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Master Thesis

Performance implications of Multiple Team Membership and the influence of the intuitive cognitive style

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Acknowledgments

Working on my master thesis once again proved to me that theory plays an important role for practice. With theory, everyday questions and complications that occur in the business world can be better answered. Multiple Team Membership (MTM) can be an example for such a complication. I myself was familiar with the phenomenon of MTM as I was involved in three teams at the same time during my working student job that I had next to my thesis. With the research that I conducted for the thesis, I was able to better understand the impact of MTM on team performance. My master thesis in general and the derived understanding just mentioned would not have been possible without the research of a number of other scientists. Therefore, I would like to thank all scientists whose findings and interpretations I used for this work. As shown by authors like O'Leary et al., literature reviews and propositions help to get a good overview of a specific topic. Personally, I prefer to verify theoretical assumptions with empirical evidence. In this sense, I would like to thank my first supervisor Dr. Matthias de Visser. He not only provided relevant findings in the field of cognitive styles and performance, but also allowed me to use his dataset for my quantitative analysis. In addition, he has given me helpful food for thought and constructive feedback and always responded quickly to my questions. I would also like to thank my second supervisor, Dr. Michel Ehrenhard, and my supervisor from the TU Berlin, Nicolas Noak, who both took the time and energy to supervise my thesis as well. Finally, I am grateful for my family and friends who have supported me during this extraordinary time.

Abstract

Multiple Team Membership (MTM) describes a situation in which individuals are simultaneously part of multiple teams. MTM is widely used in the business world and has attracted attention in theory. Yet, empirical evidence on performance implications of MTM is lacking. Therefore, the aim of this thesis was to examine the relationship between MTM and performance on the team level. In addition, it was investigated whether this relationship is influenced by cognitive styles. Research on MTM indicated that low to moderate levels of MTM produce positive effects for teams and increase their performance. High levels of MTM, however, create more negative than positive effects which leads to a decrease of team performance. Hypothesis 1 thus assumed that MTM and performance have an inverted-U shaped relationship. The theory on cognitive styles led to the assumption that the intuitive cognitive style enables teams to better cope with some of the challenges that arise from MTM. Hypothesis 2 therefore expected that the inverted U-shaped relationship between MTM and performance is positively influenced by a team's preference for the intuitive cognitive style. The hypotheses were tested by hierarchical regression analyses. The dataset used for the quantitative analysis included 94 new product development teams from Dutch companies operating in technology-intensive manufacturing industries. In support for Hypothesis 1, the results revealed that the relationship between MTM and performance follows an inverted U-shape. The results further showed that this inverse U shape only applies to less intuitive teams. Contrary to Hypothesis 2, no significant relationship between MTM and performance for more intuitive teams could be observed. Research on MTM is enriched by proving that MTM and performance are related in an inverted-U way and that this relationship only applies to less intuitive teams. Based on these findings, implications for practice are given. Firms are advised, for instance, to monitor their team's MTM and intervene when the level of MTM no longer matches the team's capabilities. One way to determine a team's tolerance for MTM could be to test its preference for the intuitive cognitive style.

Key words: Multiple Team Membership, teams, cognitive styles, team performance, new product development

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MTM	Multiple Team Membership
NPD	New Product Development
SPSS	Statistical Package for the Social Sciences
i.e.	id est
e.g.	exempli gratia
R&D	Research & Development
H1	Hypothesis 1
H2	Hypothesis 2

I. Introduction

Teams are an essential part of companies and central to their learning and effectiveness (Senge, 1990, p. 236; Wilson, Goodman, & Cronin, 2007, p. 1041). They are interdepending, socially interacting units that perform organizationally relevant tasks (Kozlowski & Bell, 2003, p. 334; Maynard, Mathieu, Rapp, & Gilson, 2012, p. 342). Organizations rely on teams because they allow them to distribute high workload and, most importantly, to accomplish complex and difficult tasks that require a diverse set of experts working together (Paulus & Kohn, 2012, pp. 334; Mathieu, Heffner, Goodwin, Salas, & Cannon-Boewers, 2000, p. 273; Wilson et al., 2007, p. 1051; Salas, Cooke, & Rosen, 2008, p. 540). Members of a team are equipped with different knowledge, skills and information (Van der Vengt & Bunderson, 2005, p. 532). By retrieving and linking their various information and different types of knowledge, teams can develop better or even new approaches to solve problems or to perform their tasks (Liang, Moreland & Argote, 1995, p. 385; Gilson & Shalley, 2004, p. 454). Aside from this, members have different perspectives and ideas, and through both interaction and cross-fertilization of their ideas, even innovations can emerge (Van der Vengt & Bunderson, 2005, p. 534; Van der Vengt & Bunderson, 2005, p. 543; Paulus & Kohn, 2012, p. 328). For this reason, teamwork plays an important role particularly for knowledge intensive industries where it accounts for up to 80% of an employee's work (Lansmann & Klein, 2018, p. 14).

All of these described characteristics of teams make them important organizational assets, especially in the fast-paced and increasingly complex business world in which companies operate nowadays (Salas et al., 2008, p. 540). The technical progress as well as globalization have been changing business requirements for all industries and pressure firms to react quickly and remain flexible (Tannenbaum, Mathieu, Salas, & Cohen, 2012, p. 3; Wageman, Gardner, & Mortensen, 2012, p. 301; Edmondson & Nembhard, 2009, p. 124). To deal with changes and trends, the team approach is chosen by many companies (Mathieu et al., 2000, p. 273; Paulus & Kohn, 2012, pp. 334). Temporary teams, for example, allow firms to remain agile, and new product development (NPD) teams enable firms to develop products in an interdisciplinary and faster manner (Tannenbaum et al., 2012, p. 3; Edmondson & Nembhard, 2009, pp. 124).

Just like the business environment, the nature of collaboration and the original perception of teams have been changing (Wageman et al., 2012, p. 301; Tannenbaum et al., 2012, p. 3; Maynard et al., 2012, p. 342). Teams do not necessarily have strict boundaries anymore and new technological communication means allow group members to collaborate geographically dispersed (Cummings & Haas, 2012, p. 316). Multiple team membership (MTM), which means having more than one team membership at a time, is considered one of the two trends of team-based settings alongside virtual communication. Companies increasingly assign their employees to multiple teams simultaneously to

organize their work and to keep up with the dynamism and complexity of today's business environment (Cummings & Haas, 2012, p. 316; O'Leary, Woolley, & Mortensen, 2011, p. 461; Berger, 2018, para 6; Maynard et al., 2012, p. 343; Chan, 2014, p. 76). Already in 2007, Mortensen, Woolley and O'Leary found that 65% of the 401 professionals they surveyed worked in more than one team at a time (p. 218). Given the increasing technical complexity and developments since 2007, it is very likely that this percentage is much higher today.

Taken together, the importance of teams for companies has increased as a result of the more dynamic and challenging business environment. Teams are influenced by the environment they operate in, and when the environment changes, so does their interaction (Wilson et al., 2007, p. 1055). MTM is used as a method by companies to assert themselves in this ever changing environment (Maynard et al., 2012, p. 343; Chan, 2014, p. 76). However, it is conceivable that MTM itself additionally influences the environment by creating new challenges and more ambiguities, and consequently influences team processes and outcomes. Gaining an understanding of the phenomenon is important for scholars and practitioners to deduce how to handle MTM correctly in order to avoid any negative effects (Pluut, Curseu, & Flestea, 2014, p. 333; O'Leary et al., 2011, p. 474). In particular, companies need to understand how MTM impacts the performance of their teams. This knowledge will enable them to achieve the desired beneficial effects of MTM as well as to develop tactics of how to overcome potential negative effects of MTM.

Research on teams has already collected many insights into team performance, as for example how it is measured and promoted (Salas et al., 2008, p. 540). Despite its increasing prevalence at work, MTM however has not gained enough attention by research since most of it focused on members who are part of only one group at a time (Higgins, Weiner, & Young, 2012, p. 384; Mortensen, Woolley, & O'Leary, 2007, p. 215). The discrepancy between developments in practice, in which MTM is adopted by many companies, and the theory has been stressed by many scientists in the past (e.g. Pluut et al., 2014, p. 343, Wageman et al., 2012, p. 301). A few scientists responded to the call and investigated the effects of MTM on individuals and teams. Bertolotti, Mattarelli, Vignoli and Maria Macri (2015), for example, studied the impact of MTM on team performance and found that, depending on its level, MTM can have both positive and negative effects (p. 918). Other authors, such as O'Leary et al. (2011), examined the impact of MTM on performance only in theory without providing empirical evidence for their propositions (p. 468). Overall, there is still too little knowledge and not enough empirical evidence on implications of MTM in general, and implications of MTM on performance in particular (Yao & Robert, 2017, p. 8; Mathieu, Maynard, Rapp, & Gilson, 2008, p. 442; Tannenbaum et al., 2012, p. 9). According to the current state of knowledge, many questions such as how MTM affects individuals' contributions to their teams and whether positive effects

caused by assigning individuals to many teams may be offset by resulting negative effects, cannot be adequately answered (Mathieu et al., 2008, p. 442; Wageman et al., 2012, p. 309).

Another understudied domain is the influence of personality on the relationship between MTM and performance. Some authors already expressed the need for future research on the relation between individual factors and concepts that are closely related to MTM. Bertolotti and colleagues (2015), for example, find that the impact of individual differences in time management on the MTM-performance relationship should be investigated (p. 922). The concept of time management is important for the understanding of MTM and the same is true for multitasking. Therefore, Altschuller and Benbunan-Fich (2017), who put MTM and multitasking into an integrated perspective, call future scientists to examine what cognitive decisions individuals make when it comes to situations that require multitasking (p. 11). Next to them, Akinci and Sadler-Smith (2013) express their interest in an investigation of cognitive styles on the ability to multitask (p. 219). Besides, O'Leary et al. (2011) suggest research on employee skills that could benefit MTM (p. 471).

Research has proven that personality affects team outcomes. Bradley and Hebert (1997), for example, found that team composition of personality types explains variances in team performance (p. 350). An analysis by Barrick, Stewart, Neubert and Mount (1998) shows that conscientious teams and high cognitive-ability teams have a higher performance than teams that are less conscientious and lower in cognitive ability (p. 387). Several studies (e.g. Barrick & Mount, 1991; Reilley, Lynn, & Aronson, 2002; Peeters, Van Tuijl, Rutte, & Reymen, 2006) investigated performance implications of personality in terms of the big five (i.e. five personality traits including openness, stability, agreeableness, conscientiousness, and extraversion-introversion) (Reilley et al., 2002, p. 41). Some other researchers gathered insights about the impact of the cognitive style, which represents another personality construct (Witkin, Moore, Goodenough, & Cox, 1977, p. 15; Sadler-Smith, 2004, p. 165). De Visser, Faems, Visscher and De Weerd-Nederhof (2014) were among the first to study how cognitive styles affect team performance of NPD teams and they demonstrate that a preference for the analytical cognitive style positively relates to project performance of both incremental and radical NPD projects (p. 1174). Findings from Sadler-Smith (2004) reveal that the intuitive cognitive style has a positive association with performance (p. 174) and Fuller and Kaplan (2004) found that the performance of specific tasks can be enhanced by the cognitive style - analytical people, for instance, perform analytical tasks better than intuitive people do (p. 141).

Hence, the cognitive style impacts team outcomes but it has not been studied whether it also has an effect on the relationship between MTM and performance. People who differ in their cognitive style also seem to differ in how they deal with their external environment (Witkin et al., 1977, p. 4; Priola, Smith, & Armstrong, 2004, p. 568). As suggested above, MTM might change the environment in

which people find themselves. Thus, it is conceivable that cognitive styles influence the way people handle their simultaneous team memberships, and that this in turn affects the outcomes of their teams. Yet, there are no studies with any evidence to prove this assumption. To conclude, there is a clear lack of research on the effects of cognitive style on the relationship between MTM and performance.

Following the repeated calls for further research on the impact of MTM on performance and the obvious research gap of how personality factors affect the relationship between MTM and performance, the aim of this thesis is to investigate the relationship between MTM on performance and whether this relationship is influenced by cognitive styles. Specifically, it is hypothesized that team MTM has an inverted U-shaped relationship with team performance[1]. Hence, MTM is suspected to have a positive relationship with performance but only until a certain point after which a further increase in MTM impacts performance negatively as the benefits derived by MTM are outweighed by its disadvantages. Furthermore, this thesis focuses on the intuitive cognitive style. It is suggested that the intuitive cognitive style positively influences the inverted-U relationship between MTM and performance on the team level. That is, under the event of MTM, teams with a higher preference for the intuitive cognitive style perform slightly better than those who have a lower preference for the intuitive cognitive style. Accordingly, this thesis is guided by the following research question: How are team MTM and team performance related and how does the intuitive cognitive style influence this relationship?

