8-2018

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SINGAPORE MANAGEMENT UNIVERSITY

2018

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Submitted to the School of Social Sciences in partial fulfilment of the requirements for the
Degree of Master of Philosophy in Psychology

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Abstract

While it has been recognized that mood can exert a substantive influence on an individual's level of creativity, much of the creative needs of organizations today are being fulfilled by brainstorming teams rather than individual employees. As such, researchers have begun to examine the effects of mood on creativity in the context of teams. Existing findings, unfortunately, have not been consistent, such that positive mood has been shown to be beneficial towards team creativity at times (e.g., Grawitch, Munz, Elliott, & Mathis, 2003), while at other times being harmful towards team creativity (e.g., Tsai, Chi, Grandey, & Fung, 2012). Similarly, negative mood has also been shown to benefit team creativity at times (e.g., Jones & Kelly, 2009), while harming team creativity at other times (e.g., Klep, Wisse, & Van der Flier, 2011). To better understand and reconcile such discrepancies, we constructed a dual-process team mood framework by considering past findings pertaining to the team mood-team creativity relationship in relation to the dual team information processing pathways of team creativity (i.e., team generative processing and team information elaboration). Within this framework, we proposed that both positive team mood and negative team mood can lead to increased team creativity, albeit via different means. Specifically, we postulated that positive team mood heightens novelty of ideas generated by facilitating team generative processing, whilst negative team mood heightens novelty of ideas generated by facilitating team information elaboration. Additionally, we postulated that team generative processing increases fluency of ideas (i.e., greater quantity of ideas) while team information elaboration improves the practicality of ideas generated.

An experimental study was conducted on 105 teams (378 participants) to test our proposed dual-process team mood framework of team creativity, where teams were randomly assigned to either a positive, negative, or neutral mood condition. The relevant team moods were experimentally induced via a combination of the established musical mood induction procedure and the Velten mood induction procedure (*see* Albersnagel, 1988). As hypothesized, teams under a positive mood were found to exhibit increased engagement in team generative processing, which consequently led to increased fluency of ideas and novelty of ideas generated. However, contrary to our hypothesis, teams under a negative mood were not found to exhibit increased engagement in team information elaboration, even though team information elaboration levels were found to predict increased novelty of ideas generated. While only partial support was found for our dual-process framework, we believe that our findings and approach represent a major step forward in elucidating the relationship between team mood and team creativity, which would serve both to inform current interventions and guide future studies in this area.

CONTENT

ACKNOWLEDGEMENTS

Chapter 1: Introduction

The continued growth of our knowledge-based economy has brought about an increasing need for creative thinking in the workplace (Peters, Marginson, & Murphy, 2009). Creative thinking amongst an organization's employees is imperative towards complex problem solving, constant innovation, and, ultimately, the sustenance of a competitive edge against other competitors for organizations across a wide range of domains (e.g., Koza, Keane, Streeter, Adams, & Jones, 2004; Titus, 2000; Nikitina, 2012). To meet such creative demands, organizations are increasingly relying on the use of teams (Chen, Williamson, & Zhou, 2012; Farh, Lee, & Farh, 2010), which potentially allows for the holistic integration and synergizing of diverse skillsets and knowledge held by individual employees (Hinsz, Tindale, & Vollrath, 1997). Researchers have thus been examining possible factors that may boost or harm team creativity in order to better inform interventions aimed at improving the creative performance of such teams (e.g., Anderson & West, 1998; Paulus, Larey, & Ortega, 1995), with team mood being one of the more recent focus (e.g., Klep et al., 2011; Shin, 2014; Tang & Naumann, 2016; Tsai et al., 2012).

Past studies have demonstrated that mood within a team exerts a substantive influence on the team's subsequent level of creative performance (e.g., Grawitch, Munz, & Kramer, 2003; Jones & Kelly, 2009). However, there exist disagreements as to what type of mood (positive or negative) drives creativity within a team, and ambiguity with regards to the type of mechanisms by which team mood affects team creativity. As such, it remains difficult for practitioners to incorporate the potentially powerful, yet currently nebulous factor of team mood within their formulations of interventions aimed at improving team creativity.

To address these gaps, we first reviewed the current literature on team mood and its postulated effects on team creativity. We conducted a comprehensive review and identified the

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two most current and prevalent perspectives: via affecting team epistemic motivation, which is postulated based on the Mood-as-Input theory (cf. Schwarz & Clore, 1988), and via affecting team cognitive flexibility, which is postulated based on the Broaden-and-Build theory of positive emotions (cf. Fredrickson, 1998, 2004). We then constructed a dual-process team mood framework of team creativity that is based on the merits and crux of these perspectives, guided by an overarching collective information processing perspective of team creativity that guides the majority of team creativity research today (cf. Hinsz et al., 1997).

The result of our endeavours led to the construction of a dual-process team mood framework that specifies how positive team mood and negative team mood could differentially affect team creativity via two distinct paths as depicted in Figure 1. Under our proposed model, both positive and negative team mood may lead to increased team creativity levels. However, it is propounded that they differentially impact the ways in which teams advance their creative outputs via facilitating the engagement of different team idea generation processes (i.e., team generative processing versus team information elaboration), which consequently results in differing influences on the fluency and practicality aspects of team creativity. An experimental study was then conducted to examine our proposed dual-process framework empirically.

Chapter 2: Literature Review

Team Mood

To define mood at the team level, we would first need to discuss what mood is at the individual level. Mood at the individual level refers to state affect, which, in contrast to discrete emotions (e.g., anger), is much more diffused and pervasive (Gooty, Connelly, Griffith, & Gupta, 2010). Mood often does not encompass a salient attributional cause or a specific action tendency towards a particular object (George & King, 2007; Huntsinger, Isbell, & Clore, 2014), and lingers on for a much longer period of time as compared to discrete emotions (Gooty et al., 2010). Due to its diffused and pervasive effects on cognition and behavior, along with its temporal persistence, mood, as opposed to discrete emotions, is often the target of study in the context of team creative performance (and team performance in-general) (e.g., Knight, 2013; Tang & Naumann, 2016; Totterdell, 2000).

