g., Humphrey et al., 2007; Wegman et al., 2016); for example, Hackman and Oldham (1975) and most subsequent studies all viewed autonomy from a unidimensional perspective and tended to focus only on work scheduling autonomy (Humphrey et al., 2007). Therefore, the study in this paper is a response to the need for research that recognizes that autonomy is multi-faceted and that these different facets can differentially impact work outcomes beyond just job satisfaction (Morgeson & Humphrey, 2008).

Because this investigation considers both work design-based autonomy dimensions and adjustable organizational-level properties or the psychological climate dimensions, it aims to

improve the understanding of such reverse relationships; that is, how adjusted organizational boundaries impact work design. This additional insight is valuable as prior research has tended to (over)simplify reality by assuming this dimension to be fixed; however, new communication technology means that the organizational dimensions can also be modified (Oldham & Hackman, 2010).

The remainder of this paper is structured as follows. First, work design and contingency theory, the autonomy construct dimensions and the innovative work behavior concept are introduced and reviewed. Then, the contingent climate dimensions are introduced as the moderators of the relationship between the autonomy dimensions and employee perceived innovative work behavior after which the method and results are given. In the final sections, the discussion and conclusion are given.

2 Theory and hypotheses

Because of the need for enhanced context-contingent work design research that considers the interactions between work design features and the broader organizational context (G. Johns, 2010; Morgeson et al., 2010; Oldham & Hackman, 2010), work design theory (Hackman & Oldham, 1976; Morgeson & Humphrey, 2006) and structural contingency theory are reviewed (Drazin & Van de Ven, 1985; Fry & Smith, 1987) to derive a framework/model that can determine the impact that work design features, in this case autonomy, have on employee perceived innovative work behavior.

2.1 Work design theory

Work design theory is based on the assumption that certain jobs, tasks or role characteristics as well as the broader social and contextual aspects of work engender psychological states such as intrinsic motivation that result in certain outcomes at the individual,

group and organizational levels (Hackman & Oldham, 1976; Morgeson & Humphrey, 2008). This interrelationship also includes an implicit assumption that certain employee characteristics are present and that there is a match between the employee characteristics and organizational task requirements (Hackman & Oldham, 1976; Morgeson & Humphrey, 2008).

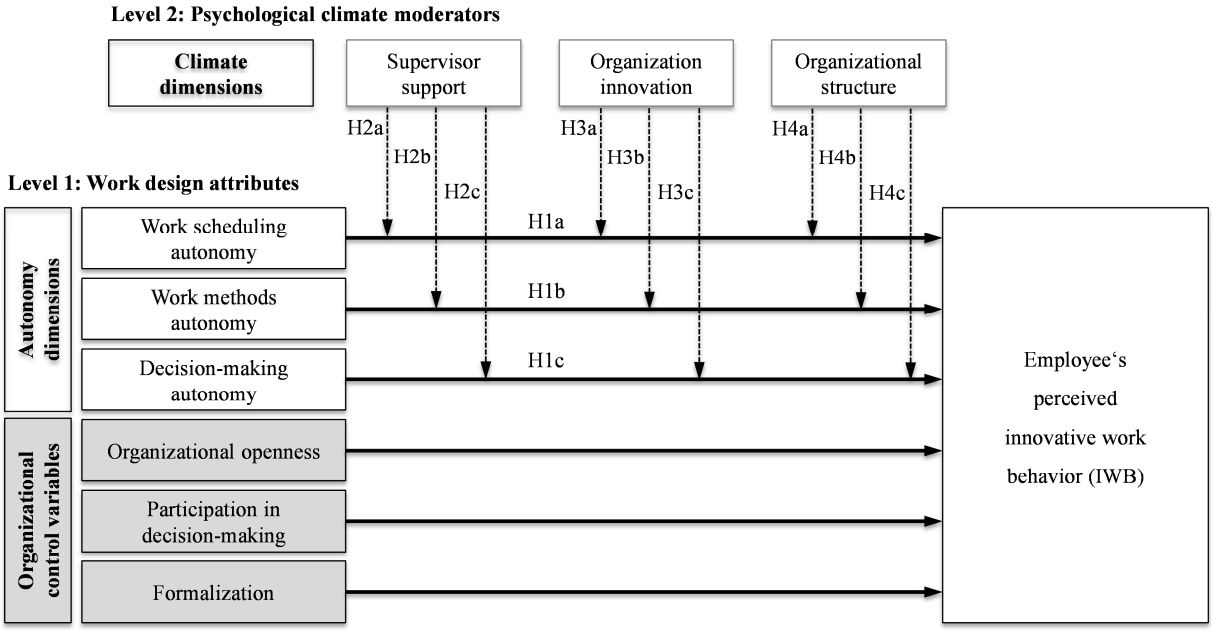
Of all the identified motivational task-related work design features, *autonomy* or "the degree to which the job provides substantial freedom, independence and discretion to the individual" (Hackman & Oldham, 1976, p. 258) has been found to strongly affect both subjective and objective employee performance (e.g., creativity) and attitudinal outcomes such as commitment and job satisfaction (Humphrey et al., 2007; Morgeson & Humphrey, 2008; Spector, 1986). For knowledge workers, in particular, autonomy has been found to be an important, essential aspect of their performance (Janz, Colquitt, & Noe, 1997). Further, it has been shown that *proximal* work environment characteristics such as job complexity and autonomy are more important than *distal* characteristics such as organizational policies in predicting employee creativity (Shalley, Gilson, & Blum, 2000). Therefore, this paper focuses on autonomy as a work design feature and as a predictor of employee perceived innovative work behavior.

2.2 Contingency theory

Structural contingency theory assumes that optimal organizational set-ups are contingent on the specific external and internal circumstances that an organization or individual faces, and that there is a fit between set-ups and these circumstances (Fiedler & Chemers, 1967; Lawrence & Lorsch, 1986). This perspective has been examined in a wide variety of contexts by, for example, addressing national contexts and cultures (e.g., Xiao & Tsui, 2007), leadership (e.g., Yun, Faraj, & Sims Jr, 2005), technology (e.g., Fry & Slocum, 1984), or individual traits (e.g., Carnabuci & Diószegi, 2015) as contingency factors. In the model (see Figure IV-1), these

current views are extended by considering how the autonomy dimensions are related to employee perceptions of their own work climate.

Figure IV-1: Conceptual model showing the direct effect of work design features on employees' perceived IWB and the moderating role of psychological climate dimensions



2.3 Autonomy and work design related outcomes

Traditionally, autonomy has been considered a job/task characteristic of work design and has been based on an intrinsic motivational paradigm in which several personal and work outcomes such as innovative performance are rooted (Hackman & Oldham, 1980; Morgeson & Humphrey, 2008; Ramamoorthy, Flood, Slattery, & Sardessai, 2005). Autonomy in an organizational work context has empirically been associated to individuals or groups and can be practiced in higher-level, lower-level and knowledge worker contexts (Axtell et al., 2000; Langfred, 2000).

Autonomy has been found to positively predict various behavioral outcomes such as objective and subjective employee performance and absenteeism, attitudinal individual and group level outcomes such as job satisfaction, job involvement and organizational commitment, and organizational outcomes such as customer satisfaction (Brock, 2003; Humphrey et al., 2007; S. K. Parker et al., 2001). It is also considered of particular value in so-called "adhocracy cultures" in which "an idealistic and novel vision [that] induces members to be creative and take risks" results in enhanced risk-taking and greater innovative adaptability (Hartnell, Ou, & Kinicki, 2011, p. 679). On the downside, however, it has also been shown that high levels of autonomy and low levels of monitoring can result in lower team performance than high levels of autonomy and high levels of monitoring (Langfred, 2004), implying that putting too much trust in an autonomous team can also be detrimental.

2.4 Dimensions of autonomy

Autonomy is not a one-dimensional construct but has several dimensions (Humphrey et al., 2007). In contrast to the views taken in the 1970s and 1980s, autonomy is now understood to be a multi-faceted construct that encompasses more than just strategic autonomy and control over work goals (Lumpkin et al., 2009). Today, the dimensions have been extended to *work scheduling* autonomy, *work methods* autonomy, and *decision-making* autonomy, each of which differentially predicts work outcomes (Breaugh, 1985, 1999; Humphrey et al., 2007; Lumpkin et al., 2009; Morgeson & Humphrey, 2006). Work scheduling autonomy at either the individual or group level refers to having control over the timing and scheduling of work, work methods autonomy refers to having control over the procedures and methods used to do the work and decision-making autonomy refers to having the freedom to make work-related decisions (Humphrey et al., 2007).

While these dimensions are inherently related, each one has distinct predictive abilities (Humphrey et al., 2007; Morgeson & Humphrey, 2008).

2.5 Innovative work behavior

Innovation or creativity as an outcome of work design characteristics have rarely been the central focus of research into work design outcomes (Grant et al., 2011; Humphrey et al., 2007) and have generally been regarded as "expanded" or "distal" outcomes (Grant et al., 2011, p. 427; S. K. Parker et al., 2001, p. 420). However, creativity and innovation are vital for organizational effectiveness (Oldham & Cummings, 1996; Yuan & Woodman, 2010) as organizational success is often dependent on employees who exceed "standard work behaviors" by being innovative rather than merely fulfilling their formal work requirements as stated in the job description (Van der Vegt & Janssen, 2003, p. 730).

An employee's innovative work behavior is dependent on a combination of three different behavioral tasks: the *generation of ideas*, the *promotion of ideas*, and the *realization of ideas* (Janssen, 2000; Van der Vegt & Janssen, 2003; West & Farr, 1989). While innovative behavior involves both the promotion and realization/implementation of ideas, the creativity concept has been seen to be only involved in idea generation (Amabile, 1983; Van der Vegt & Janssen, 2003).

The antecedents of employee creativity and the elements of innovative work behavior (e.g., Scott & Bruce, 1994; Shalley et al., 2000) have been widely examined. Scott and Bruce (1994) studied the influence of leadership, work group relations and individual attributes on innovation in the workplace and found that the supervisor-subordinate relationship, supervisor role expectations, and employee systematic individual problem-solving styles predicted high levels of innovative behavior. Similarly, Yuan and Woodman (2010) evaluated the influence of the expected outcomes of innovative behavior, such as expected performance outcomes or

expected image gains, on employee innovation and found that both performance expectations and image consequences had a significant impact on employee innovation.

2.6 Autonomy and innovative work behavior

From a work design motivational perspective (Hackman & Oldham, 1976), based on an index of job characteristic dimensions including job autonomy, it was found that job complexity was positively related to supervisor-rated employee creativity and performance (Oldham & Cummings, 1996). Several studies have also found a positive relationship between work design features such as autonomy and creativity and innovation at work (e.g., Amabile, 1988; Amabile, Schatzel, Moneta, & Kramer, 2004; Judge, Fryxell, & Dooley, 1997; Ramamoorthy et al., 2005). For example, Dul and Ceylan (2014) investigated the influence of a creativity-supporting work environment (e.g., challenging job, teamwork, job autonomy) on firms' new product introduction to the market and showed that the more a firm's overall work environment supports creativity, the higher the firm's percentage of sales from new products. In a similar vein Ramamoorthy et al. (2005) directly and indirectly tested the influence of job autonomy on innovative work behaviors when mediated through an obligation to innovate and found that job autonomy had a direct positive effect on innovative work behaviors. Autonomy has further been found to be an influential moderator in the relationship between leadership styles and relationships and creativity at work (e.g., Volmer, Spurk, & Niessen, 2012; Wang & Cheng, 2010).

The hypotheses are first introduced in relation to the main effects of the autonomy dimensions, then, the influence of the climate dimensions as moderators on the relationship between autonomy and employee perceived innovative work behavior is examined.

2.6.1 Work scheduling autonomy and innovative work behavior

Originally from a manufacturing context, work scheduling autonomy has been defined as the "extent to which workers feel they can control the sequencing/timing of their work activities" (Breaugh, 1985, p. 556). Employees that are not tied to any specific schedules or timing can, therefore, freely choose when and in which order they want to pursue certain tasks, and thus exert the related behaviors (Breaugh, 1999).

In comparison to standard tasks in positions with more "discrete, sequential stages," innovation and thus innovative behavior is characterized by discontinuous, intermittent, alternating activities and behavior (Schroeder, Van de Ven, Scudder, & Polley, 1989; Scott & Bruce, 1994, p. 582). Therefore, it is assumed that when employees are able to freely choose when and in what order they work on different tasks, their intrinsic motivation is activated, which positively impacts innovative work behavior in terms of idea generation, idea promotion, and idea implementation, implying the following relationship between work scheduling autonomy and employee innovative work behavior.

Hypothesis 1a: Higher levels of *work scheduling autonomy* are associated with higher levels of *perceived innovative work behavior*.

2.6.2 Work methods autonomy and innovative work behavior

Work methods autonomy has been defined as the "degree of discretion/choice individuals have regarding the procedures (methods) they utilize at work" (Breaugh, 1985, p. 556). As innovative behavior at work reflects a "complex behavior" comprised of "interrelated sets of behavioral activities" such as problem recognition, idea generation, idea promotion, and idea

realization (Dorenbosch, Engen, & Verhagen, 2005, p. 130; McAdam & McClelland, 2002), it appears critical that employees are able to freely choose *how* to approach these stages. This type of autonomy has been found to be particularly important during the initial idea generation phase (McAdam & McClelland, 2002).

There are many techniques that can be used for new idea generation such as brainstorming, mind mapping and morphological analysis (Smith, 1998). Therefore, limitations defined by an organization toward a certain approach or having a pre-specified selection or set of certain methods and instructions might negatively impact employee creativity and idea generation (McAdam & McClelland, 2002; Smith, 1998). Employees might also feel limited in the options they can choose to address certain problems, reducing their motivation to be innovative. It is therefore assumed that there is the following relationship between work-methods autonomy and innovative work behavior.

Hypothesis 1b: Higher levels of *work-methods autonomy* are associated with higher levels of *perceived innovative work behavior*.

2.6.3 Decision-making autonomy and innovative work behavior

The third autonomy dimension is related to the freedom to make decisions about work (Humphrey et al., 2007; Karasek et al., 1998). As the two core phases of the innovation process are initiated through idea generation and implemented through idea fulfillment, many major and minor decisions need to be made along the way such as the decision to innovate, the decision to proceed with a certain idea and the decision to implement (De Jong & Den Hartog, 2007; Zaltman, Duncan, & Holbek, 1973). Therefore, the interrelated stages in innovative work

behavior (see Dorenbosch et al., 2005) require ongoing decision-making within the stages and between the stages; that is, from idea generation to idea implementation (De Jong & Den Hartog, 2007).

Low decision-making authority along this iterative process could result in the constant need to seek approval from decision-makers, thus constraining motivation and related behaviors (Brock, 2003). Therefore, it is assumed that when employees are able to freely make decisions about the direction in which to proceed rather than having to seek supervisor approval or abide by restrictions, there is a positive influence on their innovative work behavior and performance, which implies the following interaction between decision-making autonomy and innovative work behavior.

Hypothesis 1c: Higher levels of *decision-making autonomy* are associated with higher levels of *perceived innovative work behavior*.

Of these three autonomy dimensions, meta-analysis extant findings have found that work scheduling autonomy, in comparison to work methods autonomy and decision-making autonomy, has relatively little impact on job satisfaction, and that the different autonomy dimensions have distinctive predictive effects (Humphrey et al., 2007). While most studies have focused on job satisfaction, there is also evidence of similar differential autonomy effects for employee innovative work behavior. Axtell et al. (2000), for example, found that different forms of autonomy on the shop floor such as control over machine maintenance vs. control over working methods had differential effects on idea generation and creativity. Translated to the context of this

study, it is therefore assumed that the different autonomy dimensions have distinctive predictive effects on innovative work behavior, implying the following:

Hypothesis 1d: *Work methods autonomy* and *decision-making autonomy* have a significantly larger effect on employee innovative behavior than *work scheduling autonomy*.

2.7 Organizational context as a moderator of work design relationships

Prior work design research has highlighted the importance of contextual features in constraining or fostering the development of well-designed jobs (Morgeson et al., 2010; Oldham & Hackman, 2010). Context has two analysis levels: the global *omnibus* context, within which is nested the specific *discrete* context, which involves the variables that determine certain attitudes and behaviors (G. Johns, 2006). From a work design and contingency perspective, context is important because employees seek to attain correspondence or fit with the broader context that "reinforces or rewards different individual needs and behaviors" (Morgeson et al., 2010, p. 351). Work designs related to the previously outlined autonomy dimensions, therefore, allow employees to attain correspondence, and can therefore create positive attitudinal and behavioral work outcomes (Morgeson et al., 2010). Context can influence employee intrinsic motivation which, in turn, can have an effect on employee creativity (Amabile, 1988; Oldham & Cummings, 1996).

There have been some studies focused on the broader organizational and occupational context (Morgeson & Campion, 2003; Morgeson et al., 2010). Specifically, it has been suggested that organizational climate or the "shared perceptions regarding formal and informal organizational policies, practices, and procedures" (Morgeson et al., 2010, p. 355) can impact

work design characteristics "by making specific features more salient" and by "shaping the meaning of work design characteristics in specific ways" (Morgeson et al., 2010, p. 355). Likewise, on the *individual* level, the *psychological climate* describes an "*employee's perception* of the work environment" along the different organizational dimensions; for example, between the *task climate* and the *relational climate* (Benzer & Horner, 2015, p. 457; Litwin & Stringer Jr, 1968). While the construct of organizational climate describes perceptions of organizational practices on a shared level (e.g., work group, department within an organization), psychological climate considers individual perceptions of the work environment. In this study, the focus is on the individual level and thus on specific psychological climate dimensions of the organizational context.

2.8 Psychological climate

Extant climate studies have demonstrated that the perceptions of the different psychological climate dimensions link organizational climate characteristics and employee attitudinal and behavioral outcomes such as motivation, job satisfaction, psychological well-being and performance (Benzer & Horner, 2015; Carr, Schmidt, Ford, & DeShon, 2003; C. P. Parker et al., 2003). Job satisfaction and motivation have consistently been identified as mediators between climate dimensions and work outcomes in terms of performance (Benzer & Horner, 2015; Carr et al., 2003; C. P. Parker et al., 2003). Of the many climate categories, *affective* (Ostroff, 1993), *work group and social environment* (Jones & James, 1979) and *relational or task climate characteristics* (Benzer & Horner, 2015) have been found to have the strongest relationships with work outcomes (Benzer & Horner, 2015; Carr et al., 2003; C. P. Parker et al., 2003).

On the basis of selected psychological climate dimensions, a theoretical model is developed to examine the moderating role of the climate dimensions on the relationship between the autonomy facets and employee perceived innovative work behavior. For the classification and selection of the relevant climate dimensions and the taxonomy, as it has been successfully applied in a range of climate studies (e.g., Carr et al., 2003), Ostroff's (1993) psychological involvement framework was adopted, which is made up of the *affective*, *cognitive*, and *instrumental* states in the workplace. In this paper, one affective (supervisor support), one cognitive (organization innovation), and one instrumental (organizational structure) climate dimensions were selected to examine the influence of employee autonomy evaluations on employee IWB.

2.8.1 The moderating influence of supervisor support

The *affective* climate dimension addresses employee interpersonal and social relations at work including cooperation, participation, warmth and social rewards (Carr et al., 2003; Ostroff, 1993). *Supervisor support* as a measure of cooperation is characterized through employee "support and understanding from their immediate supervisor" and the "extent to which the supervisor […] encourages the development of close, mutually satisfying relationships within the group" (Benzer & Horner, 2015, p. 479; Patterson et al., 2005, p. 386). The importance of supervisor support has been highlighted in previous work, in which it was found that good leader-member exchanges (LMX) are directly and positively related to work outcomes and innovative behavior (e.g., Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002; Oldham & Cummings, 1996; Scott & Bruce, 1994; Volmer et al., 2012; Wang & Cheng, 2010).

The focus of this section, however, is the moderating impact of supervisor support on the relationship between the autonomy dimensions and employee IWB. It is expected that (high) supervisor support, which includes supervisor empathy, confidence, guidance and a good

understanding of the people working for them, increases the effect of autonomy on employee perceived IWB (Patterson et al., 2005; Volmer et al., 2012). In short, high supervisor support results in good leader-member relationships, which are related to high(er) levels of trust between the employee and the supervisor (Oldham & Cummings, 1996). Employees that experience a superior LMX relationship often show reciprocal behavior that is reflected in greater discretionary work processes within the supervisor-subordinate relationship (Ilies, Nahrgang, & Morgeson, 2007). This implies that from both a leader and employee point of view, discretionary behavior is inherent in or triggered by work climates that have good leader-member cooperation.

