The relationship between psychological safety and management team effectiveness:

The mediating role of behavioral integration

Emil Vidu Mogård and Ole Bendik Rørstad

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Abstract

This study explores whether there is an indirect effect of psychological safety on team effectiveness in management teams, operating through the mediating variable of behavioral integration. Whilst there exists a fair amount of research on the relationship between psychological safety and team effectiveness, few have looked at potential mechanisms that can explain this association in management teams. We propose behavioral integration to be a potential mediator. Data is collected from 1150 leaders in 160 Norwegian management teams, answering a questionnaire measuring team functioning and effectiveness. Team size ranged from 3 to 19 members. Our results show a significant indirect effect of psychological safety on management team effectiveness, mediated by behavioral integration. Thus, the more team members perceive the climate as safe in terms of speaking their mind without fear of repercussions, the more they partake in mutual collaboration, information sharing and experience ownership in the decisions being made. This is associated with management teams performing better. We also found a positive relationship between psychological safety and behavioral integration, and – in line with previous studies – that psychological safety and behavioral integration both were positively related to team effectiveness. This study adds to the existing team research literature by expanding our knowledge about the importance of psychological safety and the way it influences management team performance at all levels throughout the organizational hierarchy.

Acknowledgment

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PSYCHOLOGICAL SAFETY, BEHAVIORAL INTEGRATION AND MANAGEMENT
TEAM EFFECTIVENESS

In the summer of 2018, while fans around the globe gathered to watch the highly anticipated World cup soccer tournament in Russia, they suddenly turned their attention to Thailand. An unprecedented rescue mission was unfolding in a remote cave complex near the borderlands of Myanmar. Six miles, deep within the mountain range that separates Thailand and its neighboring country in the north, lies the Tham Luang – the fourth biggest thai cave system. Days had passed since the last sightings of twelve boys from the Wild Boars´ soccer team and their coach, believed to have ventured into the cave post practice on the 23rd of June (Cheung & Wong, 2018). The torrential rainfalls which had flooded the cave and the discovery of shoes and bikes near the entrance first raised the alarm. Internationally renowned cave divers were called upon to locate the boys which had been untraceable for nine days, all whilst battling poor visibility, strong currents and complex cave systems. On July 2nd, against all odds, they made contact. Through narrow passageways, murky waters and 2,5 miles from the cave entrance, stranded on a ledge, were the missing 13. The boys had survived.

What followed was a masterclass in international teamwork. Complementary contributions from experts around the world was given in a range of areas, including child nutrition, logistics, radio technology and weather forecasts modelling. All of which resulted in a most impressive rescue operation, initially deemed impossible. In the aftermath several have tried to make out the inner workings of the daunting operation (Kuri et al., 2020) and the teams participating in it, leading to one professor at The Wharton School, University of Pennsylvania, calling it an exemplary lesson of leadership (Useem & Eavis, 2018).

Regardless of whether teams operate in such extreme, isolated and confined environments or in ordinary office settings, they are generally viewed as critical for success also in modern organizations (Kozlowski & Ilgen, 2006). Much work in today´s organization is accomplished through collaboration, defined as the joint ownership of decisions and collective responsibility for outcomes (Liedtka, 1996). The ever so intensifying competition for resources and demand for high performances are pressing firms to become more flexible, fast paced and result focused, which yields business problems more complex than any leader can solve singlehandedly (Overfield, 2016). In many contemporary firms, teams have become the building blocks throughout all levels of the organizational hierarchy (Wageman et al., 2008).

One type of team holding a particularly central position in the organizational hierarchy, is the management team. Most organizations use management teams at different levels, consisting of leaders from separate organizational units, assigned to set overall goals and strategies, coordinate tasks and engage in complex decision-making vital to the organization

and its performance (Bang & Midelfart, 2017). Indeed, in these highly competitive settings, exceedingly dealing with complex judgements and uncertainty, coordinated across multiple individuals, some management teams do perform better than others. What characterizes an effective management team, and what may increase its chances of performing well?

Theory and hypotheses

A line of research that have received significant attention for its impact on team performance and ultimately organizational outcomes, is *team psychological safety*. Team psychological safety involves members´ perception of the consequences of taking interpersonal risks in specific contexts in the workplace (Edmondson, 1999; Edmondson & Lei, 2014). More specifically, "when people have psychological safety at work, they feel comfortable sharing concerns and mistakes without fear of embarrassment or retribution" (Edmondson, 2018, p. xvi). It´s a state of mind related to the feelings and emotions each team member experience while being part of a team (Edmondson & Lei, 2014). It is argued that if members perceive the interpersonal climate within their teams as safe, they will be more willing to contribute their ideas and actions to collective work (Edmondson, 2004). Edmondson (1999) found teams that developed team psychological safety to cooperate better than those who have not. Prior research indicate that team psychological safety is a critical factor in understanding phenomena such as teamwork, team learning, communication (Edmondson & Lei, 2014), and that it is directly associated with team effectiveness and performance (Baer & Frese, 2003; Bradley et al., 2012; Edmondson, 1999). None of these studies looked specifically at performance in management teams.

To this date team learning (Edmondson, 1999) and dialogue (Bilstad, 2016; Edmondson, 1999) have been found as notable, working mechanisms identified in the relationship between psychological safety and team performance. This previous research presents them as potential mediators, explaining some of the observed associations between psychological safety and performance. Still, these studies do not exclude the possibility of other factors impacting this relationship, and indeed only one of these studies (Bilstad, 2016) looked at this association specifically for the management teams.

Another construct interesting those researching the field of team behavior, and its impact on performance in management teams, is behavioral integration. First coined by Hambrick (1994) as "the degree to which the group engages in mutual and collective interaction" (p. 188),

he argued that a team is behavioral integrated when its members share information, resources and decisions (Hambrick, 1994, 1995). It refers to the quality of the interactions within the management team. This concept was instrumental in shifting perspective towards the processes occurring within a team, from the focus on mere qualities and attributes of its members. In essence it is argued that a well-designed and functioning management team is one that is behaviorally integrated, in the sense that it works as a team (Hambrick, 1994, 1998). Studies following this line of research indicate that behavioral integration is positively related to team and organizational processes and outcomes, e.g. being positively related to firm performance (Carmeli, 2008), management teams´ decision quality (Carmeli & Schaubroeck, 2006), employee work outcomes (Raes et al., 2013) and negatively related to organizational decline (Carmeli & Schaubroeck, 2006) and team affective conflicts (Mooney & Sonnenfeld, 2001).

To our knowledge no studies have investigated behavioral integration operating as a potential mediator in the relationship between psychological safety and team effectiveness, explaining some of the observed effect between them. Prior research on psychological safety shows its ability in setting the stage for "more challenging, more honest, more collaborative, and thus also more effective work environment" (Edmondson, 2018, p. 18). Hence, enabling team members engaging more of themselves in a team, making contributing actions to the collective, "without fear of embarrassment or retribution" (Edmondson, 2018, p. xvi).

In addition, studies on behavioral integration indicates the importance of members being able to share information, resources and decisions, in creating better team performance in management teams. Thus, with the collaborative tendency resulting from psychologically safe teams (Edmondson, 1999), we suggest that behavioral integration could play a notable role in its relationship with team effectiveness. The present study therefore examines this further, to see if behavioral integration could function as a mediator in the association between team psychological safety and team effectiveness in management teams. Is it plausible that psychological safe environments enable team processes where its members are more inclined engaging in collective and mutual interactions, such as sharing information, resources and decisions? Furthermore, to what extent could these same processes potentially explain the observed difference in performance between teams exhibiting high psychological safety from those who do not?

The main aim of our study is to provide further insight into the mechanisms operating in the relationship between psychological safety and team performance, exploring if behavioral integration could possibly serve as another explanatory factor.

Clarifying the concepts

Management Teams

The present study was conducted on management teams, defined as a group of managers reporting to a superordinate manager, responsible for coordinating and providing direction for sub-units under their jurisdiction, and for the overall performance of a business unit (Cohen & Bailey, 1997; Mohrman et al., 1995; Wageman & Hackman, 2010). Group members are interdependent, and their responsibilities often involve setting goals, making decisions, prioritizing and coming up with strategies deemed important for the organization.

There is an increased interest in better understanding the role of management teams and their effect on organizational outcomes. A growing body of literature has in recent decades signaled the importance of shared leadership; "a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals (…)" (Pearce & Conger, 2003). Thus, teams are critical for success in today's organizations (Kozlowski & Ilgen, 2006), with further research yielding conclusions that the top team rather than the top person has the greatest effect on firm´s functioning (Hambrick & Mason, 1984; O'Reilly et al., 1993).

Team effectiveness

Team effectiveness is conceived as multifaceted, and emphasizes criteria emerging both from productive results of the team, and outcomes pertaining more to the well-being of its members (Hackman, 1987). Hackman (2002) offers a three dimensional model, where a team´s effectiveness is seen as contingent on the extent to which it meets or exceeds the expectations of others (task performance), lead to the learning and well-being of team members (individual well-being and growth) and facilitates and grow team capabilities for members to work interdependently in the future (team viability) (Hackman & Wageman, 2005; Wageman et al., 2005). Thus, an effective management team make some sort of added value to the organization´s creation process – either to the team´s outcome or for the individuals in it, relative to what could have been achieved with members only operating as individuals.