Mood at the team level can be characterized either in terms of bottom-up or top-down processes (Barsade & Gibson, 1998). From a bottom-up perspective (i.e., compositional perspective), team mood is characterized by the collective mood of each individual team member. This perspective is in line with the affective state convergence literature, which posits that there exists a natural tendency for the mood of individual team members to converge within a team due to processes such as emotional contagion, exposure to similar external stimuli, and iterative cycles of attraction-selection-attrition (Barsade & Knight, 2015). On the other hand, from a top-down perspective, team mood is characterized in terms of affective norms within a team that governs emotional expressions of individual team members (Barsade & Gibson, 1998). Such affective norms are postulated to be manifestations of an overarching affective climate (Barsade & Gibson, 2007; Barsade & Knight, 2015), which, as with other types of group norms,

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typically takes time to be developed and established within a group (Feldman, 1984; Kelly & Barsade, 2001).

To exemplify the bottom-up and top-down perspectives of team mood, consider the following instances. When new team members get together to form a new team where affective norms have yet to be established, team mood is characterized by the convergence of mood amongst these team members that occur through social interactions and exposure to common events; this exemplifies the bottom-up perspective of team mood. On the other hand, in a case of an existing team whereby sufficient time has elapsed for affective norms to be developed and established, affective experiences of new members joining the team would then be subjugated by such norms instead. Accordingly, team mood in such cases is characterized by the team's affective norms, exemplifying the top-down perspective of team mood.

Most of the current team mood studies are correlational in nature and have adopted a bottom-up approach whereby team mood is operationalized as an aggregation of self-reported mood among members of a team (e.g., Collins, Jordan, Lawrence, & Troth, 2016; Kaplan, Hill, Lancaster, & Hurtado, 2000; Kim & Shin, 2015). There are, however, a number of issues associated with such an approach as will be discussed in the ensuing paragraphs.

Aggregated mood scores among team members do not always, necessarily reflect the state affect (i.e., mood) of the team. As detailed by George and King (2007), homogeneity of mood within a team can also arise from similarity in dispositional characteristics of constituting team members, which gives rise to an enduring group affective tone. This is, however, often not explicitly accounted for, with virtually none of such studies making an effort to assess or control for participants' dispositional mood tendencies. Concerningly, some studies have even treated

both the distinct constructs of team mood and group affective tone to be effectively synonymous (e.g., Tsai et al., 2012).

Additionally, without the experimental induction of mood whereby all teams and their constituting members are exposed to similar affective stimuli, we cannot be certain that mood experienced by a member within a team is both quantitatively and qualitatively similar to other members within the same team. For example, while members within a team may be experiencing a relatively positive mood on average, they may each be experiencing positive mood to differing levels of magnitude and for different reasons. Such affective diversity, both in terms of quantity and quality, has been found to hold incremental predictive validity over mean affect levels for a range of team-relevant outcomes, such as decision-making quality and general task performance (e.g., Barsade, Ward, Turner, & Sonnenfeld, 2000; Knight & Eisenkraft, 2015). As such, the experimental manipulation of team mood is called for in order to address this potential confounding factor, which may have contributed towards inconsistent findings in the past.

The correlational nature of the bulk of current team mood studies also precludes causal conclusions from being drawn. For instance, in a study conducted by Kim and Shin (2015) examining the potential role of perceived efficacy in the relationship between positive team mood and team creativity, the authors adopted a correlational design whereby both positive mood experienced and perceived efficacy were assessed via self-reported measures at the same time point. Additionally, team creativity was also assessed at the same time point in the form of team-leader ratings. This precludes any firm conclusions from being made with regards to the direction of causality. While the authors made the argument that positive mood within a team influenced team creativity levels via the mediational role of team members' perceived efficacy, the reverse may also be possible such that high levels of creative performance boosted team

members' perceived efficacy, thereby eliciting positive mood among team members. As Amabile, Barsade, Mueller, and Staw (2005) detailed, positive mood may also arise as a consequence of high creative performance, or concomitantly while working on work requiring creativity. Unfortunately, the correlational nature of such studies limits our ability to rule out such possible confounds and to conclusively determine direction of causality.

Furthermore, past diary studies have revealed that there exist a positive bias in emotions experienced, such that, on average, people tend to report experiencing positive emotions more often than negative emotions on a typical day (cf. Walker, Skowronski, & Thompson, 2003). As such, it is likely for correlational studies that simply measure team mood rather than experimentally manipulating team mood to over-sample participants experiencing positive mood and to under-sample participants experiencing negative mood. This issue is accentuated in a study conducted by Knight (2013), where the author found that very few team members of ongoing work teams reported experiencing negative mood during the early phase of their team's life, to which the author then attributed as a likely reason for the finding of a non-significant relationship between team mood and general team performance early in the teams' life.

To mitigate these potential issues discussed, we adopted a full experimental design with random assignment for our study whereby team mood is experimentally induced. As opposed to simply assessing and aggregating naturally-occurring mood among individual team members, this approach provides the exposure of a shared external stimuli among all members of a team to elicit the emergence of team mood. Random assignment increases our confidence that the resultant team moods induced are not attributable to enduring, dispositional mood-related traits, while the experimental induction of mood via a shared external stimuli that is consistent across teams (within the same condition) increases our confidence that mood experienced by these team

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members are both quantitatively and qualitatively similar . Lastly, the adoption of an experimental design enables us to ascertain direction of causality with regards to the effects of team mood on team creativity and circumvent the issue of potentially under-sampling negative mood participants.