Therefore, when employees have high levels of supervisor support, this strong, mutual basis of trust inherently 'granted' by the good LMX relationship encourages self-efficacy, flexible role orientation and proactive behavior, making employees feel more comfortable with greater autonomy (S. K. Parker et al., 2006). Therefore, as employees need to spend less time on establishing and maintaining their relationship with their supervisor for work success (Wayne, Liden, Kraimer, & Graf, 1999), they can take advantage of the high levels of autonomy to indulge in more innovative behavior. In contrast, employees who have low supervisor support levels and thus lack guidance, trust and self-efficacy might not (yet) feel comfortable being given greater autonomy as they might first want to establish a closer relationship with their supervisor to develop the trust needed for autonomy to be activated, implying the following:

Hypothesis 2: The effect of a) work scheduling autonomy, b) work methods autonomy, and c) decision-making autonomy on perceived innovative work behavior (IWB) is moderated by *supervisor support*, such that under higher levels of *supervisor support*, the importance of a)

work scheduling autonomy, b) work methods autonomy, and c) decision-making autonomy is higher.

2.8.2 The moderating influence of organizational innovation

The second climate dimension, the *cognitive* facet, is related to personal development and employee involvement in work activities. Cognitive climate includes innovation, growth and intrinsic award dimensions (Carr et al., 2003; Ostroff, 1993), all of which have been found to have positive effects on innovative work outcome orientation (e.g., Benzer & Horner, 2015). O*rganizational innovation*, defined as the "perceived emphasis on innovation and creativity in work; [the] acceptance of change" (Benzer & Horner, 2015, p. 478), therefore, has been chosen in this paper as representative of the cognitive climate dimension.

It is expected that organizational innovation has a positively moderating role on the autonomy-IWB relationship. An innovative organizational climate is characterized by the encouragement for, support for and the rapid, flexible adoption of new ideas and a culture that encourages employees to search for new problem-solving techniques and approaches (Martins & Terblanche, 2003; Patterson et al., 2005). Employees who perceive they work in environments driven by an innovative organizational focus are therefore constantly surrounded, and potentially pressurized, by a mindset and thus target setting for creativity and innovation performance (Ahmed, 1998; Martins & Terblanche, 2003). As discussed, autonomy is necessary to promote employee creativity, and is therefore essential for success in an innovative organizational context (e.g., Amabile, 1988; Oldham & Cummings, 1996; Ramamoorthy et al., 2005).

When employees work in a highly innovative organizational climate, the need (and pressure) to innovate is more likely to be more important for the organization's success;

therefore, the positive effect of (more) discretion on employee innovative behavior might also be higher. Organizations that have low innovation or less of a need to innovate, on the other hand, may divert employee focus to other organizational goals and restrain employee autonomy, implying the following:

Hypothesis 3: The effect of a) work scheduling autonomy, b) work methods autonomy, and c) decision-making autonomy on perceived innovative work behavior (IWB) is moderated by *organizational innovation*, such that under higher levels of *organizational innovation*, the importance of a) work scheduling autonomy, b) work methods autonomy, and c) decision-making autonomy is higher.

2.8.3 The moderating influence of organizational structure

The third climate dimension, the *instrumental* facet, is concerned with work processes and task involvement and is represented by constructs such as extrinsic rewards, structure, hierarchy, and achievement (Carr et al., 2003; Ostroff, 1993). In line with an innovative organizational climate, as *organizational structure* has been one of the core dimensions and most commonly measured factors in the psychological climate (Benzer & Horner, 2015), in this paper structure is chosen to be representative of the instrumental climate dimension. Organizational structure is generally defined as the "perception of formality and constraint in the organization, orderly environment; emphasis on rules, regulations, and procedures" (Benzer & Horner, 2015, p. 479). Organizational structure is usually characterized by rules, pre-specified procedures, processes, or technicalities and an enhanced focus on an adherence to guidelines and instructions (Patterson et al., 2005). It is important to note that structure is distinct from centralization and hierarchy, which

refers to the decision-making authority locus (Juillerat, 2010; Pugh, Hickson, Hinings, & Turner, 1968).

Organizational structure also provides "speed, efficiency, and reliable and consistent performance" (Adler & Borys, 1996; Juillerat, 2010, p. 217) and has also been found to encourage (intrinsic) motivation, flexibility, and innovation (Ford & Gioia, 2000; Juillerat, 2010; Nayir, Tamm, & Durmusoglu, 2014; S. K. Parker, 2003; Raub, 2008). However, in this paper, the view that organizational structure diminishes the effect of autonomy on employee perceived IWB is taken. Organizations with definitive structures have many (pre)defined processes, rules and regulations in place which can stifle innovation and innovative success (e.g., Cooper, 1999).

Creativity and innovation require a degree of flexibility and freedom so as to motivate employees (Adler & Borys, 1996); however, if scheduling and decision making are bound with a definitive structure, employees have less experience with outcomes, success rates, and organizational consequences because they have less autonomy and therefore show less innovation than in more discrete working environments and might even face negative organizational consequences by not adhering to the formal rules. In these organizations, therefore, conformity with organizational guidelines is valued more highly than personal satisfaction and motivation (i.e., extrinsic vs. intrinsic motivation; Ahmed, 1998).

When there are high structural levels, employees are more likely to succeed if they follow the given processes as in highly structured organizations, employees' personal motivation and satisfaction is subordinate. Any deviance from these given rules and regulations such as enhanced autonomy and greater freedom would therefore endanger this success. Less structured organizations, however, provide greater freedom and encourage/allow higher levels of autonomy

when seeking to achieve certain outcomes in line with organizational regulations, implying the following:

Hypothesis 4: The effect of a) work scheduling autonomy, b) work methods autonomy, and c) decision-making autonomy on perceived innovative work behavior (IWB) is moderated by *organizational structure*, such that under higher levels of *organizational structure*, the importance of a) work scheduling autonomy, b) work methods autonomy, and c) decision-making autonomy is lower.

3 Data and method

3.1 Research instruments and experimental design

To examine the conditions under which employees perceive innovative work behavior, a conjoint analysis was conducted followed by a post-experiment questionnaire on the participant backgrounds and the characteristics of their organizations. The conjoint experiment was conducted to analyze the direct effects between dimensions of autonomy and employees' perceived innovative work behavior. The post-experiment questionnaire was used to capture the respondents' demographic background, as well as to assess the moderator variables (i.e., supervisor support, organizational innovation, organizational structure). The translated questionnaire and conjoint experiment profile is provided in the Appendix A.

Conjoint analyses have been frequently conducted in various disciplines such as marketing (e.g., Green, Krieger, & Wind, 2001; Green & Srinivasan, 1978), entrepreneurship (e.g., Brundin, Patzelt, & Shepherd, 2008; Patzelt & Shepherd, 2008) and human resource management (e.g., Baum & Kabst, 2013a; Moy & Lam, 2004) to evaluate complex decision-

making processes (Shepherd, Patzelt, & Baron, 2013). For example, Brundin et al. (2008) investigated in a conjoint experiment the impact of managers' emotional displays (e.g., confidence, satisfaction) and their impact on employees' willingness to act entrepreneurially. Employees had to make a series of judgments based on developed profiles that described hypothetical decision situations comparable to the ones in this study. In another study Baum and Kabst (2013a), for example, examined the importance of different organizational characteristics and their impact on employees' job choice through conjoint analysis.

Compared to post-hoc methodologies such as surveys or interviews, conjoint analyses can overcome certain biases such as self-report bias when respondents answer in a way that "makes them look as good as possible" with regard to socially desirable behaviors (Donaldson & Grant-Vallone, 2002, p. 247), or retrospective/recall bias/telescoping where respondents show differences when recalling information about a past experience or event by overstating recent events and understating more distant events (Brundin et al., 2008; Evans & Leighton, 1995; Zacharakis & Meyer, 1998). Furthermore, when using for example rating scales to examine the importance of certain organizational characteristics respondents tend to rate every item as important and it is difficult to collect contingent decision data in a specific (hypothetical) situation (Shepherd & Zacharakis, 1999). Conjoint analysis, however, is well suited to investigating "interactions among decision criteria" and make a real-time decision considering different factors simultaneously (Shepherd & Zacharakis, 1999, p. 205). Using conjoint analysis therefore avoids certain limitations related to the use of post-hoc methods and is therefore well suited to study the impact of different dimensions of organizational autonomy on employees' perceived innovative work behavior.

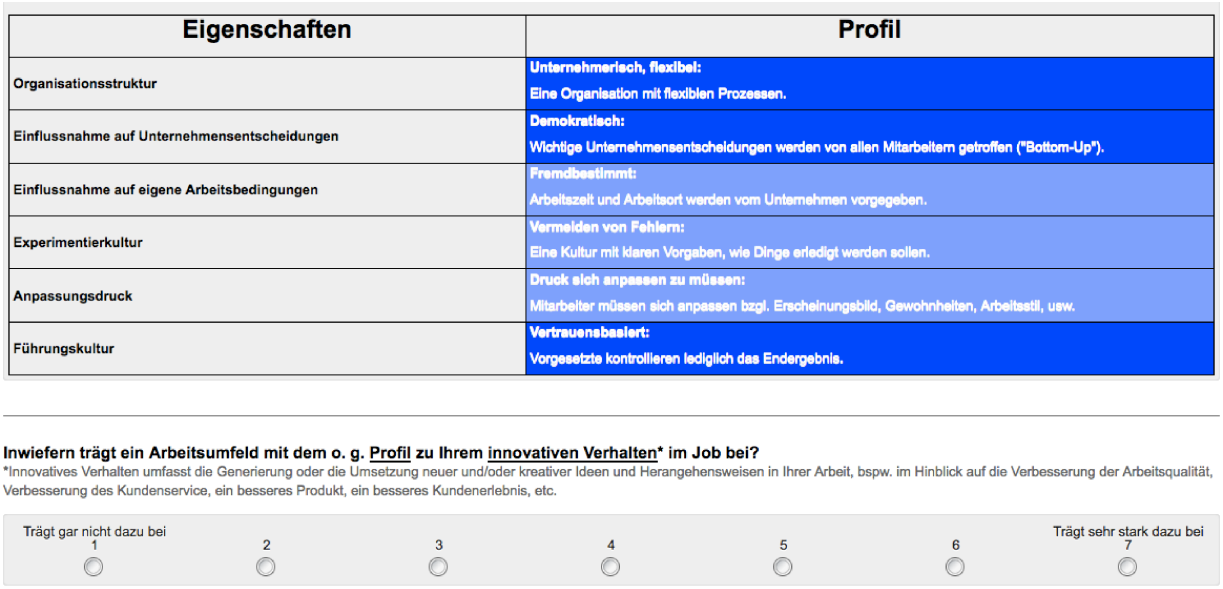
In conjoint experiments, participants are generally required to assess a series of different, hypothetical profile sets which have a certain combination of attributes or cues that assume certain levels or values for each profile (Shepherd & Zacharakis, 1997). Participants evaluate each profile set and make judgments in relation to a certain outcome variable, such as innovative behavior at work (Shepherd & Zacharakis, 1997). These series of judgments made by each participant allows for an analysis of the underlying structure of the decision making to deduce the relative importance of each attribute and to analyze how the contingency relationships are processed as the participants prioritize the attributes (Choi & Shepherd, 2004; Shepherd, 1999). The underlying structure of the decisions were analyzed using hierarchical linear modeling (HLM) to account for the decisions nested in the individual participants (Raudenbush, Bryk, & Congdon, 2004).

A metric conjoint experiment with an orthogonal design which had zero correlation between all possible attribute level combinations was designed for this experiment (Shepherd et al., 2013). The experiment had six attributes, with three being related to the hypotheses and three being used as controls for comparative reasons (see next section). Each attribute varied between two possible, opposing conditions (high and low) which resulted in a possible set of 64 (2^6) profile combinations. By applying a fractional factorial design (Hahn & Shapiro, 1966) the total number of possible combinations of attributes and profiles was reduced to eight, which were then fully replicated using test-retest correlation to account for reliability (Shepherd et al., 2013).

Therefore, there were 16 profiles for each participant (2 x 8 sets) rather than the theoretical 128 profiles. Prior to the determination of the 16 profiles, each participant was provided with a sample profile (see Figure IV-2) so as to become familiar with the structure of the succeeding profile sets. To control for ordering effects, participants were randomly assigned

to different versions of the profile sets. Specifically, two versions were created to control for the *attribute order* of appearance *within* a decision profile, and two versions were created to account for the *profile order across* all decision profiles (Choi & Shepherd, 2004).

Figure IV-2: Sample conjoint profile as used in the survey



Eigenschaften	Profil
Organisationsstruktur	**Unternehmerisch, flexibel:** Eine Organisation mit flexiblen Prozessen.
Einflussnahme auf Unternehmensentscheidungen	**Demokratisch:** Wichtige Unternehmensentscheidungen werden von allen Mitarbeitern getroffen ("Bottom-Up").
Einflussnahme auf eigene Arbeitsbedingungen	**Fremdbestimmt:** Arbeitszeit und Arbeitsort werden vom Unternehmen vorgegeben.
Experimentierkultur	**Vermeiden von Fehlern:** Eine Kultur mit klaren Vorgaben, wie Dinge erledigt werden sollen.
Anpassungsdruck	**Druck sich anpassen zu müssen:** Mitarbeiter müssen sich anpassen bzgl. Erscheinungsbild, Gewohnheiten, Arbeitsstil, usw.
Führungskultur	**Vertrauensbasiert:** Vorgesetzte kontrollieren lediglich das Endergebnis.

Inwiefern trägt ein Arbeitsumfeld mit dem o. g. Profil zu Ihrem innovativen Verhalten* im Job bei?
*Innovatives Verhalten umfasst die Generierung oder die Umsetzung neuer und/oder kreativer Ideen und Herangehensweisen in Ihrer Arbeit, bspw. im Hinblick auf die Verbesserung der Arbeitsqualität, Verbesserung des Kundenservice, ein besseres Produkt, ein besseres Kundenerlebnis, etc.

Trägt gar nicht dazu bei						Trägt sehr stark dazu bei
1	2	3	4	5	6	7

3.2 Sample

The sample was recruited through an online panel provider that distributed a web link to the survey. Participants were incentivized through the panel provider and received a fixed remuneration for their participation in the study. The remuneration was only paid when the study was successfully completed. Participants that did not finish the survey or provided invalid answers were not remunerated in the end. All data were collected and analyzed fully anonymously and did not allow drawing any personalized inferences about participants. The authors did not seek approval by an institutional review board (ethics committee) because identifying information about survey respondents was not collected, used or reported at any stage

of the study. The survey did neither collect any sensitive information (e.g., religion, nationality, state of health), nor personal information (e.g., name, (e-mail) address, phone number) of the participants. At our department there is no institutional review board and there exists no need to seek approval from such a committee for survey-based research in the field of social sciences, and more specifically organizational behavior and applied psychology.

The approach followed the department's standard research procedure in which all respondents are clearly instructed at the beginning of the study that their responses will be used for a research project or series of studies at the institution and that all information will be treated fully confidentially. Furthermore, the panel provider remunerated participation in the study and participation therefore assumed an agreement to use the survey responses for research purposes and further publication of the results. Through accepting the terms and conditions as well as the privacy policy of the panel provider, the participants provided their general consent to use, store and process their data for relevant purposes (e.g., scientific research).

The online panel provider pre-selected candidates based on defined company size quotas: 1–10 employees: 15%; 11–499 employees: 35%; 500–5,000 employees: 35%; >5,000 employees: 15%; and employee professional qualifications: university degree: 40%; vocational training: 60%. Soft quotas were agreed for gender: 50% female, 50% male; and age: 18–24 years: 15%; 25–34 years: 19%; 35–44 years: 24%; 45–54 years: 24%; 55–65 years: 18%. At the beginning of the survey, participants were asked about their highest educational degree ("What is your highest professional qualification?"), employment status ("Are you currently employed full-time or part-time?") and age ("Please indicate your age") to ensure that data was obtained only from people currently employed in Germany who had completed a professional qualification and were between 18 to 65 years old. People who did not match the age criteria, were not currently

employed part-time or full-time or did not have a professional qualification were not able to proceed to the main part of the study.

A pre-test was conducted on 16 participants to gain useful insights and suggestions for improvements with regards to timing, the clarity of the phrasing and definitions and the reliability of the conjoint decisions. For the main study, 2,550 employed individuals from across Germany completed the survey in February 2016. Among all participants the average duration of the survey was 25.1 min (SD = 15.7) including the pre-screening questions, the conjoint experiment and the post-experiment questionnaire on the measures for the chosen psychological climate dimensions. Certain checks were then applied to ensure sufficiently high reliability to guarantee the quality of the dataset. Specifically, for each participant, the correlations between the 8 original decision profiles and the 8 replicated profiles were computed. In line with Shepherd et al. (2013) only participants with a correlation of at least .3 between the original set of profiles and the replicated profile set were included. Unreliable answers were also rejected, with the final analysis being conducted on a sample of N = 1,180 with a mean test-retest correlation of .65 across the two profile sets, which was in line with similar studies (Shepherd, 1999; Shepherd et al., 2013). Among the final sample of 1,180 respondents the average duration of the conjoint analysis and the post-experiment questionnaire was 27.3 min (SD = 16.1).

The final sample consisted of 82.5% full-time employees, with the remainder being part-time employees working an average of 51.6% (SD = 19.1) of full-time work. Just over half (50.3%) the respondents were female and the average age across the participants was 42.5 years (SD = 12.1), with 53.8% having completed a university degree and the remainder having completed an apprenticeship/vocational training in areas such as insurance/retailing incl. banking, insurance, hospitality, artisanry and public administration. The mean number of years of

professional experience years was 20.7 years (SD = 13.0): 16.2% had professional experience of up to five years and 24.7% had been working for 31 or more years. Only 5% has been employed for 31 or more years with their *current* company, whereas 39.3% had been working for up to five years for their current company. The average number of years of being employed in their *current* company was 10.8 years (SD = 9.8) and the majority of participants worked for smaller companies up to 499 employees (52.3%), 31.9% worked for companies between 500 and 5,000 employees, and 15.8% worked for companies with more than 5,000 employees.

Participants worked in a range of industries: services (40.0%), manufacturing (16.4%), retail and wholesale (10.8%), public administration (9.8%), and others including transport, communication, energy (9.0%), or financial, insurance, property/real estate (8.0%). Participants worked in: (general) management and administration (22.3%), marketing/sales/communication (11.5%), fabrication/manufacturing (9.3%), information technology (8.5%), procurement and logistics (8.1%), research and development (8%), finance (5.2%), and human resources (4.7%), with 30.3% of these having staff responsibilities, 17.9% having budget responsibilities and 7.9% being owners/shareholders of their companies.

3.3 Variables and measures

3.3.1 Dependent variable: Assessment of employee perceived innovative work behavior

Each conjoint profile had six attributes with each attribute having one of two opposing predetermined levels. The different attribute levels were highlighted with different colors. For each decision profile, the participants' perceived *innovative behavior* was analyzed (i.e., "To what extent does a working environment with the following profile contribute to your innovative behavior at work?") as in Scott and Bruce (1994). In line with Hurt, Joseph, and Cook (1977), innovative behavior was further specified and defined in each profile as "*innovative behavior*

comprises the generation or the implementation of new and/or creative ideas and approaches in your work, e.g., with regard to the improvement of the quality of your work, improvement of customer service, a better product, a better customer experience, etc.". Answers were given on a seven-point Likert-type scale ranging from "1 = does not contribute at all" to "7 = contributes very much". A sample profile is provided in Figure IV-2.

3.3.2 Decision attributes: Level 1

Overall, for each conjoint profile, the effects of the six categorical attributes on the dependent variable were examined, three of which were related to the hypotheses and the three autonomy dimensions: work scheduling autonomy, work methods autonomy, decision-making autonomy; and the additional three acting as control variables for comparative reasons which addressed additional organizational features that could also possibly impact the decision-making process: organizational openness, participation in decision-making, and formalization (e.g., Behrens, Ernst, & Shepherd, 2014). Participants were asked to assume that all variables not specified in the profiles should be assumed to be constant across all decision situations. Table IV-1 illustrates and summarizes the attributes and their respective conditions.