In line with recent researchers (Bang & Midelfart, 2017; de Wit et al., 2012) we single out team viability as a special outcome, different from task performance and individual well-being and growth. We view team viability as dynamic properties of a team or emergent states, that mainly arise and varies as a function of team context, input processes and outcomes (Marks

et al., 2001). Individual well-being and growth (referred to here as individual satisfaction) and task performance is further used in this study as indicators of team effectiveness.

Task performance. Task performance concerns the team´s productive output, namely its products, services or decisions, and to what degree it meets certain expectations (e.g. standards of quality, quantity, timeliness) "perceived by those who review, receive or use the output" (Hackman, 2002, p. 23). In this study, we adopt Bang and Midelfart´s definition of task performance, namely to what extent "the results produced by the team make a significant and positive contribution to the success of the organization – in other words that the results create substantial added value for the organization" (Bang & Midelfart, 2017, p. 336).

Bang and Midelfart (2017) build on Drath et al. (2008) and summarizes the added value an effective management team creates for an organization into three likely outcomes, namely *direction* – reasonably agreed upon and understood aim, vision or goal, *alignment* – coordinated processes and strategies of different organizational units, and *commitment* – willingness of members to engage in mutual commitment in collective effort. Hence, in our study task performance refers to the added value a management team creates in their attempt to forge high quality decisions and create direction, alignment and commitment.

Individual satisfaction. The second performance measure of team effectiveness is to which degree it accounts for the contribution to members motivation, learning, development and personal well-being (Hackman, 2002). An effective management team can bring on added value in and between team meetings, by e.g. providing valuable advice, relevant information, thus energize and motivate members becoming better at their jobs (Bang & Midelfart, 2017).

By including both these measures of outcome, one accounts for the added value of an effective management through a personal level as well as the overall performance of the team as perceived by its members.

Psychological safety

Revisiting the interest in psychological safe environments first proposed by Schein and Bennis (1965), Edmondson introduced the concept of *team psychological safety* – hereby referred to as *psychological safety* (Edmondson, 1999). Psychological safety can be defined as a "shared belief that the team is safe for interpersonal risk taking" (Edmondson, 1999, p. 354). It is the individual´s perception of the risk she´s running when putting oneself on the line by being more open, authentic and direct in a given work environment. The shared belief of a

psychological safe environment has evidently been linked to team members being more able to e.g. discuss errors, learn and seek information from each other (Edmondson & Lei, 2014).

Behavioral integration

Deemed as the most important process characterizing effective management teams, Hambrick (1994) coined the term behavioral integration. Behavioral integration is a three dimensional construct which emphasizes the level of collaborative behavior, level of informational exchange and the level of perceived joint decision-making by its team members (Hambrick, 1994). Evidently a management team is considered well integrated when it has a wholeness or unity of effort (Hambrick, 1995). Thus, "a behaviorally integrated TMT [top management team] is characterized by intense interaction that produces open information exchange and collaboratively based solutions and decision. Such collectively derived decisions normally receive higher commitment and follow-up from members of the team" (Carmeli & Schaubroeck, 2006, p. 442).

Psychological safety
Past research on psychological safety

The fast-paced and hypercompetitive environment of today´s world have rendered continuous learning, innovation and change as crucial aspects of an organization´s ability to achieve success, thus relying heavily on individuals´ and groups´ capacity to engage in behaviors such as speaking up, collaborate and experimenting (Grant & Ashford, 2008; Nembhard & Edmondson, 2011). This implies an underlying expectation of employees taking a more active role, which necessarily diverted researchers to explore the factors central to assisting them in doing so – namely what foster willingness to invest their energies into work and interpersonal risk-taking (Kahn, 1990). A key factor resulting from this line of research was psychological safety (Edmondson, 1999).

Going back as far as the 1940s to Kurt Lewin and his *unfreeze-change-refreeze* process for organizational change, as referred to in Schein (1996), Lewin proposed that for change to occur, one had to break the pressure to sustain the status quo (*unfreeze*), *change* and then *refreeze* to institutionalize change. Since then, there has been numerous endeavors trying to untangle the cognitive and social mechanics for groups and individuals in need to do so (Frazier et al., 2017). Kahn (1990) was instrumental in taking psychological safety from a more

contextual determinant (Schein et al., 1965) of the organizational climate, to a more organization behavior-oriented focus, bringing attention to individual psychological safety. He defined it as "feeling able to show and employ one´s self without fear of negative consequences to self-image, status, or career" (Kahn, 1990, p. 708).

These conceptualizations do converge around a single unifying premise, in that its purpose is to mitigate the perception of interpersonal risk-taking being too high. Though, it was not before Amy Edmondson (1999), with her empirical measures of psychological safety, the term proliferated and gained the interest it holds today. Unlike her predecessors, who conceptualized the term as a contextual predictor for organizational change (Schein et al., 1965), and at the individual level (Kahn, 1990), Edmondson introduced psychological safety as a shared belief at the team level. "Perceptions of psychological safety, like other such beliefs, should converge in a team, both because team members are subject to the same set of structural influences and because these perceptions develop out of salient shared experiences" (Edmondson, 1999, p. 355).

Today it is understood as the taken-for-granted belief of how others will respond if you engage in risk-behaviors such as voicing concerns, asking questions, proposing new ideas – ideas generally perceived as putting oneself on the line (Edmondson, 1999). Hence, a psychological safe environment represents conditions where one feels comfortable in doing so. Nembhard and Edmondson (2011) refer to it as a tacit calculus we engage in at certain behavioral decisions points, in which we "assess the interpersonal risk associated with at given behavior. (…) one weighs the potential action against the particular interpersonal climate, as in 'if I do X here, will I be hurt, embarrassed or criticized?'" (p. 3). A sense of psychological safety stems from a negative answer to this question, so that we further engage in these behaviors which would have been less likely if the perceptions of interpersonal climate and consequences were different.

These risks tend to be associated with behaviors of collaboration and experimentation within a work environment as well - opportunities of being observed and making unfavorable impressions (Nembhard & Edmondson, 2011), with the easiest way when perceiving these risks being to avoid these behaviors. Although minimizing individual risk, it may lead to unique information being withheld by the individual, thus potentially limiting a team´s performance (Edmondson, 1999; Nembhard & Edmondson, 2011). In a recent extensive study, the Google´s people Analytics unit identified psychological safety as the number one characteristic of successful high-performing teams (Bergmann & Schaeppi, 2016). Other findings of

psychological safety has shown the concept being influential in e.g. job-commitment (Detert & Burris, 2007; O'Neill & Arendt, 2008), creativity (generation of novel ideas) (Madjar & Ortiz-Walters, 2009) and relational conflicts (Bruvoll & Børresen, 2021).

Relationship between psychological safety and task performance

Since the emergence of Edmondson´s (1999) influential article describing psychological safety´s impact on team learning and consequentially team outcomes, there has been a vast array of research pertaining to this domain, only fortifying the concept´s impact on team performance. Edmondson (1999) found in her study of 51 decision-making teams how members learn from their mistakes in a greater extent when levels of psychological safety are perceived to be high. Additionally, in a study investigating the implementation of new technology in 16 cardiac surgery teams, they found teams developing psychological safety to be more collaborative (Edmondson et al., 2001).

Furthermore, several researchers contribute to this growing literature; e.g. Baer and Frese (2003) found how psychological safe environments impacted task performance, and a significant positive relationship between the variables. Simons and Peterson (2000) investigated intragroup trust (conceptually similar to psychological safety), in top-management teams, and concluded that teams with a high level of trust were better able in distinguishing relationship conflicts from task conflicts – in contrast to those teams with lower intragroup trust. Kostopoulos and Bozionelos (2011) found that psychological safety promoted two kinds of learning – exploration and exploitative, and team performance, an effect enhanced by task conflict. Bradley et al. (2012) proposed how psychological safety could lead to better performing teams, and their study found how psychological safety moderated the relationship between task conflict and performance. When psychological safety was perceived as high, task conflict and performance was positively associated. Additionally, Carmeli, Tishler and Edmondson (2012) linked conditions of trust created within the team to improved decision quality and better performance, in their study of CEO relational leadership and strategic decision quality in top management teams.

In Edmundson and Lei´s (2014) review, compiling six decades of research and history, they conclude that "in sum a psychologically safe environment enables divergent thinking, creativity, and risk-taking and motivates engagement in exploratory and exploitative learning, thereby promoting team performance" (p. 31). This was further supported in a systematic

review on psychological safety, where Newman et al. (2017) highlighted the positive outcomes for individuals, teams and organizations associated with psychological safety.