Overview of Current Perspectives of Team Mood and Team Creativity

Team mood has been proposed to influence team creativity via its impact on a myriad of factors, such as task persistence (e.g., Jones & Kelly, 2009) and cognitive flexibility of individual team members (e.g., Grawitch, Munz, & Kramer, 2003). To obtain a clearer understanding of the current perspectives and empirical findings, we perused current review articles available on team mood (e.g., Barsade & Knight, 2015; Rhee, 2007) and conducted a comprehensive search on Google Scholar for empirical papers that explicitly examined the effects of team mood on team creative performance (or team performance in-general). Keywords used for our search include "team", "group", "mood", "affect", "affectivity", "emotion", "creativity", and "performance". Additionally, we conducted a backward search via perusing the reference section of the retrieved articles. After dropping papers that were irrelevant (i.e., false hits), we garnered a total of 26 empirical papers (*see* Appendix B). Two distinct perspectives emerged through our review of these papers; one based on Fredrickson's (1998) Broaden-and-Build theory of emotions and the other based on Schwarz and Clore's (1988) Mood-as-Input theory of emotions.

Broaden-and-build perspective. Researchers proposing that positive team mood, rather than negative team mood, spurs team creativity base their arguments primarily on Fredrickson's (1998) Broaden-and-Build theory of emotions (e.g., Grawitch, Munz, & Kramer, 2003; Kim & Shin, 2015; Shin, 2014). Under this perspective, positive team mood is said to prompt global cognitive processing strategies, flexible thinking, and broadened attention that collectively

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facilitates the ability to draw associations among seemingly disparate information and to adopt a wider range of perspectives; negative team mood, on the hand, is said to prompt local cognitive processing strategies, rigid thinking, and narrowed attention that collectively impedes the ability to draw associations among seemingly disparate information and evokes the adoption of a narrower range of perspectives (Grawitch, Munz, Elliott, et al., 2003; Klep et al., 2011; Shin, 2014).

This abovementioned notion is also consistent with the theory of threat-rigidity. In accordance to the threat-rigidity theory, the experiencing of stress and anxiety which arises from the perception of threat would lead to the narrowing of information processing and bias individuals toward well-learnt or dominant responses, effectively inhibiting the engagement of creative exploration (Staw, Sandelands, & Dutton, 1981).

Corroborating empirical evidence can be found in a study conducted by Grawitch, Munz, and Kramer (2003), where the authors manipulated the mood of individual team members through the use of mental imagery tasks. The authors proposed that experiencing a positive mood would increase cognitive flexibility of each individual team member, thereby leading to increased team creativity. A creative task involving the designing of a lunar hotel was administered. Results obtained indicated that teams with members in a positive mood exhibited significantly higher levels of creativity in the aforementioned task as compared to teams with members in a negative mood and teams with members in a neutral mood. Creative performance did not significantly differ between teams with members in a negative mood and teams with members in a neutral mood.

In another study conducted by Shin (2014), the author administered the positive affect subscale of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) to individual team members of 98 teams across multiple organizations, tasking them to retrospectively report their overall level of positive mood experienced within the past week. Team leader ratings of creativity were also obtained for each team at the same point of time. The author proposed that, based on the Broaden-and-Build theory of emotion, team members who have been experiencing higher levels of positive mood would possess greater cognitive flexibility, which would thereby lead to greater team creativity levels. Supporting this notion, the author found that higher mean scores of self-reported positive mood experienced among members of a team was associated with higher ratings of team creativity as provided by their respective team leaders.

In another similar study, Kim and Shin (2015) measured the mood of individual team members of 97 ongoing work teams across multiple South-Korean organizations using the positive affect subscale of the PANAS. Likewise, the authors proposed that based on the Broaden-and-Build theory of emotions, teams with members experiencing higher levels of positive mood would exhibit higher levels of team creativity due to increased cognitive flexibility elicited by the experiencing of positive mood. Results showed that higher average scores of positive mood reported among members of a team was associated with higher creativity ratings from their team leaders.

Mood-as-input perspective. On the flip side, the mood-as-input perspective posits that negative team mood, rather than positive, spurs team creativity. This perspective is based on the Mood-as-Input theory of emotions propounded by Schwarz and Clore (1988). Under this perspective, negative mood holds informational value which informs team members that the

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current level of performance on the team creativity task in-question has yet to reach satisfactory levels, thereby fueling persistence whereby team members improve their creative output incrementally over time (de Dreu, Baas, & Nijstad, 2008; Jones & Kelly, 2009). Positive team mood, on the other hand, informs team members that satisfactory levels of creative performance has already been reached, thereby decreasing task persistence and encouraging the development of a single-shared reality within the team whereby team members do not feel the need to consider a wider range of perspectives (Collins et al., 2016; George & King, 2007). This notion is corroborated by studies showing that positive team mood inflates perceptions of performance levels among team members (e.g., Totterdell, 2000), and reduces the amount of time team members are willing to spend on a creative task (e.g., Jones & Kelly, 2009).

George and King (2007) explained that a heuristic processing style and a heightened perception of performance adequacy associated with the experiencing of positive mood increases the propensity for team members to readily accept information shared among one other. This fosters a single-shared reality among team members and a sense of epistemic certainty, such that the team confidently accepts shared information as being reliable and valid in the given context. George and King (2007) further propounded that increased cognitive flexibility, as associated with the experiencing of positive mood, may even lead team members to reinterpret divergent or opposing information as being congruent with their shared-reality. Past studies have shown that such perceptions of performance adequacy preclude team members from actively considering and reflecting upon information articulated by other team members in a critical manner; as such, more often than not, perceptions of performance adequacy in a team does not reflect actual creative performance and may inadvertently harm the team's creative performance (George & King, 2007; Paulus, 2000; Pretz & McCollum, 2014; West, 1996).

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Jones and Kelly (2009) conducted a study whereby mood was experimentally manipulated by getting participants to watch certain emotionally-laden movie clips. A sloga generation task with no time limit was administered thereafter. The authors proposed that, based on the Mood-as-Input theory of emotions, the experiencing of negative mood would propel individuals to persist longer on the creativity task, thereby heightening team creativity levels beyond that of those experiencing positive mood. Results obtained suggest that teams with members experiencing negative mood generated slogans which were significantly more creative than those with members experiencing positive mood. Additionally, comparing creative performance of individuals to teams, the authors found no significant difference in creativity levels between individuals in a positive mood and teams with members in a positive mood. However, teams with members in a negative mood were found to be significantly more creative than individuals in a negative mood, suggesting that negative mood, but not positive mood, brings about creativity-related team process gains.

