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Tolkamp, Gerben

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Chapter 5. General discussion

“The creative process is mythicized in our culture. There is a sense that ideas are flashes of genius that people have, all at once. But many of history’s best ideas were generated from a process of brainstorming, experimentation, and iteration. This is one of the most important things I took away from my time at Apple. Apple never magically visualized a product; they developed their ideas over time.” – Alan Cannistraro (Former App designer and developer at Apple)

As is illustrated by the quote above, creativity is hard work. To achieve creative outcomes, individuals need to engage in a creative process consisting of various different activities. The importance of engagement in creative processes for creative outcomes has also been stressed by various researchers, who suggest that without employees’ decision to engage in creative processes, creative outcomes will not arise (e.g. Ford, 1996; Mumford et al., 1991; Shalley & Gilson, 2004; Zhang & Bartol, 2010). Despite the importance of the creative process, we still know relatively little about its nature and inner workings.

In this dissertation, we set out to demystify creativity by developing a better understanding of the nature of the creative process. We propose that the best way to do so is to acknowledge that we can and should study the creative process through three differing conceptual lenses that vary in detailedness. Specifically, our aims were threefold. Firstly, applying the most rudimentary lens that distinguishes the creative process as the set of behaviors that differs from non-creative behavior, we aimed to further our understanding of drivers that motivate employees to choose for engagement in creative processes over engagement in habitual action. Secondly, using a more detailed lens that suggests that the creative process consists of conceptually distinct behaviors (i.e., problem construction,

information search and encoding, and idea generation) that may have different antecedents, and differential impact on various types of creative outcomes, examined whether the degree of engagement in these specific activities indeed depends on certain contextual antecedents, and whether engagement in specific activities is more important for some types of creative outcomes than others. Thirdly, using the most detailed lens that considers the creative process as a sequence of interacting activities that unfolds over time, we examined how the interplay of engagement in these activities over time is related to creative outcomes by using various temporal dimensions.

Taken together, this dissertation proposes that the engagement in creative processes can best be defined as: individuals' intentional choice to invest effort into a sequence of interacting activities (that may or may not include problem construction, information search and encoding, idea generation, and idea selection and elaboration), that interact with each other as the process unfolds over time. This definition, and the above considerations show that depending on which part of the definition requires more clarity, scholars can adopt various lenses to develop a better understanding of the creative process.

In this concluding Chapter, we reflect on the main findings of the three empirical Chapters of this dissertation. We start with a summary of the results for each chapter, which gives the reader an overview of what drives creative process engagement, what causes individuals to engage more in some activities rather than others and how this relates to different types of creativity, and how different activities work together over time to produce creative outcomes. Then, we discuss the theoretical implications of our findings for the creativity literature, the creative process literature, as well as for the literatures about sensemaking, cognitive resources, and time in organizational behavior. Next, we discuss the limitations of our studies and give recommendations for potentially fruitful avenues of future research. Finally, we provide managers and practitioners with practical and tangible insights

that can be derived from this work and that can be implemented in practice to enhance their creative performance and that of their employees.

SUMMARY OF MAIN FINDINGS

In this thesis, we aimed to develop a better understanding of the creative process, and developed new propositions using several theories central to organizational behavior. In Chapter 2, we examined the proposition that creative process engagement is cognitively demanding. We used Conservation of Resources theory (Hobfoll, 1989, 2002; Hobfoll et al., 2018) to make predictions and extended existing research by answering the question what the implications are for creative process engagement when individuals' cognitive resources are depleted. In Chapter 3, we examined the proposition that creative process activities are conceptually distinct, each with their own antecedents and with differential impacts on various types of creative outcomes. We used sensemaking theory (Foldy et al., 2008; Ford, 1996; Weick, 1995) to make differential predictions about the relation of job autonomy and leader creative expectations with problem construction, information search and encoding, and idea generation. In Chapter 4, we examined how the creative process unfolds over time. Based on explicit conceptualizations of time that were developed by Aguinis and Bakker (2021), we considered how duration, timing, frequency, and sequencing of creative activities is related to creativity of outcomes.