Table IV-1: Organizational attributes and the different states as used in the conjoint analysis

Attribute	Description
Influence on own working conditions *(Variable: Work scheduling autonomy)*	**Self-determined:** Working time and working place can be freely chosen by the employee.
	Other-determined: Working time and working place are determined by the company
Experimental culture *(Variable: Work methods autonomy)*	**Learning from mistakes:** A culture that allows employees to try out new things.
	Prevention of failure: A culture with clear specifications/parameters as to how things have to be done.

Leadership culture *(Variable: Decision-making autonomy)*	**Trust-based:** Supervisors only control employees' final results.
	Control-based: Supervisors continually control employees' working progress.
Pressure to adjust *(Variable: Organizational openness)*	**Freedom to be oneself:** Employees do not need to adjust themselves with regard to appearance, habits, working style, etc.
	Pressure to adjust oneself: Employees have to adjust themselves with regard to appearance, habits, working style, etc.
Influence on company decisions *(Variable: Participation in decision-making)*	**Democratic:** Important company decisions are taken by all employees (bottom-up).
	Hierarchical: Important company decisions are exclusively taken by the management team (top-down).
Organizational structure *(Variable: Formalization)*	**Entrepreneurial, flexible:** An organization with flexible processes.
	Bureaucratic, standardized: An organization with standardized processes.

As *work scheduling autonomy* is based on employee control over the scheduling of their work (Breaugh, 1985, 1989, 1999), employees therefore have discretion in terms of their working time and place. Therefore, work scheduling autonomy was denoted as having an "*influence on own working conditions*". This was further divided into two levels: "s*elf-determined: working time and working place can be freely chosen by the employee"* [high] and "*other-determined: working time and working place are determined by the company"* [low].

As *work methods autonomy* refers to the choice or discretion that an employee has over the procedures they utilize in their work (Breaugh, 1985) and implies that employees are free to choose *how* things are to be done at work, employees are therefore free to experiment and adjust their methods to attain their goals. Pre-specified methods in highly process-driven organizations are usually applied to standardize and to mitigate risks as the outcomes are more predictable (Raub, 2008; Wüllenweber, Beimborn, Weitzel, & König, 2008). Such discretion can have

multiple origins within an organization such as from within the organizational structures, or as part of the systems and processes. Discretion, therefore is expressed/manifested in an organization's culture through the "shared values and norms that guide employees' interactions with peers, management, or clients" (Patterson et al., 2005, p. 380; Svyantek & Bott, 2004). To account for the possible multiple origins, work methods autonomy was therefore operationalized as "*experimental culture*" which was divided into two levels: "*learning from mistakes: a culture that allows people to try out new things*" [high] and "*prevention of failure: a culture with clear specifications/parameters as to how things have to be done*" [low].

As *decision-making autonomy* describes employee freedom to make choices about their work processes (Humphrey et al., 2007; Karasek et al., 1998), employee decision authority and latitude is commonly rooted in the quality and modality of the leader-member relationships based on mutual trust between supervisors and employees (Graen, Novak, & Sommerkamp, 1982; Karasek et al., 1998). Decision-making autonomy was therefore operationalized as "*leadership culture*" and specified across two levels: "*trust-based: supervisors only control employees' final results*" [high] and "c*ontrol-based: supervisors continually control employees' working progress*" [low].

In contrast to measuring work scheduling autonomy, the other two autonomy types were not explicitly operationalized to prevent the respondents drawing obvious similarities, comparisons, or perceived potential overlaps and independence issues between the autonomy dimensions and over-emphasizing their focus on these attributes (Rao, 2014).

Data was also collected on the three additional control organizational variables that have been found to impact employee creativity and innovation: namely, *organizational openness*, *participation in decision-making* and *formalization*.

Organizational openness is defined as "the degree to which individuals feel the atmosphere is conducive to the expression of individual opinions, ideas, and suggestions" (Benzer & Horner, 2015, p. 478; Flores, Zheng, Rau, & Thomas, 2012; O'Reilly, 1989). This variable was operationalized under the label "*pressure to adjust*" and further specified into two levels: "f*reedom to be oneself: employees do not need to adjust themselves with regard to appearance, habits, working style, etc.*" [high]; and "*pressure to adjust oneself: employees have to adjust themselves with regard to appearance, habits, working style, etc.*" [low].

Participation in decision-making is related to an employee's "perceived influence in joint decision making" (Benzer & Horner, 2015, p. 479; Connor, 1992), and was operationalized as "*influence on company decisions*" and specified on two levels: "*democratic: important company decisions are taken by all employees (bottom-up)* [high]; and "*hierarchical: important company decisions are exclusively taken by the management team (top-down)*" [low].

Formalization addresses an organization's "concern with formal rules and procedures" (Damanpour, 1991; Patterson et al., 2005, p. 386; Pierce & Delbecq, 1977) and was described by "*organizational structure*" and further divided into two levels: "e*ntrepreneurial, flexible: an organization with flexible processes*" [high] and "*bureaucratic, standardized: an organization with standardized processes*" [low]. Table IV-2 gives an overview of the theoretical constructs and their related operationalization for the conjoint analysis.

Table IV-2: Overview of theoretical constructs and their operationalization

Theoretical construct	**Operationalization in conjoint analysis**
Work scheduling autonomy (e.g., Breaugh 1999)	'Influence on own working conditions'
Work methods autonomy (e.g., Breaugh 1999)	'Experimenting culture'

Decision-making autonomy (e.g., Karasek *et al.* 1998)	'Leadership culture'
Organizational openness (e.g., Flores *et al*. 2012)	'Pressure to adjust'
Participation in decision-making (e.g., Connor 1992)	'Influence on company decisions'
Formalization (e.g., Pierce and Delbecq 1977)	'Organizational structure'

3.3.3 Cross-level moderators: Level 2

In the post-experiment questionnaire, participants were asked about the perceived psychological climate dimensions in their organizations, for which items from Patterson et al.'s (2005) Organizational Climate Measure© were selected, that broadly assessed and categorized the four different scale types: human relationships, internal processes, open systems and rational goals. Participants were presented with different types of statements and requested to; "please indicate to what extent the following statements apply to your current company." Answers were given on a four-point Likert-type scale ranging from "1 = definitely false" to "4 = definitely true".

Supervisor support was assessed using the 5 items from Patterson et al. (2005) and included items such as; "supervisors here are really good at understanding peoples' problems", "supervisors show that they have confidence in those they manage", and "supervisors can be relied upon to give good guidance to people". The internal Cronbach's alpha reliability was .92.

Organizational innovation was assessed using the 6 items from Patterson et al. (2005) and included statements such as; "*new ideas are readily accepted here*", "*management here are quick to spot the need to do things differently*", "*assistance in developing new ideas is readily available*", or "*people in this organization are always searching for new ways of looking at problems*". The Cronbach's alpha was .91.

Organizational structure was assessed using the 5 items from Patterson et al. (2005) and included statements such as; "*it is considered extremely important here to follow the rules*" or "*everything has to be done by the book*". The Cronbach's alpha was .80.

Scale reliability was furthermore tested by analyzing the split-half reliability from which the Spearman-Brown split-half coefficients and the Guttmann split-half coefficients were calculated. Overall, the results indicated and thus confirmed adequate to good reliability of the three constructs, both with regard to Spearman-Brown coefficients (supervisor support: .92, organizational innovation: .91, organizational structure: .77) and Guttman split-half coefficients (supervisor support: .89, organizational innovation: .91, organizational structure: .75). The cutoff value is commonly .60, while a value of .80 or higher indicates adequate reliability, and a value of .90 or higher indicates good reliability.

3.3.4 Additional level 2 variables

In addition to the previously mentioned constructs, the following (level 2) variables were controlled for so as to provide a more robust interpretation of the results. First, the participants' *age* differences were analyzed to account for any variances that may be because of age, experience or changing views and attitudes toward certain (organizational) parameters. In line with the assumption that individual preferences and perceptions change over time, participants' *overall professional experience* and *tenure* within their current company were also tested. Both parameters were speculated to possibly have an influence on how employees perceive certain parameters within an organization

Second, differences in the results based on the participants' *gender* were tested. Third, different types of *company size* were controlled for, as in smaller firms, it was speculated that more responsibility and flexibility may be required from each employee, and in larger

organizations, as the structures and processes may tend to be more formalized, employees have less room for discretion.

Fourth, the *industry* in which the respondents were employed was controlled for as it was speculated that autonomy might be more suitable in certain industries where flexibility, innovation and risk taking are important such as in the service sector, whereas in others such as manufacturing, consistency and control are of greater importance.

Fifth, the respondents' *educational background* was measured as it was speculated that because more highly qualified employees generally had wider job options, they would tend to value autonomous behavior more than less qualified persons with fewer available options.

Sixth, *staff responsibility* was accounted for as employees with staff responsibility generally have greater decision powers and enhanced overall discretion in comparison to employees with no staff responsibilities.

Finally, the attribute and profile order within and across conjoint profiles were accounted for to ensure that the different arrangements of the conjoint attributes and profiles did not influence the participants' decision-making.

4 Analysis and results

The conjoint experiment yielded a total of 9,440 decisions based on 1,180 individuals from the sample that were subject to a test-retest correlation of at least .30 to ensure sufficiently high reliability (Shepherd et al., 2013). The mean test-retest correlation between each individual assessment of the profile sets (i.e., 2 x 8 profile sets) was .65, only slightly below that of similar studies (e.g., Behrens et al., 2014; .78; Patzelt & Shepherd, 2009; .82; Shepherd, 1999; .78), which provided assurance that there was a sufficiently high degree of judgmental consistency (Choi & Shepherd, 2004). On level 1 the mean perceived innovative behavior score across all

decisions was 4.33 (SD = 1.39). The conjoint attributes (e.g., autonomy dimensions) had means and SD of .50, reflecting the binary nature of the attributes (i.e., high vs. low). A summary of the descriptive statistics for the level 2 variables (i.e., moderators) and controls including means, standard deviations, and intercorrelations is given in Table IV-3.

Multilevel modeling was conducted for the further analysis to account for the autocorrelation of the data. Specifically, a 2-level hierarchical linear modeling (HLM2) approach was conducted to explore the variance across different models (Raudenbush et al., 2004). In order to account for the nested nature of the data (i.e., decisions nested in individuals), random coefficient modeling (i.e., HLM) is well suited to deal with nested data (see alsoAguinis, Gottfredson, & Culpepper, 2013; Shepherd et al., 2013). The present study involved data at two levels. First, assessments of certain hypothetical contexts nested in individuals (i.e., conjoint profiles with autonomy dimensions; level 1) and, second, how higher-level variables influence these assessments (i.e., survey-based questions measuring dimensions of psychological climate; level 2). HLM is well suited for nested data, because it controls for autocorrelation and heteroskedasticity inherent in nested data (Raudenbush and Bryk 2002). HLM therefore allows to test the following three types of relationships that are also tested in this model: First, lower-level direct effects in which it is investigated whether level 1 predictors (e.g., dimensions of autonomy) have an effect on (a lower-level) outcome (e.g., perceived innovative work behavior). Second, cross-level direct effects, in which it is analyzed whether higher-level (2) predictors (e.g., psychological climate dimensions) have an effect on a lower level outcome variable (e.g. perceived innovative work behavior. And third, cross-level interaction effects in which it is analyzed whether the relationship between two lower-level variables (e.g., dimensions of

autonomy with innovative work behavior) changes as a function of a higher-level variable (e.g., psychological climate dimensions).

For the model estimations, best-practice recommendations were followed as outlined in Aguinis, Gottfredson, and Culpepper (2013). The best-practice recommendations for estimating cross-level interactions using multilevel modeling as put forth by Aguinis *et al.* (2013) have been applied by numerous authors in the field and to date have been cited almost 270 times since their initial publication (e.g., Chang, Jia, Takeuchi, & Cai, 2014; Morgeson, Aguinis, Waldman, & Siegel, 2013; Uy, Foo, & Ilies, 2015). The approach reflects a well-established approach in the field and was therefore also used in the analysis of this paper. Specifically, Aguinis et al. (2013) recommend a sequence including four steps in the multilevel model building process.

First, an unconditional means, one-way random-effects ANOVA or *null model* is calculated in which level 1 predictors are excluded and thus only intercepts are allowed to vary across individuals. From this first step the intraclass correlation (ICC) can be calculated, which quantifies the proportion of the total variation in perceived innovative work behavior, accounted for by individual differences. Generally, a value near zero indicates that a model including level 1 variables only is suitable and that there is no need to apply multilevel modeling (Aguinis et al., 2013). In cases where ICC > 0 there may be a level 2 variable (e.g., psychological climate) that explains heterogeneity of innovative behavior scores across individuals. ICC scores in multilevel studies usually range between .15 and .30 (Mathieu, Aguinis, Culpepper, & Chen, 2012).

Second, a *random intercept and fixed slope model* is calculated (RIFSM) in which the level 2 equations are added. The model allows the intercepts to vary across individuals, however, slopes are not allowed to vary and the equation thus assumes that the relationship between autonomy and innovative work behavior is identical across all individuals. Third, a random

intercept and random slope model is calculated (RIRSM) to test whether the third key source of variance, the variance of slopes across individuals, is different from zero (i.e., whether the relationship between autonomy and innovative work behavior varies across individuals). If such variance were nonexistent, there would be no reason for examining how certain moderators explain slope variance across individuals. Fourth, as a final step the cross-level interaction model (CLIM) is calculated to test whether a certain level 2 variable explains part of the variance in slopes across individuals (i.e., whether psychological climate moderates the relationship between autonomy and innovative work behavior across individuals).

Generally, the assumptions of multilevel modeling resemble the usual OLS regression assumptions in terms of function forms or residuals (Aguinis et al., 2013). An analysis of the residuals (level 1) indicated that they were normally distributed, that there was no autocorrelation (i.e., residuals were independent from each other), and that they were homoscedastic (i.e., equal residuals across the regression line). The parameters of the model were estimated on the basis of maximum likelihood estimation. To improve the interpretation of the cross-level interaction effect, level 1 predictors were group mean-centered (Aguinis et al., 2013). The correlations between level 1 variables were zero due to the orthogonal design of the experiment (Patzelt & Shepherd, 2008). Table IV-4 provides an overview of the different model results including the coefficients, the corresponding standard errors and the significance levels.

Table IV-3: Descriptive statistics for level 2 variables including the controls (Cronbach's alpha on the diagonal)

	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Supervisor support	2.74	.72	*.92*	-.39**	.71**	.03*	.01	-.03	-.01	.00	.02	.01	.08*
2. Organizational structure	2.82	.59	-.39**	*.80*	-.*43***	.01	.04	.05	.10**	-.05	-.04	-.10**	-.11**
3. Organizational innovation	2.54	.67	.71**	-.43**	*.91*	.04	.04	.01	-.04	.02	.10**	.00	.12**
4. Age	42.48	12.15	.03	.01	.04	-	.90**	.54**	-.20**	-.10*	-.02	.02	.08**
5. Years of professional experience	20.68	12.98	.01	.04	.04	.90**	-	.59**	-.16**	-.10**	-.03	-.20**	.06*
6. Years with current company / tenure	10.81	9.83	-.03	.05	.01	.54**	.59**	-	-.13**	-.18**	-.10**	-.10**	.10**
7. Gender (female)	50.3%		-.01	.10**	-.04	-.20**	-.20**	-.13**	-	.10	-.01	-.11**	-.19**
8. Company size (11–499 employees)	37.3 %		.00	-.10	.02	-.10*	-.10**	-.20**	.10	-	.10	-.01	.03
9. Industry (services)	40.0 %		.02	-.04	.10**	-.02	-.03	-.10**	-.01	.10	-	-.02	.01
10. Educational background (univ. degree)	46.2%		.01	-.10**	.00	.02	-.20**	-.10**	.11**	-.01	-.02	-	.17**
11. Staff responsibility (yes)	30.3 %		.10*	-.11**	.12**	.08**	.06*	.10**	-.20**	.03	.01	.17**	-

Note: * p < .05, ** p < .01.

Table IV-4: Results for multilevel modeling analysis (controls omitted)

	Model			
Level and Variable	Null	Random Intercept and Fixed Slope	Random Intercept and Random Slope	Cross-Level Interaction
Level 1				
Intercept	4.33*** (.02)	4.33*** (.02)	4.33*** (.02)	4.33*** (.02)
Work scheduling autonomy		.57*** (.02)	.57*** (.03)	.57*** (.03)
Work methods autonomy		.60*** (.02)	.60*** (.02)	.60*** (.02)
Decision-making autonomy		.43*** (.02)	.43*** (.02)	.43*** (.02)
Organizational openness		.46*** (.02)	.46*** (.02)	.46*** (.02)
Participation in decision-making		.45*** (.02)	.45*** (.02)	.45*** (.02)
Formalization		.38*** (.02)	.38*** (.02)	.38*** (.02)
Level 2 (Intercept)				
Supervisor support		.02 (.05)	.05 (.05)	.05 (.05)
Organizational innovation		.16** (.05)	.12* (.05)	.13* (.05)
Organizational structure		.10* (.04)	.09* (.05)	.09 (.05)
Cross-level interactions				
Work scheduling autonomy				
× Supervisor support				−.06 (.05)
× Organizational innovation				−.02 (.05)
× Organizational structure				.02 (.05)
Work methods autonomy				
× Supervisor support				.02 (.04)
× Organizational innovation				−.08 (.05)
× Organizational structure				.00 (.04)
Decision-making autonomy				
× Supervisor support				.02 (.04)
× Organizational innovation				−.03 (.04)
× Organizational structure				.04 (.03)
Variance components				
Intercept	.50***	.54***	.60***	.60***
Work scheduling autonomy			.48***	.47***
Work methods autonomy			.32***	.31***
Decision-making autonomy			.20***	.20***
Organizational openness			.23***	.23***
Participation in decision-making			.30***	.30***
Formalization			.19***	.19***

Additional information				
ICC	.26			
−2 log likelihood FIML	31806	29062	27884	27872
Number of estimated parameters	3	12	39	48
Pseudo R^2	0	.19**	.19**	.19**
Model comparison χ^2 (Degrees of Freedom)		2744.13 (9)***	1178.20 (27)***	12.10 (9)

Note: ICC = Intraclass correlation; FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 N = 9,440 and L2 sample size = 1,180. Values in parentheses are standard errors. Pseudo R^2 values were calculated as the squared correlation between observed and predicted scores and excluded error terms (Aguinis et al., 2013). * $p < .05$, ** $p < .01$, *** $p < .001$.