Corroborating empirical evidence can also be gleaned from a study conducted by Richter, Hirst, van Knippenberg, and Baer (2012) on 34 actual research and development (R&D) teams across multiple organizations. Although the primary focus of their study was not on team mood, it was revealed through a series of hierarchical linear regression models that self-reported negative mood of individual team members was significantly, positively related to team creativity (as assessed via team leader ratings), even when other creativity-relevant individual difference variables, such as creative self-efficacy, were accounted and controlled for.

Issues within the Current Perspectives

Common to the two main perspectives pertaining to the relationship between team mood and team creativity discussed in the previous section, is the assumption that team creativity is a

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mere aggregation of individual creativity, such that creative gains brought about by mood experienced by individual team members via individual-level processes (e.g., heightened cognitive flexibility) translates analogously into team-level creative gains. However, such assumptions are often not directly assessed within studies examining the relationship between team mood and team creativity. For example, studies examining the relationship between positive team mood and team creativity often attribute their finding of a positive relationship to increases in cognitive flexibility among members of the team – an assumption that is not directly assessed and is assumed to hold true at the team level based on past studies conducted on individual creativity (e.g., Grawitch, Munz, Elliott, et al., 2003; Grawitch, Munz, & Kramer, 2003; Shin, 2014).

The general reliance and fixation on individual-level theories and findings, however, precludes us from being able to understand how team mood may impact team-level processes and limits our understanding of how the mood-creativity relationship operates at the team level. Barsade and Knight (2015) had, similarly, highlighted this issue in their review on the current state of group affect research, noting that current studies on team mood are largely grounded by theories and findings of individual-level research. Furthermore, the assumption that team creativity is a mere aggregation of individual creativity, such that individual gains or losses in creativity-related attributes (e.g., cognitive flexibility) could account entirely for the team's subsequent creative performance, slights compilation effects whereby through processes of interaction and discussion, a team can potentially reach levels of creativity beyond that of any of its constituting members (Nijstad, Stroebe, & Lodewijkx, 2002; Nijstad, Diehl, & Stroebe, 2003; Paulus, 2000; Paulus & Yang, 2000).

Propitiously, some studies have begun to move away from the general reliance and fixedness on individual-level theories and frameworks, and are beginning to explore the possible effects of team mood on certain team emergent states, such as collective efficacy (Kim & Shin, 2015), team reflexivity (Shin, 2014), and team trust (Tsai et al., 2012).

For instance, in a series of studies conducted by Klep et al. (2011), it was found that teams with members experimentally induced to experience negative mood reported greater levels of belongingness with their group and discussed more information with their team members during their assigned tasks. In another study conducted by Tsai et al. (2012), it was found that the positive effects of positive team mood on team creativity depended on the team's level of negative mood and the extent to which team members trusted each other. While these studies evince a step in the right direction, without a team-level framework to map these findings onto, such findings remain piecemeal in-nature, precluding us from obtaining a clear and coherent understanding of the team-level effects of team mood on team creativity.

To construct a team-level framework of team mood and team creativity, we argue that it is imperative to look beyond individual-level variables and team emergent states, and to directly consider the effects of team mood on the process of collective idea generation itself. Indeed, studies on team mood and team creativity have largely viewed team creativity as an outcome or criterion to be predicted by the mood of the team and other intervening team emergent states, while team creativity in terms of the collective process of team idea generation itself is often overlooked.

Team idea generation is not just a mere collection of individuals generating ideas independently, whereby a simple aggregation of individual members' creativity suffices in characterizing overall team creativity. Working in a team and brainstorming for creative ideas

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together elicits sociocognitive processes, such that contributions made by one member could trigger creative insight within another (Dugosh, Paulus, Roland, & Yang, 2000). Team members could also discuss and build upon each other's ideas, thereby augmenting the creativity of ideas generated in a collaborative manner (Hargadon & Bechky, 2006; Hoever, Zhou, & Knippenberg, 2017). As described by Hargadon and Bechky (2006), such a process of collective creativity goes beyond the sheer reliance on each individual's creative prowess; instead, it involves moments whereby various perspectives are brought together to bear on the presented creativity issue that results in the creation of distinctly new ideas.

With these considerations in mind, we argue that the consideration of how team mood affects the processes of team idea generation itself is imperative in our quest to obtain a clearer and better understanding of the effects of team mood on team creativity, akin to how the elucidation of cognitive processes involved in individual idea generation was critical towards our current understanding of the relationship between mood and individual creativity (e.g., Carnevale & Isen, 1986; Isen, Daubman, & Nowicki, 1987).

Chapter 3: Dual-Process Team Mood Framework of Team Creativity

Effects of Team Mood on Team Idea Generation Processes

The process of team idea generation differs from individual idea generation in that it encompasses the active sharing of ideas and perspectives held by different individuals, which increases the range of perspectives available to each individual team member and affords the opportunity for synergy and integration to take place among the collection of diverse input contributed by individual team members (Hinsz et al., 1997; Paulus & Yang, 2000). Broadly speaking, the process of team idea generation can be characterized in two ways. On one hand, the team itself can serve as a contextual influence that affects the creativity levels of individual team members; on the other hand, the team as a whole can mount a collaborative effort in generating creative ideas (de Dreu, Nijstad, Bechtoldt, & Baas, 2011). The former relates to the process of team generative processing, whereas the latter relates to the process of team information elaboration. Both of which will be discussed in greater detail in the following paragraphs.

Team generative processing and team mood. The perspective of teams serving as a contextual influence on individual team members' creative performance relates to the team idea generation process of generative processing. Generative processing occurs when an individual relates new information presented with his or her own prior knowledge within semantic memory (Jonassen, 1992). This activation and use of a related cognitive schema within an individual's semantic memory to interpret a presented new information results in the assimilation of the new information into the individual's pre-existing cognitive schema, thereby resulting in an aggrandized schema which effectively broadens an individual's range of perspectives (Jonassen, 1992; Soraci et al., 1999; Wittrock, 1974).