In order to study the impact of MTM on performance as well as to study the influence of the intuitive cognitive style, this research analyses survey data from 295 individual team members of 94 teams gathered from Dutch companies. The results reveal that MTM and performance are in an inverted U-shaped relationship. A comparison between less intuitive and more intuitive teams however shows that the inverted U-shaped relationship between MTM and performance holds true only for less intuitive teams while the performance of more intuitive teams is not significantly affected by MTM.

By answering the research question, insights about the relationship between MTM and performance are given, and the growing body of research that aims to understand how psychological factors influence work outcomes is enriched by including cognitive style in the analysis of the relationship between MTM and performance. The results also allow practitioners to draw concrete conclusions about how to deal with MTM, as well as to tailor the management of MTM to the cognitive style of their employees and teams, ultimately increasing the performance of their teams.

[1] For the quantitative analysis of this study, data on *project* performance data is used. In addition, the study is being conducted at the team level, hence the relationship between *team* MTM and *team* project performance is analysed. For reasons of simplification, however, team project performance is referred to as 'performance' and team MTM as 'MTM' throughout this thesis.

The thesis is structured as follows: First, the theoretical background of MTM and cognitive styles is given. Based on the theoretical background and valuable findings from studies in this area, which are presented briefly, two hypotheses are developed. Thereafter, the methodology part is provided containing a description of the sample used to test the hypotheses, an overview of the measures and the results of the statistical analyses. The results are followed by the discussion section, in which the findings are analysed and interpreted on the basis of the hypotheses. Against this background, theoretical contribution and managerial implications are derived. The thesis ends with possible limitations of the study, recommendations for future research and a conclusion.

II. Theoretical background

1. The concept of teams

A team is "a distinguishable set of two or more people who interact dynamically, interdependently, and adaptively towards a common and valued goal/objective/mission, who have each been assigned specific roles or functions to perform, and who have a limited life-span of membership" (Salas, Dickinson, Converse, & Tannenbaum, 1992, p. 4). Teams may differ regarding their composition, size and structure but are usually embedded in an organizational context in which they engage in exchange relationships with other units (Paulus & Kohn, 2012, p. 328; Kozlowski & Bell, 2003, p. 334). A collection of individuals with particular roles, interdependent relations with another, and whose identity can be recognized by the external environment, can be referred to as a “group” (Alderfer, 1977, p. 320). Since the definitions of the two terms, ‘team’ and ‘group’, are quite similar, research using the term ‘group’ was considered in the literature review as well.

In many definitions of either groups or teams, boundaries are mentioned. Clear boundaries ensure that members and non-members can be distinguished by both insiders and outsiders of the team. Hence, they provide clarity about who is on the team, and therefore allow for accountability (Hackman & Katz, 2010, p.4; Hackman, 2012, p. 437; Mortensen & Haas, 2018, p. 342). In contrast to that, Wageman et al. (2012) recognize that clear and stable bounded memberships are increasingly rare in teams. Therefore, they question whether boundaries are still one of the defining characteristics for teams (p. 305).

2. The concept of Multiple Team Membership

As outlined above, teams, perceptions of teams and their use have been changing and companies have to use their resources most efficiently in order to be able to keep up with the dynamism and complexity of today’s business environment. One way to do so is multiple team membership (MTM)

which describes the situation where an individual is part of more than one team at a time (O'Leary et al., 2011, p. 461; Berger, 2018, para 6; Chan, 2014, p. 76).

2.1 MTM and time fragmentation

"MTM work environments by definition involve people splitting their time across multiple teams" (Mortensen et al., 2007, p. 216). A person who is a member of multiple teams at the same time cannot invest the same amount of time in a team like someone who has only one team membership (Espinosa, Cummings, Wilson, & Pearce, 2003, p.179). Thus, he or she has to allocate his or her limited working time among those teams. Specifically, this means that an increase in time spent in one team goes along with the reduction of time spent in another team (O'Leary et al., 2011, p. 464). The way time is shared between teams varies from person to person. For example, some may spend 70% of their time in one team and 10% in each of the other three teams, while others may prefer an even time distribution between their teams (Tannenbaum et al., 2012, p. 8). It was found that fragmentation of time across teams positively affects job strain by increasing teamwork related job demands (Pluut et al., 2014, p. 342). In addition, fractional team assignment influences the degree to which people feel connected to their teams (Shore & Warden, 2007, p. 39). Espinosa et al. (2003) note that time spent in a team matters for how strong one identifies with it and that members who always only spend part of their time in a team have difficulties in defining their many identities (p. 176; p. 179). Therefore, allocating time is demanding for individuals with MTM. The demands are even higher when appointments in different teams overlap (Altschuller & Benbunan-Fich, 2017, pp. 3). Besides, the way people with MTM distribute their time depends on their fellow team members, whom they have to arrange with and possibly adjust their actions to (Pluut et al., 2014, p. 337).

In addition to the individual level, members' time allocation shows effects on the team level. How much time, and thus attention, individuals give to their teams impacts the teams' processes, functioning and effectiveness (Tannenbaum et al., 2012, p. 8; Maynard et al., 2012, p. 347). Time influences cognitive processes such as the development of team mental models. A mental model is defined as a "mechanism whereby humans generate descriptions of system purpose and form, explanations of system functioning and observed system states, and predictions of future system states" (Rouse & Morris, 1986, p. 360). In a team context, members should develop a shared mental model, so they can effectively adapt to the team. A team member model contains information about each member (such as their abilities and preferences) so that each member's behaviour can be better predicted, and others can align their actions to it (Mathieu et al., 2000, p. 274). Thereby, chances to experience process losses (i.e. a situation in which people do not direct their resources towards the fulfilment of the group task) can be reduced (Zaccaro & Lowe 1988, p. 548; Mathieu et al., 2000, p. 275). Moreover, it has been noted that sharing the same mental model matters for a team's success and, by impacting team processes, for team performance (Mohammed, Ferzandi, & Hamilton, 2010,

p. 878; Mathieu et al., 2000, pp. 279). In order to align team members' mental models within the team and finally develop a common team membership model, teams have to coordinate their action and dedicate time (Mortensen, 2014, p. 915; Mohammed et al., 2010, p. 878). For a person with many team memberships, however, opportunities to engage in the process of aligning mental models are limited (Mortensen, 2014, p. 916).

Furthermore, time plays a decisive role for trust, because it takes time to develop trust in a team (Chung & Jackson, 2013, p. 441). Trust is "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trust, irrespective of the ability to monitor or control that other party" (Mayer, Davis, & Schoorman, 1995, p. 712) and it was found that the degree of internal trust relationship strength in internal networks of teams (i.e. networking relationships among people within a team (Chung & Jackson, 2013, p. 443)) has an inverse-U relationship with team performance (Chung & Jackson, 2013, p. 457).

Generally, teams whose members are part of several other teams have more difficulties at aligning members' blocks of time (O'Leary et al., 2011, p. 468). Because of this coordination challenge, teamwork processes become more effortful and a team's productivity can suffer (Pluut et al., 2014, p. 337; Mortensen et al., 2007, p. 219; O'Leary et al., 2011, p. 465). Some researchers assume that the total work effort caused by the necessity to coordinate is higher when individuals have multiple team memberships instead of just having one (Crawford, Reeves, Stewart, & Astrove, 2019, p. 345). A study by Cummings and Haas (2012) also proves that time allocation has an impact on performance. The authors found a positive relationship between time allocation and performance (Cummings & Haas, 2012, p. 331). Hence, spending more time on a team benefits a team's performance, but the percentage of time members spend on the team task was found to be negatively affected by their MTM (Mortensen, 2014, p. 923).

2.2 MTM and overload

In addition to time fragmentation, MTM can lead to overload and thereby affect both individuals and their teams. Many memberships and associated time pressure create a lack of opportunities to calm down and to reflect on certain matters (Zika-Viktorsson, Sundström, & Engwall, 2006, pp. 390). High work demands stemming from MTM combined with little slack time impact individuals negatively (Crawford et al., 2019, p. 344). A lack of recuperation opportunities not only reduces the possibility for reflection which is essential for learning but also leads to project overload, and project overload impacts performance negatively (Pluut et al., 2014, p. 335; Zika-Viktorsson et al., 2006, p. 388). Next to work overload, MTM can cause cognitive overload as resources are depleted faster (Pluut et al., 2014, pp. 334). For some individuals, this may lead to high levels of stress and, in the

worst-case scenario, even burnout. As a consequence, an individual's contribution to and effectiveness for the team is impacted (Pluut et al., 2014, p. 339; Tannenbaum et al., 2012, p. 10; Wageman et al., 2012, p. 309).

2.3. MTM and interruptions

Due to the coordination challenges caused by MTM which are mentioned above, teams have to make plans in accordance to their members' time allocation decisions. However, spontaneous events can occur which lead to interruptions and disturb teams' schedules (Perlow, 1999, p. 65). Generally, MTM increases the risk for interruptions (Cummings & Haas, 2012, p. 322) which are defined as "(…) temporary suspension(s) of a person's goal-directed action" (Brixey, Robinson, Johnson, Johnson, Turley, & Zhang, 2007, p. E30). When someone actively decides to take a break from the current task, for example, one refers to it as an internal interruption. In contrast to that, an external interruption is not self-initiated (Kirchberg, Roe, & Van Eerde, 2015, p. 116).

Individuals who face frequent interruptions because they engage in multiple tasks (as in the case of MTM) may benefit from information gains, but they also experience time losses. Owing to these time losses, individuals have fewer opportunities to recover from their high workload that result from these multiple tasks (Baethge, Rigotti, & Roe, 2015, p. 317). Periods of recovery, however, are necessary to prevent persons who engage in multiple activities from overstrain and depletion of their resources (Baethge et al., 2015, p. 314; Baethge et al., 2015, p. 317). Baethge et al. (2015) propose that being exposed to interruptions for a long time can have negative effects on performance (p. 317). In fact, the authors assume that cumulative interruptions (i.e. an increasing number of interruptions in a certain time period) lead to an inverted U-development of performance (Baethge et al., 2015, p. 317). Likewise, Adler, Adepu, Bestha and Gutstein (2015) state that individual performance can be reduced by an increasing number of interruptions and tasks (p. 5461). In any case, interruptions lead to task-switching, hence, multitasking (Jeuris & Bardram, 2016, p. 407; Benbunan-Fich, Adler, & Mavlanova, 2011, p. 2).

2.4 MTM and multitasking

Multitasking represents "the act of switching between multiple tasks or doing them simultaneously" (Altschuller & Benbunan-Fich, 2017, p. 11). Accordingly, multitasking encompasses both simultaneous activities, where two or more tasks are performed at the same time, and interleaved strategies, where one task is put aside in order to pursue another one (Adler & Benbunan-Fich, 2012, p. 157; Kirchberg et al., 2015, p. 113). In an extreme form of the latter strategy, the sequential mode, a task is completed before the work on the next task begins (Benbunan-Fich et al., 2011, p. 3).

People who are involved in multiple teams at the same time have to manage a high number of project-related activities (Altschuller & Benbunan-Fich, 2017, p. 12). They constantly switch between teams; sometimes even daily, thus, they need to multitask (Altschuller & Benbunan-Fich, 2017, p. 6; Mortensen et al., 2007, p. 219). In a situation in which an individual with MTM faces tight deadlines in several of his or her teams, the level of multitasking even increases because he or she has to respond to several urgent requirements at the same time (Altschuller & Benbunan-Fich, 2017, p. 11). Furthermore, the amount of switching is higher, the more teams a person belongs to (Bertolotti, Mortensen, Mattarelli, & O'Leary, 2013, p. 4). It is less likely that people with MTM can attend a team's task from the very beginning until the very end but more likely that they constantly leave unfinished tasks in one team for performing tasks in another team. Hence, they switch among tasks. Task-switching is considered as a multitasking paradigm representing the middle between simultaneous multitasking and the sequential mode (Altschuller & Benbunan-Fich, 2017, p. 4; Benbunan-Fich et al., 2011, p. 3; Payne, Duggan, & Neth, 2007, pp. 373). Therefore, even if multitasking and MTM are separate concepts, they have several overlaps and many of the implications of multitasking are applicable to MTM as well (Altschuller & Benbunan-Fich, 2017, p. 6; Pluut et al., 2014, p. 335). This thesis follows the considerable number of authors who studied MTM and included multitasking or task-switching in their considerations and hypothesis development (e.g. Bertolotti et al., 2013; Chan, 2014; O'Leary et al., 2011).