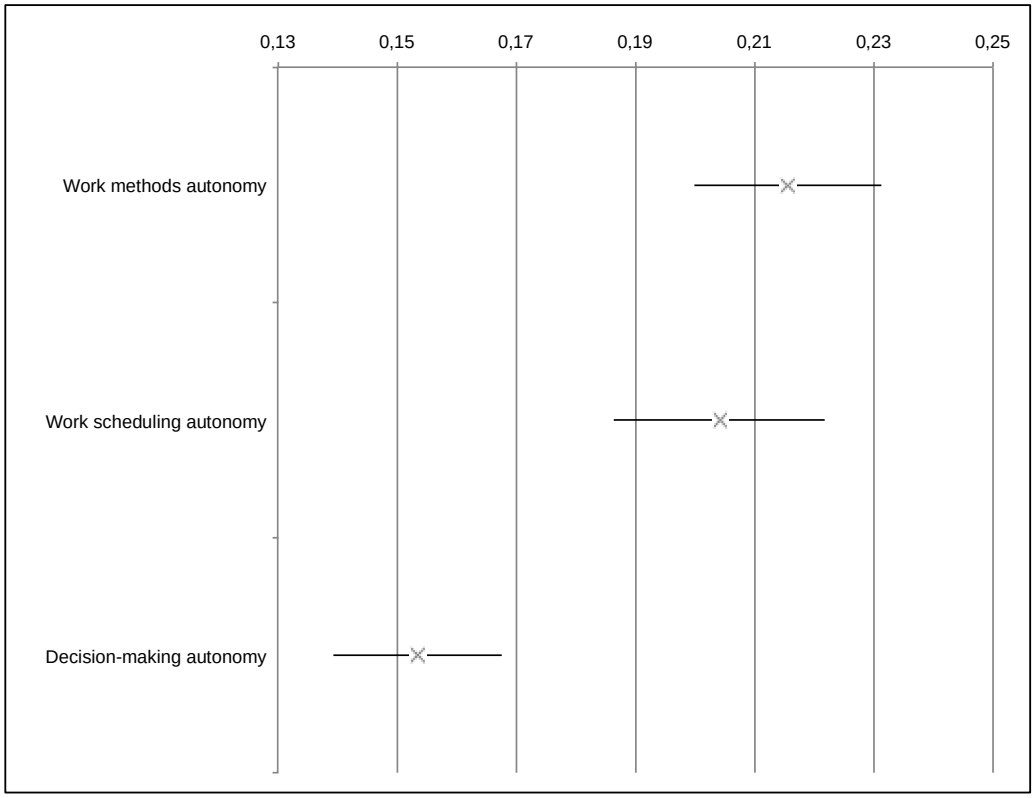
4.1 Level 1 effects

Considering the nested nature of the data, a null model for the one-way random-effects ANOVA was first calculated, from which the intraclass correlation (ICC) was calculated that quantified the proportion of the total variation in a participant's innovative behavior that was accounted for because of employee individual differences (Aguinis et al., 2013). A value of .26 indicated that there may be a level 2 variable (i.e., climate) that explained the heterogeneity of the perceived innovative behavior scores across individuals (from different organizations) with different perceived climates, indicating that multilevel modeling was appropriate (Aguinis et al., 2013). In the next steps, a random intercept fixed slope (RIFS; intercepts vary across individuals) model and a random intercept random slope (RIRS; slopes vary across individuals) model were calculated to test the direct effects of the level 1 autonomy dimension and the level 2 climate dimension predictors (Aguinis et al., 2013). For both models all level 1 predictors were significant ($p < .001$). With regard to level 2 variables, only organization innovation and organizational structure had a significant direct effect ($p < .05$). Overall, both models were significant (RIFS model: $\chi^2 = 2744.13$, $p < .001$; RIRS model: $\chi^2 = 1178.20$, $p < .001$) and had a pseudo R^2 of .19.

On level 1, the results showed significant main effects for all autonomy dimensions. Hypotheses 1a-c stated that higher levels of employee autonomy were associated with higher levels of perceived innovative work behavior, as opposed to lower levels of employee autonomy. This RIFS and RIRS model results also supported this across all measured autonomy dimensions (i.e., work scheduling autonomy (.57, $p < .001$); work methods autonomy (.60, $p < .001$), and decision making autonomy (.43, $p < .001$)) that showed significant lower-level direct effects of autonomy dimensions on perceived IWB. Significant main effects were also observed for the additional organizational control attributes (i.e., organizational openness (.46, $p < .001$); participation in decision-making (.45; $p < .001$); and formalization (.38; $p < .001$). Of the level 2 variables only organizational innovation was found to have a significant, direct effect on the intercept (RIFS model: .16, $p < .01$; RIRS model: .12, $p < .05$).

Hypothesis 1d stated that work methods autonomy and decision-making autonomy had a higher and significantly more distinct effect on employee innovative behavior than work scheduling autonomy. Contrary to expectations, this hypothesis was rejected. It was found that both work methods autonomy (95% CI [.20, .23]) and work scheduling autonomy (95% CI [.19, .22]) had an equally high influence on perceived innovative behavior, and a significantly higher effect than decision-making autonomy, (95% CI [.14, .17]). Work scheduling autonomy and work methods autonomy fell into the same confidence interval, whereas decision-making autonomy showed a significantly smaller impact on employee perceived innovative work behavior (see Figure IV-3). Hypothesis 1d was therefore not supported even though work methods autonomy had the strongest effect of the autonomy dimensions.

Figure IV-3: Z-standardized coefficients of autonomy attributes including 95% confidence intervals



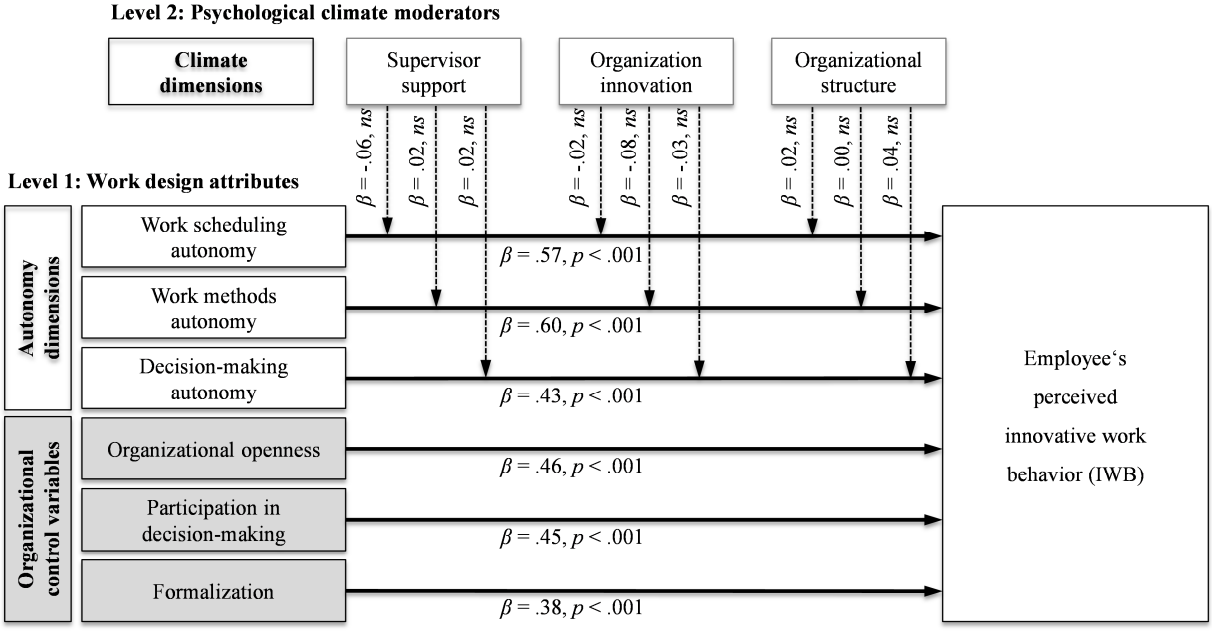
Note: 95% confidence intervals centered around z-standardized HLM coefficients of the cross-level interactions model presented in Table IV-4.

4.2 Cross-level interaction effects between level 1 and level 2

In the final steps the recommended approach from Aguinis et al. (2013) was followed and a cross-level interaction model calculated to analyze whether the level 2 psychological climate dimensions variable were able to explain the variance across the different organizations. This analysis evaluated how the relationship between the autonomy dimensions and employee innovative behavior was contingent on the perceived climate characteristics on level 2 (Behrens et al., 2014). Contrary to our expectation, our model was not significant (χ^2 = 12.10, p > .05), with a pseudo R^2 of .19.

Hypotheses 2a-c stated that supervisor support moderated the autonomy-innovative work behavior relationship. This hypothesis was rejected, as no significant interaction effect was found. No significant interaction effects were found for the other autonomy dimensions: work scheduling autonomy, H2a (−.06, $p > .05$); work methods autonomy, H2b (.02, $p > .05$); and decision-making autonomy, H2c (.02, $p > .05$): and similar non-significant results were found for Hypotheses 3a-c, which stated that organizational innovation was a moderator in the autonomy-innovative work behavior relationship (H3a: −.02, $p > .05$; H3b: −.08, $p > .05$; H3c: −.03, $p > .05$), and Hypotheses 4a-c, which stated that organizational structure was a moderator, neither of which were supported (H4a: .02, $p > .05$; H4b: .00, $p > .05$; H4c: .04, $p > .05$). The summary of the results across the different hypotheses is provided in Figure IV-4.

Figure IV-4: Summary of model results (without level 2 control variables)



In addition to the analysis based on the final sample of n = 1,180 respondents, a further analysis was conducted on the basis of the full sample of survey respondents (N = 2,550), including respondents with a test-retest correlation below .30 in the conjoint analysis (e.g., Shepherd et al., 2013) to test the robustness of the results. The summary of the results for the enlarged sample is provided in the Table IV-5 in Appendix B. However, we decided to report the more conservative approach where we apply a similar cut-off for sample inclusion as in the extant literature (Shepherd et al., 2013). Overall, the results of the reduced sample were mainly the same as in the full sample regarding Hypotheses 1 – 4. For Hypotheses 1a – 1c, we found that higher levels of (work scheduling, work methods, and decision-making) autonomy were also associated with higher levels of perceived innovative work behavior. Moreover, the results were even congruent with regard to effect size order, in which work methods autonomy showed the strongest effect (.32, $p < .001$), followed by work scheduling (.29, $p < .001$), and then decision-making autonomy (.22, $p < .001$). For Hypothesis 1d we also found that work methods autonomy and decision-making autonomy did not have a significantly larger effect on perceived innovative work behavior than work scheduling autonomy. The Hypothesis was therefore also rejected, in line with our results from the selective sample.

For Hypotheses 2 – 4 we also found that none of them was supported in the full sample. However, although the Hypothesis had to be rejected we found two moderating effects. First, in the full sample of respondents there was a significant interaction effect of organizational innovation on the relationship between work methods autonomy and perceived innovative work behavior (−.06, $p < .05$). Despite the significant (negative) effect, Hypothesis 3b still had to be rejected, as it was not in line with the originally postulated direction of the Hypothesis. Second, the effect of work scheduling autonomy on perceived innovative work behavior was moderated

by organizational structure (.06, $p < .05$), however, also in this case Hypothesis 4a had to be rejected in the full sample as the effect was not in line with the proposed direction of the Hypothesis.

Moreover, the intention of this study was to produce results that are generalizable across different contexts. Therefore, all industries were considered simultaneously in the final sample. However, we also tested the Hypotheses with regard to different industry (sub-) samples to provide additional robustness information for our analyses. Specifically, we analyzed the three largest industries in our sample, namely services (n = 472), manufacturing (n = 193), as well as retail and wholesale (n = 127). The summary of the results for the industry samples is provided in Tables IV-6 – IV-8 in the Appendices C – E of the manuscript. Overall, the industry-based results generally reflected the results from the overall sample. Hypotheses 1a – 1c were confirmed across all industries. In the services sample both the effect size and the order of magnitude of the autonomy dimensions' effect sizes were in line with the final cross-industry sample. For the manufacturing as well as the retail and wholesale samples, effect sizes were slightly smaller and the order of magnitude of autonomy dimensions' effect sizes differed from the overall sample.

Furthermore, Hypothesis 1d was rejected in all industry samples, which was also in line with the overall sample results. With regard to interaction effects of psychological climate dimensions on the relationship between autonomy and perceived innovative behavior (Hypotheses 2 – 4), the results were also mainly in line with the overall sample. None of the Hypotheses were supported and thus none of the psychological climate dimensions (i.e., supervisor support, organizational innovation, organizational structure) had a moderating effect on the analyzed relationship in the different industry samples in line with our Hypotheses. There was, however, one exception in the retail and wholesale sample in which supervisor support

moderated the relationship between decision-making autonomy and perceived innovative work behavior (−.25, p < .05). Not only was the effect very small but also still led to a rejection of Hypothesis 2c as it was not in line with the direction as postulated in the Hypothesis.

Finally, an analysis was then conducted with the control variables included (see Table IV-9 in Appendix F). Overall, the results did not change considerably with regard to both the direction and significance of the effects across the different models. A few effects were noteworthy, however. Company size (1–10 employees vs. 11–499 employees) was found to have a significant, negative main effect on the intercept (RIFS model: −.20, $p < .05$; RIRS model: −.15, $p < .05$). Also, age had a significant, but small, effect in the RIRS model (−.01, $p < .05$).

For the cross-level interaction effects, the profile order had a significant, negative effect with work scheduling autonomy (−.09, $p < .05$) and the attribute order had a significant, negative interaction effect with decision-making autonomy slope (−.14, $p < .001$). Interestingly, educational background (apprenticeship vs. university degree) had a significant effect on the work methods autonomy slope (−.13, $p < .01$).

5 Discussion

This article is among the first to take a context-contingent perspective in work design relationships and more specifically on the relationship between autonomy (i.e., work scheduling autonomy, work methods autonomy, and decision-making autonomy) as a key work design feature and employee perceived innovative work behavior. It therefore addresses calls for enhanced research considering the contextual features that "constrain or enhance the emergence of well-designed jobs" (Oldham & Hackman, 2010, p. 20). Furthermore, the study has also considered multiple dimensions of autonomy simultaneously, while previous studies have treated autonomy only as a unidimensional construct in the sense of work scheduling autonomy. Treating autonomy as a multi-faceted construct is important because different facets can differentially impact work outcomes such as innovative work behavior. From a methodical perspective the research approach is in line with other existing research in the field of human resource management, marketing, strategy, and organization research to study similar research questions (Baum & Kabst, 2013b; Brundin et al., 2008; Shepherd et al., 2013; Shepherd & Zacharakis, 1997, 1999). This study is, however, among the first to investigate work design relationships in a conjoint experiment and moreover, to study the moderating effects of the organizational context.

First, contrary to the Hypotheses, organizational context was not found to moderate this investigated work design relationship. Specifically, selected psychological climate dimensions: supervisor support, organizational innovation, and organizational structure: were not found to have a moderating effect on the above relationship, such that under high/low levels, the relationship was more/less positive or the importance of the different autonomy dimensions was higher/lower. Second, however, it was found that different autonomy dimensions had direct positive effects on employee perceived innovative work behavior, and that work methods

autonomy had the largest effect of the three autonomy dimensions, which was in agreement with previous work design and autonomy research (e.g., Oldham & Cummings, 1996; Ramamoorthy et al., 2005).

5.1 Theoretical contributions

The key theoretical contribution of this article is that it addressed the importance of the employee autonomy–work outcome relationship and assessed whether these were always equally strong or weak or contingent on certain boundary factors and conditions. Given the assumption that employees are seeking congruence with their environments (Dawis & Lofquist, 1984; Holland, 1997; Morgeson et al., 2010) and that the work context is undergoing rapid and frequent change (S. K. Parker et al., 2001), the results can help practitioners and researchers better understand the interrelationships between work design features and the broader organizational context.

Therefore, an analysis of the supporting and inhibitive factors in autonomy relationships indicates how organizations can adjust strategies for certain situations and effectively fine-tune work design principles and boundary conditions. Because extant work design theory and research has mostly neglected context contingent perspectives (Morgeson et al., 2010), this study saw autonomy as one of the most salient work design features and selected dimensions of the psychological climate as the contingency factors.

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psychological climate as the contingency factors. The results of this study, however, confirmed the results of previous studies that have largely treated autonomy relationships in isolation independent of its moderating potential (Morgeson & Humphrey, 2006). Autonomy has a significant impact on employee attitudes and work outcomes (perceived IWB) but the relationship appears to be independent from contextual boundary conditions. Contrary to expectations, the results of this study indicated that organizations do *not* need to consider the organizational context when putting together work design strategies. Similar findings were found in a study that investigated dispersed collaboration in the front-end of innovation. Specifically, the researchers have tested the moderating influence of the role of communities, as well as organizational climate on the relationship between the proficiency of dispersed collaboration and front-end innovation performance. While climate showed as well a significant direct effect on front-end innovation performance, the researchers also did not find any support for the moderating role of organizational climate in this relationship (Bertels, Kleinschmidt, & Koen, 2011).

The potential reasons for these results should be carefully considered in further evaluations. First, as this study only examined three selected climate dimensions, only a small part of the overall organizational context and the available climate dimensions in the affective, cognitive, and instrumental categories (Ostroff, 1993) were examined. Further, only a single work design feature within the task characteristics category (autonomy) was examined; therefore, it is likely that when the scope is broadened to include additional work design features such as task variety, feedback, job complexity or social support (Morgeson & Humphrey, 2006) as well as different climate dimensions (Benzer & Horner, 2015), the results may be substantially different.

Second, one of the major underlying assumptions of this study was that employees were seeking individual correspondence with their broader work environments (Dawis & Lofquist, 1984) through their work behavior, and that correspondence or, "a relationship in which the individual and the environment are corresponsive or mutually responsive" (Lofquist & Dawis, 1969, p. 45), supported or weakened certain relationships. Specifically, climate acts as a cross-level moderator and "shapes the relationship between work characteristics and the consequences of work design" (Morgeson et al., 2010, p. 357). In this study, however, this did not seem to be the case. A potential reason for this outcome might be that autonomy or its sub-dimensions do not play a role in connection with the selected climate factors. While logical theoretical connections between the autonomy–IWB relationship and the selected context dimensions that were likely to act as cross-level moderators were drawn, it seems that such congruence did not apply to the selected variables. For example, strong supervisor support was expected to positively influence the autonomy–IWB relationship through the inherent discretionary atmosphere and trust in good leader-member cooperation on which an autonomous work design can be built; however, there was no or not a strong enough connection between the climate factor and the work design attribute to trigger a cross-level interaction effect.

Moreover, a second contribution of this article is the consideration of employee autonomy as a multi-faceted construct. The results of the study clearly show that different dimensions of the construct have different results and thus clearly indicate that autonomy should not be considered as a unidimensional construct. This is insofar important, as autonomy has been one of the most salient work design features and has recently (re-)gained enhanced importance due to an increase of knowledge-based organizations in which enhanced employee autonomy has been found to be an important predictor of innovation performance (Y Fried et al., 2008; Grant et al., 2011). It is

therefore important that future studies analyzing work design relationships including autonomy as a feature consider the multi-faceted nature of autonomy. In retrospective, it would therefore also be interesting to investigate which types of autonomy have been considered in previous studies and how the results would change when using other dimensions of autonomy (e.g., work methods autonomy or decision-making autonomy instead of work scheduling autonomy which has been used predominantly).

5.2 Practical implications

From a practical perspective, this study draws organizational attention to the broader context in which companies operate and how/if organizations need to dynamically adjust their people management strategies. Given the fast changing technological environment that has impacted work processes and the occupational structure in organizations (Colbert et al., 2016; Wegman et al., 2016), organizations should not treat work design changes in isolation. Instead, they need to carefully evaluate whether and how potential boundary conditions might reinforce or hamper the effect on relationships between work design features and their related outcomes. This study also confirmed that autonomy is one of the most salient work design features. Organizations need to be aware of the different autonomy dimensions and the different effects on employee attitudes and work outcomes. It is therefore crucial that based on the desired outcomes, firms have a more finely tuned understanding of the different employee autonomy dimensions so as to apply them in a more targeted way.

5.3 Limitations and future research suggestions

Despite a rigorous methodology and a comprehensive theoretical foundation based on work design theory and contingency theory, there are several limitations. First, as this study only investigated context on the individual level through the psychological climate, the evaluations

were highly dependent on individual factors, previous experience and current organizational circumstances. It was therefore not possible to draw inferences to more general work groups, departmental or organizational levels. Future studies could benefit from aggregating the individual scores to represent the climate and context on a higher level to satisfy the assumption that organizational collectives have their own climates (Patterson et al., 2005).

Second, the selected (level 2) climate dimensions of supervisor support, organizational innovation and organizational structure were highly inter-correlated (see Table IV-3) and therefore did not represent independent climate dimensions as outlined in previous studies that have developed climate measures (e.g., Patterson et al., 2005). More recent studies that have estimated the intercorrelations for various climate constructs seem to confirm the results of this study, indicating that the psychological climate may be represented by only the two higher dimensions of task and relational climate (Benzer & Horner, 2015). It might therefore be worth investigating the climate dimensions that are truly independent of each other. Related to this, the work design dimensions and climate constructs have not often been treated independently. While some studies have treated autonomy as a core task-related work design feature (e.g., Morgeson & Humphrey, 2006), others have conceived autonomy as a work context dimension (e.g., Wegman et al., 2016). Future approaches should therefore clearly and carefully differentiate work design features and organizational context dimensions.