Chapter 2: Creative process engagement and the role of cognitive resources: A

Conservation of Resources perspective

A central proposition of creative process theories is that engagement in creative processes as opposed to habitual processes requires a significant investment of effort, and as such, of cognitive resources (Ford, 1996; Mumford et al., 2012; Reiter-Palmon & Illies, 2004). However, this proposition has not received much empirical attention to date, and therefore, it remains unclear to what extent creative process engagement indeed requires the

investment of effort and cognitive resources. Additionally, this provokes the question how a lack of cognitive resources influences individuals' willingness to engage in creative processes. Using Conservation of Resources theory (Hobfoll, 2002; Hobfoll et al., 2018), we argued that daily engagement in creative processes is positively related to daily levels of reported work effort, because creative process engagement requires higher levels of active information processing than opting for habitual behavioral patterns. Additionally, we argued that lagged work effort (i.e., within-person deviances in work effort) is negatively related to next-day creative process engagement via two pathways. Firstly, expending work effort today leads to a depletion of cognitive resources, which lowers the amount of possible work effort tomorrow, which means that less effort can be spent on creative process engagement. Additionally, when resources are depleted, individuals become less likely to invest their remaining resources in risky behaviors, which leads to a direct negative effect of lagged work effort and daily creative process engagement.

We conducted a five-day diary study via Mturk among 172 employees, and found support for our predictions. Results presented in Chapter 2 indeed showed that daily creative process engagement is positively related to daily work effort, thereby confirming that creative process engagement is experienced as effortful or as requiring the investment of cognitive resources. Furthermore, we found a negative effect of lagged work effort on next day work effort, showing that individuals who work very hard on one day, are likely to work less hard the next day. Mediation analysis showed a significant negative effect between lagged work effort and next-day creative process engagement via lowered same-day work effort. This effect suggests that having fewer resources available means that one can also invest less resources in creative process engagement. More importantly, however, we found a significant negative direct effect of lagged work effort on next-day creative process engagement, showing that when resources are depleted, individuals are also less likely to choose to engage

in creative processes. This confirms the tenet in COR that individuals become more protective of their resources when they are low on cognitive resources (Hobfoll et al., 2018). It is also consistent with the theory of Ford (1996) who suggests that individuals' decision of engagement in creative processes is in part driven by the perceived likelihood of success. When resources are low, this perception is probably also lowered.

As such, this Chapter shows that a lack of resources hinders creative action in two ways: firstly, because reduced resources means that individuals have fewer resources to invest in creative action, and secondly, because reduced resources make the option of engagement in creative processes less desirable.

Chapter 3: Disentangling the creative process: An examination of differential antecedents and outcomes for specific process-elements

In Chapter 2, we found evidence that besides motivation and affect, the availability of cognitive resources is an important driver for individuals to engage in creative processes instead of habitual action. However, the creative process itself consists of various activities (i.e., problem construction, information search and encoding, and idea generation) that are considered conceptually distinct (Henker et al., 2015; Reiter-Palmon & Illies, 2004). Various scholars have suggested that the decision to engage in specific activities over others may be explained by different antecedents (Mumford et al., 1991, 2012; Unsworth, 2001). Additionally, it has been suggested that these activities in turn may vary in their effects on creativity depending on the type of creative outcomes (Mumford & Gustafson, 1988; Unsworth, 2001). Despite these suggestions, theory is lacking on how antecedents might predict engagement in specific activities differentially, as well as on how these activities relate to different types of creativity.