2.5 MTM and task-switching

Task-switching means shifting attention from one to another task. This process represents a challenge itself and it is more severe in a case of MTM where one switches between projects, thus, a high number of tasks (McDonald, DeChurch, Asencio, Carter, Mesmer-Magnus, & Contractor, 2015, pp. 1157). Multitasking requires multiple goal orientation (Benbunan-Fich et al., 2011, p. 6). Projects have unique characteristics and goals and because of that switching requires refocusing which in turn costs time (Adler & Benbunan-Fich, 2012, p. 165; Patanakul & Milosevic, 2008, pp. 225). The fact that switching becomes more difficult when working on multiple heterogeneous projects is also reported by an informant in a study by Bertolotti et al. (2015) who notes "(…) It's impossible to manage well so many projects of different kinds! Some projects need concentration; the others need availability!" (p. 919). Besides time costs, individuals who have to constantly re-engage with new tasks pay a cognitive price. Frequent switching can, for instance, consume members' attention and lead to a lack of focus as well as to a reduction of cognitive resources available for task performance (Payne et al., 2007, p. 371; Waller, 2007, p. 244; Zika-Viktorsson et al., 2006, p. 388; Yao & Robert, 2017 p. 5). Switching costs increase when tasks are complex and diverse and are said to impact individual performance negatively (Bertolotti et al., 2013, p. 6). Besides, it was found that switching attention between tasks affects subsequent task performance (Leroy, 2009, p. 178). According to Leroy (2009), someone who constantly has to transition between tasks, likely exhibits attention

residue which "reflects the persistence of cognitive activity about a Task A even though one stopped working on Task A and currently performs a Task B." (p. 169). Her study's results reveal that individuals who leave a task unfinished experience more attention residue and lower subsequent task performance compared to those who are able to complete the first task before transitioning to the next (Leroy, 2009, p. 178).

The concept of multitasking (including task switching) and its consequences, particularly for performance, have attracted attention in science. Mainly negative consequences of multitasking are reported by the majority of researchers. Richter and Yeung (2012), for instance, found that task switching harms current performance, because it reduces memory for task-relevant items while improving memory for task-irrelevant ones (pp. 1261). The study of Kirchberg et al. (2015), in which 93 employees rated their performance and well-being over a period of five consecutive workdays, reports negative relationships between daily multitasking and daily performance and between day-level multitasking and well-being in the evening (p. 121; p. 130). The findings from the study of Goes, Ilk, Lin and Zhao (2018), which investigated the customer service, demonstrate that even though multitasking led to an increase of productivity because employees were able to process more customer inquiries in the same time, quality suffered. The authors suspect that due to the bad quality even more customer demands might be created in the long run (Goes et al., 2018, pp. 3052). In their paper from 2012, Adler and Benbunan-Fich found that an increase of multitasking benefits performance but only until a certain point after which any more multitasking negatively affects performance (p. 157). Therefore, productivity is best at medium levels of multitasking activity (Adler & Benbunan-Fich, 2012, p. 166). According to the authors, multitasking leads to higher levels of arousal, which means that time is better utilized, individuals are more involved in their task and additional cognitive resources are mobilized. Thereby, better productivity can be reached. However, too much multitasking can result in a situation of cognitive overloading, in which one's memory is negatively affected by the amount of task switching and interfering (Adler & Benbunan-Fich, 2012, p. 159; Adler & Benbunan-Fich, 2012, pp. 165; Adler & Benbunan-Fich, 2012, p. 167). Next to these predictions, the authors could further show that any increase of multitasking only has negative effects for accuracy, hence, performance effectiveness (Adler & Benbunan-Fich, 2012, pp. 166).

2.6 The influence of MTM and related concepts on the individual and the team level

In summary, MTM is a concept that can be linked to some other concepts such as multitasking or team mental models. By linking these concepts, effects of MTM become more obvious. First, more memberships lead to a decrease of time available, which has an impact on the individual and the team level. At the individual level, this time fragmentation, among other things, influences identification and connection with the team and it results in an increase of (job) demands (Espinosa et al., 2003, p. 176; Espinosa et al., 2003, p. 179; Shore & Warden, 2007, p. 39; Mortensen et al.,

2007, p. 216; O'Leary et al., 2011, p. 464; Altschuller & Benbunan-Fich, 2007, pp. 3). At the team level, time fragmentation forces teams to coordinate and plan more as they have to align their members' schedules. This process is effortful and can harm a team's performance (O'Leary et al., 2011, p. 468; Pluut et al., 2014, p. 337; Mortensen et al., 2007, p. 219; O'Leary et al., 2011, p. 465). Besides, members who spend less time together find it more difficult to develop both trust and team mental models (Chung & Jackson, 2013, p. 441). Moreover, MTM leads to overload since it eventually decreases both cognitive resources and opportunities available to reflect and to recover (Pluut et al., 2014, pp. 334; Zika-Viktorsson et al., 2006, pp. 390). Individuals and teams with MTM also experience more interruptions, and MTM forces them to multitask as they have to switch tasks and teams often (Cummings & Haas, 2012, p. 322; Jeuris & Bardram, 2016, p. 407; Benbunan-Fich et al., 2011, p. 2). Findings suggest that some level of MTM is beneficial (e.g. by leading to higher levels of arousal), but too much MTM negatively impacts performance (e.g. by creating cognitive overload) (Payne et al., 2007, p. 371; Waller, 2007, p .244; Zika-Viktorsson et al., 2006, p. 388; Yao & Robert, 2017 p. 5). The insights gained in this theoretical part on the influence of MTM on performance and performance-influencing factors are used for the development of the hypotheses in chapter III.

2.7 MTM and personal factors

In many cases where scientists investigated the effects of MTM or the effects of concepts related to MTM, it has been suggested that personal factors might also play a role. Van de Brake, Walter, Rink, Essens and Van der Vegt (2016), for instance, suggests that personality traits might help employees with an increasing MTM to overcome resulting challenges as well as to use possibly resulting opportunities (p. 1229). Besides, qualitative research about MTM and multitasking which was conducted and interpreted by Altschuller and Benbunan-Fich (2017), leads the authors to the assumption that "perhaps the choice of how multitasking occurs is a cognitive decision that, along with individual skills, determines the impact of the multitasking on outcomes" (p. 11). Next to them, Adler and Benbunan-Fich (2012), who studied the impact of multitasking on performance, find that an inclusion of personality or cognitive styles would be a logical expansion to their framework (p. 167). There is a widespread belief that some individuals have a higher preference for multitasking than others. Waller (2007), for example, assume that polychronicity which describes a "preference for doing more than one thing at a time" (Francis-Smythe & Robertson; 2003, p. 308) positively impacts the ability to multitasking (Waller, 2007, p. 244). On top of that, Bertolotti et al. (2013) find that preferences for and abilities in multitasking are meaningful moderators when studying multi-teaming (p. 2). Moreover, Benbunan-Fich et al. (2011) and McDonald et al. (2015) are convinced that personality traits influence task switching decisions (p. 6; p. 1159).

To conclude, literature suggests that personality may impact the way multiple simultaneous commitments are handled and call for more research in that regard (e.g. Adler & Benbunan-Fich, 2012, p. 167; Baethge et al., 2015, p. 320; Altschuller & Benbunan-Fich, 2017, p. 11). Because of these signals from literature, this thesis includes individual differences in personality when analysing performance implications of MTM. Specifically, it is investigated how cognitive styles, which are considered a personality dimension (Witkin et al., 1977, p. 15; Sadler-Smith, 2004, p. 165), impact the relationship between MTM and performance. For this reason, theories and findings on literature about cognitive styles are introduced below.

3. The concept of cognitive styles

"Cognitive styles are concerned with the form rather than the content of cognitive activity" (Witkin et al., 1977, p. 5) and are considered as features of personalities which might be possible to alter, but are generally stable over time (Witkin et al., 1977, p. 15; Miller, 1991, p. 231; Messick, 1976, p. 5; Sadler-Smith, 2004, p. 165). Due to their different perceptual and intellectual activities, individuals approach situations and their external environments differently (Witkin et al., 1977, p. 4; Priola et al., 2004, p. 568). Cognitive styles represent individual preferences in how experience and information are organized and processed, including how information is acquired, stored and transformed (Ho & Rodgers, 1993, p. 103). The different cognitive styles matter for example when individuals perform tasks and for the problem-solving process, in which context they are therefore often mentioned (e.g. Priola et al., 2004, p. 569; Fuller & Kaplan, 2004, pp. 131; Sadler-Smith, 2004, p. 155). The influence of cognitive styles "extends to almost all human activities that implicate cognition, including social and interpersonal functioning" (Messick, 1976, p. 5). Accordingly, cognitive styles are also concerned with the way people relate to others and they likely affect individuals' behaviour in teams (Witkin et al., 1977, p. 15; Armstrong & Priola, 2001, p. 290). The concept of cognitive style has been studied from different perspectives and the dual processing theory posits that there are at least two processing styles (Priola et al., 2004, p. 568; Salas, Rosen, & DiazGranados, 2010, p. 946). Even though the taxonomies of the two modes of processing vary in literature, they have in common that both present systems of information processing. System 1, the intuitive system, works rather fast, holistic and unconscious and System 2, which is the conscious deliberative system, works slower, more cognitively effortful and conscious (Akinci & Sadler-Smith, 2013, p. 212; Sales et al., 2010, p. 944). Humans use both systems for decision-making, but it has been found that they have a tendency to either rely on the analytical or the intuitive system (Sales et al., 2010, p. 949; Dane & Pratt, 2007, p. 48; Sales et al., 2010, p. 946). Evans (2003) summarizes dual-process theories as "two minds in one brain" (p. 454). Indeed, many researchers suggest that differences in cognitive styles are caused by differences between the left/ right hemispheric specialization of the brain (e.g. Riding & Pearson, 1994; Allinson & Hayes, 1996; Doktor, 1978; Ornstein, 1977; Robey & Taggart, 1981; Sonnier, 1990; Taggart, Robey, & Kroeck, 1985; Waber,

1989), whereby logical thought mainly results from the left hemisphere and simultaneous integration of inputs and synthesis from the right hemisphere (Allinson, Armstrong, & Hayes, 2001, p. 203). It is assumed that, depending on the environmental context, one of the cognitive styles is more appropriate than the other (Sadler-Smith, 2004, p. 157). Olson (1985), for example, examined entrepreneurial activities in terms of the two thinking modes (p. 25). The author proposes that right-hemispheric processing matters in the beginning of the entrepreneurial process where individuals engage in creative activities and idea-thinking (Olson, 1985, p. 28). Beyond the status quo, ideas have to be assessed rationally and plans have to be developed, and for that, the left-hemispheric processing is important (Olson, 1985, p. 29).

3.1 The cognitive-experiential self-theory (CEST)

One of the theories belonging to dual-processing theories is CEST, the cognitive-experiential self-theory, which is a "global theory of personality" (Epstein, 1994, p. 710). CEST differentiates between two modes of information processing: the experiential and the rational system, which are independent from another rather than distributed along a bipolar continuum (Epstein, Pacini, Denes-Raj, & Heier, 1996, p. 401; Hayes, Allinson, Hudson, & Keasey, 2004, p. 270). The experiential system, which results in intuitive thinking, is preconscious, rapid, holistic and associative (Epstein, 2012, p. 95; Armstrong, Cools, & Sadler-Smith, 2012, p. 252) and "a source of intuitive wisdom and creativity" (Epstein, 1994, p. 715). In contrast to that, the rational system is conscious, relatively slow, intentional and affect-free (Epstein, 2012, p. 95; Armstrong et al., 2012, p. 252) and leads to analytical thinking which is "capable of very high levels of abstraction" but "a very inefficient system for responding to everyday events" (Epstein, 1994, p. 715). The two systems operate by different rules – the former by abstract, general ones guided by analysis and logic and the latter by context-specific, heuristic rules, but both influence the individual's behaviour (Epstein et al., 1996, p. 401). This work focuses on CEST and, in line with authors like De Visser et al. (2014), examines cognitive styles in terms of 'intuitive and analytical information processing' (p. 1169). Nonetheless, articles using other terminologies like 'field dependent' and 'field independent' (e.g. Witkin et al., 1977; Armstrong et al., 2012) or 'intuitive synthesis' and 'rational analysis' (Khatri & Ng, 2000) are also considered for the literature review as long as they are related to dual-processing theories and the descriptions are similar to those of 'intuitive information processing' and 'analytical information processing' respectively.

3.2 The difference between intuitive and analytical information processing

As previously outlined, individuals tend to either engage more in intuitive or analytical information processing[2]

[2] Those individuals with a tendency for intuitive information processing are referred to as being 'intuitive' and those with a tendency for analytical information processing as being 'analytical'.