Third, the dependent variable and moderators only measured employee perceptions rather than the real outcomes of innovative work behavior or the prevailing organizational context conditions. Although conjoint analysis has been a proven method in similar types of research and therefore avoids many of the biases that are related to survey-based research, it remains a hypothetical (i.e., “what if”) scenario and is not able to evaluate actual outcomes of certain work

designs. Employee perceptions and attitudes are a good proxy for actual conditions and work outcomes (Ajzen, 1991; Grant & Parker, 2009). This study did, however, not provide objective evidence for these outcomes or the climate conditions. Future work could therefore extend this approach and investigate the mediated relationships that measure actual work outcomes from certain work design set-ups. Likewise, such approaches could objectively measure the organizational context dimensions. Moreover, the results in this study were limited to an "expanded"/"distal" outcome of work design - innovative work behavior (Grant et al., 2011, p. 427; S. K. Parker et al., 2001, p. 420). It therefore remains unanswered as to whether similar effects apply for more proximal outcomes such as job satisfaction and motivation and how these outcomes may be related to innovative work behavior. Nevertheless, conjoint analysis remains an important method to study complex decision-making processes as it allows researchers to "assess decision-makers' theories in use" (Lohrke, Holloway, & Woolley, 2010, p. p. 28) . Moreover, the method allows evaluating whether previous findings from post hoc methods can be sustained when tested using Conjoint experiments. Future studies in the field can therefore benefit from using and comparing results from conjoint analysis with those of post hoc methodologies.

Finally, from the many available constructs and dimensions in each domain, this study only examined a limited set of work design features related to autonomy, and limited climate dimensions related to supervisor support, organizational innovation and organizational structure. Therefore, future studies should explore and investigate the additional relationships and more comprehensively combine the many work design features, climate dimensions and related work outcomes.

6 Conclusion

Despite a comprehensive research history on work design features and their proven influence on employee attitudes and organizational work outcomes, only a few approaches have considered a context-contingent perspective and whether/how organizational boundary conditions influence such relationships. This study was among the first to take such a contextual perspective to investigate how the different employee autonomy dimensions are moderated by climate and affect innovative work behavior. A more finely-tuned understanding of these interrelationships is important so that contemporary organizations are able to cope with the rapidly changing environmental conditions and nature of work. Scholars and practitioners should be mindful of these interrelationships and rethink the seemingly known relationships between certain work design set-ups and desired employee attitudes, behaviors and work outcomes.

7 Appendix

7.1 Appendix A

Survey questions incl. conjoint profile (original language and English translation)

- Welches ist Ihr berufsqualifizierender Abschluss?
  - Abgeschlossene Berufsausbildung
  - Studium (Fachhochschule oder Universität)
  - (Noch) keine abgeschlossene Berufsausbildung
- What is your highest professional qualification?
  - Apprenticeship/vocational training
  - Academic studies
  - Professional qualification not (yet) finished
- Arbeiten Sie in Vollzeit oder Teilzeit?
  - Vollzeit
  - Teilzeit mit …%
  - Ich bin (aktuell) nicht berufstätig
- Are you currently employed full-time or part-time?
  - Full-time
  - Part-time at …%
  - I'm (currently) not employed
- Bitte geben Sie an wieviele Mitarbeiter derzeit in Ihrem Unternehmen (in Deutschland) beschäftigt sind
  - 1 bis 10
  - 11 bis 499
  - 500 bis 5,000
  - Mehr als 5,000
- Please indicate how many employees work in your company (in Germany)
  - 1 to 10 employees
  - 11 to 499 employees
  - 500 to 5,000 employees
  - More than 5,000 employees
- Bitte geben Sie ihr Geschlecht an
  - Weiblich
  - Männlich
- Please indicate your gender
  - Female
  - Male
- Bitte geben Sie Ihr Alter an
  - [… Jahre]
- Please indicate your age
  - [… years]
- In welcher Branche ist Ihr derzeitiges Unternehmen primär tätig?
  - Dienstleistungen

  - Verarbeitendes Gewerbe
  - Öffentliche Verwaltung
  - Transport, Kommunikation, Energie
  - Finanz-, Versicherungs-, und Immobilienwirtschaft
  - Baugewerbe
  - Bergbau
  - Landwirtschaft, Forstwirtschaft, Fischerei
  - Großhandel
  - Einzelhandel
  - Sonstiges, nämlich: …
  - Keine Angabe
- In which industry is your current company primarily operating?
  - Services
  - Manufacturing
  - Public administration
  - Transport, communication, energy
  - Financial, insurance, property and real estate
  - Construction
  - Mining
  - Agriculture, forestry, fishery
  - Wholesale
  - Retail
  - Other, as follows: …
  - No indication
- In welchem Unternehmensbereich bzw. in welcher Unternehmensfunktion sind Sie derzeit tätig?
  - Einkauf/Beschaffung
  - Logistik
  - Produktion
  - Forschung und Entwicklung
  - Personalwesen
  - Finanzen
  - Marketing/Vertrieb/Kommunikation
  - Informationstechnik (IT)
  - Verwaltung
  - Management
  - Sonstiges, nämlich: …
  - Keine Angabe
- In which department / function are you currently working?
  - Procurement/purchasing
  - Logistics
  - Production
  - Research and development
  - Human resources
  - Finance
  - Marketing/Sales/Communication

    - IT
    - Administration
    - Management
    - Other, as follows: …
    - No indication
- Wie lange sind Sie schon berufstätig?
    - [Jahre] [Monate]
- For how long are you already working?
    - [Years] [Months]
- Wie lange arbeiten Sie bereits in Ihrem jetzigen Unternehmen?
    - [Jahre] [Monate]
- For how long are you already working in your current company?
    - [Years] [Months]
- Tragen Sie Personalverantwortung?
    - Ja, ich trage für … Mitarbeiter Personalverantwortung
    - Nein
    - Keine Angabe
- Do you currently have staff responsibility?
    - Yes, I'm responsible for … employees
    - No
    - No indication

[Conjoint profiles, 2 x 8 profile sets]

Inwiefern trägt ein Arbeitsumfeld mit dem genannten Profil zu Ihrem innovativen Verhalten* im Job bei?

1 Trägt gar nicht dazu bei
2
3
4
5
6
7 Trägt sehr stark dazu bei

**Innovatives Verhalten umfasst die Generierung oder die Umsetzung neuer und/oder kreativer Ideen und Herangehensweisen in Ihrer Arbeit, bspw. im Hinblick auf die Verbesserung der Arbeitsqualität, Verbesserung des Kundenservice, ein besseres Produkt, ein besseres Kundenerlebnis, etc.*

Eigenschaft	Profil
Einflussnahme auf eigene Arbeitsbedingungen	**Selbstbestimmt:** Arbeitszeit und Arbeitsort sind im Unternehmen frei wählbar.
	Fremdbestimmt: Arbeitszeit und Arbeitsort werden vom Unternehmen vorgegeben.

Experimentierkultur	**Lernen aus Fehlern:** Eine Kultur, die es ermöglicht neue Dinge auszuprobieren.
	Vermeiden von Fehlern: Eine Kultur mit klaren Vorgaben, wie Dinge erledigt werden sollen.
Führungskultur	**Vertrauensbasiert:** Vorgesetzte kontrollieren lediglich das Endergebnis.
	Kontrollbasiert: Vorgesetzte kontrollieren stets den Arbeitsfortschritt.
Anpassungsdruck	**Freiheit man selbst zu sein:** Mitarbeiter müssen sich nicht anpassen bezüglich Erscheinungsbild, Gewohnheiten, Arbeitsstil, usw.
	Druck sich anpassen zu müssen: Mitarbeiter müssen sich anpassen bezüglich Erscheinungsbild, Gewohnheiten, Arbeitsstil, usw.
Einflussnahme auf Unternehmensentscheidungen	**Demokratisch:** Wichtige Unternehmensentscheidung.en werden von allen Mitarbeitern getroffen (“Bottom-Up”).
	Hierarchisch: Wichtige Unternehmensentscheidungen werden ausschließlich vom Management getroffen (“Top-Down”).
Organisationsstruktur	**Unternehmerisch, flexibel:** Eine Organisation mit flexiblen Prozessen.
	Bürokratisch, standardisiert: Eine Organisation mit standardisierten Prozessen.

Please indicate, to what extent does a working environment with the following profile contribute to your innovative behavior* at work:

1 Does not contribute at all
2
3
4
5
6
7 Contributes very much

**Innovative behavior comprises the generation or the implementation of new and/or creative ideas and approaches in your work, e.g., with regard to the improvement of the quality of your work, improvement of customer service, a better product, a better customer experience, etc.*

Characteristic	**Profile**
Influence on own working conditions	**Self-determined:** Working time and working place can be freely chosen by the employee.
	Other-determined: Working time and working place are determined by the

	company
Experimental culture	**Learning from mistakes:** A culture that allows employees to try out new things.
	Prevention of failure: A culture with clear specifications/parameters as to how things have to be done.
Leadership culture	**Trust-based:** Supervisors only control employees' final results.
	Control-based: Supervisors continually control employees' working progress.
Pressure to adjust	**Freedom to be oneself:** Employees do not need to adjust themselves with regard to appearance, habits, working style, etc.
	Pressure to adjust oneself: Employees have to adjust themselves with regard to appearance, habits, working style, etc.
Influence on company decisions	**Democratic:** Important company decisions are taken by all employees (bottom-up).
	Hierarchical: Important company decisions are exclusively taken by the management team (top-down).
Organizational structure	**Entrepreneurial, flexible:** An organization with flexible processes.
	Bureaucratic, standardized: An organization with standardized processes.

[Organizational climate dimensions]

[Supervisor support]

Bitte geben Sie im Folgenden an, wie sehr die jeweiligen Aussagen auf Ihr Unternehmen zutreffen bzw. nicht zutreffen:

Please indicate to what extent the following statements apply to the company you are currently working for:

- In diesem Unternehmen sind Vorgesetzte wirklich gut darin die Probleme ihrer Mitarbeiter zu verstehen.
  - 1 Stimme gar nicht zu
  - 2
  - 3
  - 4 Stimme auf jeden Fall zu
  - 5 Weiß nicht / keine Angabe
- Supervisors here are really good at understanding peoples' problems
  - 1 Definitely false
  - 2
  - 3

    - 4 Definitely true
    - 5 Don't know / no indication
- Die Vorgesetzen zeigen, dass sie auf ihre Mitarbeitern vertrauen.
    - 1 Stimme gar nicht zu
    - 2
    - 3
    - 4 Stimme auf jeden Fall zu
    - 5 Weiß nicht / keine Angabe
- Supervisors show that they have confidence in those they manage
    - 1 Definitely false
    - 2
    - 3
    - 4 Definitely true
    - 5 Don't know / no indication
- Die Vorgesetzten sind freundlich und einfach ansprechbar.
    - 1 Stimme gar nicht zu
    - 2
    - 3
    - 4 Stimme auf jeden Fall zu
    - 5 Weiß nicht / keine Angabe
- Supervisors here are friendly and easy to approach
    - 1 Definitely false
    - 2
    - 3
    - 4 Definitely true
    - 5 Don't know / no indication
- Man kann auf die Vorgesetzten vertrauen, dass sie ihre Mitarbeiter gut führen.
    - 1 Stimme gar nicht zu
    - 2
    - 3
    - 4 Stimme auf jeden Fall zu
    - 5 Weiß nicht / keine Angabe
- Supervisors can be relied upon to give good guidance to people
    - 1 Definitely false
    - 2
    - 3
    - 4 Definitely true
    - 5 Don't know / no indication
- Die Vorgesetzten kennen und verstehen ihre Mitarbeiter sehr gut.
    - 1 Stimme gar nicht zu
    - 2
    - 3
    - 4 Stimme auf jeden Fall zu
    - 5 Weiß nicht / keine Angabe
- Supervisors show an understanding of the people who work for them
    - 1 Definitely false

- 2
- 3
- 4 Definitely true
- 5 Don't know / no indication

[Organizational structure]

Bitte geben Sie im Folgenden an, wie sehr die jeweiligen Aussagen auf Ihr Unternehmen zutreffen bzw. nicht zutreffen:

Please indicate to what extent the following statements apply to the company you are currently working for:

- Es wird in diesem Unternehmen als extrem wichtig angesehen, die Regeln zu befolgen.
  - 1 Stimme gar nicht zu
  - 2
  - 3
  - 4 Stimme auf jeden Fall zu
  - 5 Weiß nicht / keine Angabe
- It is considered extremely important here to follow the rules
  - 1 Definitely false
  - 2
  - 3
  - 4 Definitely true
  - 5 Don't know / no indication
- Mitarbeiter können formelle Prozeduren und Regeln ignorieren, wenn es ihnen dabei hilft ihre Aufgabe zu erledigen.
  - 1 Stimme gar nicht zu
  - 2
  - 3
  - 4 Stimme auf jeden Fall zu
  - 5 Weiß nicht / keine Angabe
- People can ignore formal procedures and rules if it helps get the job done
  - 1 Definitely false
  - 2
  - 3
  - 4 Definitely true
  - 5 Don't know / no indication
- Alles muss genau nach Vorschrift erledigt werden.
  - 1 Stimme gar nicht zu
  - 2
  - 3
  - 4 Stimme auf jeden Fall zu
  - 5 Weiß nicht / keine Angabe

- Everything has to be done by the book
  - 1 Definitely false
  - 2
  - 3
  - 4 Definitely true
  - 5 Don't know / no indication
- In diesem Unternehmen ist es nicht erfordlich Vorgehensweisen ganz genau zu folgen.
  - 1 Stimme gar nicht zu
  - 2
  - 3
  - 4 Stimme auf jeden Fall zu
  - 5 Weiß nicht / keine Angabe
- It’s not necessary to follow procedures to the letter around here
  - 1 Definitely false
  - 2
  - 3
  - 4 Definitely true
  - 5 Don't know / no indication
- In diesem Unternehmen regt sich niemand übermäßig auf, wenn Regeln gebrochen werden.
  - 1 Stimme gar nicht zu
  - 2
  - 3
  - 4 Stimme auf jeden Fall zu
  - 5 Weiß nicht / keine Angabe
- Nobody gets too upset if people break the rules around here
  - 1 Definitely false
  - 2
  - 3
  - 4 Definitely true
  - 5 Don't know / no indication

[Organizational innovation]

Bitte geben Sie im Folgenden an, wie sehr die jeweiligen Aussagen auf Ihr Unternehmen zutreffen bzw. nicht zutreffen:

Please indicate to what extent the following statements apply to the company you are currently working for:

- In diesem Unternehmen werden neue Ideen bereitwillig angenommen.
  - 1 Stimme gar nicht zu
  - 2
  - 3

    - 4 Stimme auf jeden Fall zu
    - 5 Weiß nicht / keine Angabe
- New ideas are readily accepted here
    - 1 Definitely false
    - 2
    - 3
    - 4 Definitely true
    - 5 Don't know / no indication
- Dieses Unternehmen reagiert schnell, wenn Veränderungen erforderlich sind.
    - 1 Stimme gar nicht zu
    - 2
    - 3
    - 4 Stimme auf jeden Fall zu
    - 5 Weiß nicht / keine Angabe
- This company is quick to respond when changes need to be made
    - 1 Definitely false
    - 2
    - 3
    - 4 Definitely true
    - 5 Don't know / no indication
- Das Management erkennt rasch, wenn Bedarf besteht Dinge anders zu erledigen.
    - 1 Stimme gar nicht zu
    - 2
    - 3
    - 4 Stimme auf jeden Fall zu
    - 5 Weiß nicht / keine Angabe
- Management here are quick to spot the need to do things differently
    - 1 Definitely false
    - 2
    - 3
    - 4 Definitely true
    - 5 Don't know / no indication
- Dieses Unternehmen ist sehr flexibel; es kann Vorgehensweisen rasch ändern um sich neue Gegebenheiten einzustellen und aufkommende Probleme zu lösen.
    - 1 Stimme gar nicht zu
    - 2
    - 3
    - 4 Stimme auf jeden Fall zu
    - 5 Weiß nicht / keine Angabe
- This organization is very flexible; it can quickly change procedures to meet new conditions and solve problems as they arise
    - 1 Definitely false
    - 2
    - 3
    - 4 Definitely true
    - 5 Don't know / no indication

- Unterstütztung bei der Entwicklung neuer Ideen ist stets verfügbar.
  - 1 Stimme gar nicht zu
  - 2
  - 3
  - 4 Stimme auf jeden Fall zu
  - 5 Weiß nicht / keine Angabe
- Assistance in developing new ideas is readily available
  - 1 Definitely false
  - 2
  - 3
  - 4 Definitely true
  - 5 Don't know / no indication
- Mitarbeiter in diesem Unternehmen sind stets auf der Suche nach neuen Herangehensweisen für Problemstellungen.
  - 1 Stimme gar nicht zu
  - 2
  - 3
  - 4 Stimme auf jeden Fall zu
  - 5 Weiß nicht / keine Angabe
- People in this organization are always searching for new ways of looking at problems
  - 1 Definitely false
  - 2
  - 3
  - 4 Definitely true
  - 5 Don't know / no indication

7.2 Appendix B

Table IV-5: HLM results for all respondents (N = 2,550)

	Model			
Level and Variable	Null	Random Intercept and Fixed Slope	Random Intercept and Random Slope	Cross-Level Interaction
Level 1				
Intercept	4.47*** (.02)	4.47*** (.02)	4.47*** (.02)	4.47*** (.02)
Work scheduling autonomy		.29*** (.01)	.29*** (.01)	.29*** (.01)
Work methods autonomy		.32*** (.01)	.32*** (.01)	.32*** (.01)
Decision-making autonomy		.22*** (.01)	.22*** (.01)	.22*** (.01)
Organizational openness		.25*** (.01)	.25*** (.01)	.25*** (.01)
Participation in decision-making		.24*** (.01)	.24*** (.01)	.24*** (.01)
Formalization		.20*** (.01)	.20*** (.01)	.20*** (.01)
Level 2 (Intercept)				
Supervisor support		.01 (.04)	.04 (.04)	.03 (.04)
Organizational innovation		.33** (.04)	.29** (.04)	.31** (.04)
Organizational structure		.07* (.03)	.10** (.04)	.09* (.04)
Cross-level interactions				
Work scheduling autonomy				
× Supervisor support				−.01 (.03)
× Organizational innovation				−.03 (.03)
× Organizational structure				.06* (.03)
Work methods autonomy				
× Supervisor support				.03 (.03)
× Organizational innovation				−.06* (.03)
× Organizational structure				.03 (.03)
Decision-making autonomy				
× Supervisor support				.02 (.02)
× Organizational innovation				−.02 (.02)
× Organizational structure				.03 (.02)
Variance components				
Intercept	.74***	.71***	.75***	.75***
Work scheduling autonomy			.31***	.31***
Work methods autonomy			.22***	.22***
Decision-making autonomy			.14***	.14***
Organizational openness			.16***	.16***
Participation in decision-making			.18***	.18***
Formalization			.12***	.12***
Additional information				
ICC	.46			
−2 log likelihood FIML	60381	57787	55029	55007

Number of estimated parameters	3	12	39	48
Model comparison χ^2 (Degrees of Freedom)			2757.26 (27)***	2779.79(36)***

Note: ICC = Intraclass correlation; FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 N = 20,400 and L2 sample size = 2,550. Values in parentheses are standard errors.
* $p < .05$, ** $p < .01$, *** $p < .001$.