In Chapter 3, we argued that employees are engaged in a continuous sensemaking process that consists of two distinct elements: building mental models about situations or

events, and subsequently articulating potential courses of action based on these mental models. The former element is generally referred to as diagnostic framing, defined as the way in which the problem or situation is understood, whereas the latter is referred to as prognostic framing, defined as the way in which the appropriate course of action is understood (Foldy et al., 2008). We argue that diagnostic framing shows strong conceptual overlap with problem construction and information search and encoding, as these processes serve as a foundation for understanding a situation or problem and generating future solutions. In contrast, prognostic framing is related to idea generation, as it involves the proposition of possible future courses of action. Related to creative processes, we propose that autonomy signals the need to engage in diagnostic framing and thus in problem construction and information search and encoding. Individuals are likely to adopt existing mental models rather than developing their own mental models unless critical thinking is stimulated (Ford, 1996). Because autonomy signals the absence of strict policies, this stimulates individuals to develop their own mental models. Alternatively, we propose that leader creative expectations signal the need to engage in idea generation, because creative expectations may best be satisfied by generating creative outcomes. Furthermore, we propose that radical creativity, defined as the production of ideas that differ substantially from existing practices (Madjar et al., 2011), requires engagement in all creative processes, while incremental creativity, defined as the production of ideas that offer minor modification to existing practices (Madjar et al., 2011) only requires engagement in idea generation, without a deep and thorough problem analysis.

Results show that autonomy was indeed more strongly related to problem construction and information search and encoding, than to idea generation. Conversely, leader creative expectations were more strongly related to idea generation than to both problem construction, and information search and encoding. Furthermore, we found that while both incremental and radical creativity were related to idea generation, problem

construction was only positively related to radical creativity. Finally, we did not find a relation between information search and encoding and either of the two creative outcomes.

Taken together, these results suggest that the sensemaking theory of creative action is a suitable conceptual framework to understand individuals' engagement in specific creative processes. Specifically, by teasing apart the sensemaking process as a process that consists of diagnostic framing (which conceptually overlaps with problem construction and information search and encoding) and prognostic framing (which conceptually overlaps with idea generation), we show that antecedents that signal the need to engage in either of these two framing activities also differentially predict engagement in the corresponding creative activities. As such, the distinction between diagnostic and prognostic framing is a useful theoretical framework for disentangling the creative process. Additionally, showing differential effects of processes on creative outcomes enables our understanding as to how certain creative outcomes come about.

Chapter 4: The role of time in the creative process

Although we showed in Chapter 3 that it is important to consider the creative process as a set of conceptually distinct activities, we did not consider how the interplay between these activities influences creative outcomes. That is, various scholars have suggested that the creative process can best be described as individuals' engagement in a set of interacting activities (i.e., problem construction, information search and encoding, idea generation, and idea selection and evaluation) that unfolds over time (Bink & Marsh, 2000; Lubart, 2001) where the output of one activity serves as the input of another activity (Bink & Marsh, 2000; Finke et al., 1992; Mumford et al., 1991). This raises various temporal questions, such as how much time individuals should spend on specific activities, how frequently they must switch between specific activities, when they should start or stop with a specific activity, and in what order they should engage in these activities.

In Chapter 4, we outline temporal propositions for the two most prominent theoretical perspectives regarding the creative process (Bink & Marsh, 2000; Mumford et al., 1991). We identify a linear perspective that proposes that: (1) individuals should engage in problem construction, information search and encoding, idea generation, and idea selection in a linear order; (2) individuals should minimize switching between activities; (3) individuals should spend most time and effort on the “early-stage” processes, namely problem construction and information search and encoding; and (4) that the start of idea selection and elaboration should be delayed until early-stage processes are completed. Alternatively, we identify an iterative perspective that proposes that: (1) creativity comes about in a dynamic process in which individuals alternate between generation processes (umbrella term for problem construction, information search and encoding, and idea generation), and selection processes (idea selection and elaboration); (2) switching frequency contributes to creativity; (3) individuals should spend most time on selection processes; and (4) idea selection and elaboration should start early in the creative process.

Using a new micro-longitudinal methodological paradigm that allowed us to follow individuals’ creative process as it unfolds over time, we tested these temporal propositions in a student sample in a Dutch University. We found that some students followed a more linear approach to creativity, whereas others behaved more in line with the iterative approach. More importantly, those who followed the iterative approach generated more original solutions, and this difference mainly occurred because students who followed the iterative approach spent more time on idea selection and development. Other factors, such as the frequency of engagement in different activities or an early or late onset of certain activities, appeared less important for generating creative outcomes.