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In the context of idea-generating teams, ideas and inputs articulated by team members can serve as new information that trigger creative insight within individual team members (Kurtzberg & Amabile, 2001). In a series of studies conducted by Dugosh, Paulus, Roland, and Yang (2000), it was shown that mere exposure to ideas generated by others increased the creativity levels of individual participants in an independent idea generation task. The authors explained that exposure to ideas generated by others activated related cognitive schemas within an individual's own semantic network, which, by spreading activation, activated other related nodes and knowledge structures in its vicinity; thereby broadening his/her range of perspectives and increasing his/her creative capacity.

The occurrence of generative processing, however, depends on the extent to which the individual is able to perceive relatedness between an idea shared by a fellow team member and the individual's own pre-existing knowledge (Hoever, Zhou, & Knippenberg, 2017). For instance, suppose a team has been tasked to generate creative uses for a pair of sunglasses and a team member suggests changing out the sunglasses' shaded lenses for clear, prescription lenses so that the sunglasses could be repurposed into reading glasses. If another team member has prior knowledge regarding camera filters and perceives relatedness between the concept of lens and camera lens filters, he/she might then conjure an idea of using the sunglasses' shaded lens as a camera lens filter. Through such a process, ideas contributed by team members can serve as stimulating inputs that trigger creative insights within individual team members, resulting in them being able to generate even more creative ideas (Hoever et al., 2017).

Relating the process of generative processing to team mood, we propose that a positive team mood would facilitate the engagement of team generative processing. The experiencing of positive mood has been posited to enhance cognitively flexibility, which facilitates the ability to

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perceive relatedness among seemingly disparate information (Carnevale & Isen, 1986; Isen, Johnson, Mertz, & Robinson, 1985). This potentially increases the likelihood that other team members' creative contributions would be perceived as being related to one's own knowledge, thereby triggering creative insight within the individual team member in-question (i.e., eliciting generative processing). Reduced cognitive flexibility associated with the experiencing of negative mood (Isen et al., 1985; Murray, Sujan, Hirt, & Sujan, 1990), on the hand, would likely attenuate team members' ability to perceive relatedness between others' contributions and their own knowledge, thereby hampering their ability to engage in generative processing. This is depicted as path (a) in Figure 1 of Appendix A.

Team information elaboration and team mood. Creative insight can also emerge iteratively through interaction and active deliberation among team members (Hargadon & Bechky, 2006). Such a process active deliberation whereby team members discuss and integrate their diverse ideas and perspectives is termed as team information elaboration (Hoever, van Knippenberg, van Ginkel, & Barkema, 2012; Homan et al., 2008).

When an individual team member solicits the inputs of others on their creative ideas, and others devote their time and attention to listen and provide their own perspectives, it results in a process known as reflective reframing whereby novel perspectives held by other team members are integrated into the original idea, thereby heightening its level of creativity (Hargadon & Bechky, 2006). In the same vein, Paulus and Yang (2000) posited that the extent to which a team is able to elevate its level of creativity beyond that of any of its constituting team members depends on the extent to which team members afford attention to ideas generated by other team members and actively reflect upon them.

To exemplify the process of team information elaboration, consider the excerpt of a brainstorming team discussion session detailed by Cross (1997). A team of designers were tasked to generate creative designs for a hiker's backpack mounting device that was to be used with mountain bicycles. A team member first came up with a general idea of a rack, to which another member responded by recalling a similar device seen elsewhere that resembles a flat panel. Another member then responded by saying that while it may be a simple solution, it may not be a good-enough solution. He then went on to suggest propping up the edges of the flat panel, which eventually led to the notion of trays. The team then spent their remaining time focusing on refining this tray-based design, resulting in a highly refined and highly creative idea of a vacuum-formed tray mounting device design. Through such an iterative and deliberative process, initial ideas contributed by team members can serve as foundations or building-blocks for other team members to refine and build-upon, integrating their own unique perspectives within and culminating as a highly refined and highly creative idea (Hoever et al., 2017).

Relating the process of team information elaboration to team mood, we propose that a negative team mood would facilitate the engagement of team information elaboration. The experiencing of negative mood has been shown to decrease the perception of performance adequacy and epistemic certainty, which drives epistemic motivation within a team that encourages task persistence and the consideration of diverse input and perspectives (Collins et al., 2016; de Dreu et al., 2008; George & King, 2007; Jones & Kelly, 2009). Specifically, such an increase in epistemic motivation arising from reduced perceptions of performance adequacy impels team members to search for, attend to, and make amalgamations among any additional information and perspectives that may be articulated by their fellow team members (de Dreu et al., 2011; Sedikides, 1992; Stanley, 2008; Tiedens & Linton, 2001). On the other hand, team

members under a positive mood has been shown to exhibit higher levels of confidence in their task performance, which fosters a sense of epistemic certainty and precludes them from expanding additional effort to search for, attend to, or make amalgamations among any additional information and perspectives that may be articulated by their fellow team members (George & King, 2007; Sedikides, 1992; Stanley, 2008; Tiedens & Linton, 2001; Totterdell, 2000). This is depicted as path (b) in Figure 1 of Appendix A.

Corroborating empirical evidence can be found in a series of studies conducted by Klep et al. (2011), where the authors found that team members experiencing experimentally-induced negative mood used the pronoun "we" significantly more often and discussed significantly more information with their team members during their assigned tasks as compared to teams with team members experiencing experimentally-induced positive mood.

This notion is also consistent with the current literature on social support, where studies have shown that perceived threat and negative emotions experienced (e.g., anxiety) drives people to seek out others for assistance and support (e.g., Kitsantas & Chow, 2007; Simpson, Rholes, & Nelligan, 1992; Sloan & Telch, 2002). Such help-seeking and help-giving behaviours in the context of a team creative task potentially facilitates reflective reframing, whereby the help-giver's unique input and perspectives are incorporated and integrated with the help-seeker's original perspective on the issue (i.e., elicits team information elaboration), thereby heightening creativity levels of the resultant idea generated (Hargadon & Bechky, 2006).