Intuitive individuals are said to be optimistic, but also naïve, impulsive and tend to engage in unrealistic, irrational thinking (Epstein et al., 1996, p. 395; Epstein et al., 1996, p. 402; Evans, 2008, p. 257). They do not conform to prevailing ideas easily and their positive mindsets make them think beyond boundaries (Armstrong & Priola, 2001, pp. 287). Persons with this cognitive style feel most comfortable in less structured environments (Armstrong & Priola, 2001, p. 304). Work settings can benefit from them, because they often develop unique products. By contrast, products created by people with a high analytical tendency are well-crafted, logical and useful (Puccio, Treffinger, & Talbot, 1995, p. 157). In general, analytical individuals are characterized by a pronounced logical, reflective and rational way of thinking and a preference for structure, rules and step-by-step procedures (Armstrong & Priola, 2001, p. 304; Priola et al., 2004, p. 589). In comparison to intuitive individuals, they might be less emotionally expressive and approachable but they are constructive and effectively push realistic actions forward (Armstrong & Priola, 2001, p. 290; Epstein et al.,1996, pp. 395).

Increasingly, studies investigate cognitive styles at the team-level rather than at the individual-level (e.g. Kearney, Gebert, & Voelpel, 2009; Leonard, Beauvais, & Scholl, 2005; Post, 2012; De Visser et al., 2014). These studies suggest that teams have a certain preference for information processing because of their membership structure. That is, a team of predominantly members who tend to engage in analytical information processing strengthens the preference for analytic information processing of the team. Likewise, a team with more intuitive individuals has a preference for intuitive information processing (De Visser et al., 2014, p. 1169).

III. Hypotheses

1. The relationship between MTM and performance

In the following paragraph, studies with explicit findings of the relationship between MTM and performance are presented. Subsequently, the most important insights of MTM and associated concepts (such as multitasking) from the theoretical part are linked and interpreted. Based on this, the first hypothesis is developed.

MTM has an inverted-U shaped relationship with productivity

O'Leary et al. (2011) significantly set the basis for further research on MTM by providing a theoretical model of MTM and its effects on learning and productivity. Productivity is considered a performance dimension (Adler & Benbunan-Fich, 2012, p. 161). Learning, however, should be distinguished from performance as it can occur even though no effect on performance can be

observed. For example, it may be that something has been learned, but it cannot be used to improve performance (Wilson et al., 2007, p. 1043). Therefore, only O'Leary et al.'s results on productivity are taken into consideration for the purpose of this thesis. In terms of productivity, the authors examined turnaround and utilization. Turnaround includes the actual time needed to complete the task as well as the amount of time before the work on the task can be started. Utilization means the percentage of a person's time that is actively used for team projects (O'Leary et al., 2011, p. 466). The number of MTM seems to have curvilinear effects on productivity at both the individual and the team level. This means that positive effects created by MTM increase until a certain point. After that point, productivity gains turn negative. As people with MTM have to manage multiple tasks at once, they have to focus on the most important ones and manage their work most efficiently. The so-called "focusing effect on individual attention" (O'Leary et al., 2011, p. 462), which means concentrating on the most important tasks and fully utilizing time schedules, improves productivity by positively impacting utilization and turnaround, respectively (O'Leary et al., 2011, p. 462; O'Leary et al., 2011, pp. 466). But if someone has to finish too many tasks at once, turnaround will take longer and thereby reduce productivity (O'Leary et al., 2011, p. 468). Such negative effects show up after the saturation point that was mentioned above.

MTM has an inverted U-shaped relationship with team performance

Bertolotti et al. (2015) provide evidence for the theoretical model proposed by O'Leary et al. (2011). Instead of examining productivity, the authors tested the relationship between MTM and team performance (Bertolotti et al., 2015, p. 920). In order to do so, an R&D unit with 83 members of a worldwide leading firm in the alternative energy sector was examined (Bertolotti et al., 2015, pp. 916). The study is particularly interesting for this thesis since it investigates the team-level and the measures for both performance and team MTM are similar to those used in the preceding analysis of this thesis: Performance was assessed by the individuals, and team MTM was formed by the average number of concurrent team memberships of the individual members of the central team (Bertolotti et al., 2015, pp. 916; Bertolotti et al., 2015, p. 918). Bertolotti et al. (2015) expected that a team's performance is enhanced when there is an intermediate level of MTM in the team. The expectation of an inverted U-shaped relationship between MTM and team performance is verified in their study (Bertolotti et al., 2015, p. 918). The authors believe that MTM's advantages outweigh its disadvantages at medium levels of MTM in contrast to extreme (very high or very low) levels of MTM. On the one hand, the team benefits from the members' knowledge and best practices acquired from other teams. At medium levels of MTM, individuals have enough time to reflect on the knowledge gained in one team and to modify it as to utilize it in the focal team. On the other hand, these members allocate enough time to the focal team and do not have to switch too often. Because of that, the focal team does not experience the same severe effects that arise from the challenge of

organizing the teamwork as in the case of extremely high levels of MTM (Bertolotti et al., 2015, p. 912; Bertolotti et al., 2015, pp. 914).

MTM has a positive relationship with team performance and an inverted U-shaped relationship with individual performance

Chan (2014) assumed that the relation between MTM and team performance has an inverse U-shape. The argumentation leading to this hypothesis is similar to the one of Bertolotti and his colleagues: A focal team can benefit from diverse knowledge gathered by its members who are part of multiple other teams, but if the team is confronted with too much MTM, it can experience coordination and organizational problems (Chan, 2014, p. 78). The variety of ideas individuals develop through their MTM can inspire them to innovate. Yet, if they have too many team memberships, the individuals have less time capacity to think creatively and engage in innovative behaviour with their fellow team members (Chan, 2014, p. 76). In contrast to their suggestion, the study's results reveal a positive relationship between the number of MTM that a focal team's members have concurrently and team performance. On the individual level, however, their argumentation proved correctly: A curvilinear relationship between MTM and individual innovative performance is demonstrated, meaning that there is a certain point after which a further increase in MTM does not influence one's individual performance positively but negatively (Chan, 2014, p. 84).

MTM leads to performance gains in the long run

The paper by Van de Brake et al. (2016) investigates MTM on the individual-level and adds within-person perspectives to the discussion about MTM and performance. In order to derive conclusions about the relationship between changes in employees' MTM and job performance over time, the authors used data from 1,875 knowledge workers of a Dutch organization of applied research (Van de Brake et al., 2016, p. 1220; Van de Brake et al., 2016, p. 1223). Regarding the within-person perspective, a negative relation between changes in MTM and subsequent job performance was found. Additionally, the study gains insights from a between-person perspective. It shows that the level of MTM is positively associated with job performance changes (Van de Brake et al., 2016, p. 1227). These results led the authors to the presumption that MTM might create negative performance detriments initially but that those are outweighed by performance gains that are produced by MTM in the long run (Van de Brake et al., 2016, p. 1229).

MTM impacts team performance positively

Cummings and Haas (2012) conducted a multi-level study in 285 knowledge-intensive teams in a large global corporation (p. 317). The authors suspected that the time a team member spends in a team positively influences team performance as that person puts more attention to the team. In contrast, people with MTM experience attention diffusion and therefore contribute less to the team

(Cummings & Haas, 2012, p. 318; Cummings & Haas, 2012, p. 321). Unexpectedly, the results show that MTM has a positive impact on team performance. The authors suggest that this could stem from the possibility to acquire knowledge from other teams that is useful for the focal team (Cummings & Haas, 2012, p. 336). Furthermore, if the members' "work on other teams is complementary, yet distinct, then these team members may be able to more readily import valuable insights and learning from those other teams to the focal team" (Cummings & Haas, 2012, p. 336).

Intermediate summary of the key studies

All studies presented are concerned with the impact of MTM on performance. Some authors examined the influence of MTM on job performance (e.g. Van de Brake et al., 2016), others the influence on team performance (e.g. Cummings & Haas, 2012, Chan, 2014). The studies were carried out at different levels: Van de Brake et al. (2016), for example, investigated MTM at the individual level while Bertolotti et al. (2015) did so at the team level. Besides, multi-level analyses were done, for example by Cummings and Haas (2012) and O'Leary et al. (2011). Apart from these subtle differences, the researchers have in common that most of them propose an inverse U-shape relation between MTM and performance. In many cases, the reasoning for this relationship is similar as well.

Reviewing the studies has helped to understand how MTM can influence outcomes of individuals and teams. This understanding is further strengthened by bringing together the most important findings on MTM and MTM-related concepts from the theoretical part with regard to performance implications.

The relevance of the level of MTM on its performance implications

The findings from literature that are presented in the following lead to the assumption that the overall effect that MTM might have on performance, whether positive or negative, could depend on the level of MTM.

Individuals and teams with MTM experience positive effects which they, most probably, would not experience this way without MTM. First of all, individuals with MTM are required to manage their time and work most efficiently. As a consequence, their time schedules are fully utilized, and they concentrate on the most important tasks which in turn has a focusing effect on their attention (O'Leary et al., 2011, p. 462; pp. 466). On top of that, MTM leads to multitasking, and lower levels of multitasking result in higher levels of arousal and efficiency gains (Altschuller & Benbunan-Fich, 2017, p.6; Mortensen et al., 2007, p. 219; Adler & Benbunan-Fich, 2012, p. 165). In addition to having more effective, efficient and focused members, teams benefit from knowledge, best practices, ideas and even inspirations for innovation that their members can acquire by being part of several teams (Chan, 2014, p. 78; Bertolotti et al., 2015, p. 912; Bertolotti et al., 2015, pp. 914; Cummings & Haas, 2012, p. 336).

Up to this point, it could be concluded that the relationship between MTM and performance is linear and positive. However, such a conclusion would ignore any negative impacts MTM can have on performance. The reasons outlined below, gathered from the theoretical background of MTM, show that high levels of MTM affect team performance negatively.

For one, a further raise in memberships leads to a further decrease in time available for each team (O'Leary et al., 2011, p. 464). Finding times where members of a team can work together becomes more difficult for the team and thus more time has to be spent for planning activities (O'Leary et al., 2011, p. 468; Crawford et al., 2019, p. 345). Owing to the challenge of aligning member's blocks of time and coordinating their work, team work processes can become more effortful and consequently, team performance suffers (Bertolotti et al., 2015, p. 912; Bertolotti et al., 2015, pp. 914; Pluut et al., 2014, p. 337; Mortensen et al., 2007, p. 219; O'Leary et al., 2011, p. 465; Cummings & Haas, 2012, p. 331). On top of that, team performance is impacted by the effects that high levels of MTM create on the individual level. As the same amount of time has to be split between even more teams, members have less time available for each team (O'Leary et al., 2011, p. 464; Mortensen et al., 2007, p. 216). Hence, teams have less common time and, as pointed out above, a higher proportion of time must be spent on planning (O'Leary et al., 2011, p. 468; Crawford et al., 2019, p. 345). As a result, team members can spend only little time together which means trust between team members takes longer to establish and teams experience greater difficulties at developing shared mental models which, however, would benefit teams' processes (Chung & Jackson, 2013, p. 341; Espinosa et al., 2003, p. 176; Espinosa et al., 2003, p. 179; Mortensen, 2014, pp. 915; Mathieu et al., 2000, p. 275; Mohammed et al., 2010, p. 878). In addition, teams have to deal with members who perform less because of their many team memberships. Individuals who become part of even more teams have to work on even more tasks, face more interruptions and have to switch more often (Adler et al., 2015, p. 5461; Baethge et al., 2015, p. 317). The constant need to switch and refocus takes time, energy and results in a faster depletion of resources (Adler & Benbunan-Fich, 2012, p. 165; Patanakul & Milosevic, 2008, pp. 225; Pluut et al., 2014, pp. 334). Additionally, opportunities for reflection and recovery are lacking (Mortensen et al., 2007, p. 216; Zika-Viktorsson et al., 2006, pp. 390). Therefore, individuals have a higher risk of experiencing performance detriments caused by cognitive or project overload (Pluut et al., 2014, pp. 334; Zika-Viktorsson et al 2006, p. 388; Pluut et al., 2014, p. 339; Tannenbaum et al., 2012, p. 10; Wageman et al., 2012, p. 309; Adler & Benbunan-Fich, 2012, pp. 165; Adler & Benbunan-Fich, 2012, p. 167). Furthermore, individuals lack time for creative thinking and innovative behaviour (Baethge et al., 2015, p. 314; Baethge et al., 2015, p. 317).