Importantly though, Sanner and Bunderson (2015) has furthered this understanding by contesting psychological safety being as effective regardless of the team´s task at hand. Considering that "the implicit assumption seems to be that teams are teams" (p. 234), they point to the fact that the magnitude of the relationship between psychological safety and team performance vary across several studies. They propose a more nuanced view whereas psychological safety becomes less important for tasks where problem-solving and information-sharing are less central to success. Sanner and Bunderson find in their study that teams who work in "cognitively simple, isolated, and routine tasks where the ends and means of production is clear" (p. 227), do not engage in experiential learning processes and thus do not benefit much from psychological safety and its mitigation of perceived interpersonal risk. Moreover, when teams are relying more on social interaction, sharing perspective and collective problem-solving, dubbed knowledge-intensive work (Sanner & Bunderson, 2015), psychological safety is a more important and enabling condition.

In this study our aim is to explore management teams where members are interdependent and their responsibilities often require variable interpersonal activities, like informational exchange and decision-making. Thus, from Sanner and Bundersons´ viewpoint on task-based contingency, psychological safety should in a greater extent impact team behaviors and performance in these teams.

Relationship between psychological safety and individual satisfaction

The literature on individual satisfaction point to the concept being understood in a variety of ways, some pertaining primarily to the affective state (positive affects compared to negative affects), whereas other encompass a broader domain of behaviors (e.g. autonomy, personal mastery, positive interpersonal relations) and motivation (Ryff, 1989; Taris & Schaufeli, 2015). Being employed has in itself been deemed as an important factor associated with individual satisfaction (Helliwell & Putnam, 2004), and thus the concept of satisfaction and how it´s understood is something which has caught the interest of researchers, especially in working contexts (Taris & Schaufeli, 2015). We follow the compelling definitions of Hackman (2002) and consider a more multidimensional approach, incorporating both the affective and non-affective aspects of satisfaction – namely learning, growth and motivation.

Clearly satisfaction relates to a wide range of concepts, and thus holds the potential to be impacted by several factors concerning the interdependently processes and states emerging within a management team – one of them being psychological safety.

The aforementioned studies have already displayed psychological safety´s influence on team members learning, and how this consequentially could lead to better performing teams (Edmondson, 1999; Edmondson et al., 2001; Edmondson & Lei, 2014). We consider the willingness to engage in informational exchange, speaking one´s mind, voicing concern etc. related to perceived psychological safe environments, to be behaviors potentially leading to individual learning and growth. Additionally, research on satisfaction has suggested that employees who perceive lower risk in making mistakes are more likely to be satisfied with their work (Hackman & Oldham, 1976). Similarly, when an employee feels the environment to be sufficiently safe, they are also more likely to commit to their work, and thus psychological safety holds the potential to result in higher levels of job-commitment (Detert & Burris, 2007; Frazier et al., 2017; O'Neill & Arendt, 2008). Overall psychological safety seemingly impacts both affective and non-affective states in individuals perceived satisfaction.

H1a: Psychological safety is positively related to task performance

H1b: Psychological safety is positively related to individual satisfaction

Behavioral integration

Past research on behavioral integration

The concept of behavioral integration results from a long lineage of research trying to identify the processes associated with highly functioning teams and organizations. Previous research on variables predicting top management team performance, directed much of its attention towards demographic variables explaining outcomes (Pfeffer, 1981, 1983), appealing in the fact that one only needed demographic predictors and outcome variables in answering their hypotheses. These attributes were focused on an aggregated level, rather than individual, proposing that they would impact behavior independently of the attributes residing on the individual level (cognitions, attitudes, values etc.). Harsh critique was later raised, pointing to the approach having serious limitations, namely in what Lawrence (1997) referred to as a "black box"-problem. She argued that emphasizing prediction over explanation, thus ignoring more subjective concepts, risked leaving out numerous interpretations of the relationship between

outcomes and the demographic predictors. Lawrence argued that this research had ultimately failed to consider these crucial intervening processes, further criticizing that subjective concepts in general had been left "unmeasured and untested" (Lawrence, 1997, p. 2).

Whilst researchers sought to fill in the gap of the black box, trying to specify these intervening mechanisms by pointing to single dimensions like communication frequency (Smith et al., 1994), social integration (Smith et al., 1994), collaboration (Boone & Hendriks, 2009), interdependence (Michel & Hambrick, 1992) etc., Hambrick (1994) devised a more inclusive construct encompassing the complexities of management team interaction processes that could not be easily captured by any single process dimension. Behavioral integration refers to "the degree to which the group engages in mutual and collective interaction" (Hambrick, 1994, p. 188). It incorporates one social and two task dimensions, namely (1) the level of collaborative behavior between members and the (2) quality and quantity (speed, accuracy and richness) of information exchange and (3) joint decision-making (Hambrick, 1995).

Following this line of thought, the extent to which a team is fully integrated is gauged by those three components. This discerns it from what following researchers (Kozlowski & Bell, 2003) deemed as mere work groups, where members simply acted in parallel on relatively discrete tasks. Evidently a management team is considered well integrated when it has a wholeness or unity of effort, where sharing vital information, partaking in collective decision-making and close collaboration is paramount to achieving this. Behavioral integration thus, with its inclusion of several intervening processes focusing on a more multidimensional approach, renders a greater understanding of the dynamics within a management team than accounted for by distal demographic predictors or single process dimensions.

The multidimensional rationale of behavioral integration has been acknowledged by later research (Simsek et al., 2005), where empirical findings has associated behavioral integration with e.g. employee work outcomes (Raes et al., 2013), teams´ decision quality (Carmeli & Schaubroeck, 2006) and negatively to team affective conflicts (Mooney & Sonnenfeld, 2001).

Antecedents for behavioral integration

What stimulates management teams to become behavioral integrated? What makes them more susceptible to engage in open information exchange and collaboratively based decision-making? Simsek et al. (2005) tried to work out some of the antecedents shaping behavioral

integrated teams, by conducting a multilevel analysis, using data from 402 firms. Their findings include several multilevel determinants, such as CEO tenure, size of management team, team level educational diversity and firm performance (Simsek et al., 2005). Other researchers focused primarily on CEO influence and leaders´ expectations and supportive behaviors to facilitate integration (Carmeli & Waldman, 2010; Ling et al., 2008), whilst Carmeli and Shteigman (2010) applied a social identity perspective. They build on the concept of social identification processes and shifts the perspective from it as an individual phenomenon and argue for *collective team identification* (Van Der Vegt & Bunderson, 2005), treating it as a group-level phenomenon. Collective team identification refers to members´ shared sense of identification with a work group, and the "emotional significance that members of a given group attach to their membership in that group" (Van Der Vegt & Bunderson, 2005, p. 533). Thus, acknowledging both cognitive, evaluative and emotional aspects of identification, in line with traditional social identity theorists. It is a shared sense of identification held by those in the management team.

How is this meant to facilitate collaborative interactions and informational exchange in management teams? Carmeli and Shteigman (2010) leaned on Turner (1999) in that social identity is the cognitive mechanism that facilitates group behavior, and proposed that when a team develop strong identification, "they redefine the self as *'we'* rather than *'I'* and share common ground" (p. 327). They posit that "members are likely to value and work for a collective purpose rather than their individual interests when a strong collective identification emerges" (p. 321). This can make members more inclined to engage in collaborative behavior, joint decision-making and informational exchange. Their findings support this, showing that collective team identification indeed facilitates behavioral integration. By providing insights into the underlying mechanisms in a management teams´ dynamics, through social identity theory, their findings also entertains and supports the notion that identification forms a motivation to engage in a given task (Foote, 1951).

Relationship between behavioral integration and team effectiveness

Indeed, there has been some empirical findings of outcomes linked to behavioral integration. Carmeli (2008) found that top management teams engaging in mutual and collaborative interaction do have a positive impact on firm performance levels. In addition, Carmeli and Halevi (2009) showed how processes of behavioral integration within the

management team shape more competent organizations, and Carmeli and Schaubroeck (2006) found behavioral integration to be negatively associated with organizational decline. Thus, focusing more on the overreaching outcomes of the organization, rather than the dynamic behaviors within and the resulting outcomes of the management team.

Carmeli and Schaubroeck (2006), in the same study, also concluded that behavioral integrated management teams were perceived to reach better quality strategic decisions than those perceived to be less behaviorally integrated. Mooney and Sonnenfeld (2001) investigated behavioral integration´s association with team affective conflicts, considered to be more dysfunctional in the decision context of the management team, and found them to be negatively correlated with each other. Hambrick (1998) also found that deficient performance was a result of poor behavioral integration leading to ineffective group decision processes in a medical product company led by a top management team. Additionally, Marks et al. (2000) concluded their findings with interactions reflective of behavioral integration being strongly related to decision-making processes (performance), especially when the team embarked upon novel situations with high task difficulty. Overall, this is indicative of behavioral integration´s association with similar behaviors making up task performance (*task results, decision quality*).

Though there are some findings regarding behavioral integration´s impact on employee outcome, in e.g. how management teams´ influence others outside the team, leading to employee´s individual satisfaction (Raes et al., 2013), there is rather scarce research concerning these individual effects on the members within. Some research shows that joint decision-making, a task-related construct of behavioral integration, could increase motivation, job satisfaction and commitment (Anderson & McDaniel Jr, 1999; Pearson & Duffy, 1999 as cited in Carmeli & Halvevi, 2009). We therefore posit that there is a positive association between management team members of behavioral integrated teams and their individual satisfaction.