In sum, the results of this Chapter suggests that the iterative approach to the creative process is better supported than the linear approach. Although these results are tentative, they

do provide an initial empirical substantiation that the creative process should be considered as something that is dynamic. Additionally, we believe that our research paradigm may be fruitfully applied to study other temporal questions about the creative process (or any other process that consists of a sequence of interacting activities) in more detail.

THEORETICAL IMPLICATIONS

Following these results, this dissertation makes several contributions to the creative process literature. Furthermore, we make various specific contributions to the literature of Conservation of Resources (Hobfoll, 1989, 2002; Hobfoll et al., 2018), sensemaking theory (Foldy et al., 2008; Ford, 1996; Weick, 1995), and theories of time in organizational research (Aguinis & Bakker, 2021). Beyond these specific contributions, the results of this dissertation also have important implications for the creativity literature in general.

Some antecedents have similar effects on creative process activities; others have differential effects

Although theoretical work has suggested that the various activities in the creative process are conceptually distinct (Mumford et al., 1991; Reiter-Palmon & Illies, 2004), potentially each with their own antecedents and consequences (Mumford & Gustafson, 1988; Unsworth, 2001), empirical research to date has largely left this claim unexamined. In this dissertation, we examined the creative process as both a unidimensional construct (Chapter 2), as well as a multidimensional construct (Chapter 2, 3, and 4).

On the antecedent side, in Chapter 2 we found that the effects of effort on creative process engagement is similar across different creative activities. This result suggests that some variables impact all processes in a similar fashion. In Chapter 3, however, we showed that autonomy is more strongly related to problem construction and information search and encoding than to idea generation, and we found the converse effects for leader creative expectations. Thus, some contextual variables affect engagement in specific stages of the

creative process differentially. We therefore propose that scholars should always consider how specific antecedents are related to the nature of the creative process in making their predictions about whether or not antecedents will impact specific activities differentially. That is, all creative-process activities are considered cognitively demanding, thus it makes sense that a lack of cognitive resources (in absence of other contextual variables) impacts all activities in a similar fashion (Chapter 2). However, because each activity of the creative process has a different function, environmental demands that signal the importance of engaging in one activity over the other (as in Chapter 3), likely impact engagement across activities differentially. For example, individual difference variables such as personal fear of invalidity (PFI; Thompson et al., 2013), epistemic motivation (Kruglanski, 1990), or conscientiousness (McCrae & Costa, 1987) may motivate individuals to expend a large amount of effort in problem construction and information search and encoding, because they value having a thorough understanding of a situation before thinking about potential ways of dealing with the situation. Alternatively, time pressure in a situation that requires creativity might lead to a stronger inclination to take the problem or task representation for granted, and to spend all remaining time on developing the best solution for the problem, and as such, favor idea generation.

Creative process activities have differential effects on creative outcomes

On the outcome side, we examined in two Chapters whether distinct creative processes are differentially related to creative outcomes (Chapter 3 and 4). We found that idea generation is important for all forms of creativity, as shown by the significant effects on incremental creativity and radical creativity (Chapter 3), and the (marginally significant) curvilinear effect on novelty (Chapter 4). Additionally, we found a significant effect of problem construction on radical creativity (Chapter 3), but not on incremental creativity (Chapter 3) or novelty in the problem-solving task (Chapter 4). Given that the task in Chapter

4 reflects a real-world task, in which individuals tend to focus more on maximizing usefulness than on maximizing novelty (Runco et al., 2005), the task in Chapter 4 can also be seen as a task that is more incremental in nature. As such, results suggest that problem construction is related especially to radical creativity. Furthermore, we did not find an effect of information search and encoding on creativity in either of the Chapters, whereas we found that idea selection and evaluation is significantly related to both novelty and effectiveness (Chapter 4).