Overall, it seems that low to medium levels of MTM lead to an increase of team performance as, among others, individuals make better use of their time, are more focused and are able to acquire knowledge and information that can be translated to the respective team in order to improve performance. If, however, MTM reaches very high levels, individuals have fewer opportunities to really gather such insights, reflect upon them and, finally, make use of them in order to enhance team performance. In addition, coordinating and planning becomes increasingly tedious and more time has to be invested for it, ultimately negatively affecting team processes (like the development of mental models) and performance. To summarize, the relationship between performance and MTM seems to follow an inverted U-shape where performance is best at medium levels of MTM. Several researchers suggest such an inverse U-shape between MTM and performance (e.g. O'Leary et al., 2011, p. 468) and some even found evidence for this relationship (e.g. Bertolotti et al., 2015, p. 918). Moreover, inverse U-shaped relationships between concepts related to MTM (as multitasking, interruptions and strength of trust) and performance are suggested and empirically proven (e.g. Baethge et al., 2015, p. 317; Chung & Jackson, 2013, p. 457).

Following both implications of MTM and findings provided by researchers, it is hypothesized that a team's level of MTM is in an inverted U-shaped relationship with team performance. The relationship is best explained using a graph (see Figure 1): An increase of MTM positively influences performance but only until a certain point after which a further increase of MTM negatively influences performance. Hence, the first hypothesis is as follows:

H1: Team MTM has an inverted U-shaped relationship with team performance.

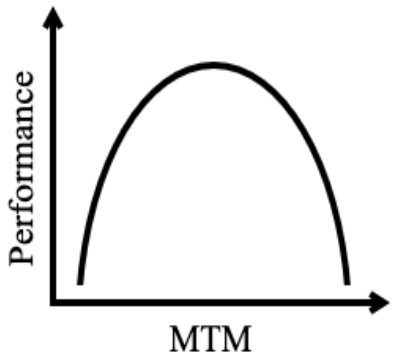

Figure 1: The inverted U-shaped relationship between team MTM and team performances

2. The influence of the intuitive cognitive style on the relationship between MTM and performance

As indicated above, this study examines the influence of cognitive styles on the relationship between MTM and performance. Therefore, the characteristics of the intuitive and analytical cognitive style and its possible effects on the relationship between MTM and performance are presented in the upcoming paragraphs. These insights are then used to develop and present the second hypothesis.

The relevance of social skills for performance implications of MTM

As previously described, MTM leads to a fragmentation of time across teams. The study of Pluut et al. (2014) discusses the demanding and resourceful aspects of MTM (p. 336). The authors propose that team processes as coordinating actions and communicating are more demanding for a person with MTM (Pluut et al., 2014, p. 337). Besides, they assume that chances for interpersonal demands like conflicts between members are higher when member's time is highly fragmented for example because of member's different goal preferences and priorities (pp. 337). Their assumptions proved correct: Both a positive association between fragmentation of time across teams and individual demands related to team processes and between fragmentation of time across teams and conflicts experienced with members is determined (Pluut et al., 2014, p. 342). Hence, being on multiple teams simultaneously calls for a higher engagement in communication and coordination as well as in conflict management activities (Pluut et al., 2014, p. 337). MTM also requires switching between teams. Each team is made up of different personalities, so each switch not only means a change in content but also a change in the social environment the switching individual has to adapt to (McDonald et al., 2015, p. 1158). Therefore, it could be assumed that individuals who can quickly adapt to the team environment, and who do not have difficulties in contacting fellow team members (e.g. for coordinating actions), find switching between teams probably easier than those who do not have these abilities. Mortensen et al. (2007), who interviewed employees with MTM, state that MTM can be better handled when team members have established relationships and trust (p. 223). Trust, in turn, leads to a reduction of switching costs i.e. negative effects stemming from switching (Mortensen et al., 2007, p. 224). In that regard, it seems also conceivable that a member's MTM impacts his or her focal team performance less negatively if he or she possesses social skills helping them to communicate, resolve actions and establish relationships with fellow members. For the same reasons, it is conceivable that an intuitive team (i.e. one that consists predominantly of members who have a preference for the intuitive style) can handle any level of MTM better than a less intuitive team (i.e. one that consists of only few members who have a preference for the intuitive style).

All these findings demonstrate that social activities matter in teams; especially in those facing MTM. In the next section, the influences of a preference for the intuitive or analytical cognitive style on social behaviour are examined.

The influence of cognitive styles on social behaviour

Intuitive persons are said to be highly empathetic and agreeable (Epstein, 2012, p. 110). These characteristics, paired with their open-mindedness and sensitivity to social cues, allow them to develop satisfying interpersonal relationships (Epstein, 2012, pp. 109; Witkin, et al., 1977, p. 7). Striking evidence for the perception that persons who primarily process information intuitively have more social qualities comes from Armstrong and Priola (2001). The authors conducted a study with

100 final-year undergraduate students, organized in 11 teams, to examine the effect of cognitive styles on group behaviour (Armstrong & Priola, 2001, p. 292). The authors find that intuitive individuals and homogeneous intuitive teams initiate more social-emotional oriented behaviours than analytical individuals and homogeneous analytical teams do (Armstrong & Priola, 2001, p. 304). People with a more intuitive mindset are "seized by emotions" (Epstein, 2012, p. 95) and are more emotionally involved in an outcome (Epstein, 2012, p. 104). However, they are equipped with the skill to get along with others very well (Witkin et al., 1977, p. 8). This skill may be particularly helpful in a situation where one is part of multiple teams at the same time. For one, the person probably establishes favourable relationships with fellow team members which means that he or she knows whom to reach out to for information like status updates about what has happened when this person was busy in another team or for help. Additionally, the overall group climate likely benefits from an intuitive person as he or she engages in social-emotional activities in the group, thereby potentially impacting a team's performance positively. In this sense, team performance is even more positively influenced the more intuitive people a team has i.e. the higher the team preference for the intuitive style is.

By contrast, analytical individuals are often perceived as insensitive and impersonal (Epstein, 1996, p. 395; Armstrong & Priola, 2001, p. 290). Instead of putting energy towards establishing relationships with others, they focus on their tasks (Armstrong & Priola, 2001, p. 290). People with this cognitive style have a higher awareness for their own needs and feelings than for those of others. When they are in social contact, they tend to rely on their internal frames which mainly consist of their own feelings and thoughts (Witkin et al., 1977, p. 11). Such behaviour patterns could explain why their relationship style is also referred to as "dismissive" (Epstein, 2012, p. 110). Given the above rationale, it can be argued that in the same way as social skills stemming from an intuitive cognitive style could facilitate dealing with MTM, a mindset that is not intuitive could impede dealing with MTM and thereby negatively impact a team performance.

The relevance of cognitive styles for ambiguity and resulting performance implications

In addition to frequent switching between different content and people, MTM may lead to greater planning uncertainty. Teams are often confronted with spontaneous occurrences that force them to react quickly and immediately (Perlow, 1999, p. 65). This is especially true for NPD teams, which are statistically analysed in the following, who often deal with unpredictable environments that cause new conditions and challenges teams have to respond to (Dayan & Elbanna, 2011, p. 160). Such occurrences could mean, for instance, that emergency meetings have to be set up while regular meetings have to be postponed. For someone who is a member of several teams in parallel, a change of plans in one team requires him or her to adjust his or her overall planning. The spontaneous meeting might, for instance, collide with a meeting in another team. Therefore, it can be concluded

that MTM requires planning but that these plans can change quickly. Accordingly, planning uncertainty is greater the more team memberships an individual has.

Khatri and Ng (2000) examined the moderating effect of environmental instability on the relationship between the intuitive cognitive style and performance. Their findings reveal that intuition matters for strategic decision-making, and hence, organizational performance, when business environments are highly unstable (Khatri & Ng, 2000, p. 78). Moreover, Sadler-Smith states that in unstable environments one should make use of intuitive information processing, and that "rational modes of processing may be both inappropriate and difficult to apply successfully" (Sadler-Smith, 2004, p. 165). Intuitive persons prefer open, unprompted and ambiguous environments (Priola et al., 2004, p. 588). Besides, they show flexibility in problem solving and an orientation towards immediate action (Allinson et al., 2001, p. 213; Epstein, 2012, p. 95). According to theory, the associated process caused by intuition could be helpful in the case of complex problems where further procedure is unclear and where non-related elements have to be integrated (Dane & Pratt, 2007, pp. 45).

In contrast, analytical people prefer a clear structure both in dealing with problems and in their environments in general (Allinson & Hayes, 1996, p. 122; Priola et al., 2004, p. 588). They are logical, progress-oriented thinkers who make use of systematic examination methods and step-by-step analyses (Allinson & Hayes, 1996, p. 122; Epstein, 1996, p. 395; Priola et al., 2004, p. 588). While this tactic might be suitable for solving routine problems, its application is difficult in situations characterized by information uncertainties (Claxton, 1998, p. 219; Sadler-Smith, 2004, p. 165). Evidence for that is provided by Sadler-Smith (2004) who found that a rational style in very unstable environments is associated with lower performance than a rational style in more stable environments (p. 172). In addition to that, Dane and Pratt (2007) state that complex, unstructured problems are better solved with an intuitive rather than an analytical thinking style (p. 45). Besides, solving problems in a systematic, rational manner seems to hinder high levels of innovative behaviour (Scott & Bruce, 1994, pp. 600).

To conclude, individuals who have a preference for intuitive information processing seem to handle the ambiguity caused by MTM better than those who have a preference for analytical information processing.

The influence of cognitive styles on performance

Despite the conventional wisdom that financial analyses are better done with an analytical style, Khatri and Ng (2000) observe a strong relationship between intuition and financial performance and Sadler-Smith's (2004) study shows that the intuitive style has a positive influence on subsequent financial performance (Khatri & Ng, 2000, pp. 77; Sadler-Smith, 2004, pp. 174). On top of that, the findings of research on cognitive styles and comparisons of analytical and intuitive cognitive style

described above lead to the suggestion that MTM has fewer negative impacts on performance when teams have a higher rather than a lower preference for intuitive information processing. On the one hand, teams consisting of intuitive individuals can profit from their intuitive members' abilities to initiate and maintain social relationships as well as to create a good climate. On the other hand, intuitive people prefer unstructured environments which most likely enables them to cope with planning insecurity. Hence, teams with mainly intuitive members might not be completely immune to negative effects of MTM, but the characteristics and skills of their intuitive members could help them to derive more beneficial effects caused by MTM as well as to better mitigate its disadvantages. Specifically, it is hypothesized that a team's tendency to engage in intuitive information processing does not change the nature of the relationship between MTM and performance, but that more intuitive teams perform slightly better compared to less intuitive teams. As with H1, the relationship between MTM and power is thus best visualized by an inverted U. Since intuitive teams, however, can handle MTM better than less intuitive ones, their inverse-U has slightly shifted up. This change is illustrated by the graph below (Figure 2): At equal levels of MTM, teams with a strong preference for the intuitive cognitive style achieve higher performance (black graph) than teams without that preference (grey graph). Consequently, the second hypothesis is as follows:

H2: The inverted U-shaped relationship between team MTM and team performance is positively influenced by a strong team preference for the intuitive cognitive style.

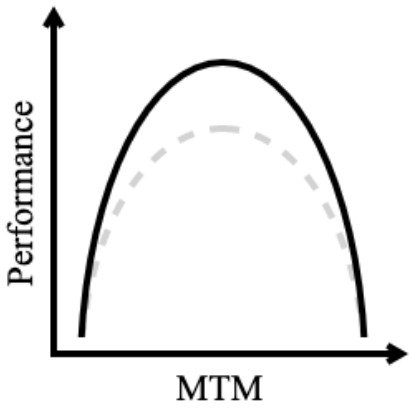

Figure 2: The inverted U-shaped relationship between team MTM and team performance with (black slope) and without (grey slope) a strong team preference for the intuitive cognitive style

The hypotheses about the relationship between MTM and performance (H1) and about the influence of the intuitive cognitive style on this relationship (H2) are tested using a quantitative analysis. In the preceding chapter, information about the details of this analysis as well as its results are outlined.

IV. Methodology

In the following, detailed descriptions of the sample, the measures and the procedure of the analysis are given before the results of the analyses are presented and interpreted.

1. Sample

The hypotheses are tested on fine-grained data from six Dutch companies. The selected companies operate in technology-intensive manufacturing industries and have R&D departments supervising a considerably high number of NPD projects.