H2a: Behavioral integration is positively associated with task performance
H2b: Behavioral integration is positively associated with individual satisfaction

Psychological safety as possible antecedent for behavioral integration

Compiling Edmondson´s research on psychological safety (Edmondson & Lei, 2014), combined with such as Simon and Peterson´s (2000) findings on trust (conceptually similar to psychological safety), and its pivotal role in group process, could be indicative for an

association between psychological safety and behavioral integration. Furthermore, psychological safety is documented to create a context in which it is easier to collaborate (Nembhard & Edmondson, 2011). A central theme of this research line is how psychological safety facilitates the willing contribution of ideas and actions, leading to behaviors such as sharing of information and knowledge between employees (Collins & Smith, 2006; Edmondson & Lei, 2014; Siemsen et al., 2009). Those team members perceiving high psychological safety are more inclined to engage in such interpersonal risk behaviors, thus focusing less on self-protection and more on the team as a whole. In sum psychological safety is likely to affect the way members interact with each other (Edmondson, 1999).

The resulting collaborative tendency of psychological safe environments will thus seemingly account for some of the integral parts in behavioral integration (*collaborative behavior, joint decision-making and information exchange*). Empirical research on both individual and group levels have found psychological safety to be positively related to sharing of information (Bunderson & Boumgarden, 2010; Siemsen et al., 2009), providing an environment in which collaboration and feedback seeking is accepted and encouraged (Nembhard & Edmondson, 2011). Thus, we posit there will be a positive relationship between psychological safety and behavioral integration.

H3: Psychological safety is positively associated with behavioral integration

Behavioral integration as a mediator between psychological safety and team effectiveness

To this day there is still much to be uncovered regarding under what conditions positive dynamics within the management team are being built, namely what could enable constructive processes. Carmeli (2008) points to the fact that neither does behavioral integration alone encompass "basic elements that make for positive interpersonal relationships such as respectful engagement, trust and task enabling, nor does it address the emotional space in which people flourish (…)" (p. 729). Indeed though, psychological safety seems to represent such conditions where members feel comfortable in expressing themselves, and thus make way for information sharing and collaborative behavior to occur. One could also surmise from these safe environments that they would aid people engaging in more joint decision-making, and thus, strengthening a potential association between the two. Could it be that psychological safety

enable teams to become more behavioral integrated, and thus contribute to better decision-making and individual satisfaction amongst team members?

Psychological safety and behavioral integration have both respectively been associated with team effectiveness. In addition, some studies have also looked at other factors potentially enabled by psychological safety, and how they mediate its impact on team effectiveness. For instance, Edmondson´s (1999) conclusions indicated how psychological safe environment could enable learning, and how this could be a factor that contributed to team effectiveness. Later, Bilstad (2016) found that dialogue had a mediating role in psychological safety´s association with team effectiveness. Even though dialogue and learning has been found to mediate this relationship, we speculate anther mechanism, namely behavioral integration, to hold the same function. Hambrick (1994) postulated that management teams are subject to forces driving members apart – such as competing goals and interests, and that these forces hamper the team from becoming a collaborative and coordinated unit. If a management team was to operate as an integrated whole, it must support forces driving members together to behave as a real team. It is our hypothesis that psychological safety could act as one of those forces.

> *H4a: Behavioral integration mediates the relationship between psychological safety and task performance*
> *H4b: Behavioral integration mediates the relationship between psychological safety and individual satisfaction*

Method

Procedure, design, and sample

This study uses self-report data collected through a questionnaire called *effect*. The questionnaire is based on research described in the book *Effective Management Teams and Organizational Behavior: A Research-based Model for Team Development* (Bang & Midelfart, 2021), measuring several aspects of management team effectiveness and functioning. The management teams responding to the *effect*-questionnaire was either a part of a development program designed for management teams or part of an assessment of how such teams in various Norwegian companies operate.

The sample of management teams used in this study comprised a total of 1150 leaders pertaining to 160 management teams from Norway, with a gender distribution of 50,1 % being

male respondents and 49,9 % female. The data was collected from first-time respondents answering the questionnaire from March 2017 until October 2019. The tenure distribution of the respondents was categorized as follows: less than one year (23,6%), 1-2 years (27,4%), 3-4 years (18,7%) and longer than 5 years (30,3%).

The teams participating were classified according to their organizational levels: top management teams (50,4%), middle management teams (31,9%) and lower-level management teams (17.7%). The sector distribution of the respondents was grouped to one of the following sectors: governmental or municipal sector (43%), and private sector or public enterprises representing the remaining 57%. Finally, team size varied from 3 to 19 members. The majority of these teams consisted of 5 to 8 members, and the average team size was seven members.

Measures

The questionnaire *effect* consists of 24 variables measured by 99 items, all attempting to capture different aspects of a management team's effectiveness. These 24 variables are divided into the following four main construct categories: input factors, process factors, emergent states and output factors (Bang & Midelfart, 2021). The four variables included in this study are psychological safety, behavioral integration and the two performance measures; task performance and individual satisfaction (see Appendix for more information on all items belonging to the respective variables). Each variable consisted of 4 to 7 items, where the responding participants rated their management team on a 7-point Likert scale. Their agreement to each question answered ranged from 1 (*strongly disagree)* to 7 *(strongly agree*). In addition, items could be scored as "do not know/not applicable".

The variables measured in *effect* have not been selected because of the assumption that they are independent of each other, but due to the fact that several empirical studies have proven them to be robust predictors or indicators of team effectiveness in management teams (Bang & Midelfart, 2021). Thus, the scale's inventory might correlate with other scales, and this can be regarded as natural and expected due to the theoretical basis of the concept they are intended to measure. The individual scores on measures included in this study were aggregated from individual to team level data.

Reliability. Reliability was estimated for all scales. Cronbach alpha is a general measure for the internal reliability of multiple items, assessing the consistency for the entire scale (Field, 2018). An acceptable threshold for internal consistency is commonly set at .70 (Field, 2018; Nunnally, 1978). Values "substantially lower indicate an unreliable scale" (Field, 2018, p.

1045). All Cronbach alpha-values for the scales in this study are .70 or higher (α ≥ .70) (see Table 3).

Variables of the study

Task performance. Task performance was operationalized and based on the work of Bang and Midelfart (2017) and measures the extent to which "the results produced by the team make a significant and positive contribution to the success of the organization – in other words that the results create substantial added value for the organization"(p. 336). Task performance constitutes the direction, alignment and commitment a management team creates, as well as the high-quality decisions it makes. This is measured through the participants' response to seven items (see Appendix). Reliability was estimated at α = .92.

Individual satisfaction. The individual satisfaction measure is defined as the extent to which a "team contributes to the individual member's well-being, motivation, learning and growth" (Bang & Midelfart, 2017, p. 337). This scale is based on Hackman's concept of team member satisfaction (2002) and Wageman et al. 's (2008) conceptualization of individual well-being and growth. The scale consisted of five items (see Appendix). Reliability estimated at α = .86.

Behavioral integration. The scale of behavioral integration builds on the work of Hambrick (1994, 1995) and Carmeli and colleagues (Carmeli, 2008; Carmeli & Schaubroeck, 2006; Simsek et al., 2005). This is operationalized as the extent to which team members perceive their management team engaging in the sharing of relevant information and resources, feeling mutually responsible for the decisions being made, helping each other solve problems and understanding each other's needs and issues. The scale consists of five items (see Appendix). Reliability on these items was estimated at α = .82.

Psychological safety. The psychological safety measure was based on the work of Amy Edmondson (Edmondson, 1999; Edmondson & Lei, 2014; Edmondson, 2018), measuring if it is perceived as safe to raise issues, express uncertainty and ask for help in the management team. This measure originally consisted of five items, but due to cross-loadings one of the five items was deleted (see Table 2). The four items reliability was estimated at α = .90.

To ensure that behavioral integration and psychological safety will be distinct and represent separate concepts, a principal component analysis (PCA) was conducted on the 9 items measuring these two variables, using oblique rotation (direct oblimin). PCA is a multivariate technique for identifying the linear components of a set of variables (Fields, 2018).

The groups of items retained for the PCA are indicated in Table 1. One item in the rotated factor matrix cross-loaded on more than one factor. Item 3: *"It is easy to ask other management team members for help."* measured at -.37 on psychological safety, also loads on behavioral integration at .39. Tabachnick and colleagues (2007) suggest in their renowned textbook on multivariate statistics, that a minimum loading of an item at .32 is as good rule of thumb ,when considering if an item is to be dropped from further analysis. This equates to approximately 10% overlapping variance with the other items in that factor (Costello & Osborne, 2005).