7.3 Appendix C

Table IV-6: HLM results for "Services" (n = 472)

	Model			
Level and Variable	Null	Random Intercept and Fixed Slope	Random Intercept and Random Slope	Cross-Level Interaction
Level 1				
Intercept	4.34*** (.04)	4.34*** (.04)	4.34*** (.04)	4.34*** (.04)
Work scheduling autonomy		.58*** (.04)	.58*** (.04)	.58*** (.04)
Work methods autonomy		.59*** (.04)	.59*** (.04)	.59*** (.04)
Decision-making autonomy		.44*** (.03)	.44*** (.03)	.44*** (.03)
Organizational openness		.47*** (.03)	.47*** (.03)	.47*** (.03)
Participation in decision-making		.43*** (.04)	.43*** (.04)	.43*** (.04)
Formalization		.39*** (.03)	.39*** (.03)	.39*** (.03)
Level 2 (Intercept)				
Supervisor support		−.04 (.08)	−.02 (.08)	−.01 (.08)
Organizational innovation		.28** (.09)	.26** (.09)	.26** (.09)
Organizational structure		.11 (.07)	.08 (.07)	.08 (.07)
Cross-level interactions				
Work scheduling autonomy				
× Supervisor support				.03 (.07)
× Organizational innovation				−.06 (.09)
× Organizational structure				−.04 (.09)
Work methods autonomy				
× Supervisor support				−.02 (.08)
× Organizational innovation				−.07 (.08)
× Organizational structure				.03 (.07)
Decision-making autonomy				
× Supervisor support				−.05 (.07)
× Organizational innovation				.10 (.07)
× Organizational structure				.03 (.05)
Variance components				
Intercept	.53***	.56***	.62***	.62***
Work scheduling autonomy			.42***	.42***
Work methods autonomy			.37***	.37***
Decision-making autonomy			.22***	.22***
Organizational openness			.23***	.23***
Participation in decision-making			.29***	.29***
Formalization			.17***	.17***
Additional information				
ICC	.27			
−2 log likelihood FIML	12808	11712	11277	11269

Number of estimated parameters	3	12	39	48
Model comparison χ^2 (Degrees of Freedom)			434.84 (27)***	7.82 (9)

Note: ICC = Intraclass correlation; FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 n = 3,776 and L2 sample size = 472. Values in parentheses are standard errors.
* $p < .05$, ** $p < .01$, *** $p < .001$.

7.4 Appendix D

Table IV-7: HLM results for "Manufacturing" (n = 193)

	Model			
Level and Variable	Null	Random Intercept and Fixed Slope	Random Intercept and Random Slope	Cross-Level Interaction
Level 1				
Intercept	4.31*** (.05)	4.31*** (.05)	4.31*** (.05)	4.31*** (.05)
Work scheduling autonomy		.57*** (.05)	.57*** (.05)	.57*** (.05)
Work methods autonomy		.55*** (.05)	.55*** (.05)	.55*** (.05)
Decision-making autonomy		.36*** (.05)	.36*** (.05)	.36*** (.05)
Organizational openness		.44*** (.05)	.44*** (.05)	.44*** (.05)
Participation in decision-making		.41*** (.05)	.41*** (.05)	.41*** (.05)
Formalization		.39*** (.05)	.39*** (.05)	.39*** (.05)
Level 2 (Intercept)				
Supervisor support		−.01 (.10)	.03 (.11)	.02 (.11)
Organizational innovation		06 (.12)	.00 (.12)	.03 (.12)
Organizational structure		−.04 (.10)	.01 (.12)	−.02 (.12)
Cross-level interactions				
Work scheduling autonomy				
× Supervisor support				.05 (.10)
× Organizational innovation				.05 (.14)
× Organizational structure				.16 (.12)
Work methods autonomy				
× Supervisor support				−.11 (.09)
× Organizational innovation				−.06 (.10)
× Organizational structure				.03 (.11)
Decision-making autonomy				
× Supervisor support				.10 (.08)
× Organizational innovation				−.09 (.08)
× Organizational structure				.08 (.08)
Variance components				
Intercept	.41***	.45***	.51***	.51***
Work scheduling autonomy			.38***	.38***
Work methods autonomy			.30***	.30***
Decision-making autonomy			.19***	.19***
Organizational openness			.22***	.22***
Participation in decision-making			.38***	.38***
Formalization			.22***	.22***
Additional information				
ICC	.23			
−2 log likelihood FIML	5100	4684	4455	4445

Number of estimated parameters	3	12	39	48
Model comparison χ^2 (Degrees of Freedom)			228.45 (27)***	10.66 (36)

Note: ICC = Intraclass correlation; FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 n = 1,544 and L2 sample size = 193. Values in parentheses are standard errors.
* $p < .05$, ** $p < .01$, *** $p < .001$.

7.5 Appendix E

Table IV-8: HLM results for "Retail and Wholesale" (n = 127)

	Model			
Level and Variable	Null	Random Intercept and Fixed Slope	Random Intercept and Random Slope	Cross-Level Interaction
Level 1				
Intercept	4.43*** (.07)	4.43*** (.07)	4.43*** (.07)	4.43*** (.07)
Work scheduling autonomy		.31*** (.07)	.31*** (.07)	.31*** (.07)
Work methods autonomy		.38*** (.07)	.38*** (.07)	.38*** (.07)
Decision-making autonomy		.34*** (.07)	.34*** (.07)	.34*** (.07)
Organizational openness		.26*** (.07)	.26*** (.07)	.26*** (.07)
Participation in decision-making		.37*** (.07)	.37*** (.07)	.37*** (.07)
Formalization		.22*** (.07)	.22*** (.07)	.22*** (.07)
Level 2 (Intercept)				
Supervisor support		.25 (.14)	.22 (.13)	.26 (.12)
Organizational innovation		−.21 (.15)	−.18 (.14)	−.20 (.13)
Organizational structure		−.03 (.14)	.01 (.13)	.01 (.11)
Cross-level interactions				
Work scheduling autonomy				
× Supervisor support				−.11 (.15)
× Organizational innovation				−.26 (.16)
× Organizational structure				.26 (.21)
Work methods autonomy				
× Supervisor support				.14 (.12)
× Organizational innovation				−.28 (.15)
× Organizational structure				.12 (.12)
Decision-making autonomy				
× Supervisor support				−.25* (.10)
× Organizational innovation				.08 (.11)
× Organizational structure				.00 (.12)
Variance components				
Intercept	.40***	.41***	.48***	.48***
Work scheduling autonomy			.86***	.86***
Work methods autonomy			.23***	.23***
Decision-making autonomy			.36***	.36***
Organizational openness			.18***	.18***
Participation in decision-making			.20***	.20***
Formalization			.15***	.15***
Additional information				
ICC	.24			
−2 log likelihood FIML	3309	3176	3005	2979
Number of estimated parameters	3	12	39	48

Model comparison χ^2 (Degrees of Freedom)	170.20 (27)***	25.96 (21)

Note: ICC = Intraclass correlation; FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 n = 1,016 and L2 sample size = 127. Values in parentheses are standard errors.
* $p < .05$, ** $p < .01$, *** $p < .001$.

7.6 Appendix F

Table IV-9: Results for multilevel modeling analysis including level 2 control variables

	Model			
Level and Variable	Null	Random Intercept and Fixed Slope	Random Intercept and Random Slope	Cross-Level Interaction
Level 1				
Intercept	4.33*** (0.02)	4.33*** (.02)	4.33*** (.02)	4.33*** (.02)
Work scheduling autonomy		.57*** (.03)	.57*** (.03)	.57*** (.02)
Work methods autonomy		.60*** (.02)	.60*** (.02)	.60*** (.02)
Decision-making autonomy		.43*** (.02)	.43*** (.02)	.43*** (.02)
Organizational openness		.46*** (.02)	.46*** (.02)	.46*** (.02)
Participation in decision-making		.45*** (.02)	.45*** (.02)	.45*** (.02)
Formalization		.38*** (.02)	.38*** (.02)	.38*** (.02)
Level 2 (Intercept)				
Supervisor support		.04 (.05)	.05 (.05)	.06 (.05)
Organizational innovation		.15** (.05)	.12* (.05)	.13* (.05)
Organizational structure		.07 (.05)	.08 (.05)	.07 (.05)
Age		.01 (.01)	.01* (.01)	.01 (.01)
Professional experience		.00 (.00)	.00 (.00)	.00 (.00)
Tenure		.00 (.00)	.00 (.00)	.00 (.00)
Gender		−.05 (.05)	−.07 (.05)	−.06 (.05)
Company size (1–10 empl. vs. 11–499		−.20* (.08)	−.15* (.07)	−.16* (.08)
Industry (manufacturing vs. services)		−.02 (.07)	−.03 (.06)	−.02 (.06)
Educational background (apprenticeship vs. university)		.05 (.06)	−.02 (.05)	.00 (.06)
Staff responsibility (no resp. vs. resp.)		−.05 (.05)	−.02 (.05)	−.03 (.05)
Attribute order		.08 (.05)	.06 (.04)	.07 (.05)
Profile order		−.03 (.05)	−.1 (.04)	−.01 (.05)
Cross-level interactions				
Work scheduling autonomy				
× Supervisor support				−.08 (.05)
× Organizational innovation				−.02 (.05)
× Organizational structure				.01 (.05)
× Age				.00 (.01)
× Professional experience				.00 (.00)
× Tenure				.00 (.00)
× Gender				−.07 (.05)
× Company size (1–10 empl. vs. 11–499 empl.)				.14 (.08)
× Industry (manufacturing vs.				.03 (.07)
× Educational background (apprenticeship vs. university)				.02 (.06)
× Staff responsibility (no resp. vs.				.08 (.05)
× Attribute order				.05 (.05)
× Profile order				−.09* (.05)

Work methods autonomy				
× Supervisor support				.01 (.04)
× Organizational innovation				−.07 (.05)
× Organizational structure				.00 (.04)
× Age				.00 (.00)
× Professional experience				.00 (.00)
× Tenure				.00 (.00)
× Gender				−.01 (.04)
× Company size (1–10 empl. vs. 11–499 empl.)				−.02 (.06)
× Industry (manufacturing vs.				−.03 (.06)
× Educational background (apprenticeship vs. university)				−.13** (.05)
× Staff responsibility (no resp. vs.				.07 (.05)
× Attribute order				−.02 (.04)
× Profile order				.01 (.04)
Decision-making autonomy				
× Supervisor support				.02 (.04)
× Organizational innovation				−.03 (.04)
× Organizational structure				.04 (.04)
× Age				.00 (.00)
× Professional experience				.00 (.00)
× Tenure				.00 (.00)
× Gender				−.03 (.04)
× Company size (1–10 empl. vs. 11–499 empl.)				−.02 (.06)
× Industry (manufacturing vs.				−.08 (.05)
× Educational background (apprenticeship vs. university)				−.05 (.04)
× Staff responsibility (no resp. vs.				−.01 (.04)
× Attribute order				−.14*** (.04)
× Profile order				.07 (.04)
Variance components				
Intercept	.50***	.53***	.59***	.59***
Work scheduling autonomy			.48***	.45***
Work methods autonomy			.32***	.29***
Decision-making autonomy			.20***	.19***
Organizational openness			.23***	.23***
Participation in decision-making			.30***	.30***
Formalization			.19***	.19***
Additional information				
ICC	.26			
−2 log likelihood FIML	31806	29042	27865	27760
Number of estimated parameters	3	27	54	108
Pseudo R^2	0	.19**	.19**	.20**
Model comparison χ^2 (Degrees of Freedom)		2764 (24)***	25101 (30)***	2659 (78)***

Note: ICC = Intraclass correlation; FIML = Full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 N = 9,440 and L2 sample size = 1,180. Values in parentheses are standard errors. Pseudo R^2 values were calculated as the squared correlation between observed and predicted scores and excluded error terms (Aguinis et al., 2013). * $p < .05$, ** $p < .01$, *** $p < .001$.

8 References

Adler, P. S., & Borys, B. (1996). Two types of bureaucracy: Enabling and coercive. *Administrative Science Quarterly, 41*(1), 61-89.

Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-practice recommendations for estimating cross-level interaction effects using multilevel modeling. *Journal of Management, 39*(6), 1490-1528.

Ahmed, P. K. (1998). Culture and climate for innovation. *European Journal of innovation management, 1*(1), 30-43.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Amabile, T. M. (1983). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology, 45*(2), 357-376.

Amabile, T. M. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behavior, 10*(1), 123-167.

Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly, 15*(1), 5-32.

Axtell, C. M., Holman, D. J., Unsworth, K. L., Wall, T. D., Waterson, P. E., & Harrington, E. (2000). Shopfloor innovation: Facilitating the suggestion and implementation of ideas. *Journal of Occupational and Organizational Psychology, 73*(3), 265-285.

Baum, M., & Kabst, R. (2013a). Conjoint implications on job preferences: The moderating role of involvement. *The International Journal of Human Resource Management, 24*(7), 1393-1417.

Baum, M., & Kabst, R. (2013b). How to attract applicants in the Atlantic versus the Asia-Pacific region? A cross-national analysis on China, India, Germany, and Hungary. *Journal of World Business, 48*(2), 175-185.

Behrens, J., Ernst, H., & Shepherd, D. A. (2014). The decision to exploit an R&D project: Divergent thinking across middle and senior managers. *Journal of Product Innovation Management, 31*(1), 144-158.

Benzer, J., & Horner, M. (2015). A meta‐analytic integration and test of psychological climate dimensionality. *Human Resource Management, 54*(3), 457-482.

Bertels, H. M., Kleinschmidt, E. J., & Koen, P. A. (2011). Communities of practice versus organizational climate: Which one matters more to dispersed collaboration in the front end of innovation? *Journal of Product Innovation Management, 28*(5), 757-772.

Bouée, C.-E. (2015). *Digital transformation doesn't have to leave employees behind*. Retrieved 01.07.2016, from https://hbr.org/2015/09/digital-transformation-doesnt-have-to-leave-employees-behind

Bradshaw, T. (2017, 17.10.2017). Netflix subscriber growth tops estimates. *Financial Times*. Retrieved from https://www.ft.com/content/e9d7e4de-b2b6-11e7-a398-73d59db9e399

Breaugh, J. A. (1985). The measurement of work autonomy. *Human Relations, 38*(6), 551-570.

Breaugh, J. A. (1989). The work autonomy scales: Additional validity evidence. *Human Relations, 42*(11), 1033-1056.

Breaugh, J. A. (1999). Further investigation of the work autonomy scales: Two studies. *Journal of Business and Psychology, 13*(3), 357-373.

Briggs, C., & Makice, K. (2012). *Digital fluency: Building success in the digital age*: SociaLens.

Brock, D. M. (2003). Autonomy of individuals and organizations: Towards a strategy research agenda. *International Journal of Business and Economics, 2*(1), 57-73.

Brundin, E., Patzelt, H., & Shepherd, D. A. (2008). Managers' emotional displays and employees' willingness to act entrepreneurially. *Journal of Business Venturing, 23*(2), 221-243.

Brynjolfsson, E., & McAfee, A. (2012). *Race against the machine: How the digital revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy*: Brynjolfsson and McAfee.

Carnabuci, G., & Diószegi, B. (2015). Social networks, cognitive style, and innovative performance: A contingency perspective. *Academy of Management Journal, 58*(3), 881-905.

Carnoy, M., Castells, M., & Benner, C. (1997). Labour markets and employment practices in the age of flexibility: A case study of Silicon Valley. *International Labour Review, 136*(1), 27-48.

Carr, J. Z., Schmidt, A. M., Ford, J. K., & DeShon, R. P. (2003). Climate perceptions matter: A meta-analytic path analysis relating molar climate, cognitive and affective states, and individual level work outcomes. *Journal of Applied Psychology, 88*(4), 605-619.

Castells, M. (2011). *The information age: Economy, society, and culture - The rise of the network society* (2nd ed. Vol. 1): John Wiley & Sons.

Chang, S., Jia, L., Takeuchi, R., & Cai, Y. (2014). Do high-commitment work systems affect creativity? A multilevel combinational approach to employee creativity. *Journal of Applied Psychology, 99*(4), 665.

Choi, Y. R., & Shepherd, D. A. (2004). Entrepreneurs' decisions to exploit opportunities. *Journal of Management, 30*(3), 377-395.

Colbert, A., Yee, N., & George, G. (2016). The digital workforce and the workplace of the future. *Academy of Management Journal, 59*(3), 731-739.

Connor, P. E. (1992). Decision-making participation patterns: The role of organizational context. *Academy of Management Journal, 35*(1), 218-232.

Cooper, R. G. (1999). The invisible success factors in product innovation. *Journal of Product Innovation Management, 16*(2), 115-133.

Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal, 34*(3), 555-590.

Dawis, R. V., & Lofquist, L. H. (1984). *A psychological theory of work adjustment: An individual-differences model and its applications*. Minneapolis, MN: University of Minnesota Press.

De Jong, J. P., & Den Hartog, D. N. (2007). How leaders influence employees' innovative behaviour. *European Journal of innovation management, 10*(1), 41-64.

Dedrick, J., Gurbaxani, V., & Kraemer, K. L. (2003). Information technology and economic performance: A critical review of the empirical evidence. *ACM Computing Surveys (CSUR), 35*(1), 1-28.

Donaldson, S. I., & Grant-Vallone, E. J. (2002). Understanding self-report bias in organizational behavior research. *Journal of Business and Psychology, 17*(2), 245-260.

Dorenbosch, L., Engen, M. L. v., & Verhagen, M. (2005). On - the - job innovation: The impact of job design and human resource management through production ownership. *Creativity and Innovation Management, 14*(2), 129-141.

Drazin, R., & Van de Ven, A. H. (1985). Alternative forms of fit in contingency theory. *Administrative Science Quarterly, 30*(4), 514-539.

Dul, J., & Ceylan, C. (2014). The Impact of a Creativity‐supporting Work Environment on a Firm's Product Innovation Performance. *Journal of Product Innovation Management, 31*(6), 1254-1267.

Eisenberger, R., Stinglhamber, F., Vandenberghe, C., Sucharski, I. L., & Rhoades, L. (2002). Perceived supervisor support: Contributions to perceived organizational support and employee retention. *Journal of Applied Psychology, 87*(3), 565-573.

Evans, D. S., & Leighton, L. S. (1995). Retrospective bias in the displaced worker surveys. *Journal of Human Resources, 30*(2), 386-396.

Fiedler, F. E., & Chemers, M. M. (1967). *A theory of leadership effectiveness*. New York: McGraw-Hill.

Flores, L. G., Zheng, W., Rau, D., & Thomas, C. H. (2012). Organizational learning subprocess identification, construct validation, and an empirical test of cultural antecedents. *Journal of Management, 38*(2), 640-667.

Ford, C. M., & Gioia, D. A. (2000). Factors influencing creativity in the domain of managerial decision making. *Journal of Management, 26*(4), 705-732.

Fried, Y., & Ferris, G. R. (1987). The validity of the job characteristics model: A review and meta‐analysis. *Personnel Psychology, 40*(2), 287-322.

Fried, Y., Levi, A., & Laurence, G. (2008). Motivation and job design in the new world of work. In S. Cartwright & C. L. Cooper (Eds.), *The Oxford handbook of personnel psychology* (pp. 586-611). Oxford, UK: Oxford University Press.

Fry, L. W., & Slocum, J. W. (1984). Technology, structure, and workgroup effectiveness: A test of a contingency model. *Academy of Management Journal, 27*(2), 221-246.

Fry, L. W., & Smith, D. A. (1987). Congruence, contingency, and theory building. *Academy of Management Review, 12*(1), 117-132.

Gottlieb, J., & Willmott, P. (2014). The digital tipping point: McKinsey global survey results: McKinsey & Company.

Graen, G., Novak, M. A., & Sommerkamp, P. (1982). The effects of leader—member exchange and job design on productivity and satisfaction: Testing a dual attachment model. *Organizational Behavior and Human Performance, 30*(1), 109-131.

Grant, A. M. (2007). Relational job design and the motivation to make a prosocial difference. *Academy of Management Review, 32*(2), 393-417.

Grant, A. M., Fried, Y., & Juillerat, T. (2011). Work matters: Job design in classic and contemporary perspectives. *APA handbook of industrial and organizational psychology: Building and developing and organization, 1*, 417-453.

Grant, A. M., & Parker, S. K. (2009). Redesigning work design theories: The rise of relational and proactive perspectives. *The Academy of Management Annals, 3*(1), 317-375.

Green, P. E., Krieger, A. M., & Wind, Y. (2001). Thirty years of conjoint analysis: Reflections and prospects. *Interfaces, 31*(3), S56-S73.

Green, P. E., & Srinivasan, V. (1978). Conjoint analysis in consumer research: Issues and outlook. *Journal of Consumer Research, 5*(2), 103-123.

Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. *Journal of Applied Psychology, 60*(2), 159-170.

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance, 16*(2), 250-279.

Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.

Hahn, G. J., & Shapiro, S. S. (1966). *A cataloging and computer program for the design and analysis of orthogonal symmetric and asymmetric fractional factorial experiments*: General Electric, Research and Development Center.

Hartnell, C. A., Ou, A. Y., & Kinicki, A. (2011). Organizational culture and organizational effectiveness: A meta-analytic investigation of the competing values framework's theoretical suppositions. *Journal of Applied Psychology, 96*(4), 677-694.