Taken together, our results indicate that distinct stages of the creative process have differential effects on creative outcomes. These findings are in line with the work of Mumford et al. (2010), who found that scientists across disciplines differed in the level of skill they have in executing specific stages of the creative process. This suggests that creativity is not only domain-specific, but people also may possess differing levels of skills when it comes to executing specific stages of the creative process. However, where Mumford et al. (2010) examined differences across fields, our study contributes by measuring the effects of processes on outcomes regardless of the domain individuals worked in. Taken together, scholars should consider these differential effects of creative processes on creative outcomes in the design of further studies.

The application and advancement of sensemaking theory for creative processes

This dissertation also contributed to the sensemaking literature in. As a recap, sensemaking involves developing a framework for understanding a situation, and devising a subsequent plan of action. According to Ford (1996), individuals' decision to engage in creative action is contingent on their sensemaking process, specifically on their expectations that creative behavior is desired, and whether the creative endeavor is likely to be effective. In Chapter 2 we found that individuals are less willing to engage in creative processes after having spent high levels of effort the prior day, above and beyond the indirect effect via

lowered daily effort. This suggests that individuals are less willing to engage in creative processes when they are fatigued, most likely because their perceived expectation of success lowers. This is in line with the work of Feather (1982), who found that people's expectations about their future task performance largely determine whether they will invest effort into that task. Furthermore, we extended the sensemaking framework of creative action in Chapter 3, where we tease apart the individuals' sensemaking process into the distinct activities of prognostic framing and diagnostic framing in a creative context (by conceptually linking the former to problem construction and information search and encoding, and the latter to idea generation). We proposed that different antecedents predict engagement in both types of framing, which suggests for the sensemaking literature that we can in fact predict in which part of the sensemaking process individuals engage. It would therefore be interesting to examine whether diagnostic and prognostic framing can also be predicted in a non-creative context.

The curious case of information search and encoding

A finding that we did not expect is that information search and encoding was unrelated to creativity in both Chapters that included creative outcome measures (Chapter 3 and Chapter 4). Firstly, in Chapter 3, in which we examined the relation between problem construction, information search and encoding, and idea generation with radical and incremental creativity, we found no effect for information search and encoding on either creativity types. Secondly, we found in Chapter 4 that information search and encoding was not related to novelty but only to effectiveness. Taken together, we propose that information search and encoding cannot be studied in isolation during a creative problem-solving task. Rather, it may either serve the understanding of the problem, or may aid the generation of ideas to solve the problem. These ideas are supported in Chapter 4, in which we observed that individuals often switched from information search to either problem construction or to idea

generation. We therefore believe that information search and encoding should not be seen as a distinct construct that has independent effects on creative outcomes, but rather a process that supports other creative activities. Future research needs to look into this issue.

Studying the creative process can be done while using various lenses

A clear implication of this dissertation is that one can and should use different lenses when studying the creative process. Scholars should be aware of these lenses, and make conscious choices as to which lens is most appropriate in studying the creative process, depending their research question. The lens that carries the least amount of detail, is conceptualizing the creative process as a set of creativity-relevant activities, and contrast this with habitual activities as a competing set of behaviors (cf. Ford, 1996). This lens is suitable for scholars who are interested in (1) the question what drives individuals to engage in creative action over habitual action, (2) and when these drivers can be reasonably assumed to impact all creative process activities in a similar fashion.

A more detailed lens is disentangling the creative process into conceptually distinct activities that serve a different function in the creative endeavor (cf. Mumford et al., 1991). Using this lens, scholars can focus on question such as (1) how do individuals' personalities and environments provide them with cues as to which creative activity is most attractive or functional in a given situation, and (2) how does the inherent function of a process overlap with specific types of creative outcomes.

Finally, the most detailed lens is to consider the creative process as a sequence of interacting creativity-relevant activities that unfolds over time (cf. Lubart, 2001). Using this lens, scholars can for example answer questions about: (1) how the temporal aspects of a creative process relate to specific types of creativity; (2) how antecedents influence several temporal aspects of the creative process; (3) how the unfolding of the creative process is related to successful versus failed attempts or to making progress versus getting stuck.

PRACTICAL IMPLICATIONS

The increasing importance of employee creativity for organizational performance and survival suggests that managers and practitioners should learn more about how to enable their employees to engage in a creative process that consists of the right activities. This dissertation has various important implications that may enable managers and practitioners to do just that.