Furthermore, it is suggested to employ an alternative rotation method, to see if the cross-loading persists in another rotation method and thus define a simpler structure (Costello & Osborne, 2005). An orthogonal rotation produced results nearly identical to the oblique rotation when using the same extraction method. There is a cross loading that loads higher than .32 on the two variables psychological safety and behavioral integration that persist through different rotations. Hair et al. (2018) suggests when such cross-loadings persist, as is the case for this item, it becomes a candidate for deletion. Thus, it could be argued that item 3, pertaining to the scale of psychological safety, could be removed due to its cross loadings. This item, if included, could be a potential source of multicollinearity between the variables in our study. As outlined in Table 2, item 3 is removed from the analysis.

Table 1

Results from a principal component analysis of the effect-inventory

Items from *effect*[a]	Factor loading	
	1	2
Factor 1: Behavioral integration		
Item 3	.83	
Item 4	.78	
Item 2	.68	
Item 5	.61	
Item 1	.49	
Factor 2: Psychological safety		
Item 3	.39	-.37
Item 4		-.92
Item 2		-.86
Item 5		-.77
Item 1		-.73

Note. N = 1150. The extraction method was principal component analysis with an oblique

(Direct Oblimin with Kaiser Normalization) rotation.

[a] All items can be found in Appendix.

Table 2

Results from a principal component analysis of the effect-inventory after removing item 3

Items from *effect*	Factor loading	
	1	2
Factor 1: Behavioral integration		
Item 3	.82	
Item 4	.78	
Item 2	.74	
Item 5	.57	
Item 1	.54	
Factor 2: Psychological safety		
Item 4		-.92
Item 2		-.87
Item 5		-.76
Item 1		-.74

Note. N = 1150. The extraction method was principal component analysis with an oblique

(Direct Oblimin with Kaiser Normalization) rotation. See Table 1.

Aggregation

This study's aim is to infer different group phenomena in management teams. Our data is obtained through the collection of individual responses to a questionnaire; thus, aggregation of data is necessary. The questionnaire is designed in such a way that each item is framed to represent questions pertaining to team level phenomenon. Respondents were asked to rate statements worded as observers of the team, e.g., item four in the scale of team performance: *"The management team ensures that goals and processes are coordinated and consistent.",* and item two on the scale measuring behavioral integration: "*The members of the management group have a clear understanding of each other's issues and needs*". This ensures the observations perceived by the individual to be situated at a team level. The process of aggregation offers the opportunity for the individual team member´s response to be merged with other members and analyzed at a team level. Accordingly, whether the rater observations are similar enough and applicable to represent a homogenous whole (Kozlowski & Klein, 2000), thus reflecting a group phenomenon, is a legitimate issue at hand. To justify whether it is meaningful to initiate this process converting individual responses by aggregation, yielding team level data, we conduct analysis of interrater agreement (r_{WG}) and interrater reliability (intraclass correlation coefficient (ICC)) (Biemann et al., 2012; LeBreton & Senter, 2008)

Interrater agreement

The average within-group rater agreement (r_{WG}) is a measure of agreement between group members, and in this study pertaining to their response to each item compromising the variable in question. R_{WG} quantifies the extent to which multiple judges' ratings are interchangeable due to their absolute similarity (Biemann et al., 2012). It assesses this agreement by comparing the observed variance from multiple raters "to the variance expected when there is complete lack of agreement among raters (i.e., random responding)" (Biemann et al., 2012, p. 6). It is thus central to obtain justifiable within-group-agreement, through the r_{WG}, for us to infer the group mean as reflective of a group phenomenon.

There has been a debate as to what ought to constitute the acceptable level of agreement, and thus a tolerable threshold level for the r_{WG} (Lance et al., 2006). One favorable view is to consider the threshold level on a continuum agreement scale ranging from .00-1.00, where .00-.30 equals "lack of agreement", .31-.50 = "weak agreement", .51-.70 = "moderate agreement, .71-.90 = "strong agreement" and .91-1.00 = "very strong agreement" (Biemann et al., 2012;

LeBreton & Senter, 2008). Biemann et al. (2012) argue that one should consider the type of research at hand before analyzing and setting the final cut-off points of the r_{WG}. Due to the nature of the phenomena being studied, it is reasonable to expect that some variance between the different respondents' perceptions will occur, when assessing the team processes and outcome variables. In studies researching general trends across multiple teams, it has been argued that it would be sufficient to obtain a moderate agreement between individual respondents (Biemann et al., 2012), reflecting a cut-off point at .50 = "moderate agreement".

Although excluding teams exhibiting a low level of within-agreement seems like a preferable option, Biemann et al. (2012) advise against this. He argues that the study risks losing statistical power, and that the variance observed may in fact be valuable and originate from natural dissimilarities, rather than measurement error. Several approaches have been proposed to mitigate the risk of groups with low level within-agreement imposing a threat to the analyses conducted. LeBreton and Senter (2008) offers one approach, encouraging researchers to calculate the respective r_{WG}s for all groups included in the study. An examination of the percentage of groups exceeding a cut-off of .70 should be conducted, and if a high percentage is found, one should include the low-level groups. Conducting such an analysis, using this approach, the interrater agreement mean (mean r_{WG}) should be above cut-off point, which in this study is set at .50 (moderate agreement). Table 3 shows a r_{WG} mean for our groups exceeding the cut-off point at .50 for all the included variables, with a high percentage of the r_{WG} group values also surpassing this threshold (ranging from 76,9 % to 86, 9%).

Interrater reliability

Another analysis conducted to justify aggregation of our data, estimating the reliability between team member scores and management team scores, is the intraclass coefficient correlation (ICC (2)). It takes into account the variance occurring within each group and between each group responding to the variable in question, and is often interpreted "as the proportion of observed variance in ratings that is due to systematic between-targets differences compared to the total variance in ratings" (LeBreton & Senter, 2008, p. 822). By examining this proportion of scores attributed to between-team variance compared to what is attributed to variance within-team scores, it provides a valuable measure indicating how meaningful it would be to aggregate scores from individual level to team level.

Furthermore, generating a sensible cut-off score for the ICC (2) has been a topic of discussion. As Lebreton et al. (2003) found in their research, reported values of ICC (2) tend to be lower in the domain pertaining to organizational research. They suggest this is due to restrictions within measures of certain variables, rather than individuals differing on their response to the same phenomenon. Akin to the r_{WG}, Biemann et al. (2012) encourages setting a cut-off point suitable for the specific nature of the research domain and study context. Moreover, in their guidelines for selecting intraclass coefficients for reliability research, Koo and Li (2016) argues for a general guideline of "values between 0.5 and 0.75 indicate moderate reliability and values between 0.75 indicate good reliability and values greater than 0.90 indicate excellent reliability"(Koo & Li, 2016, p. 161). A high ICC (2) level represents a high between-team variance and a low within-team variance. We apply a cut-off point at .5, setting a moderate level of agreement for all our measures for the ICC (2) values. The ICC (2) values in this study ranges from .68-.73.

Table 3

Cronbach´s alpha, mean r_{WG}, r_{WG}-percentage, ICC(2) for all scales

Variable	Alpha	r_{WG}	r_{WG} %[b]	ICC(2)
Psychological safety	.90	.68	76.9	.67
Behavioral integration	.82	.73	83.1	.68
IS[a]	.86	.75	86.9	.71
Task performance	.92	.68	76.9	.73

[a]*Individual satisfaction*

[b] *Percentage of teams with an r_{WG}-value >.50*
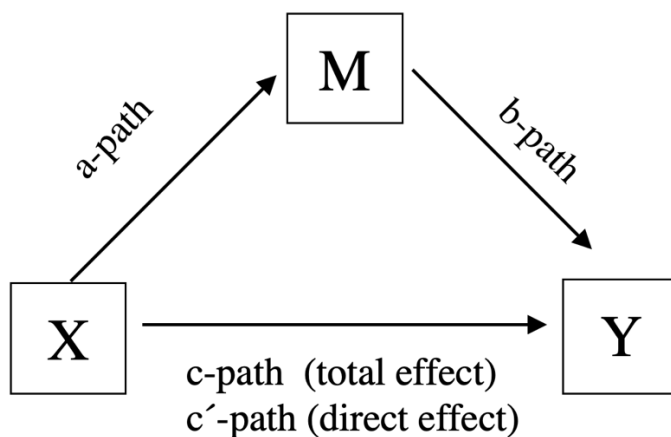
Data analysis

All statistical analysis in this study was performed in SPSS (27th ed.). We conducted correlation analysis for *H1*, *H2* and *H3*. Linear regression analysis with the macro PROCESS written by Andrew F. Hayes (2017) was used for our model estimation of hypothesis 4a and 4b. PROCESS provides the regression coefficients in a simple mediation model, and bootstrap confidence interval for inference of the indirect effects´ statistical significance (Hayes, 2017). Bootstrapping is a statistical method of simulation that aims to create a sample distribution by repeatedly resampling a single data set, in this case the indirect effects, as a means to mimic the original sampling process (Hayes, 2017). The indirect effect of X on Y through M is the product of *path a* multiplied with *path b* (see Figure 1). A bootstrap confidence interval for the indirect

effect (ab) is generated after "randomly resampling *n*-cases from the data with replacement, where *n* is the original sample size in the study, and estimating the model and resulting indirect effect *ab* in this bootstrap sample" (Hayes & Rockwood, 2017, p. 6). A bootstrap confidence interval of 95 % has two endpoints, an upper limit (ULCI) and a lower limit (LLCI). The true value of an indirect effect resides with 95 % certainty between these endpoints in our bootstrap sample (Field, 2018).