Summary of Proposed Framework

In general, our proposed framework posits that positive team mood elevates team creativity via facilitating the engagement of team generative processing. Increased cognitive flexibility and decreased epistemic motivation associated with the experiencing of positive mood

is propounded to facilitate the engagement of team generative processing, whereby individual team members generate ideas confidently on their own rather than collaboratively with other team members. The team in this case serves as a stimulating context for each individual team member, providing cognitively stimulating material in the form of contributions made by other team members that trigger creative insights within individual team members.

On the other hand, our proposed framework posits that negative team mood elevates team creativity via facilitating the engagement of team information elaboration. Decreased cognitively flexibility yet increased epistemic motivation that is associated with the experiencing of negative mood is propounded to facilitating the engagement of team information elaboration, whereby team members actively share and integrate their ideas and perspectives with one another in a deliberative manner. The team in this case functions as a holistic information processing unit whereby its constituting team members work together in a collaborative manner to generate creative ideas.

Regardless of whether team members communicate and integrate information in a deliberative manner or simply generate their own ideas with cognitive insight gained from the contributions of other team members, both paths are posited to lead to the generation of novel ideas (Hoever et al., 2017). However, the process of active deliberation among team members involved in team information elaboration takes more time as compared to team generative processing, where minimal deliberation occurs. As such, it could take more time for teams engaging in team information elaboration to be able to generate highly creative ideas, as they have to systematically work through less creative ideas among one another, deliberating upon and making integrations among them.

Empirical support exists for the abovementioned notion, with Jones and Kelly (2009) and de Dreu et al. (2008) finding that ideas generated become increasingly creative over time only for those under a negative mood. Fixed time limits imposed on creativity tasks used in most of the current studies may thus be a potential reason why more studies have found positive effects on team creativity for positive team mood than for negative team mood, even though theoretical support for both camps appear to be equally strong.

Although the processes of team generative processing and team information elaboration are both posited to lead to the generation of novel ideas, we propose that both paths would differentially impact the fluency and practicality aspects of team creativity. Studies conducted on the relationship between team mood and team creativity had almost a laser-like focus on the novelty aspect of team creativity (e.g., Grawitch, Munz, Elliott, et al., 2003; Jones & Kelly, 2009), which is often taken to be almost synonymous to the term of team creativity itself. Creativity, however, encompasses two other facets that are, arguably, just as important as the novelty aspect: fluency and practicality. Fluency refers to the number of ideas that one (or in this case, a team) is able to generate and practicality refers to the usefulness and overall implementability of ideas generated (Amabile et al., 2005; Kurtzberg, 2005; Shaw & DeMers, 1986; Sternberg & Lubart, 1999). These facets are especially pertinent in the context of organizations as organizations not only need ideas that are highly novel, but also ideas that are readily implementable and a greater number of ideas to afford more options and to sustain continued innovation.

The process of team generative processing entails the continual production and adding of new ideas into a common pool of ideas contributed by individual members of a team, whereas the process of team information elaboration entails deliberatively building-upon and integrating

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among existing ideas articulated, which increases the quality and integrative complexity of ideas generated but not necessarily the quantity (as compared to team generative processing) (Hoever et al., 2017; Javadi, Gebauer, & Mahoney, 2013). As such, it is proposed that team generative processing would lead to the generation of a greater quantity of ideas (i.e., fluency of ideas), as compared to team information elaboration. On the flip side, because ideas generated via team information elaboration would have gone through a series of evaluation and validation by members of a team during the iterative process of critical discussion and deliberation, we propose that these ideas would be more useful and practical as compared to those generated via team generative processing, which does not entail such intensive and extensive deliberative processes.

In summary, our proposed dual-process team mood framework of team creativity reconciles discrepant propositions in the current literature by melding these propositions into an overarching, coherent framework built based on current team creativity frameworks. Our proposed framework goes beyond individual-level variables and team emergent states to consider how team mood may affect the collective process of team idea generation itself, allowing us to obtain a richer understanding of how team mood exerts its effects on team creativity. We strongly believe that our framework, which is constructed based on both the current perspectives of team mood research, and existing team-level theories and findings pertaining to the process of team idea generation, would serve as a foundation for future research examining the effects of team mood on team creativity; allowing us to map future findings onto a single, consensual framework.

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Chapter 4: Pilot Study

Purpose of Study

The purpose of this pilot study was to assess the efficacy of a team mood induction procedure. Past studies that have attempted to experimentally manipulate the mood of individual participants have employed a wide variety of techniques, such mental imagery (e.g., Grawitch et al., 2003), picture viewing (e.g., Dreisbach & Goschke, 2004), music listening (e.g., Bouhuys, Bloem, & Groothuis, 1995), and film watching (e.g., Jones & Kelly, 2009). Team mood studies typically employ the use of such techniques on each team member individually (e.g., Grawitch, Munz, & Kramer, 2003).

Klep et al. (2011), however, proposed that the induction of team mood should be directed at the group holistically, rather than individually on each team member. The authors argued that there exists a qualitative difference between mood that is independently (but commonly) held by each individual team member and mood that is explicitly shared among members of a team. Corroborating evidence can be found in a series of studies conducted by the authors, where the authors found stronger effects for team-related outcomes, such as team creativity, when team mood was induced to the team holistically as compared to independently on individual team members. As such, the team mood induction procedure selected to be examined in this pilot study was one that simultaneously targeted both fronts -each individual team member and the team in its entirety- to ensure that the resultant team mood induced is not just commonly held by, but also explicitly shared among members of the team.

The mood induction procedure tested entails a combination of the established Velten mood induction procedure and the musical mood induction procedure (*see* Albersnagel, 1988). As stipulated by this procedure, mood-inducing music was be played to the entire team while

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each member of the team read mood-inducing self-referent statements. The Positive and Negative Affect Schedule (PANAS) was then administered to assess if the mood induction technique had induced the relevant mood as intended. Dispositional affect was also assessed at the beginning of the study, prior to mood induction, to ascertain that the resultant mood induced was not attributable to idiosyncratic dispositional affect of individual team members.