All data used were provided by De Visser who collected most of them through a survey from 2010 to 2013 in order to study the impact of team cognitive styles on performance of radical and incremental NPD projects (De Visser et al., 2014). This dataset was expanded with a second survey that De Visser conducted between 2016 and 2018. Both surveys targeted employees who were part of NPD projects. Specifically, the companies' documentation systems including project's time-accounting data were used to determine NPD projects employees were involved in as well as the number of working hours employees spent on those projects. Only employees were considered for the survey who have been working at least 100 hours in a project and who, according to the respective project manager, made a significant contribution to the project and were actually seen as part of the team were considered for the survey. Team members who could be identified by this procedure were then sent questionnaires in the form of hard copies via mail. For this research, data on the number of teams employees were part of, data about their cognitive styles and about project performance were needed. Therefore, one part of the questionnaire contained personal questions, including questions to assess the preferred cognitive style, while the other part addressed the specific project the respective employee was member of (see Appendix for full questionnaire). In accordance with the procedure of Post (2012), only those projects where two thirds of its members filled out the questionnaire were considered for the sample (pp. 564).

The final sample that is used for this research thus includes 295 people who form a total of 94 teams. Of the total sample, 95.932% of the subjects are male. The total sample has a mean age of 41.885 years (SD=9.695) and has been working for 14.037 years (SD=11.001) in the respective company. On the individual level, the respondents are involved in about 5.067 (SD=5.558) projects at the same time. On the team-level, the mean team MTM is 5.169 (SD=4.258) and the average team project performance is 3.628 (SD=.602).

2. Measures

2.1 Dependent variable: Team project performance

In this study, (project) performance represents the extent to which a team is able to meet established project objectives. The definition is consistent with prior studies on project performance (De Visser et al. 2014; Bonner, Ruekert, and Walker, 2002; Hoegl, Weinkauf, and Gemuenden, 2004; Olson, Walker, Ruekert, & Bonner, 2001). Project performance was measured on a scale adopted by Hoegl et al. (2004). Each team member rated the team's project performance on the following five items: (1) project success, (2) achievement of project goals, (3) output quality, (4) team satisfaction about project performance, and (5) top management satisfaction about project progress (see Appendix for a full description of the items). Based on the rating of each of these five items, the overall project performance attributed to the respective project by a single team member is calculated. Hence, a team member's evaluation of overall project performance corresponds to the mean across these five items. All evaluations of project performance available within a team are averaged to derive project performance on the team-level. A one-way analysis of variance reveals whether and, if yes, how evaluations of performances vary between and within groups (Kozlowski & Klein, 2000, p. 350). An ANOVA that was conducted by De Visser et al. (2014), who studied the data derived during the first round of data collection, shows that there are reliable differences between team members' evaluations of overall project performance among the teams ($F[167, 94]=2.508$ with $p<.0001$) (De Visser et al., 2014, p. 1172). To examine whether project performance can be aggregated and analysed as a group mean, the intraclass correlation coefficients ICC (1) and ICC (2) were calculated by the researchers (Kozlowski & Klein, 2000, p. 359; De Visser et al., 2014, p. 1172). With the help of the ICC, the total variance of a variable that is accounted for by group membership can be measured (Cohen, Cohen, West, & Aiken, 2003, p. 537). Specifically, the ICC (1) provides information about the reliability of the single assessment of the group mean and the ICC (2) is used to estimate the reliability of the group mean (Bliese, 2000, p. 367). The recommended cut-off value for ICC (1) is 0.12 and 0.60 for ICC (2) (James, 1982, p. 224, Bliese, 2000, p. 361). De Visser et al. (2014) found an ICC (1) of 0.35 and an ICC (2) of 0.60, so both values are in the recommended range (p. 1172). Given these results, it can be concluded that members within a project have a similar perception of their performance while there are significant differences between project performance ratings between teams (Bliese, 2000, p. 350). Both the ANOVA and the calculation of the ICC are performed only with data from the first data collection. Group aggregation of project performance for the entire dataset, however, may be justified for the following reasons. On the one hand, the data from the first data collection makes up more than two-thirds of the final data set. On the other hand, companies interviewed between 2016 and 2018 are similar to those surveyed between 2010 and 2013. In view of this, it can be argued that the characteristics of the data are not too different from each other which is why it is conceivable that another run of analyses would yield similar results.

2.2 Independent variable: Team multiple team membership

Multiple team membership (MTM) describes the situation where an individual is part of more than one team at a time (O'Leary et al., 2011, p. 461; Berger, 2018, para 6; Chan, 2014, p. 76). The documentation systems of the companies participating in the survey provide information on the number of teams in which members are involved in at the same time. To capture team MTM, the average of the number of team memberships in a team is determined. This measurement is in line with previous researchers who used team MTM as a variable in their analyses (Bertolotti et al., 2005, p. 15; Cummings & Haas, 2012, p. 326; Mortensen, 2014, p. 920).

2.3 Moderating variable: Team intuitive cognitive style

Cognitive style, i.e. whether someone has a preference for analytical or intuitive information processing, is measured by the rational-experiential inventory constructed by Epstein et al. (1996). Their original questionnaire includes 31 items that have to be rated by respondents on a 5-point scale which ranges from 'completely false' to 'completely true' (Epstein et al., 1996, p. 394). This questionnaire consists of two unipolar scales. With the first one, 'Need for cognition' an individual's preference for and engagement in analytical activities can be derived. The second scale, 'Faith in intuition', aims at assessing one's intuitive information processing (Epstein et al., 1996, p. 394). The original construct was shortened by De Visser et al. (2014) according to the factors that were reported to have the highest loading resulting in five items for analytical information processing and the five items for intuitive information processing (Epstein et al., 1996, p. 394; De Visser et al., 2014, p.1172) (see Appendix for both original and shortened construct). After a confirmatory analysis was run on the 10 items remaining, two additional items (one in each cognitive style category) were removed because of their low factor loadings. Finally, both intuitive and analytical information processing items had significant factor loadings (α=.79 and α=.80, respectively) (De Visser et al., 2014, p. 1172).

On the basis of the individual ratings on both scales, it is possible to determine whether the individual member has a preference for analytical or intuitive information processing. In order to ascertain a team's cognitive style, its members' scores on both 'Need for cognition' and 'Faith in intuition' are averaged across the team resulting in a team analytical style measure and a team intuitive style measure respectively. This form of operationalization of team cognitive style is in line with the focus of this study, which lies on the team level, and it can be justified by the fact that previous studies measure team cognitive styles in a similar vein (e.g. De Visser et al., 2014, p. 1172). In order to holistically understand the concept of cognitive styles, both styles were theoretically examined and measured. The analysis however concentrates on the intuitive style which is why only the values for the intuitive style, captured by 'Faith in Intuition', are used for the subsequent quantitative analysis.

2.4 Control variable: Organizational tenure

Organizational tenure is included as a control variable in the subsequent analyses. Firstly, because earlier studies find that there is a link between organizational tenure and performance, and secondly, because previous scientists controlled for it as well. These scientists include, for example, Van de Brake et al. (2016) and Bertolotti et al. (2013) who examined the effects of MTM on performance, as well as researchers who studied cognitive styles such as De Visser et al. (2014) (Van de Brake et al., 2016, pp. 1225; Bertolotti et al., 2013, p. 8; De Visser et al., 2014, p. 1173). In this study, organizational tenure is defined as the number of years an individual has worked for a firm. With information provided by the individual team members, each person's organizational tenure is derived. The mean of all calculated organizational tenures of team members thus represents the average organizational tenure.

3. Procedure

The hypotheses were tested by hierarchical regression analyses. In this form of analysis, variables "are entered cumulatively in a prespecified sequence" (Cohen et al., 2003, p. 158). After each input, a (multiple) regression analysis is performed in order to assess the contribution of the variable(s) to the variability of the dependent variable (Wampold & Freund, 1987, p. 372). Accordingly, the number of regression analyses performed during one hierarchical regression analysis corresponds to the number of variables that are considered for the prediction of the dependent variable. Each subsequent regression analysis has a variable more than its predecessor, and with each analysis, values including R-squared (which tells how much of the variance of the dependent variable can be explained by the variable(s) being used (Wampold & Freund, 1987, p. 374)) and correlation coefficients are determined. Those values can then be compared to values of the previous analyses. In this way, differences between the variables can be assessed. Hence, gradually extending the regression model allows to deduce how much the newly added variable contributes to the prediction of the dependent variable beyond the previously included variables (Cohen et al., 2003, p. 144; Cohen et al., 2003, p. 158; Petrocelli, 2003, p. 10). Therefore, it is recommended to use this type of analysis when the effect of variables and not their relative importance are relevant for the research (Jeon, 2015, p. 1636).

With respect to this thesis, the hierarchical "build-up procedure" (Cohen et al., 2003, p. 158) allows to determine how much variability of performance can be explained by MTM. In addition, the effect of each variable and the predictive power added to the model can be evaluated. Hence, it can be examined whether the squared term of MTM is actually more significant in predicting performance than the normal term of MTM. Put differently, the relationship between MTM and performance can

be ascertained and the hypotheses assuming an inverse U relationship between MTM and performance can be verified.

To facilitate testing overall, and testing of quadratic effects particularly, all continuous variables are standardized.

Some pages are omitted intentionally

VI. Discussion

The aim of this study was to examine the relationship between MTM and performance on the team level. In addition, it was investigated whether the tendency for a certain cognitive style, namely intuitive information processing, influences how MTM relates to performance. The study was guided by the following research question: How are team MTM and team performance related and how does the intuitive cognitive style influence this relationship? The results of the analysis demonstrate that the relationship between MTM and performance follows an inverted U-shape. The results further show that this relationship only exists for teams who have a low preference for the intuitive cognitive style. For more intuitive teams, however, MTM does not seem to have a significant influence on performance. In the following, these findings are discussed in detail and they are put into context with findings of previous investigations of MTM and its related concepts.

H1 predicted that MTM and performance are in an inverted U-shaped relationship. The hypothesis was tested with a hierarchical linear regression which reveals support for H1. Whereas MTM does not contribute to performance, its squared term does. The beta weights of MTM-squared are negative and significant. Thus, in line with previous research, the findings demonstrate an inverted U-shaped relationship between MTM and performance. In other words, a growth in MTM creates positive effects that lead to an increase in performance. However, if the growth of MTM continues, negative effects are created which outweigh the positive effects, ultimately decreasing performance.

Consequently, the results of this study confirm that MTM can actually improve team performance: On the one hand, through the effective transfer of knowledge and best practices from other teams (Bertolotti et al., 2015, p. 912; Bertolotti et al., 2015, pp. 914; Cummings & Haas, 2012, p. 336; Chan, 2014, p. 78) and, on the other hand, through more efficient team members. Team members may perform better as multitasking increases their cognitive resources and their many commitments oblige them to spend their time as profitably as possible and to focus on the team (Adler & Benbunan-Fich, 2012, pp. 165; O'Leary et al., 2011, p. 462; O'Leary et al., 2011, pp. 466; Adler & Benbunan-Fich, 2012, p. 157; Kirchberg et al., 2015, p. 113).

The results further prove that excessive MTM values may cause performance degradation. For one, because of the many memberships simultaneously, individual team members can attribute less attention to the focal team (Zika-Viktorsson et al., 2006, pp. 390). Additionally, they have less time for both reflection on acquired knowledge and engaging in creative thinking (Baethge et al., 2015, p. 314; Baethge et al., 2015, p. 317). Besides, members are confronted with frequent switching between tasks, teams and contexts, they have to deal with multiple demands and may experience project and cognitive overload (Bertolotti et al., 2013, p. 4). As a result, team members are less efficient and less effective (Bertolotti et al., 2013, p. 6; Pluut et al., 2014, p. 335; Pluut et al., 2014,

p. 339; Zika-Viktorsson et al 2006, p. 388; Tannenbaum et al., 2012, p. 10; Wageman et al., 2012, p. 309). MTM also challenges the team as a whole as organizational and coordination efforts are necessary to find available time slots for all members (Pluut et al., 2014, p. 337; Mortensen et al., 2007, p. 219; O'Leary et al., 2011, p. 465). Time shared by members and shared mental models have a positive impact on team performance. Nevertheless, MTM negatively affects both time spent and the opportunities to develop shared mental models, which in turn leads to performance degradation in the team (Mohammed et al., 2010, p. 878; Mathieu et al., 2000, pp. 279; Mortensen, 2014, p. 916; Mortensen, 2014, p. 923).