An indirect effect is statistically significant when the values between the upper (ULCI) and lower limits (LLCI) of the bootstrap interval do not straddle zero (Hayes & Rockwood, 2017). The procedure of resampling is often repeated thousands of times. In this study we ran 5000 bootstraps. This allows us to generate a sound empirical representation of the sampling distribution of the indirect effect. This computation is argued to be one of the more valid and powerful methods for testing intervening variable effects in simulation research (MacKinnon et al., 2004; Williams & MacKinnon, 2008), and is considered adequate to support a claim of an indirect effect of X on Y, mediated through M, if the indirect effect proves statistically significant (Hayes, 2017). Figure 1 is a visual depiction of a simple mediation model. The relationship between *X* and *Y* is denoted by *c* (total effect), whereas *c´* (direct effect), concerns the relationship between these variables when controlled for by the mediator (M). Another way of calculating the indirect effect is to subtract the *c´* from the total effect *c* (Hayes, 2017).

Figure 1

A conceptual diagram of a simple mediation model

Control Variables

Becker and colleagues (2016) argue that there must be a clear and defensible purpose when including control variables in further analysis, with several researchers stating that the basis for inclusion should lie in theory (Becker, 2005; Bernerth et al., 2018; Breaugh, 2006). When lacking such a convincing rationale of justification, this should result in the exclusion of these variables (Becker et al., 2016).

Management team level (MTL). Data was collected from management teams at different levels in the organizational hierarchy. Floyd and Lane (2000) propose that management teams pertaining to different levels (top-, middle and lower level) are inherently different in their ways of processing information. Depending on level allocation, it is argued that management teams process unique types of information and engage in different forms of behaviors, and thus there could be a distinctive form of motivation based on level allocation.

Top management teams, due to their vital role in the organization, might be more motivated to set direction, make good decisions and be effective (Floyd & Lane, 2000; Wiersema & Bantel, 1992). Middle management teams on the other hand, is argued to have a role of conveying information from the top to the operating level (lower-level management teams), whilst the latter primarily reacts to information e.g. from top level and feedback from the market their products addresses (Floyd & Lane, 2000). Additionally, top management teams have the tendency to consist of more competitive, individualistic and ambitious managers (Hambrick, 1994; Katzenbach, 1998), potentially having less time tending to interpersonal relationships and pressing members to be highly effective.

Thus, considering these combined differences in characteristics and the information being processed within each management team, it is reasonable to assume that this could impact team dynamics and performance. Accordingly, MTL could potentially influence both psychological safety and behavioral integration, in addition to the performance measures included in our study. Level was measured using an ordinal scale with items ranging from 1-3, with 1 referring to the top management team, 2 to the team directly below the top management team and level 3 being a team ranking lower than the former in this organizational hierarchy. Hence, MTL is suitable for further analysis and subsequently considered if it ought to be included as a control variable.

Team size. Previous research has argued for a team potentially experiencing reduced productivity based on the number of members it holds (Forsyth, 2018). Steiner (1972 as cited in Forsyth, 2018) referred to this phenomenon as process loss, meaning a reduction in the

performance due to "action, operations or dynamics" that prevent the group from reaching its full potential (Forsyth, 2018, p. 320). This follows Max Ringelmann´s (1913 as cited in Forsyth, 2018) earlier findings of the tendency of people becoming less productive when they work with others, and that this loss of efficiency increases as the size of the group increases. Team size itself could also potentially be a source of confrontations, large group effects and logistical issues, such as finding enough physical space and time to meet (Katzenbach & Smith, 1993). Depending on factors such as a team's purpose and type of tasks, optimal team size will vary. Wageman et al. (2008) suggested that the best management team typically consisted of no more than eight members.

Moreover, in his study of 215 Scandinavian management teams Espedalen (2016) found a significant and negative relationship between team size and team performance, with Midthaug (2017) later replicating these findings. In addition, Midthaug (2017) found a negative correlation between psychological safety and team size. Thus, larger teams tend to exhibit lower levels of psychological safety, with both seemingly having detrimental effects on the overall performance in a management team. Thus, team size could affect both our proposed mediator in psychological safety and the outcome variables task performance and individual satisfaction. In the present sample our management teams ranged in size from 3 to 19 members. Thus, we will include team size in our further analysis, and subsequently consider its inclusion as a potential control variable.

Results

Main Analysis

Means, standard deviations and bivariate correlations are presented in the table below. To examine the potential impact of the control variables management team level and team size, a correlation analysis was performed including all variables in the study. As reported in the bivariate correlation matrix (Table 4), management team level showed a significant association with the two outcome variables. The correlations for the outcome variables were measured at -.16 (task performance) and -.17 (individual satisfaction). We also found team size to be correlated with the mediator behavioral integration at -.20. Due to the significance of the correlations, management team level and team size are included as control variables in the subsequent regression and bootstrap analysis.

Table 4

Means, standard deviation and bivariate correlations for all variables. N = *160*

Variable	Mean	SD	1	2	3	4	5	6
1. PS$_a$	5.44	.68	-					
2. BI$_b$	5.10	.63	.68**	-				
3. IS$_c$	5.23	.63	.70**	.76**	-			
4. TP$_d$	4.88	.66	.51**	.77**	.80**	-		
5. MTL$_e$	1.74	.79	.05	-12	-.17*	-.16*	-	
6. TS$_f$	7.19	2.71	-.11	-.20*	-.12	-.04	-.22**	-

^{a} *Psychological safety* ^{b}*Behavioral integration*

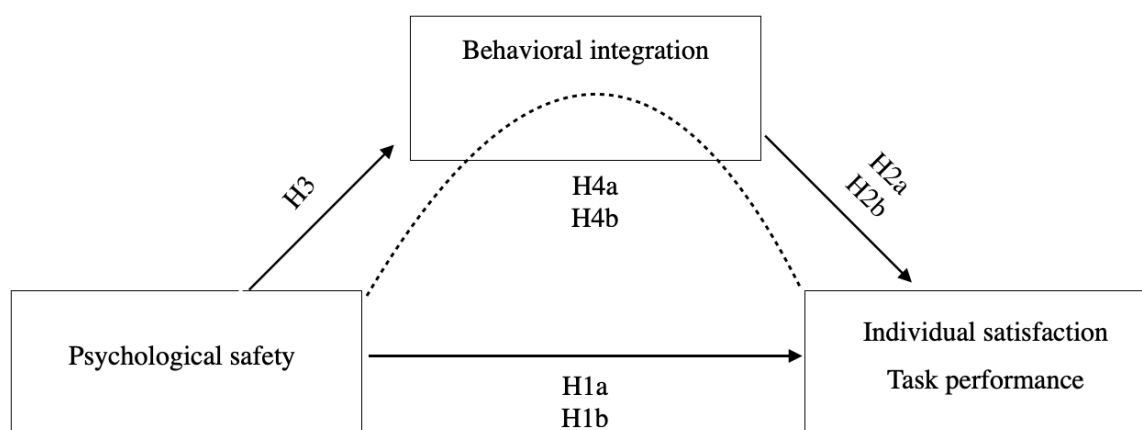^{c} *Individual satisfaction* ^{d} *Task performance*

^{e}*Management team level* ^{f}*Team size*

** *Correlation significant at the .01 level*

* *Correlation significant at the .05 level*

Figure 2

A conceptual model

Note. This model depicts all our hypotheses and the relationship between the included variables
in our study.

H1: Hypothesis 1a and 1b (see Figure 2) predicted a positive relationship between psychological safety and the two outcome variables: task performance and individual satisfaction. Analyses showed that there was a significant positive bivariate correlation between psychological safety and the two measures of team performance. There was a positive correlation between psychological safety and task performance ($r = .51, p \leq .01$), and between psychological safety and individual satisfaction ($r = .70, p \leq .01$). When controlling for team size and MTL, as shown in Table 5, the partial correlations were almost similar to the bivariate ones, and psychological safety was still positively correlated with task performance ($r = .51, p \leq .01$) and with individual satisfaction ($r = .72, p \leq .01$). Hypothesis 1a and 1b were therefore supported.

H2: Hypothesis 2a and 2b (see Figure 2) predicted that there is a positive relationship between behavioral integration and the two outcome variables: task performance and individual satisfaction. There was a positive bivariate correlation between behavioral integration and task performance ($r = .77, p \leq .01$), and between behavioral integration and individual satisfaction ($r = .76, p \leq .01$). When controlling for team size and MTL, as shown in Table 5, the partial correlations were marginally lower than the bivariate ones, and behavioral integration was still positively correlated with task performance ($r = .76, p \leq .01$) and with individual satisfaction ($r = .75, p \leq .01$). Hypothesis 2a and 2b were therefore supported.