Measures

   Dispositional affect. Dispositional affect was measured in terms of dispositional positive affect and dispositional negative affect via a 16-item measure adapted from Feldman (1995). Participants were tasked to rate themselves, on a scale of 1 being "very slightly or not at all" to 6 being "extremely or very often", based on how often they experienced, in general, the affective experiences denoted by eight positive affect terms and eight negative affect terms (*see* Appendix C). Cronbach's α calculated was .646 for the eight items assessing dispositional positive affect and .719 for the remaining eight items assessing dispositional negative affect.

   State affect (mood). Mood of participants was measured using the Positive and Negative Affect Schedule (PANAS) developed by Watson et al. (1988). The PANAS scale consists of 20 items (*see* Appendix D) that assesses mood in two dimensions; positive affect and negative affect. Participants were tasked to rate themselves based on what they are feeling "right now" on ten positive affect terms and ten negative affect terms, on a scale of 1, being "very slightly or not at all", to 5, being "extremely". The PANAS is a commonly used measure of state affect (e.g., Hancock, Gee, Ciaccio, & Lin, 2008). It has been well validated and deemed to be a valid and reliable measure of both positive affect and negative affect (Crawford & Henry, 2004). Cronbach's α calculated was .923 for items assessing positive affect and .959 for items assessing negative affect.

Procedure

48 participants (23 males and 25 females), age ranging from 18 to 27 years old, were recruited from the Singapore Management University subject pool system. Participants were randomly assigned to groups of three, yielding a total of 16 teams. These teams were randomly assigned to either a positive mood induction condition ($N= 21$, 7 teams) or a negative mood induction condition ($N= 27$, 9 teams). The cover story provided to participants was that we were interested in examining the effects of different musical genres and states of mind on creativity. Participants were awarded one course credit for their participation in this 30-minute study. Before the commencement of the mood induction procedure, all participants completed the 16-item measure of dispositional affect to ensure that random assignment was successful and that the resultant team mood induced was not attributable to idiosyncratic dispositional affect of individual team members. After which, the musical mood induction procedure commenced.

Following past studies that have employed the use of the musical mood induction procedure, the music "Coppelia" by Delibes was used to induce a positive mood for teams assigned to the positive mood induction condition, whereas the music "Russia under the Mongolian Yoke" by Prokofiev, played at half-speed, was used to induce a negative mood for teams assigned to the negative mood induction condition (Albersnagel, 1988; Martin, 1990). As per the instructions used by past studies employing this procedure, during the first two minutes of musical exposure, team members were instructed to sit back, close their eyes, and immerse themselves in the music being played. They were also instructed to try to experience the feelings that they believe the composer was trying to make their listeners feel. The music was played continually, in a perpetual loop, throughout the entire duration of the study to maintain the mood induced.

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Following the first two minutes of musical immersion, the Velten mood induction procedure was initiated. Each team member was given a bounded set of papers. Each set contained 25 pieces of paper, with a self-referent statement printed on each page. All members within teams randomly assigned to the positive mood induction conduction read positive self-referent statements (e.g., I feel cheerful), while members in teams randomly assigned to the negative mood induction condition read negative self-referent statements (e.g., I feel cheated by life). The exact Velten statements used in this study were adopted from Jennings, McGinnis, Lovejoy, and Stirling (2000), Teasdale and Russell (1983), and Seibert and Ellis (1991) (*see* Appendix E for the complete list of statements). Team members were instructed to read each statement at their own pace. As per the instructions used by past studies employing this procedure, they were told that for each statement, they should focus on saturating themselves with the atmosphere expressed by that statement and incorporate the feeling expressed in the statement into their minds. They were also told not to spend too much time on any particular statement and to return back to the first statement and cycle through the stack again once they have finished reading the last statement. This procedure lasted for seven minutes for all teams.

Upon completion of the Velten mood induction procedure, with the music still playing in the background, all team members were task to complete the PANAS measure to assess their state affect, in terms of positive state affect and negative state affect, to determine if our mood induction procedure was efficacious. Finally, to maintain consistency with our provided cover story, all teams engaged in a team idea generation task before being thanked and debriefed.

Results

Two independent samples *t*-tests were conducted on dispositional affect between participants assigned to the positive mood induction condition and participants assigned to the

negative mood induction conduction; one for dispositional positive affect and one for

dispositional negative affect. Results indicated that participants assigned to the positive mood

condition did not differ significantly in terms of dispositional positive affect (*M*= 3.65, *SD*=

0.557) with participants assigned to the negative mood condition (*M*= 3.34, *SD*= 0.627), *t*(46)= -

1.794, *p*=. 079. Similarly, results indicated that participants assigned to the positive mood

condition did not differ significantly in terms of dispositional negative affect (*M*= 3.28, *SD*=

0.859) with participants assigned to the negative mood condition (*M*= 3.18, *SD*= 0.817), *t*(46)= -

0.427, *p*= .671. These results indicates that no systematic difference in terms of dispositional

affect exists between participants assigned to the two conditions.

Next, a series of independent samples *t*-tests were conducted on state affect (mood) as

assessed via PANAS following the mood induction procedure, between participants assigned to

the positive mood induction condition and participants assigned to the negative mood induction

conduction. Participants who underwent the positive mood induction procedure exhibited

significantly higher levels of positive affect (*M*= 2.96, *SD*= 1.134) as compared to participants

who underwent the negative mood induction procedure (*M*= 1.98, *SD*= 0.910), *t*(46)= 3.325,

p= .002. Similarly, participants who underwent the negative mood induction procedure exhibited

significantly higher levels of negative affect (*M*= 2.24, *SD*= 1.100) as compared to participants

who underwent the positive mood induction procedure (*M*= 1.39, *SD*= 0.558), *t*(40.303)= 3.483,

p= .001 (equal variance not assumed as Levene's test was statistically significant). These

findings suggest that the mood induction procedure was effective in inducing positive and

negative mood respectively.