Firstly, managers should consider that employees make an intentional decision to either engage in creative action (including problem construction, information search and encoding, and idea generation) or in habitual action (Ford, 1996). Our results show that an important predictor for employees to engage in creative action is the availability of cognitive resources. This has two important implications. Firstly, our finding that individuals are less willing to engage in creative processes when they are depleted of resources suggests that managers should consider *when* creative work is scheduled. For example, Elsbach and Hargadon (2006) propose that switching cognitively demanding tasks with mindless work might be a solution that enables individuals to replenish their resources before a creative endeavor is required again. Additionally, Bakker et al. (2005) propose that contextual factors such as social support, a good relationship with one's supervisor, constructive feedback and job autonomy can actually serve as additional resources to cope with demands at work, and as such, may lead to lower levels of resource depletion through effort expenditure. Thus, managers could change the work environment in such a way that these resource-building factors are present. Finally, an important predictor for resource availability is recovery outside of work through psychological detachment (Sonnentag, 2011) while negative rumination (i.e., the inability to switch off work-related thoughts) is detrimental (M. Cropley & Zijlstra, 2011). A policy that would enable detachment would be to not grant employees access to their work email outside of working hours. Taken together, managers should

recognize that resources are important for creativity, and should implement policies that enable the replenishment and extension of available resources.

Secondly, managers should realize that the creative process consists of various activities, such as problem construction, information search and encoding, and idea generation. These activities have distinct functions, and impact different types of creativity differentially. Specifically, we found in Chapter 3 that while idea generation is important for both radical creativity and incremental creativity, problem construction is especially important for radical creativity. Managers should therefore consider the type of creativity that is needed or wanted, and based on that, create an organizational environment that enables individuals to engage in the processes relevant for the type of creativity that is desired. Specifically, since all creative outcomes require idea generation, managers should emphasize the importance of creative outcomes. In our study, we showed that when leaders communicate that creativity is expected, this is an effective strategy. Additionally, other factors that signal the importance of creativity, such as perceived support for creativity (Diliello et al., 2011), or creative rewards (Eisenberger & Rhoades, 2001), would be a good strategy to ensure that individuals generate new ideas. Secondly, our results suggest that when incremental creativity is required, leaders should specify the problem that requires improvement, and conversely, when radical creativity is required, managers should delegate the responsibility of finding problems or potential areas of improvement to their workers.

Thirdly, managers should understand that the creative process consists of various activities that interact with each other over time to create creative outcomes. In Chapter 4, we report various findings about the nature of the creative process that are important for managers to know, but the main point is that the creative process is highly dynamic. This means that a creative process involves a lot of switching back and forth between specific activities. Thus, managers should accept the fact that a problem and its conceptualization is

not set in stone, and may be revised, and the same applies for the final solution. In fact, we found that it is the constant selection and revision of ideas (as depicted by the idea selection and elaboration process) that brings about creativity. A creative product is not a single idea, but requires numerous iterations that slowly shape the initial idea(s) into a final creative solution. This implies several things for how managers should enable the process to unfold. Indeed, Acar, Tarakci, and Van Knippenberg (2019) also suggested that managers can influence creativity by setting process constraints, defined as the restrictions that determine the steps to be followed during creative and innovative processes. Specifically, in line with the iterative idea and our results that highlight the importance of iteration, and specifically of engagement in selection and elaboration processes, they propose it helps to adopt approaches in which feedback on ideas, and reviewing initial ideas (i.e. selection processes) happens early on, which allows the continuous improvement of a creative product.