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Odessa, FL, US: American Psychological Association.

Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: a meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology, 92*(5), 1332-1356.

Hurt, H. T., Joseph, K., & Cook, C. D. (1977). Scales for the measurement of innovativeness. *Human Communication Research, 4*(1), 58-65.

Ilies, R., Nahrgang, J. D., & Morgeson, F. P. (2007). Leader-member exchange and citizenship behaviors: A meta-analysis. *Journal of Applied Psychology, 92*(1), 269-277.

Janssen, O. (2000). Job demands, perceptions of effort‐reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology, 73*(3), 287-302.

Janz, B. D., Colquitt, J. A., & Noe, R. A. (1997). Knowledge worker team effectiveness: The role of autonomy, interdependence, team development, and contextual support variables. *Personnel Psychology, 50*(4), 877-904.

Johns, G. (2006). The essential impact of context on organizational behavior. *Academy of Management Review, 31*(2), 386-408.

Johns, G. (2010). Some unintended consequences of job design. *Journal of Organizational Behavior, 31*(2‐3), 361-369.

Johns, T., & Gratton, L. (2013). The third wave of virtual work. *Harvard Business Review, 91*(1), 66-73.

Jones, A. P., & James, L. R. (1979). Psychological climate: Dimensions and relationships of individual and aggregated work environment perceptions. *Organizational Behavior and Human Performance, 23*(2), 201-250.

Judge, W. Q., Fryxell, G. E., & Dooley, R. S. (1997). The new task of R&D management: Creating goal-directed communities for innovation. *California Management Review, 39*(3), 72-85.

Juillerat, T. L. (2010). Friends, not foes?: Work design and formalization in the modern work context. *Journal of Organizational Behavior, 31*(2‐3), 216-239.

Karasek, R., Brisson, C., Kawakami, N., Houtman, I., Bongers, P., & Amick, B. (1998). The Job Content Questionnaire (JCQ): An instrument for internationally comparative assessments of psychosocial job characteristics. *Journal of Occupational Health Psychology, 3*(4), 322-355.

Kastelle, T. (2013). *Hierarchy is overrated.* Retrieved 26.04.2016, from https://hbr.org/2013/11/hierarchy-is-overrated

Kirkman, B. L., Rosen, B., Tesluk, P. E., & Gibson, C. B. (2004). The impact of team empowerment on virtual team performance: The moderating role of face-to-face interaction. *Academy of Management Journal, 47*(2), 175-192.

Lammers, J., Stoker, J. I., Rink, F., & Galinsky, A. D. (2016). To have control over or to be free from others? The desire for power reflects a need for autonomy. *Personality and Social Psychology Bulletin, 42*(4), 498-512.

Langfred, C. W. (2000). The paradox of self-management: Individual and group autonomy in work groups. *Journal of Organizational Behavior, 21*(5), 563-585.

Langfred, C. W. (2004). Too much of a good thing? Negative effects of high trust and individual autonomy in self-managing teams. *Academy of Management Journal, 47*(3), 385-399.

Lawrence, P. R., & Lorsch, J. W. (1986). *Organization and environment: managing differentiation and integration* Boston: Harvard Business Review Press.

Litwin, G. H., & Stringer Jr, R. A. (1968). *Motivation and organizational climate*. Boston: Harvard University Press.

Lofquist, L. H., & Dawis, R. V. (1969). *Adjustment to work: A psychological view of man's problems in a work-oriented society*. New York: Appleton-Century-Crofts, Educational Division.

Lohrke, F. T., Holloway, B. B., & Woolley, T. W. (2010). Conjoint analysis in entrepreneurship research a review and research agenda. *Organizational Research Methods, 13*(1), 16-30.

Lumpkin, G. T., Cogliser, C. C., & Schneider, D. R. (2009). Understanding and measuring autonomy: An entrepreneurial orientation perspective. *Entrepreneurship Theory and Practice, 33*(1), 47-69.

Mankins, M., & Garton, E. (Producer). (2017, 02.11.2017). How Spotify balances employee autonomy and accountability. *Harvard Business Review*. Retrieved from https://hbr.org/2017/02/how-spotify-balances-employee-autonomy-and-accountability.

Martins, E., & Terblanche, F. (2003). Building organisational culture that stimulates creativity and innovation. *European Journal of innovation management, 6*(1), 64-74.

Mathieu, J. E., Aguinis, H., Culpepper, S. A., & Chen, G. (2012). Understanding and estimating the power to detect cross-level interaction effects in multilevel modeling. *Journal of Applied Psychology, 97*(5), 951.

Mazmanian, M., Orlikowski, W. J., & Yates, J. (2013). The autonomy paradox: The implications of mobile email devices for knowledge professionals. *Organization Science, 24*(5), 1337-1357.

McAdam, R., & McClelland, J. (2002). Individual and team-based idea generation within innovation management: Organisational and research agendas. *European Journal of innovation management, 5*(2), 86-97.

McCord, P. (2014). How Netflix reinvented HR. *Harvard Business Review, 92*(1), 71-76.

Morgeson, F. P., Aguinis, H., Waldman, D. A., & Siegel, D. S. (2013). Extending corporate social responsibility research to the human resource management and organizational behavior domains: A look to the future. *Personnel Psychology, 66*(4), 805-824.

Morgeson, F. P., & Campion, M. A. (2003). Work design. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Handbook of Psychology: Industrial and Organizational Psychology* (Vol. 12, pp. 423-452). Hoboken, NJ: John Wiley & Sons.

Morgeson, F. P., Dierdorff, E. C., & Hmurovic, J. L. (2010). Work design in situ: Understanding the role of occupational and organizational context. *Journal of Organizational Behavior, 31*(2‐3), 351-360.

Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology, 91*(6), 1321-1339.

Morgeson, F. P., & Humphrey, S. E. (2008). Job and team design: Toward a more integrative conceptualization of work design. In J. J. Martocchio (Ed.), *Research in Personnel and Human Resources Management* (Vol. 27, pp. 39-91). Bingley, UK: Emerald.

Moy, J. W., & Lam, K. F. (2004). Selection criteria and the impact of personality on getting hired. *Personnel Review, 33*(5), 521-535.

Nayir, D. Z., Tamm, U., & Durmusoglu, S. S. (2014). How formalization hinders different firm innovativeness types: Opening the black box with evidence from a service industry. *International Journal of Innovation and Technology Management, 11*(5), 1-22.

O'Reilly, C. (1989). Corporations, culture, and commitment: Motivation and social control in organizations. *California Management Review, 31*(4), 9-25.

Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal, 39*(3), 607-634.

Oldham, G. R., & Hackman, J. R. (2010). Not what it was and not what it will be: The future of job design research. *Journal of Organizational Behavior, 31*(2‐3), 463-479.

Ostroff, C. (1993). The effects of climate and personal influences on individual behavior and attitudes in organizations. *Organizational Behavior and Human Decision Processes, 56*(1), 56-90.

Parker, C. P., Baltes, B. B., Young, S. A., Huff, J. W., Altmann, R. A., Lacost, H. A., & Roberts, J. E. (2003). Relationships between psychological climate perceptions and work outcomes: A meta‐analytic review. *Journal of Organizational Behavior, 24*(4), 389-416.

Parker, S. K. (2003). Longitudinal effects of lean production on employee outcomes and the mediating role of work characteristics. *Journal of Applied Psychology, 88*(4), 620-634.

Parker, S. K., Wall, T. D., & Cordery, J. L. (2001). Future work design research and practice: Towards an elaborated model of work design. *Journal of Occupational and Organizational Psychology, 74*(4), 413-440.

Parker, S. K., Williams, H. M., & Turner, N. (2006). Modeling the antecedents of proactive behavior at work. *Journal of Applied Psychology, 91*(3), 636-652.

Patterson, M. G., West, M. A., Shackleton, V. J., Dawson, J. F., Lawthom, R., Maitlis, S., . . . Wallace, A. M. (2005). Validating the organizational climate measure: Links to managerial practices, productivity and innovation. *Journal of Organizational Behavior, 26*(4), 379-408.

Patzelt, H., & Shepherd, D. A. (2008). The decision to persist with underperforming alliances: The role of trust and control. *Journal of Management Studies, 45*(7), 1217-1243.

Patzelt, H., & Shepherd, D. A. (2009). Strategic entrepreneurship at universities: Academic entrepreneurs' assessment of policy programs. *Entrepreneurship Theory and Practice, 33*(1), 319-340.

Pierce, J. L., & Delbecq, A. L. (1977). Organization structure, individual attitudes and innovation. *Academy of Management Review, 2*(1), 27-37.

Pugh, D. S., Hickson, D. J., Hinings, C. R., & Turner, C. (1968). Dimensions of organization structure. *Administrative Science Quarterly, 13*(1), 65-105.

Ramamoorthy, N., Flood, P. C., Slattery, T., & Sardessai, R. (2005). Determinants of innovative work behaviour: Development and test of an integrated model. *Creativity and Innovation Management, 14*(2), 142-150.

Rao, V. R. (2014). *Applied conjoint analysis*. New York, NY: Springer.

Raub, S. (2008). Does bureaucracy kill individual initiative? The impact of structure on organizational citizenship behavior in the hospitality industry. *International Journal of Hospitality Management, 27*(2), 179-186.

Raudenbush, S. W., Bryk, A. S., & Congdon, R. (2004). *Hierarchical linear and nonlinear modeling*. Lincolnwood, IL: Scientific Software International.

Schroeder, R. G., Van de Ven, A. H., Scudder, G. D., & Polley, D. (1989). The development of innovation ideas. In A. H. Van de Ven, H. L. Angle, & M. S. Poole (Eds.), *Research on the Management of Innovation: The Minnesota Studies* (pp. 107-134). Oxford: Oxford University Press.

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal, 37*(3), 580-607.

Shalley, C. E., Gilson, L. L., & Blum, T. C. (2000). Matching creativity requirements and the work environment: Effects on satisfaction and intentions to leave. *Academy of Management Journal, 43*(2), 215-223.

Shepherd, D. A. (1999). Venture capitalists' assessment of new venture survival. *Management Science, 45*(5), 621-632.

Shepherd, D. A., Patzelt, H., & Baron, R. A. (2013). "I care about nature, but…": Disengaging values in assessing opportunities that cause harm. *Academy of Management Journal, 56*(5), 1251-1273.

Shepherd, D. A., & Zacharakis, A. (1997). Conjoint analysis: A window of opportunity for entrepreneurship research. *Advances in Entrepreneurship, Firm Emergence and Growth, 3*, 203-248.

Shepherd, D. A., & Zacharakis, A. (1999). Conjoint analysis: A new methodological approach for researching the decision policies of venture capitalists. *Venture Capital: An International Journal of Entrepreneurial Finance, 1*(3), 197-217.

Smith, G. F. (1998). Idea‐generation techniques: A formulary of active ingredients. *The Journal of Creative Behavior, 32*(2), 107-134.

Spector, P. E. (1986). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Human Relations, 39*(11), 1005-1016.

Svyantek, D., & Bott, J. (2004). Organizational culture and organizational climate measures: An integrative review. In J. C. Thomas & M. Hersen (Eds.), *Comprehensive Handbook of Psychological Assessment: Industrial and organizational assessment* (Vol. 4, pp. 507-524). Hoboken, NJ: John Wiley & Sons.

Uy, M. A., Foo, M.-D., & Ilies, R. (2015). Perceived progress variability and entrepreneurial effort intensity: The moderating role of venture goal commitment. *Journal of Business Venturing, 30*(3), 375-389.

Van der Vegt, G. S., & Janssen, O. (2003). Joint impact of interdependence and group diversity on innovation. *Journal of Management, 29*(5), 729-751.

Volmer, J., Spurk, D., & Niessen, C. (2012). Leader–member exchange (LMX), job autonomy, and creative work involvement. *The Leadership Quarterly, 23*(3), 456-465.

Wang, A. C., & Cheng, B. S. (2010). When does benevolent leadership lead to creativity? The moderating role of creative role identity and job autonomy. *Journal of Organizational Behavior, 31*(1), 106-121.

Wayne, S. J., Liden, R. C., Kraimer, M. L., & Graf, I. K. (1999). The role of human capital, motivation and supervisor sponsorship in predicting career success. *Journal of Organizational Behavior, 20*(5), 577-595.

Wegman, L. A., Hoffman, B. J., Carter, N. T., Twenge, J. M., & Guenole, N. (2016). Placing Job Characteristics in Context Cross-Temporal Meta-Analysis of Changes in Job Characteristics Since 1975. *Journal of Management*. 10.1177/0149206316654545

West, M. A. (1990). The social psychology of innovation in groups. *Innovation and creativity at work: Psychological and organizational strategies*, 309-333.

West, M. A., & Farr, J. L. (1989). Innovation at work: Psychological perspectives. *Social Behaviour, 4*(1), 15-30.

WorldEconomicForum (2016). *The future of jobs - Employment, skills and workforce strategy for the fourth industrial revolution*. Retrieved 12.08.2016, from http://reports.weforum.org/future-of-jobs-2016/

Wüllenweber, K., Beimborn, D., Weitzel, T., & König, W. (2008). The impact of process standardization on business process outsourcing success. *Information Systems Frontiers, 10*(2), 211-224.

Xiao, Z., & Tsui, A. S. (2007). When brokers may not work: The cultural contingency of social capital in Chinese high-tech firms. *Administrative Science Quarterly, 52*(1), 1-31.

Yuan, F., & Woodman, R. W. (2010). Innovative behavior in the workplace: The role of performance and image outcome expectations. *Academy of Management Journal, 53*(2), 323-342.

Yun, S., Faraj, S., & Sims Jr, H. P. (2005). Contingent leadership and effectiveness of trauma resuscitation teams. *Journal of Applied Psychology, 90*(6), 1288-1296.

Zacharakis, A. L., & Meyer, G. D. (1998). A lack of insight: Do venture capitalists really understand their own decision process? *Journal of Business Venturing, 13*(1), 57-76.

Zaltman, G., Duncan, R., & Holbek, J. (1973). *Innovations and organizations* (Vol. 1973). New York: John Wiley & Sons.

V Overall Conclusion[12]

1 Summary of findings and contributions

The intention of this thesis was to review and investigate organizational strategies and approaches that foster employee attraction and retention among potential and current employees. Moreover, from a company-internal perspective, the thesis examined motivation-based work design features and related context that positively influence employees' innovative work behavior in organizations. To investigate this, the thesis drew mainly on brand equity theory (Aaker, 1991; Keller, 1993) in connection with theory on the employer image construct (Cable & Turban, 2001; Lievens & Highhouse, 2003), as well as on theory related to work design (Hackman & Oldham, 1976; Morgeson & Humphrey, 2008). While the first essay, in the form of a comprehensive review, contemplated the field of employer image and organizational attractiveness from a more general perspective and integrated it along different research streams, the second essay empirically developed and tested a method to efficiently and reliably measure employer image from large-scale text data. The third essay then focused on the internal perspective of existing employees and empirically assessed in a conjoint experiment the influence of different types of autonomy on employee innovative work behavior and how this effect is moderated through the organizational context. The specific findings of each of the chapters will be summarized in the following sections.

Chapter II outlines and integrates research on brand equity-based employer image and organizational attractiveness from a general perspective. Due to the multidisciplinary research approaches emerging primarily from the marketing, psychology, and human resource

[12] This chapter is partly based on and includes elements of Theurer, Tumasjan, Welpe, & Lievens (2018a), Theurer, Tumasjan, Welpe, & Lievens (2018b), and Theurer, Tumasjan, & Welpe (2018).

management disciplines, the field has developed into a highly heterogeneous and fragmented landscape of studies. Through a comprehensive and analytical review of the literature, this chapter demonstrates that research in the field can be grouped into three main research streams, namely brand equity-based theoretical concepts and models, employer knowledge dimensions, and activities to promote a positive employer image. Regarding concepts and models, extant research has identified both potential and existing employees as target groups of a favorable employer image and its subsequent promotion. Related to the different target groups, theoretical models propose different outcomes that are directly and indirectly related to a favorable employer image. From an external (i.e., recruitment) perspective, these are, for example, enhanced employer familiarity, identification, attraction, job pursuit intentions, and ultimately favorable applicant pools. From an internal (i.e., current employees) perspective, proposed outcomes are related to enhanced organizational identity, loyalty, productivity, or engagement. In fact, empirical evidence in the employer knowledge dimensions stream has confirmed that dimensions of employer knowledge (i.e., employer familiarity, reputation, image attributes) have a positive effect on such outcomes, both externally and internally. Finally, the means whereby to influence and modify employer knowledge are summarized and clustered. The identified approaches are related to high- and low-involvement practices (e.g., sponsorship vs. employee endorsements/ detailed ads); media richness (e.g., print vs. Internet); personal information and word-of-mouth; and best employer studies (e.g., best place to work certifications), which all have a positive effect on potential and current employees' attitudinal and behavioral outcomes. Finally, the different research streams are integrated into a comprehensive model and set into relation to each other. It becomes apparent that extant research has mainly focused on a recruitment context and the empirical assessment of the impact of selected employer knowledge dimensions (e.g., employer

image attributes and their effect on employee attitudes). In turn, extant research has neglected the organizational perspective and the development of comprehensive, integrated strategies to modify employer knowledge. Furthermore, there has only been a limited focus on existing employees and the measurement of proximal and distal outcomes on an organizational level.

Chapter III relates to the neglect of the organizational perspective of employer image and contrasts the projected organizational perspective with employees' perceived perspective of employer image. A content analysis-based method is developed that efficiently and reliably measures dimensions of employer image from large-scale text data (i.e. corporate and employment webpage data). While previous research has content-analyzed organizationally produced texts such as annual reports and constructs such as leadership image, this study is among the first to analyze employer image on an organizational level with large-scale text data. Moreover, through contrasting dimensions of projected employer (webpage) image with perceived employer image dimensions, the results show that both image types are quite distinct from each other. Furthermore, this chapter tests the predictive power of employer image dimensions. In contrast to theoretical propositions, the overall results demonstrate that both image types have only limited predictive power regarding organizational attractiveness, and more distal outcomes such as market value and firm performance. When comparing the two images types (i.e., projected vs. perceived image), perceived image seems to have slightly stronger effects on the investigated outcomes. Reasons for this might stem from the fact that images are first being developed by organizations and only afterwards perceived by employees. As both images may often not be in line with each other, the difference in their effects is explainable.

Finally, Chapter IV focuses on the internal organizational perspective and shifts the focus from employer image-related factors to work design-based features that have an influence on

employee motivation, and subsequently can influence their innovative work behavior. Specifically, different dimensions of autonomy (i.e., work methods autonomy, work scheduling autonomy, decision-making autonomy) as a task/motivational work design feature and their effect on employees' perceived innovative work behavior are being investigated. Previous perspectives have treated autonomy mainly as a unidimensional construct, or from a work scheduling perspective. Furthermore, the study draws on calls for more context-contingent investigations of features of work design (e.g., Baum & Kabst, 2014; Cable & Yu, 2006) and investigates how dimensions of psychological climate moderate the relationship between autonomy dimensions and innovative work behavior. As a result, the chapter finds that all dimensions of autonomy have a significant positive effect on employees' innovative work behavior, while work scheduling and work methods autonomy have a significantly stronger effect on innovative work behavior than decision-making autonomy. In contrast to the initial hypotheses, none of the contextual organizational factors (i.e., psychological climate dimensions such as supervisor support, organizational structure, and organizational innovation) had a moderating effect on this relationship, which suggests that organizations do not need to consider the organizational context when putting together work design strategies.

2 Implications for theory

Through addressing important research questions in the fields of brand equity-based employer image and work design relationships, this thesis contributes to the literature in a many important ways.

First, research on employer image and organizational attractiveness is integrated along a guiding theoretical construct (i.e., brand equity theory) and summarized under a comprehensive value chain model. The model highlights both well-researched areas in the field and yet under-

researched areas that require enhanced attention. Valuable guidance for future research is therefore given. While previously, there has been no guiding theoretical construct to direct future research in the field, the brand equity-based model integrates recent perspectives and supports researchers in systematically developing the field along different stages in the employee engagement cycle. Therefore, the thesis provides important new perspectives to the field by consistently translating and applying brand equity conceptualizations to an employment context.