H3: Hypothesis 3 (see Figure 2) predicted a positive relationship between psychological safety and behavioral integration. Analyses showed that there was a significant positive bivariate correlation between psychological safety and behavioral integration ($r = .68, p \leq .01$). When controlling for MTL and team size, as shown in Table 5, the partial correlations were marginally lower than the bivariate ones, and psychological safety was still positively correlated with behavioral integration ($r = .67, p \leq .01$). Hypothesis 3 was therefore supported.

Table 5

Means, standard deviation and partial correlations for variables in H1, H2 and H3 controlled for team size and management team level. N = 160

Variable	Mean	SD	1	2	3	4
1. PS_a	5.44	.68	-			
2. BI_b	5.10	.63	.67**	-		
3. IS_c	5.23	.63	.72**	.75**	-	
4. TP_d	4.88	.66	.51**	.76**	-	-

^{a} *Psychological safety* ^{b}*Behavioral integration*

^{c} *Individual satisfaction* ^{d} *Task performance*

** *Correlation significant at the .01 level*

Mediation analysis. Hypothesis 4a and 4b (see Figure 2) predicted that behavioral integration mediates the relationship between psychological safety and the two outcome variables: task performance and individual satisfaction. Results were found from a simple mediation analysis conducted using ordinary least squares path analysis in PROCESS by Hayes (2017).

H4: In a model with behavioral integration as the mediator, we found a significant indirect effect (IE) of psychological safety on task performance through behavioral integration (*IE* = .51, 95%Cl[.3683-.6872]). There was also significant indirect effect of *p*sychological safety on individual satisfaction through behavioral integration (*IE* = .33, 95%Cl[.2270-.4526]) (see Table 6). When controlling for team size and MTL, as shown in Table 7, the indirect effect of psychological safety on task performance through behavioral integration was marginally lower but significant (*IE* = .50, 95%Cl[.3573-.6684]). When controlling for team size and MTL the indirect effect of psychological safety on individual satisfaction through behavioral integration was marginally lower but significant (*IE* =.30, 95%Cl[.2014-.4220]). All indirect effects were entirely above zero when conducting bootstrapping at the 95% confidence interval for the indirect effect, based on 5000 boot samples. Hypothesis 4a and b was therefore supported.

There was a weak and non-significant direct effect of psychological safety on task performance (*B* = -.01, ns) and on individual satisfaction we found a positive significant direct

effect ($B = .32$, $p \leq .01$, 95%Cl [.2016-.4368]). When controlling for team size and MTL, there was still a weak and non-significant direct effect of psychological safety on task performance ($B = -.01$, ns) and on individual satisfaction we found a marginally higher positive significant direct effect ($B = .35$, $p \leq .01$, 95%Cl[.2016-.4368]). Also note that B as provided by the bootstrap analysis, represents the unstandardized regression coefficient.

The results from PROCESS by Hayes (2017) are presented in Table 6 and 7.

Table 6

Indirect effects and Bootstrap results

	Estimate	SE	95% CI	
			LL	UL
Indirect effect of psychological safety on task performance	.51	.08	37	.69
Indirect effect of psychological safety on individual satisfaction	.33	.06	.23	.45

Note. Standard errors and confidence intervals estimated by 5000 bootstrap replications.

CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

Table 7

Indirect effects and Bootstrap results controlled for team size and management team level

	Estimate	SE	95% CI	
			LL	UL
Indirect effect of psychological safety on task performance	.50	.08	.36	.67
Indirect effect of psychological safety on individual satisfaction	.30	.06	.20	.42

Note. Standard errors and confidence intervals estimated by 5000 bootstrap replications.

CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

Discussion

This study explores the relationship between psychological safety, behavioral integration, and team effectiveness in management teams. Prior research has recognized psychological safety and behavioral integration as playing influential roles in the performance of teams. Overall, our results highlight their importance in doing so, both on a team performance (*task performance*) level and on a personal level (*individual satisfaction*). Our findings thus replicate results from these previous studies (Carmeli & Schaubroeck, 2006; Edmondson, 1999; Edmondson, 2018). Furthermore, we found a significant positive relationship between psychological safety and behavioral integration, and that psychological safety was indirectly related to team effectiveness through behavioral integration.

Theoretical implications

Our study seeks to contribute to the existing literature in several ways. First, our findings extend the prevailing framework of psychological safety, strengthening its empirical support, playing an important part in team performance. Thus, replicating earlier studies in this domain, furthering the concept´s position as a force stimulating positive outcomes for the teams and their members. Additionally, the field of research on psychological safety has previously been occupied by studies conducted in health care units and work team settings (Edmondson, 1999; Edmondson & Lei, 2014; Edmondson, 2018; Nembhard & Edmondson, 2006; O'donovan & McAuliffe, 2020), and rather few specifically aimed at management teams. Thus, our findings add to the existing literature by expanding the applicability of psychological safety and its influence on performance, with positive outcomes also yielded in management teams. Management teams are important in setting goals, direction and offer strategies deemed important for the organization and its overall performance.

Second, our findings contribute to the literature of psychological safety by unfolding its little-known relationship with behavioral integration. As exhibited in our theoretical framework, psychological safety is documented to create a context in which it is easier to collaborate (Nembhard & Edmondson, 2011). It facilitates the willing contribution of ideas and actions, ultimately leading to behaviors such as sharing of information and knowledge between employees (Collins & Smith, 2006; Edmondson & Lei, 2014; Siemsen et al., 2009). Our study is the first to point to a positive relationship between behavioral integration and psychological safety in management teams. Thus, the more team members perceive the climate as safe in

terms of speaking their mind without fear of repercussions, the more they partake in mutual collaboration, information sharing and experience ownership in the decisions being made.

Third, in addition to earlier research, demonstrating dialogue (Bilstad, 2016) and learning (Edmondson, 1999) operating as mediators in the association between psychological safety and team effectiveness, this study introduces a new variable in behavioral integration. By adding a less-proven relationship to our psychological safety and team effectiveness model (behavioral integration as a mediator), we expand this theoretical framework, presenting a new explanatory factor for this observed effect. These findings implicate how psychological safety can enable the level of behavioral integration in management teams, with contributing to both task performance and individual satisfaction. Psychological safety is likely to impact the way team members interact with each other (Edmondson, 1999), being more inclined to engage in interpersonal risk-taking, when feeling psychologically safe to do so. Thus, focusing less on self-protection and more on the team as a whole, seemingly affecting and enabling the ability of teams becoming more integrated and accomplish team effectiveness. Hambrick (1994) postulated that management teams are subject to forces driving members apart – such as competing goals and interests, and that these forces hamper the team from becoming a collaborative and coordinated unit. In line with Hambrick we argue that for a team to become an integrated whole it must support forces steering them towards behaving as a real team. Based on our findings we believe psychological safety to be one of those forces.

Forth, though there are some findings of behavioral integration impacting employees´ individual satisfaction outside a management team (Raes et al., 2013), there is scant research concerning these individual effects on the members within. Our results point to behavioral integrated teams not only being associated with performing better on task-related constructs, but also individuals reporting more satisfaction being part of that management team.

Lastly, the concept of behavioral integration originates from the study of top management teams (Hambrick, 1994). These differ from other management teams in their constellation of the most influential executives situated at the apex of an organization. Our sample consists of management teams at different levels, and thus expand the applicability of behavioral integration´s impact on team performance to management teams at all levels in the organizational hierarchy.

Implications for practice

The research may provide several implications for practice. These findings show that behavioral integration explains some of the impact psychological safety has on performance in management teams, and thus highlights the influential role of psychological safety and its relationship with behavioral integration in creating conditions under which effective management teams seem to thrive. Hambrick (1994) argued how a well-designed and functioning management team is one that is behaviorally integrated, in the sense that it works as a team. Thus, conversely, a management team exhibiting low level of psychological safety, associated with lower levels of behavioral integration, will not.

Our findings should therefore encourage management teams at all levels, and its members, towards becoming more conscious of promoting psychological safety, bearing in mind that this could potentially influence the effectiveness and how integrated a team is. Considering management teams´ central position in an organization, setting directions, offering strategies and engaging in complex decision-making, it is reasonable to think that functioning as a team (behavioral integration) would be key to accomplishing these tasks. And, additionally, that team members feeling safe to speak up, voicing their concerns and not withholding potentially unique and important information, would aid a management team perceiving themselves as one. After inferring these results, it would be advisable to encourage management teams at all levels to nurture those aspects of team engagement and interactions that lead to psychological safe environments.

Facilitating psychological safety

Defined as a "shared belief that the team is safe for interpersonal risk taking" (Edmondson, 1999, p. 354), psychological safety pertains to a property of the collective, describing the interpersonal safety experienced by its members (Edmondson, 2004). It is essential though, to note its temporal importance, with psychological safety only considering the short-term interpersonal consequences of our behavior, thus diverging from constructs such as trust which holds a wider temporal range, enduring into the relatively distant future. Psychological safety is thus considered to be more volatile and fragile, and in need of continuous renewal.