LIMITATIONS AND FUTURE RESEARCH

In this dissertation, we provided new insights into the nature and the inner workings of the creative process, and its relationship with different types of creative outcomes. We further developed the understanding of the creative process by using three different conceptual lenses across the Chapters. Specifically: (1) we identified cognitive resources as an important new indicator to predict whether individuals will engage in creative action over habitual action; (2) we showed that adopting a sensemaking perspective enables us to make predictions about the differential effects that antecedents have on engagement in specific processes; (3) we uncovered the implicit propositions of the temporal aspects in the two most dominant theoretical perspectives on the creative process and tested their validity; (4) and we showed that specific activities relate differentially to different types of creative outcomes. Our empirical evidence consists of a multi-method approach, including an experimental study, a multisource field study, and a multi-source field study. Despite these strengths, we

must also acknowledge the limitations present in the current work. In what follows, we highlight these limitations, provide theoretical and empirical implications, and suggest what future avenues of research would be especially promising.

Finding an optimal way of measuring employees' creative process engagement

Engagement in creative processes was measured in different ways across the Chapters. In Chapter 2 and 3, we used the self-report measure of creative process engagement as developed by Zhang and Bartol (2010). Specifically, in Chapter 2 we use this measure in a daily diary study, whereas in Chapter 3, we use the measure in a cross-sectional design. Although this measure has been validated and used in various studies (Henker et al., 2015; To et al., 2012, 2015), it may not fully capture the creative process as intended. That is, work by Botella and Lubart (2019) suggests that individuals' retrospective account of internal psychological processes is often biased, and as such, the measurements may have captured some noise as well.

In Chapter 4, we aimed to develop a more objective, unobtrusive measure of engagement in specific creative activities. Specifically, we developed a task that captures individuals' engagement in specific creative processes by presenting them with an environment in which each tab represents a specific activity. Although this measure may have captured engagement as it unfolds over time in a more fine-grained manner, this method too has some limitations. Firstly, the design may help to capture engagement in specific processes in the context of an experimental problem-solving task, but it cannot be used to measure real-world engagement in creative processes. Secondly, we operationalized time spent on a specific page as individuals' engagement in the corresponding activity, but it could be that participants mentally work on multiple tasks simultaneously, forget to switch to another page when they switch between cognitive processes, or just drift off for a while. Additionally, the creative process activities in this measure were pre-defined rather than self-

chosen. This measure thus also has its limitations. Future research should therefore continue to innovate when it comes to measuring the creative process in novel ways, as a more precise measurement of the creative process will enable us to further our understanding of the phenomenon.

A team-level perspective on engagement in the creative process

Another limitation lies in the fact that this thesis solely examines engagement in the creative process on an individual level. However, many of the creative projects or tasks within organizations are assigned not to individuals, but to teams (Basadur & Head, 2001). For example, many organizations nowadays have R&D departments that focus on the development of new products and services, and much of the project work in companies is also assigned to teams (Comer, 1995). This development is also highlighted by the fact that so many of the new and popular management methods or work methods (e.g. Scrum, Agile, and Lean) reside on the team-level or even the organization level (Fowler & Highsmith, 2001; Gupta & Jain, 2013; Schwaber, 1997) As such, we propose it is a fruitful avenue for future research to take the team context into account, firstly as a predictor of individuals' creative process engagement, and secondly as a unit of analysis.

Firstly, team context might play an important moderating role on the relations that we have found on the individual level. For example, in Chapter 2, we found that work effort leads to lowered creative process engagement the next day because of resource depletion. However, research shows that team members can help individuals build and retain resources by providing social support (Bakker et al., 2005). That is, work effort may be less depleting when individuals receive social support from other team members, and as such, this support provides individuals with sufficient energy to engage in creative processes again the next day. In a similar fashion, in Chapter 3, we found that leader creative expectations especially impact individuals' engagement in idea generation. That is, individuals are more likely to

exert effort in idea generation when it is expected of them. However, research on social loafing suggests that there are circumstances in which individuals reduce their effort expenditure when they work on a group task (Comer, 1995; Petty et al., 1977). This brings forward the question how working in a group might attenuate the relation between leader creative expectation and idea generation.