Second, the thesis provides a more nuanced understanding of the employer image construct, as it highlights differences between projected and perceived employer image. Extant research has implicitly assumed that the two types of employer image are two sides of the same coin. The findings of this thesis indicate that this is not the case, and therefore, enhance our knowledge and understanding of the employer image construct. Prior research has rarely analyzed what images companies actually communicate to prospective and current employees. This thesis highlights important conceptual differences that extend our current understanding of employer image, and therefore, adds an important perspective that has so far been neglected.

Third, by focusing on a context-contingent perspective on work design relationships, this thesis highlights important interaction effects that may have an influence on our current understanding of such relationships. Therefore, an analysis of the supporting and inhibitive factors in work design relationships provides valuable insights and a more comprehensive understanding in comparison to current views. While previously, organizational context has been assumed as given, the boundary condition perspective provides a more holistic picture and thus answers recent calls to better understand factors that enable or constrain different work design features. Moreover, important differences in similar/related types of a work design feature (i.e., autonomy) are highlighted. Traditionally autonomy has been viewed as a unidimensional

construct. However, the results of this thesis provide valuable implications that different types of the same construct can have different effects and should therefore be investigated.

3 Implications for practice

Apart from the theoretical advancement in the areas of employer image, organizational attractiveness and work design that this thesis provides, it also asserts several important practical implications.

First, regarding employer image and organizational attractiveness, this thesis provides clear conceptual and practical guidance on antecedents, outcomes, and interrelations of an employer branding program for organizational stakeholders to attract and retain potential and current employees (e.g., human resource managers). Following from a clear classification of employer branding elements, the integrative model illustrates interrelations within and across the stages, and building blocks to develop an effective strategy for both recruiting potential applicants and retaining current employees. Apart from highlighting the different organizational input factors and the range of potential outcomes of the brand as an employer, the integrative model supports decision-making through an enhanced insight into the applicant/employee perspective and how relevant attitudes and behaviors are formed. The consolidated findings can support managers to attain greater legitimacy within their organizations for (increasing) investments into branding strategies, as related to the attractiveness as an employer. Management can thereby attain and steer relevant recruitment and retention policies, and consider spillover effects more to ultimately make a positive contribution to their organization’s (financial) performance

Second, the availability of a new measurement method to assess employers’ projected (webpage) image opens a variety of opportunities in the evaluation of employers. Using CATA

and the newly developed and validated image dictionaries, both researchers and practitioners can now efficiently and quickly measure and monitor dimensions of employer image within large-scale text data. For example, improved measurability and transparency is likely to unveil "image gaps" between espoused and perceived employer image that will become increasingly apparent and visible in a connected world. As shown in the comparison of the two image types in this thesis, there may be gaps between image projection and perception, and companies will thus be able to better adjust and fine-tune their aspired image. The issue applies not only in a recruitment context, but also to an internal perspective regarding current employees. Companies could, for example, compare their initially projected image with dimensions of their internal culture. Furthermore, the innovative measurement method could serve as an additional part of employer image audits (i.e., as a further input to best employer competitions). Simultaneously, organizations will be able to quickly assess their labor market competition and analyze their relative employer value proposition across a variety of image dimensions. This is valuable insofar as content and information between employers and employees is nowadays increasingly exchanged online (Cappelli, 2001; Nolan et al., 2013).

Third, regarding work design-based strategies to address employees' attitudinal and behavioral work outcomes, the present thesis draws attention to the broader context in which companies operate and how/if organizations need to dynamically adjust their people management strategies. Given the fast-changing technological environment that has impacted work processes and the occupational structure in organizations (Colbert et al., 2016; Wegman et al., 2016), organizations should not treat work design changes in isolation. Instead, they should carefully evaluate whether and how potential boundary conditions might reinforce or hamper the effect on relationships between work design features and their related outcomes. This thesis has also

confirmed that autonomy is one of the most salient and important work design features. Organizations therefore need to be aware of the different dimensions of autonomy and the different effects on employee attitudes and work outcomes. It is therefore crucial that based on the desired outcomes, firms have a more finely tuned understanding of the different employee autonomy dimensions, and are thus able to apply them in a more targeted way.

In summary, this thesis has shown that brand equity and work-design-based strategies to foster employee attraction, retention and innovation management have multiple important implications for practice.

4 Directions for future research

This thesis reveals the importance of a sufficiently attractive and favorable employer image, along with a suitable means to promote it, to impact employees' attitudinal and behavioral work outcomes (e.g., organizational attractiveness, job pursuit intentions, loyalty), as well as organizational outcomes (e.g., firm performance). Furthermore, this thesis highlights the positive influence of features of work design such as dimensions of autonomy on employees' innovative behavior. The findings therefore provide a foundation for several future research avenues.

First, regarding employer image and organizational attractiveness, further research is needed that addresses the relative importance of employer image. While previous research has primarily investigated image attributes in isolation, more insight is needed regarding relative image development and its impact on attitudinal and organizational outcomes. Factors such as the competitive environment or other contextual features such as industry need to be considered. Further investigations are therefore required to analyze the impact of certain image changes with more context-contingent views.

Second, future research should also take a more longitudinal perspective and assess employer image changes and impact over time. Consistency has been proposed as one of the success factors of an effective employer image. However, empirical evidence to assess evidence of the time factor is largely absent. Relatedly, future research is needed that investigates outcomes of favorable employer image across multiple levels, starting from proximal attitudinal and behavioral outcomes on an individual level (e.g., job pursuit and application intentions) to more distal organizational-level outcomes (applicant pools, financial performance).

Third, research is needed that further investigates and contrasts the different image perspectives, namely projected organizational images and perceived images by potential and current employees. The results of this thesis indicate that the two image perspectives are not necessarily in line with each other and hence research is needed to investigate the impact of misaligned images (i.e., “image gap”), which may lead to potential frustration among employees.

Fourth, in terms of promoting employer image, additional research is needed that comprehensively investigates different types of media along the engagement cycle, as well as a focus on newer and richer media (i.e., social media). Especially, newer media and their interplay with traditional media have only marginally been discussed so far.

Fifth, employer image research clearly needs to enhance its focus on current employees. Although theory postulates both potential and current employees as a target group of a favorable employer image and means to promote it, extant research has largely focused on the external (i.e., recruitment) perspective. To a much lesser extent, the focus has been on internal audiences and interrelations in this context.

Sixth, regarding an internal work design perspective and task/motivational features to influence employee attitude and outcomes, future research could investigate similar relationships

between features of work design and innovative work behavior on an organizational level. The current thesis has only investigated this relationship on an individual level and further evidence on an organizational level may therefore be supportive. Additionally, a seventh area for prospective future research may be to test actual outcomes of work design-based relationships instead of measuring employee perceptions only.

Finally, an eighth avenue for future research could tap into empirically investigating relationships of additional features of work design and organizational context dimensions (i.e., apart from autonomy and psychological climate dimensions as a moderator). This thesis has only looked at a specific work design feature (i.e., autonomy) and dimensions of organizational context (i.e., supervisor support, organizational structure, and organizational innovation). Direct and moderating relationships may therefore change with changing variables (e.g., task variety, job feedback, skill variety, social support, physical demands).

5 Concluding remarks

In conclusion, by considering a series of exploratory/qualitative and empirical studies, this thesis highlights strategies to address employee attraction, retention and innovation management in an increasingly challenging organizational environment, as influenced by rapid technological and demographic change. The results suggest that a favorable image as an employer and means to transmit such an image play a central role in overcoming recruitment and retention challenges. From a company-internal perspective, employee autonomy is a key motivational factor and closely related to employees' innovative work behavior. Offering several implications for theory and practice, as well as future research, the present thesis intends to stimulate and inspire future research and discussions around brand equity and work design-based

approaches to the attraction and management of companies' most valuable assets – their employees.

6 References (Introduction & Conclusion)

Aaker, D. A. (1991). *Managing Brand Equity*. New York: Free Press.

Aaker, J. (1997). Dimensions of brand personality. *Journal of Marketing Research*, 347-356.

Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-practice recommendations for estimating cross-level interaction effects using multilevel modeling. *Journal of Management, 39*(6), 1490-1528.

Allen, D. G., Mahto, R. V., & Otondo, R. F. (2007). Web-based recruitment: effects of information, organizational brand, and attitudes toward a Web site on applicant attraction. *Journal of Applied Psychology, 92*(6), 1696-1708.

Amabile, T. M. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behavior, 10*(1), 123-167.

Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly, 15*(1), 5-32.

Ambler, T., & Barrow, S. (1996). The employer brand. *Journal of Brand Management, 4*(3), 185-206.

Armstrong, S. J., Cools, E., & Sadler-Smith, E. (2012). Role of cognitive styles in business and management: Reviewing 40 years of research. *International Journal of Management Reviews, 14*(3), 238-262.

Baum, M., & Kabst, R. (2013). How to attract applicants in the Atlantic versus the Asia-Pacific region? A cross-national analysis on China, India, Germany, and Hungary. *Journal of World Business, 48*(2), 175-185.

Beechler, S., & Woodward, I. C. (2009). The global “war for talent”. *Journal of international management, 15*(3), 273-285.

Brundin, E., Patzelt, H., & Shepherd, D. A. (2008). Managers' emotional displays and employees' willingness to act entrepreneurially. *Journal of Business Venturing, 23*(2), 221-243.

Brynjolfsson, E., & McAfee, A. (2012). *Race against the machine: How the digital revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy*: Brynjolfsson and McAfee.

Cable, D. M., & Turban, D. B. (2001). Establishing the dimensions, sources and value of job seekers' employer knowledge during recruitment. *Research in Personnel and Human Resources Management, 20*, 115-163.

Cable, D. M., & Turban, D. B. (2003). The Value of Organizational Reputation in the Recruitment Context: A Brand Equity Perspective. *Journal of Applied Social Psychology, 33*(11), 2244-2266.

Cassell, C., & Symon, G. (2004). *Essential guide to qualitative methods in organizational research*. London: Sage.

Colbert, A., Yee, N., & George, G. (2016). The digital workforce and the workplace of the future. *Academy of Management Journal, 59*(3), 731-739.

Collins, C. J., & Han, J. (2004). Exploring applicant pool quantity and quality: The effects of early recruitment practice strategies, corporate advertising, and firm reputation. *Personnel Psychology, 57*(3), 685-717.

Collins, C. J., & Stevens, C. K. (2002). The relationship between early recruitment-related activities and the application decisions of new labor-market entrants: A brand equity approach to recruitment. *Journal of Applied Psychology, 87*(6), 1121-1133.

Cooper, D. R., Schindler, P. S., & Sun, J. (2006). *Business research methods* (Vol. 9). New York: McGraw-Hill Irwin.

Cortada, J. (2009). *Rise of the knowledge worker*. London: Butterworth-Heinemann.

Dineen, B. R., & Allen, D. G. (2016). Third Party Employment Branding: Human Capital Inflows and Outflows Following "Best Places to Work" Certifications. *Academy of Management Journal*. Advance online publication. doi: 10.5465/amj.2013.1091.

Donaldson, S. I., & Grant-Vallone, E. J. (2002). Understanding self-report bias in organizational behavior research. *Journal of Business and Psychology, 17*(2), 245-260.

Edwards, M. R. (2010). An integrative review of employer branding and OB theory. *Personnel Review, 39*(1), 5-23.

Farquhar, P. H. (1989). Managing brand equity. *Marketing Research, 1*(3), 24-33.

Fréchette, J., Bourhis, A., & Stachura, M. (2013). The Organizational Attraction of Nursing Graduates: Using Research to Guide Employer Branding. *The Health Care Manager, 32*(4), 303-313.

Fried, Y., & Ferris, G. R. (1987). The validity of the job characteristics model: A review and meta-analysis. *Personnel Psychology, 40*(2), 287-322.

Gardner, B. B., & Levy, S. J. (1955). The product and the brand. *Harvard Business Review, 33*(2), 33-39.

Gephart, R. P. (2004). Qualitative research and the Academy of Management Journal. *Academy of Management Journal, 47*(4), 454-462.

Grant, A. M., Fried, Y., & Juillerat, T. (2011). Work matters: Job design in classic and contemporary perspectives. *APA handbook of industrial and organizational psychology: Building and developing and organization, 1*, 417-453.

Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. *Journal of Applied Psychology, 60*(2), 159-170.

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance, 16*(2), 250-279.

Holsti, O. R. (1969). *Content analysis for the social sciences and humanities*. Don Mills: Addison-Wesley.

Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: a meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology, 92*(5), 1332-1356.

Janz, B. D., Colquitt, J. A., & Noe, R. A. (1997). Knowledge worker team effectiveness: The role of autonomy, interdependence, team development, and contextual support variables. *Personnel Psychology, 50*(4), 877-904.

Johns, T., & Gratton, L. (2013). The third wave of virtual work. *Harvard Business Review, 91*(1), 66-73.

Judge, W. Q., Fryxell, G. E., & Dooley, R. S. (1997). The new task of R&D management: Creating goal-directed communities for innovation. *California Management Review, 39*(3), 72-85.

Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *The Journal of Marketing*, 1-22.

Keller, K. L. (2011). *Strategic Brand Management: Building, Measuring, and Managing Brand Equity*. Harlow: Pearson Education.

Krippendorff, K. (2012). *Content analysis: An introduction to its methodology*. Thousand Oaks, CA: Sage.

Lievens, F. (2007). Employer branding in the Belgian Army: The importance of instrumental and symbolic beliefs for potential applicants, actual applicants, and military employees. *Human Resource Management, 46*(1), 51-69.

Lievens, F., & Highhouse, S. (2003). The relation of instrumental and symbolic attributes to a company's attractiveness as an employer. *Personnel Psychology, 56*(1), 75-102.

Lievens, F., & Slaughter, J. E. (2016). Employer image and employer branding: What we know and what we need to know. *Annual Review of Organizational Psychology and Organizational Behavior, 3*, 407-440.

Lievens, F., Van Hoye, G., & Schreurs, B. (2005). Examining the relationship between employer knowledge dimensions and organizational attractiveness: An application in a military context. *Journal of Occupational and Organizational Psychology, 78*(4), 553-572.

ManpowerGroup (2014). *The Talent Shortage Continues: How the Ever Changing Role of HR Can Bridge the Gap*. Retrieved 07.01.2015, from http://www.manpowergroup.ca/campaigns/talent-shortage-2014/

Morgeson, F. P., Dierdorff, E. C., & Hmurovic, J. L. (2010). Work design in situ: Understanding the role of occupational and organizational context. *Journal of Organizational Behavior, 31*(2-3), 351-360.

Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and Validating a Comprehensive Measure for Assessing Job Design and the Nature of Work. *Journal of Applied Psychology, 91*(6), 1321-1339.

Morgeson, F. P., & Humphrey, S. E. (2008). Job and team design: Toward a more integrative conceptualization of work design. In J. J. Martocchio (Ed.), *Research in Personnel and Human Resources Management* (Vol. 27, pp. 39-91). Bingley, UK: Emerald.

Myers, M. D. (2013). *Qualitative research in business and management*: Sage.

Nolan, K. P., Gohlke, M., Gilmore, J., & Rosiello, R. (2013). Examining How Corporations Use Online Job Ads to Communicate Employer Brand Image Information. *Corporate Reputation Review, 16*(4), 300-312.

Oldham, G. R., & Hackman, J. R. (2010). Not what it was and not what it will be: The future of job design research. *Journal of Organizational Behavior, 31*(2-3), 463-479.

Parker, S., & Wall, T. D. (1998). *Job and work design: Organizing work to promote well-being and effectiveness*. Thousand Oaks: Sage.

Parker, S. K., Wall, T. D., & Cordery, J. L. (2001). Future work design research and practice: Towards an elaborated model of work design. *Journal of Occupational and Organizational Psychology, 74*(4), 413-440.

Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). *The development and psychometric properties of LIWC2015*. Austin, TX: The University of Texas at Austin.

Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2001). Linguistic inquiry and word count: LIWC 2001. *Mahway: Lawrence Erlbaum Associates, 71*, 2001.

Ramamoorthy, N., Flood, P. C., Slattery, T., & Sardessai, R. (2005). Determinants of innovative work behaviour: Development and test of an integrated model. *Creativity and Innovation Management, 14*(2), 142-150.

Raudenbush, S. W., Bryk, A. S., & Congdon, R. (2004). *Hierarchical linear and nonlinear modeling*. Lincolnwood, IL: Scientific Software International.

Schlager, T., Bodderas, M., Maas, P., & Cachelin, J. L. (2011). The influence of the employer brand on employee attitudes relevant for service branding: An empirical investigation. *Journal of Services Marketing, 25*(7), 497-508.

Shalley, C. E., Gilson, L. L., & Blum, T. C. (2000). Matching creativity requirements and the work environment: Effects on satisfaction and intentions to leave. *Academy of Management Journal, 43*(2), 215-223.

Shepherd, D. A., Patzelt, H., & Baron, R. A. (2013). "I care about nature, but…": Disengaging values in assessing opportunities that cause harm. *Academy of Management Journal, 56*(5), 1251-1273.

Shepherd, D. A., & Zacharakis, A. (1997). Conjoint analysis: A window of opportunity for entrepreneurship research. *Advances in Entrepreneurship, Firm Emergence and Growth, 3*, 203-248.

Short, J. C., Broberg, J. C., Cogliser, C. C., & Brigham, K. C. (2010). Construct validation using computer-aided text analysis (CATA): An illustration using entrepreneurial orientation. *Organizational Research Methods, 13*(2), 320-347.

Spector, P. E. (1986). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Human Relations, 39*(11), 1005-1016.

Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology, 29*(1), 24-54.

Terry, U. (2017). *Research and Methodolody - Content Analysis as a Research Technique*. Retrieved 14.01.2017, from https://www.terry.uga.edu/management/contentanalysis/research/

Thai, V. V., & Latta, T. (2010). Employment brand strategy for the shortage of seafarers. *International Journal of Shipping and Transport Logistics, 2*(4), 411-428.

Theurer, C. P., Tumasjan, A., Welpe, I. M., & Lievens, F. (2018a). Employer branding: A brand equity-based literature review and research agenda. *International Journal of Management Reviews, 20*(1), 155-179.

Theurer, C., Tumasjan, A., Welpe, I. M., & Lievens, F. (2018b). *Substance or noise: Analyzing dimensions of employer image from corporate and employment webpages*. Working paper.

Theurer, C., Tumasjan, A., & Welpe, I. M. (2018). *Contextual work design and employee innovative work behavior: When does autonomy matter?*. Working paper.

Tumasjan, A., Strobel, M., & Welpe, I. M. (2011). Employer brand building for start-ups: which job attributes do employees value most? *Journal of Business Economics (formerly: Zeitschrift für Betriebswirtschaft), 81*(6), 111-136.

Turner, N., Swart, J., & Maylor, H. (2013). Mechanisms for managing ambidexterity: a review and research agenda. *International Journal of Management Reviews, 15*(3), 317-332.

Weber, R. P. (1990). *Basic content analysis*. Newbury Park, CA: Sage.

Wegman, L. A., Hoffman, B. J., Carter, N. T., Twenge, J. M., & Guenole, N. (2016). Placing Job Characteristics in Context Cross-Temporal Meta-Analysis of Changes in Job Characteristics Since 1975. *Journal of Management*. 10.1177/0149206316654545

WorldEconomicForum (2016). *The future of jobs - Employment, skills and workforce strategy for the fourth industrial revolution*. Retrieved 12.08.2016, from http://reports.weforum.org/future-of-jobs-2016/

Zacharakis, A. L., & Meyer, G. D. (1998). A lack of insight: Do venture capitalists really understand their own decision process? *Journal of Business Venturing, 13*(1), 57-76.

Appendix

Appendix A (Reference for Chapter II)

Theurer, C. P., Tumasjan, A., Welpe, I. M., & Lievens, F. (2018). Employer branding: A brand equity-based literature review and research agenda. *International Journal of Management Reviews*, *20*(1), 155-179.

Appendix B (Reference for Chapter III)

Theurer, C., Tumasjan, A., Welpe, I. M., & Lievens, F. (2018). *Substance or noise: Analyzing dimensions of employer image from corporate and employment webpages.* Working paper.

Appendix C (Reference for Chapter IV)

Theurer, C., Tumasjan, A., & Welpe, I. M. (2018). *Contextual work design and employee innovative work behavior: When does autonomy matter?*. Working paper.