How can management teams facilitate this climate of trust? Team leaders hold a central position in affecting teams´ internal dynamics and climate, with some arguing that more

inclusive leadership is associated with a collective´s perception of higher psychological safety (Hirak et al., 2012; Nembhard & Edmondson, 2006). Leaders can lead by exemplary behaviors and make themselves "approachable and accessible, acknowledge their fallibility" and encourage input from other team members in trying to establish or enhance psychological safety (Edmondson, 2018, p. 169). Team members are most receptive and assessing of the behaviors of leaders, in making out what is expected and acceptable of them in a team (Tyler & Lind, 1992).

Edmondson (2018) argue that today´s leaders need to understand that "people spontaneously set an invisible threshold that governs when they speak up (…)" (p. 196), and that this bar is often set too high at work. Even though leaders are highlighted as potential instigators of creating psychological safe environments, which likely mitigate the risk of setting these thresholds too high, team members could also initiate the same processes. For instance, by asking questions springing from and conveyed with genuine curiosity, one potentially creates "a vacuum that serves as a voice opportunity for someone" (Edmondson, 2018, p. 199).

Moreover, by acknowledging your own faults you signal the acceptance of other members doing the same. Thus, giving each other leeway when framing a task as uncertain and difficult, and not necessarily having any right or wrong answers, could also potentially reduce the reluctance to engage in discussions. This, Edmondson argues, is a form of exercised leadership by its members that could facilitate psychological safe environments for the team. Those interested in more on the subject pertaining to team members as creators of psychological safe environments should consult Edmondson (2018).

Challenges – playing not to lose or playing to win

Do all teams benefit from the effort in facilitating psychological safe environments? As Sanner and Bunderson (2015) proposed, the more contingent a team´s success is on engaging in problem-solving and information-sharing interaction, the more psychological safety functions as an enabling condition in doing so. A management team is interdependent and often requires engagement in such interpersonal activities, compared to tasks of simple cognitive and routinely qualities. A comparison of task-based contingency is outside the scope of this study, but our findings are not conflicting with the assumptions of Sanner and Bunderson (2015).

Can you have too much psychological safety? Some researchers even propose that feeling psychologically safe within a team with members of a certain ethical orientation, could

have the unintended effect of them pushing boundaries of ethical behaviors (Pearsall & Ellis, 2011). They argue that even though members are willing to engage in unethical actions, one must feel safe and comfortable enough to propose this as a possible alternative for the group. Thus, it is important to note that psychological safety in isolation is no guarantee for a team's success. In terms of the possibility of being too much psychological safety within a team, Edmondson (2018) argues that what a team could gain from psychological safety they could lose in lack of discipline. A concern is that if one removes the breaks of those forces favoring silence over voice, fruitful discussions risks being flooded with every unhelpful remark also expressed. Psychological safety is about reducing the interpersonal fear within the team and enabling members to speak up and other factors to have desirable effect on work outcomes, and does not serve the purpose of instilling discipline. Edmondson argues that remaining silent is a self-protective act that "remains a hollow victory" compared to the potential fulfillment one gains by actively participating and being part of a team that achieves its goals (Edmondson, 2018, p. 188). These opposed forces are, in Edmondson´s regard, what separates one playing not to lose and playing to win.

Limitations

There are multiple methodological limitations to be considered. First, being a cross-sectional study, with data at one specific given point in time, and with the same team members evaluating both the predictor and criteria variables, makes it hard to claim causality. We describe the association between psychological safety, behavioral integration and team performance as a causal relationship, but this type of study cannot demonstrate cause and effect (Hayes, 2017). Our data show correlations between variables in this study, but the correlation coefficients give no indication of the direction of causality. We cannot say whether a high psychological safety leads to high behavioral integration, or whether high behavioral integration leads to high psychological safety. There is an underlying methodological bias contingent on the non-established temporal sequence in these studies, which implies that the associations being reported should be cautiously considered.

Second, being based solely on quantitative methods, this provides another potential methodical challenge for our study. A systematic review of literature of psychological safety (Newman et al., 2017) points out the need for alternative methodologies to study psychological safety. In the methodology in existing research there is a skewness towards a quantitative survey methodology, and by considering other alternatives one can gain "a more holistic understanding

as to how psychological safety develops and influences work outcomes." (Newman et al., 2017, p. 531). Longitudinal data collection could provide a stronger theoretical foundation than cross-sectional data. One opportunity is longitudinal research that allows both a better assessment of cause and effect and an examination of changes in psychological safety over time (Edmondson & Lei, 2014).

Third, the variables used in our study are based on the self-reported questionnaire *effect*. This causes a potential methodological challenge because the respondent might be motivated to respond in a socially desirable manner (Podsakoff et al., 2012). Social desirability bias is the tendency of respondents to answer in a way deemed more socially acceptable, doing this to "project a more favorable image of themselves and to avoid negative evaluations" (Lavrakas, 2008, p. 825). We must be aware of the potential social desirability tendency since all variables in this study were self-report and part of the same questionnaire. The results of the *effect*-questionnaire were given as written feedback. Consequently, depending on the size of the management team, the responding individuals might worry about their response being identified. Thus, this could potentially impact their answers.

Lastly, Edmondson and Lei (2014) suggests performing cross-cultural comparisons of relationships between psychological safety and performance outcomes. They point out that in some cultures it could be difficult to ask questions, have a discussion with team members and provide feedback to members of the team. They argue this could be interpreted as rude and inappropriate behavior. The cultural differences mentioned show the importance of studying the association in different cultures. Our study consists of a relatively large sample of 1150 respondents, but they were not randomly assigned and include entirely Norwegian management teams. This opts for future research to replicate this study in other cultures.

Recommendations for future research

Future research should take these limitations into consideration. First, to better understand the association between psychological safety, behavioral integration and team performance, longitudinal data collection could contribute to a stronger theoretical foundation than cross-sectional data. As pointed out by Edmondson and Lei (2014), longitudinal research can examine the changes in psychological safety over time and allow a better assessment of cause and effect. Due to the skewness towards quantitative research conducted on the phenomenon of psychological safety, they argue using hybrid methods, mixing qualitative and quantitative data in future studies.

Second, Edmondson and Lei (2014) points out that one of the further research directions and theoretical opportunities when it comes to psychological safety, is to perform cross-cultural comparisons of relationships between psychological safety and performance outcomes. As discussed in the limitations, all management teams in this study were based in Norway. Thus, we echo these findings where we suggest that our study should be applied in a cross-cultural manner. Additional research is needed to test if our findings could be replicated in and generalized across other cultures.

Third, in our study we have investigated a relationship that has added empirical data to the existing research on psychological safety. We will draw attention to the importance of replicating and further investigating these variables as valid predictors to be done in future team studies. Future research should also keep exploring an even broader range of mediating mechanisms through which psychological safety impacts a management teams' performance.

Conclusion

This study explores whether there is an indirect effect of psychological safety on team effectiveness in management teams, operating through the mediating variable of behavioral integration. Our findings lend support for such an indirect effect. We are the first to point to a mediating effect of behavioral integration in the psychological safety and team effectiveness relationship in management teams. The more team members perceive their climate as safe in terms of speaking their mind without fear of repercussions, the more they partake in mutual collaboration, information sharing and experience ownership in the decisions being made. This is associated with management teams performing better. This implicates psychological safety as a potential enabler of environments where behavioral integrated teams could thrive, and additionally, to some extent explain its impact on team performance in management teams. Thus, pointing to behavioral integration as a possible explanatory mechanism for some of the observed difference in performance between management teams exhibiting high psychological safety and those who do not. This study adds to the existing literature by expanding the applicability of psychological safety and its influence on performance to management teams at all levels in the organizational hierarchy. Based on our findings, we encourage management teams and its members to have a keen focus on fostering psychologically safe environments, bearing in mind how this could impact both how integrated a management team is, having a sense of wholeness or unity of effort (Hambrick, 1995), and its overall performance.

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Appendix

Items for all measures from the questionnaire effect

Measure	Item
Psychological safety	1. It is easy to bring up problems and controversial issues in this management team
	2. It is safe to take a risk in this management team.
	3. It is easy to ask other management team members for help.[a]
	4. It is safe to express your opinions in the management team.
	5. There is room for expressing your uncertainty in the management team.
Behavioral integration	1. All members feel mutually responsible for the decisions the management team makes.
	2. The members of the management team have a clear understanding of each other's issues and needs.
	3. The members of the management team help each other to solve problems.
	4. The members of the management team share relevant information with each other.
	5. The members of the management team share resources with each other.
Task performance	1. We are a high-performance management team.
	2. Our management team adds obvious value to the organization.
	3. Our management team sets a clear direction for the organization/our unit.
	4. Our management team ensures that goals and processes are well coordinated and aligned.
	5. We consistently make high quality decisions in our management team.
	6. The vast majority of decisions made by the management team turn out to be beneficial for the organization.
	7. Those affected by management team decisions are generally very satisfied with our decisions.

Individual satisfaction	1. Being a member of the management team contributes to my learning and professional development.
	2. We give each other emotional support in this management team.
	3. I feel very energized by our management team meetings.
	4. I often get valuable advice and feedback from my colleagues in the management team.
	5. Team members are always given useful input when they raise issues in management team meetings.

[a] This item was removed after principal component analysis, see Table 1 and 2.