Secondly, because a lot of creative work occurs on the team level, it also becomes interesting to examine how engagement in specific creative processes is distributed within teams. That is, in Chapter 3 we adopt a sensemaking perspective to explain why individuals choose to engage in problem construction, information search and encoding, and idea generation. Specifically, we propose that individuals scan what behavior is desired or necessary. However, when individuals work in teams who collectively work on a creative process, this decision may be driven by various other factors, such as creative self-efficacy tied to specific processes, or certain motivational structures within the team. For example, one individual may feel very confident in generating ideas, whereas another feels very confident in gathering all information. Alternatively, work from Wu (2021) shows that cognitive diversity within teams (i.e. skill diversity in particular) leads to more role differentiation across specific creative processes within the team when time pressure is high, because it enables the team to effectively manage time and expertise while maintaining optimal task performance. These results suggest that both team characteristics, as well as external motivators, or contextual variables can influence individuals' decisions regarding the distribution of their resources across creative process behaviors. Additionally, in Chapter 4 we examined the creative process as it unfolds over time for one individual. It is interesting to see how the process unfolds when it is embedded in a social context with various team members, and how various team characteristics might influence the temporal aspects of the creative process, and subsequently influence creativity. Taken together, an important next

step in creative process research is to incorporate the team context as it represents an important way in which creativity nowadays comes about in organizations.

Integration with innovation processes (e.g. innovation)

This dissertation focuses on the creative process. Following the propositions of other scholars (e.g. Reiter-Palmon & Illies, 2004; Zhang & Bartol, 2010), we mainly focus on the core activities of the creative process, namely: problem construction, information search and encoding, and idea generation (Chapter 2, 3, and 4). Additionally, we also examined idea selection and elaboration (Chapter 4). For organizations, however, the process does not stop after creativity. That is, the creative process does not explain the full trajectory from a problem to the implemented solution. As such, we propose that it would be interesting to incorporate the core elements of the innovative process in future work, which also involves idea championing and idea implementation (Perry-Smith & Mannucci, 2017).

Understanding between-person differences in temporal aspects of the creative process

Although Chapter 3 sheds light on why individuals might favor engagement in some creative process activities over others, it remains to be studied what individual difference factors may influence the temporal nature of a creative process as it unfolds over time (as studied in Chapter 4). Research conducted by Lucas and Nordgren (2015) showed that individuals hold the implicit belief that their creativity during an ideation task will decline over time, while in their studies, individuals' creativity actually remained constant or improved over the course of the ideation session. More importantly however, these authors found that individuals who believed that creativity would decline over time, also showed less task persistence in ideation tasks, and as such, underinvest in ideation. Following this rationale, it may very well be that individuals also hold implicit beliefs about how an ideal creative process should work, which in turn influences the duration, timing, frequency, and sequence of engaging in specific stages of the creative process, which in turn influences

creative outcomes. As such, a fruitful avenue for future research would be to examine whether people hold implicit beliefs about the creative process, and how these beliefs in turn, influence their engagement in specific activities as they unfold over time.

CONCLUSION

The purpose of this dissertation was to demystify the creative process, and examine what drives engagement in creative action over habitual action, what drives individuals' engagement in specific activities of the creative process, how different processes relate to different types of creativity, and how the properties of the temporal dynamics of the creative process (i.e. the activities unfolding in a sequence over time) impacts creative outcomes. Findings from three empirical Chapters demonstrate that availability of cognitive resources is an important predictor of individuals decision to engage in creative action. Additionally, we find that individuals' decision to engage in problem construction and information search and encoding is driven by autonomy, because autonomy signals that employees are responsible for developing their own understanding of their work context. In contrast, we find that individuals' decision to engage in idea generation is driven by leader creative expectations, because this signals to employees that they are responsible for developing creative solutions. Furthermore, we find that problem construction is positively related to radical creativity, but not to incremental creativity, whereas idea generation is related to both types of creativity. Finally, we explored how the creative process unfolds over time, and found that the creative process is dynamic in nature, and is characterized by frequent switches between activities. Additionally, we found that idea selection and elaboration is especially important for generating novel solutions. Taken together, we believe this dissertation has furthered our understanding about the creative process, and we hope it inspires others to uncover other central aspects of the creative process, so that science and practice together can reap the benefits of our ever-continuing understanding of the magic we call creativity.