H2 hypothesized that a team's tendency for intuitive information processing positively impacts the inverted-U shaped relationship between team MTM and team performance. To test the impact of the intuitive cognitive style, the relationship between MTM and performance was investigated by comparing two groups: Group 1 included teams that have a low tendency for intuitive information processing and Group 2 was composed out of teams that have a higher tendency for intuitive information processing. Before the hierarchical regression analysis was run, the descriptive statistics showed that there are hardly any performance differences between the groups. Contrary to the assumption, the average performance for Group 1 is even slightly higher than for Group 2. Moreover, the results of the quantitative analysis do not support the hypothesis. For less intuitive teams, the relationship between MTM and performance is represented by an inverted-U form. So, for Group 1, MTM shows to be a significant contributor to explain some variability of performance. For more intuitive teams, however, no relationship between MTM and performance can be observed. In Group 2, MTM does not account for any variance in performance. This means that in strong contrast to Group 1, the performance of more intuitively oriented teams does not seem to be influenced by MTM at all. In regards to both the descriptive statistics and the results from the hierarchical regression analyses, the suggestion that intuitive teams generally perform better when they are confronted with MTM therefore has to be refuted. Surprisingly, only the performance of less intuitive teams seems to be influenced by MTM. This leads to the question of how these findings can be interpreted and possibly explained.

The findings may mean that more intuitive teams cannot experience negative consequences of MTM such as time-consuming coordination activities (Chan, 2014, p. 78). Yet, it should not be prematurely concluded that more intuitive teams have advantages over less intuitive teams as, following this line of argumentation, this would also imply that intuitive teams are not able to gain any benefits resulting from MTM. Benefits include, for instance, the frequently-cited focusing effect of individual attention introduced by O'Leary et al. (2011) (O'Leary et al., 2011, p. 462). Plausible explanations for why the performance of more intuitive teams is not affected by MTM can be derived from theories about MTM and cognitive style that were studied for this thesis. Firstly, people with a preference for intuitive information processing are said to prefer unstructured environments (Priola et al., 2004, p.

588; Armstrong & Priola, 2001, p. 304). This thesis argued that high levels of MTM create unstructured environments. Taken together, more intuitive teams might be unaffected by interruptions and spontaneous events caused by MTM, because such unstructured environments feel most natural to those teams anyway. Secondly, people with the tendency for the intuitive cognitive style possess more social skills, like sensitivity to social clues, open-mindedness and empathy. These social skills help them to develop and maintain relationships and to engage in social-emotional oriented behaviours (Epstein, 2012, pp.109; Witkin, et al., 1977, pp.7; Armstrong & Priola, 2001, p.304). An increase in MTM is usually accompanied by an increase in communication and coordination activities and possibly conflict management activities (Pluut et al., 2014, p.337). Again, intuitive persons are considered very social characters who engage in social-emotional activities and who develop interpersonal relationships relatively easily (Epstein, 2012, pp. 109; Armstrong & Priola, 2001, p. 304; Witkin et al., 1977, p. 7). Hence, highly intuitive individuals probably adapt more quickly to the regularly changing team environments than less intuitive individuals as the former have more pronounced social abilities which, among others, allow them to get in touch with others easily. Ergo, it is conceivable that in the same way as an increase of ambiguities might not have any influence, an increase of social activities due to MTM might not have a substantial impact on intuitive individuals as well. Therefore, neither their individual nor their team's performance is significantly affected by MTM. The fact that no relationship between MTM and performance for more intuitive teams could be stated also means that the performance of more intuitive teams seems to be unaffected by the above-mentioned learnings and insights that can be gained by being part of other teams (Chan, 2014, p. 78; Bertolotti et al., 2015, p. 912; Bertolotti et al., 2015, pp. 914; Cummings & Haas, 2012, p. 336). A plausible reason is that even without MTM, these teams engage in social activities, probably even outside the team. Consequently, there is always a certain amount of outside knowledge available in these teams, which they can make use of and which cannot significantly be increased by MTM.

To conclude, MTM might not have any impact on the performance of more intuitive teams as, for one thing, ambiguities caused by MTM have neither positive nor negative effects on them. For another thing, they fully engage in social activities and appreciate a good team climate and can thus profit from a constant outside knowledge base and largely avoid team problems that can arise through MTM. By contrast, less intuitive teams' performance is influenced by their level of MTM. Due to their lower preference for the intuitive cognitive style, less intuitive teams probably feel more uncomfortable in unstructured environments. Most likely, they do not engage as fully in social activities as highly intuitive teams. In that sense, some amount of MTM might actually be beneficial for less intuitive teams because it creates an unfamiliar environment that does not feel natural to them. As a result, they need to focus more and adapt better, for example through more effective planning and more communication with the other team members, resulting in an enhanced team

performance. Furthermore, their performance benefits from the learnings and insights that members and thus teams can collect through their MTM. Without MTM, these less intuitive teams would most likely not have received these learnings and insights because they find it difficult to establish social relationships. If, however, the level of MTM becomes too high, less intuitive members are confronted with a highly unstructured environment in which, due to their personalities, they do not perform well. In addition, they might suffer from communication and coordination problems as well as cognitive overload because they are overwhelmed by all those insights that they gather in other teams, which eventually results in a lower team performance.

In summary, the present study confirms that the relationship between MTM can be illustrated with an inverted U-curve. First, any addition in memberships brings about more positive than negative effects for both individuals and teams. Hence, MTM leads to performance gains. But as the number of team membership increases, the negative effects caused by MTM that are outlined above add up. Finally, the positive relationship between MTM and performance turns into a negative one. The analysis, however, shows that this relationship only holds true for less intuitive teams. For teams that have a higher tendency for intuitive information processing no relationship between MTM and performance can be observed.

VII. Theoretical contribution

The preceding part already discusses the results of the analyses within the framework of the prevailing theory to some extent. Based on this, the most important theoretical contributions of this study are presented below.

As already pointed out, in recent years some scientists examined the relationship between MTM and performance (e.g. Van de Brake et al., 2016; Chan, 2014). However, only few studies provide empirical evidence for the relationship between MTM and performance at the team level (e.g. Cummings & Haas, 2012). This lack of evidence was used as an opportunity to investigate the relationship between MTM and performance by testing hypotheses on a large set of team data. For the development of the hypotheses, a whole range of literature including many theories and concepts (e.g. time allocation, multitasking, trust) was considered. Part of the literature that was regarded clearly deals with MTM as for example O'Leary et al. (2011) and Bertolotti et al. (2015). The other part is not concerned with MTM but with other issues such as project overload and mental models that translate into the concept and implications of MTM (Zika-Viktorsson et al., 2006, Mathieu et al., 2000). A theoretical contribution of this work therefore is that many theories are linked and combined in a way that has not been accomplished by previous research on MTM to date.

The analysis of the hypotheses shows that MTM and performance are positively related only up to a certain point. After that, the relationship between MTM and performance becomes negative. Thus, this study provides additional support for the proposition of a curvilinear relationship by O'Leary et al. (2011) (O'Leary et al., 2011, p. 468). It is also in line with the work of researchers who provide empirical evidence for the inverted U-shape (e.g. Bertolotti et al., 2015, p. 918). While the study agrees with these researchers, it contradicts those who found a linear relationship between MTM and performance (e.g. Chan, 2014, p. 84; Cummings & Haas, 2012, p. 335). Overall, the results contribute to an ongoing discussion about how MTM impacts team outcomes. More specifically, they expand research on MTM by providing solid evidence for the inverted-U shaped relationship between MTM and performance.

Beyond that, the study enriches theory by providing completely new insights. For the first time, the relationship between MTM and performance is considered under the inclusion of cognitive styles. That is, findings from literature on teams and their performance were linked to findings from literature on personality and cognitive styles. Specifically, this study focuses on the intuitive style and compares less intuitive teams to more intuitive teams. It was found that the inverted U-shaped relationship applies only to teams that are less intuitive. This completely new finding extends the current state of research around teams and MTM and opens discussions about existing research results. It could, for example, be questioned whether the study by Bertolotti et al. (2015) would yield the same result (an inverse U-shape between MTM and performance) when all less intuitive teams were excluded from their sample. On top of extending literature on teams, the findings contribute to the under-explored research on personality and on cognitive styles in particular. The literature on cognitive style provides some information about the personality traits of intuitive persons. However, it does not shed light on how a team and its outcomes are impacted when the team is made up mainly of more intuitive (in the case of more intuitive teams) or rather less intuitive individuals (as with less intuitive teams). By providing empirical evidence that MTM only has an impact on the performance of less intuitive teams, and not on the performance of more intuitive teams, this thesis joins few researchers such as De Visser et al. (2014) who examined the effects of cognitive style on performance. Thereby, one of the initial aims of this thesis, to add to the research that aims to understand how certain personality factors influence team outcomes, could be achieved.

Finally, the research results obtained here can be used as a basis for further research. As already pointed out, several concepts (such as multitasking) were included in order to completely map MTM and its possible consequences as well as to deduce plausible hypotheses. By finding support for the hypothesized inverted U, this work not only contributes to the theory of MTM but also to the theory of these concepts. For example, researchers who deal with multitasking might have never thought

about how MTM affects the performance of intuitive teams. Therefore, the results may even open up interesting future research topics.

VIII. Managerial implications

From the current study's results clear implications for companies, teams and other practitioners can be derived and three of them are described below.

First, companies should monitor and supervise teams regarding their level of MTM as both literature and this study's results imply that MTM has an impact on individual and team levels. The obligations arising from MTM may affect the attention and contribution of individual team members to the team (Cummings & Haas, 2012, p. 318; Cummings & Haas, 2012, p. 321). Therefore, team members should be aware that once MTM affects their own performance it also has a negative impact on team performance. In the same vein, teams should be aware that they can derive benefits from MTM but only if their average MTM is not too high. Accordingly, project managers should consistently monitor the average MTM of their team in favour of their performance. In addition to project managers monitoring their teams, a company should appoint someone to oversee all teams and their respective mean MTM. Such a supervising manager could support teams in their HR matters by not only checking whether an employee would fit the team in terms of his or her abilities, but also in how many teams he or she is currently involved in. Thereby, it could be avoided that teams with an already high mean MTM are assigned employees who are part of many teams at the same time. Consequently, the potential for team performance detriments could be reduced. Individual employees would also benefit from such a measure since being overloaded with too many projects can lead to cognitive and health impairments (Pluut et al., 2014, p. 334; Tannenbaum et al., 2012, p. 10).

Second, companies should test the cognitive styles of their employees as the analysis proves that cognitive styles impact the relationship between MTM and team performance. Depending on which cognitive style prevails in a team, companies can adapt the management and monitoring of the teams to it. In terms of performance, the average MTM of more intuitive teams does not need to be monitored as accurately since their performance is not affected by MTM. In those teams, other factors seem to play a role for performance. In contrast, it is important to identify and monitor the level of MTM of less intuitive teams, because their performance could suffer from a high mean MTM. One concrete implication therefore is that managers of less intuitive teams should determine the optimal MTM level for their team and maintain it. Thereby, team performance could benefit from the positive effects caused by MTM as, for instance, the acquisition of useful knowledge from other teams (Cummings & Haas, 2012, p. 336). In addition to corporate use, information about one's own cognitive style is beneficial at the individual level. When a person become aware of their individual way to process information, he or she can better understand their resulting actions and thoughts. This

understanding in turn makes it easier to reflect on them, control them, and possibly even avoid negative effects caused by the respective cognitive style.

Third, companies should find appropriate ways to deal with the trade-off situation they face when they are confronted with MTM. On the one hand, the simultaneous assignment of employees to many teams means that the work potential of their employees is fully realised. On the other hand, finding the optimal level of MTM is probably not easy, and the risk of deriving negative effects through MTM instead of positive effects seems to be relatively high. Regardless, companies should try to find out the level of MTM that a single employee can handle. This allows them to assign their employees to a suitable number of teams and to fully exploit their potential. One way to do so might be to determine their cognitive style or to test their multitasking skills. Besides, team leaders should ensure that teams perform sufficient preparation and coordination activities to discuss different deadlines and bottlenecks, share team tasks fairly, and make sure that no one feels disadvantaged or overburdened. An organization that is unable to effectively control the average MTM of its teams could try to positively influence variables that are adversely affected by excessive MTM values in order to protect team performance. For example, team trainings could help to overcome coordination challenges that teams face due to fluid team boundaries, for instance, and generally lead to enhanced teamwork and team performance (Liang et al., 1995, p. 390; Edmondson & Nembhard, 2009, pp. 130; Salas et al., 2008, p. 542). Trainings can also teach time management skills and how multiple commitments can be organized. Furthermore, they may help employees to develop effective coping strategies to overcome stressful times. Team leaders could also gather useful information in trainings. As Tannenbaum et al. (2012) pointed out, team leaders may be trained how to guide members in ambiguous work environments and how to manage their affiliations (p. 9).

IX. Limitations

As shown previously, the present study contributes to theory and provides practical implications. Yet, the study also has some limitations that should be considered when interpreting the results.

To start with, the sample used to test the hypotheses is considerably large but very homogeneous; all participating companies operate in similar sectors (technology-intensive manufacturing industries) and from the same country (the Netherlands). The homogeneity of the dataset allows comparability of the results but leads to a low external validity and transferability. Aside from this, the vast majority of the study's respondents is male. Findings could thus differ if the same analysis would be carried out with companies from other industries or if the sample would include more female employees.

Moreover, the team performance was measured by team members, which potentially reduced the objectivity of the measure's assessments (Mortensen, 2014, p. 926). Employees who felt under

pressure (triggered, for example, by MTM) may have blamed the team for their overall dissatisfaction and for that reason underestimated team performance. Another possible reason for having underestimated team performance could be that the project went well, but the team members had a conflict and therefore rated the team performance lower than it actually was. In both cases, the individual's current mood would have influenced his or her answers and thereby diminished the validity of the performance measure (Podsakoff & Organ, 1986, p. 535; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003, p. 883). It may equally well be that the team performance was rated above average because the team members wanted to present their team in a favourable light. Such a tendency, referred to as social desirability, can lead to bias ratings that do not reflect the rater's true feelings about a topic (Podsakoff et al., 2003, p. 881).

One further limitation of the study is that common method variance, which means the measurement method and not the constructs that represent the measures are responsible for the observed variance, may be operative (Podsakoff et al., 2003, p. 879). Common method variance can occur when "the predictor and criterion variable are obtained from the same person in the same measurement context using the same item context and similar item characteristics" (Podsakoff et al., 2003, p. 885). In studies of behavioural science such conditions are frequently found which is why common method variance is often present there (Podsakoff et al., 2003, p. 885). In this study, the independent variable MTM was derived from the enterprise documentation systems while the performance of the dependent variables was reported by the team members. Since these variables were obtained from different sources, common method variance was largely avoided (Podsakoff & Organ, 1986, p. 542). Next to performance, cognitive style is a self-report measure that was included in the previous analyses. For that reason, common method variance cannot be ruled out completely. All relationships and influences identified between cognitive styles and performance should thus be interpreted with caution (Podsakoff & Organ, 1986, p. 533; Podsakoff et al., 2003, p. 880). Chen, Hui and Cascio (2017) found that raters' personalities can influence how they evaluate their performance (p. 7). Therefore, it is conceivable that a certain preference for an information processing style affects how individuals rate the performance of a team they are part of.

Apart from that, the lack of additional verification of the findings using interview data is a limitation of this study (Blackstone, 2012, p. 195; Queirós, Faria & Almeida, 2017, p. 378). Due to limited resources, the results of this study are based only on a quantitative analysis and were not verified by a qualitative method. According to triangulation theory, however, organizational research can achieve better accuracy and validity of results by examining research objects with multiple methods (Jick, 1979, p. 602; Bouchard, 1976, p. 268). Generally, the use of independent and multiple measures allows to better portray the units under investigation and can lead to unexpected findings (Jick, 1979, p. 604; Jick, 1979, p. 607). Qualitative methods in particular are said to illuminate and

unfold unique variance that might not be detected by other methods and to serve as critical counterpoints to quantitative methods (Jick, 1979, p. 603; Jick, 1979, p. 609). Mortensen (2014) studied the construction of teams and, in addition to a survey, conducted semi-structured interviews with some of the study's participants in order to gather more insights on teams and their performance (p. 918). Similarly, Bertolotti et al. (2015) found support for their results from their quantitative analysis as well as clarification for the challenges entailed in working MTM scenarios by conducting qualitative interviews (p. 18). Within the framework of this research, only a quantitative analysis was carried out. Personal interviews could have confirmed the results of the quantitative analysis. Furthermore, they could have provided new insights that might even question the results of the quantitative analysis or trigger another type of discussion. Still, the results are representative due to the size of the dataset. In addition, quantitative research is attributed objectivity (Queirós et al., 2017, p. 370).

Last but not least, a possible limitation of the study is that the overall explained variances of the regression models used to test H1 and H2 (Group 1) are low. The analyses of H1 and H2 (Group 1) show that MTM-squared contributes significantly to performance. In both cases, however, the overall explained variance is rather low (7.5% and 15.6%, respectively). The low adjusted R-squared values may indicate that performance-critical predictor variables were not included in the models.

X. Future research

The results from this study give raise to some questions that could be addressed by future researchers. Some of them are presented in the following.

In the context of this work, performance implications of MTM were examined. Firstly, the relationship between MTM and performance and secondly, the relationship between MTM and performance under the inclusion of cognitive style were analysed. Both analyses were conducted on the team level. Future research might thus additionally study the organizational level for instance by comparing the performance of companies whose teams are confronted with high team MTM with companies that mostly avoid assigning employees to multiple teams.

For a verification of the results, the study could be repeated with a different set of data of equal size. Data from firms coming from countries other than the Netherlands could be analysed and compared with the current results. Alternatively, or additionally, the hypotheses could be tested on a larger sample. In addition to increasing the reliability of the results, an extension of the dataset could have an influence on the statistical analysis. In the case of Group 2, for instance, Beta is positive, which would indicate a linear relationship between MTM and performance, but it is insignificant. The significance may change with the size of the dataset.

As discussed above, a limitation of the study is that members rated the performance of their own teams. Further studies could use objective rather than subjective outcome variables. For example, a manager who oversees the entire R&D area could rate R&D teams in different performance dimensions and thereby improve the objectivity of the performance measure. Moreover, the quantitative analysis could be complemented by a qualitative analysis, such as in-depth interviews, to gain a deeper understanding of the effects of MTM (Queirós et al., 2017, p. 371).

The findings reveal that, for less intuitive teams, MTM and performance are in an inverted U-shape relationship while there seems to be no relationship between MTM and performance for more intuitive teams. Although these results are valuable on their own, future researchers analysing this dataset could follow authors like Bertolotti et al. (2015) and determine exact values of MTM that correspond to the highest level of performance (Bertolotti et al., 2015, p. 18). Thereby, even more concrete implications for practice could be derived.

Further work is also needed to detect the factors that account for the rest of variability in performance of teams with a lower tendency for intuitive information processing because MTM accounts only for little variability in their performance. Relatedly, it may be useful to identify the variables that impact performance of teams with a higher tendency for intuitive information processing since their performance is not affected by MTM at all. It may also be worthwhile to test whether MTM influences other team outcomes than performance (like learning) of those more intuitive teams. Next to the influence of MTM on productivity, O'Leary et al. (2011), for example, explored how MTM relates to learning. They propose that MTM negatively affects learning on both the individual and the team level (p. 471). Besides, the results of a study by Armstrong and Priola (2001) show that intuitive individuals and homogeneous intuitive teams initiate socio-emotional acts, i.e. they are characterized by high solidarity and commitment in their team (p. 304). An investigation examining the potential impact of MTM on the socio-emotional engagement of intuitive teams could therefore provide interesting results. Moreover, the nature of the relationship between MTM and performance in terms of analytical information processing is unknown, constituting another recommendation for future research.

Finally, the study could be repeated after outliers are excluded from the dataset in order to find out if the curvilinear relationship between MTM and performance still exists for less intuitive teams and if there are any significant results regarding the more intuitive team.

XI. Conclusion

Teams with members who have memberships in multiple teams at the same time are becoming progressively commonplace (Maynard et al., 2012, p. 359). Therefore, it is important to investigate if and how MTM affects team performance. In order to derive an understanding of performance implications of MTM, theories and findings of MTM and its related concepts were combined and interpreted. On top of that, the relationship between MTM and performance was examined under the inclusion of the intuitive cognitive style. Based on research on MTM and cognitive styles, hypotheses were developed and then tested by a quantitative analysis. The analysis' results provide empirical evidence that MTM and performance are in an inverted U-shaped relationship. Hence, this study adds to previous research that delivers propositions or findings for such an inverse U-shape (e.g. O'Leary et al., 2011; Bertolotti et al., 2015). The study further contributes to theory by extending the current state of research around teams and MTM with a completely new insight. That is, the curvilinear relationship only holds true for less intuitive teams whereas MTM does not seem to affect the performance of highly intuitive teams. To conclude, the results suggest that MTM has different effects on team performance depending on a team's cognitive preference. The performance of less intuitive teams seems to benefit from a medium amount of MTM. Therefore, managers should consistently monitor and manage the mean MTM of their teams as well as ensure that their teams spend sufficient time on preparation and coordination activities. Besides, companies are advised to assess the cognitive styles and multitasking abilities of their employees in order to determine if and how they are affected by MTM. For an additional verification of the study, future research could repeat the study by modifying some of its components (for example by removing outliers or using objective performance measures). The finding that MTM does not impact performance of more intuitive teams also opens up additional research areas. For one thing, the factors influencing the performance of more intuitive teams could be identified. For another thing, it could be investigated whether MTM may affect outcome variables other than performance.

Appendix

Questionnaire for project performance (De Visser et al., 2014 based on Hoegl et al., 2004)

Respondents had to circle the number next to each of the following statements that best represented their degree of disagreement or agreement (where 1=strongly disagree; 5=strongly agree and numbers between 1 and 5 represent the varying degrees).

	1	2	3	4	5
1) Going by the status of the project, it can be regarded as successful. **OV1**	☐	☐	☐	☐	☐
2) Going by the status of the project, all project goals have been achieved. **OV2**	☐	☐	☐	☐	☐
3) Going by the status of the project, the output of the quality is of high quality. **OV3**	☐	☐	☐	☐	☐
4) Going by the status of the project, the team, which is responsible for this project, is satisfied with its performance. **OV4**	☐	☐	☐	☐	☐
5) Going by the status of the project, our top management can be fully satisfied with the progress of this project. **OV5**	☐	☐	☐	☐	☐

Questionnaire for cognitive styles (De Visser et al., 2014 based on Epstein et al., 1996, p. 394)

The questionnaire for cognitive styles that was used for the survey is a shortened and modified version of Epstein's full questionnaire presented below. Respondents had to circle the number next to each of the following statements that best represented their degree of disagreement or agreement (where 1=strongly disagree; 4=neutral; 7=strongly agree; and numbers between 1 and 7 represent the varying degrees).

	1	2	3	4	5	6	7
1) I like to rely on my intuitive impressions. **EP1**	☐	☐	☐	☐	☐	☐	☐
2) Using my gut feeling usually works well for me in figuring out problems in my life. **EP2**	☐	☐	☐	☐	☐	☐	☐
3) I believe in trusting my hunches. **EP3**	☐	☐	☐	☐	☐	☐	☐
4) Intuition can be a very useful way to solve problems. **EP4**	☐	☐	☐	☐	☐	☐	☐
5) I often go by my instincts when deciding on a course of action. **EP5**	☐	☐	☐	☐	☐	☐	☐
6) I try to avoid situations that require thinking in depth about something. **EP6**	☐	☐	☐	☐	☐	☐	☐
7) I enjoy solving problems that require hard thinking. **EP7**	☐	☐	☐	☐	☐	☐	☐
8) I am much better at figuring things out logically than most people. **EP8**	☐	☐	☐	☐	☐	☐	☐
9) I have a logical mind. **EP9**	☐	☐	☐	☐	☐	☐	☐
10) I don't reason well under pressure. **EP10**	☐	☐	☐	☐	☐	☐	☐

The 31-item questionnaire based on Epstein et al. (Epstein et al., 1996, p. 394)

Need for cognition

I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.

I don't like to have the responsibility of handling a situation that requires a lot of thinking.

I would prefer complex to simple problems.

I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.

I find little satisfaction in deliberating hard and for long hours.

Thinking is not my idea of fun.

The notion of thinking abstractly is not appealing to me.

I prefer my life to be filled with puzzles that I must solve.

Simply knowing the answer rather than understanding the reasons for the answer to a problem is fine with me.

I don't reason well under pressure.

The idea of relying on thought to make my way to the top does not appeal to me.

I prefer to talk about international problems rather than to gossip or talk about celebrities.

Learning new ways to think doesn't excite me very much.

I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.

I generally prefer to accept things as they are rather than to question them.

It is enough for me that something gets the job done, I don't care how or why it works.

I tend to set goals that can be accomplished only by expending considerable mental effort.

I have difficulty thinking in new and unfamiliar situations.

I feel relief rather than satisfaction after completing a task that required a lot of mental effort.

Faith in Intuition

My initial impressions of people are almost always right.

I trust my initial feelings about people.

When it comes to trusting people, I can usually rely on my "gut feelings."

I believe in trusting my hunches.

I can usually feel when a person is right or wrong even if I can't explain how I know.

I am a very intuitive person.

I can typically sense right away when a person is lying.

I am quick to form impressions about people.

I believe I can judge character pretty well from a person's appearance.

I often have clear visual images of things.

I have a very good sense of rhythm.

I am good at visualizing things.

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