These findings reported held when the analyses were conducted on aggregated scores,

which was calculated by taking the mean score on the PANAS measure among members of a

team. Teams that underwent the positive mood induction procedure exhibited significantly higher levels of positive affect (M= 2.96, SD= 0.724) as compared to teams that underwent the negative mood induction procedure (M= 1.98, SD= 0.616), $t(14)$= 2.927, p= .011. Similarly, teams that underwent the negative mood induction procedure exhibited significantly higher levels of negative affect (M= 2.24, SD= 0.392) as compared to teams that underwent the positive mood induction procedure (M= 1.39, SD= 0.284), $t(14)$= 4.824, p<.001.

The mean r_{wg} (using a uniform null distribution) and ICC(1) values for positive mood scores were .535 (median r_{wg}= .753) and .586 respectively. While mean r_{wg} (using a uniform null distribution) and ICC(1) values for negative mood scores were .510 (median r_{wg}= .704) and .116 respectively. The current literature recommends values of at .70 and above for r_{wg} (James, Demaree, & Wolf, 1993; Lance, Butts, & Michels, 2006) and .12 and above for ICC(1) (James, 1982; Schneider, White, & Paul, 1998) to substantiate aggregation of within-group scores. Several of our observed indices were slightly short of these recommended values, which may be potentially attributable to the meagre sample sizes for both conditions (only 7 teams for the positive mood condition and 9 teams for the negative mood condition). It is, however, worth noting that while our mean r_{wg} values may fall short of the recommended value of .70, our median r_{wg} values, which is often the only type of central tendency measure reported by many studies for r_{wg} values (e.g., Farh et al., 2010), were well above this recommended value. Regardless, our findings generally suggest that the mood induction procedure was effective in inducing positive team mood and negative team mood as intended.

Chapter 5: Actual Study

Purpose of Study

The purpose of this study was to test our proposed dual-process team mood framework of team creativity empirically. To achieve this aim, participants were randomly assigned to teams of three to four members, and to one of three conditions: positive team mood, negative team mood, or neutral team mood. Based on the average estimated effect size of 0.4087 calculated from three past team creativity studies that have experimentally manipulated team mood (Grawitch, Munz, & Kramer, 2003; Jones & Kelly, 2009; Klep et al., 2011), an a priori power analysis was conducted with the specifications of α= .05, power= .95, and conditions= 3. The results of this power analysis indicated that a total of at least 96 teams was required for this study.

The relevant team mood was experimentally induced via the mood induction procedure tested in our pilot study. As detailed in the pilot study, teams assigned to the positive mood condition listened to "Coppelia" by Delibes and members of these teams read positively-valanced Velten mood induction statements, whereas teams assigned to the negative mood condition listened to "Russia under the Mongolian Yoke" by Prokofiev (at half speed) and members of these teams read negatively-valanced Velten mood induction statements.

Consistent with past studies employing the use of the musical mood induction procedure for the induction of a neutral mood, the music "Prelude l'Apres Midi d'un Faun" by Debussy was played for teams assigned to the neutral mood condition (Albersnagel, 1988; Martin, 1990). Members of these teams also read neutral Velten statements (e.g., Elephants carried the supplies). As with the self-referent Velten statements used for positive and negative mood induction, these neutral Velten statements were also adopted from Jennings, McGinnis, Lovejoy, and Stirling (2000), Teasdale and Russell (1983), and Seibert and Ellis (1991) (*see* Appendix E

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for the complete list of statements). The respective music of each condition was played continually, in a perpetual loop, for the entire duration of the study to maintain the mood induced.

Following mood induction, participants were tasked to engage in an idea generation task as a team without any ascribed time limit. This task allowed us to assess cognitive flexibility, in terms of the number of distinct categories to which ideas generated could be categorized into, and epistemic motivation, in terms of the amount of time a team is willing to spend on the task, for each team; both being key variables implicated in the often-untested assumptions made by current team mood studies as discussed in our literature review. The number of distinct categories to which ideas generated could be categorized into, otherwise known as ideational flexibility, is an established indicator of cognitive flexibility (Nijstad, Dreu, Rietzschel, & Baas, 2010; Shaw & DeMers, 1986; Sternberg & Lubart, 1999). Likewise, time spent on task (i.e., persistence), is an established indicator of epistemic motivation (Jones & Kelly, 2009; Kruglanski et al., 2006; Kruglanski & Webster, 1996; Nijstad et al., 2010).

An additional self-report measure of team epistemic motivation was also administered; the 3-item information processing motivation scale adopted from de Dreu, Koole, and Oldersma (1999), which is commonly used to assess the efficacy of experimental manipulations of epistemic motivation (e.g., Bechtoldt, De, Nijstad, & Choi, 2010; Scholten, van Knippenberg, Nijstad, & De Dreu, 2007).

Independent judges blind to the hypotheses and conditions of this study examined video recordings of the teams' discussion process in the idea generation task and provided ratings indicative of the extent to which each team engaged in team information elaboration and team generative processing. Consistent with past studies, team information elaboration was rated on a

seven-point scale, with 1 indicating that teams developed ideas with little to no systematic

discussion of information or different perspectives among team members, and 7 indicating that

team members systematically discussed various perspectives held by individual team members,

elaborated upon each other's ideas, and made attempts at integrating these varied perspectives

when developing their ideas (e.g., Hoever, van Knippenberg, van Ginkel, & Barkema, 2012;

Hoever et al., 2017; van Ginkel & van Knippenberg, 2008). The complete scoring guide used can

be found in Appendix F.

Likewise, consistent with past studies, team generative processing was assessed based on

the frequency to which team members made statements that were indicative of divergent

thinking triggered by the input of other team members (e.g., Hoever et al., 2017). Based on

Hoever et al.'s (2017) guidelines, three distinct types of statements qualify as such. One of which

is when an idea is generated based on drawing parallels between the context of the task with

other contexts as prompted by the previous input of another team member. Another of which is

when team members articulate their idea generation thought process aloud, which includes the

sharing of incomplete or half-baked ideas, in response to the input of another team member. The

last of which is when a team member takes a previous utterance made by another team member

out of context and moves the discussion in another direction.

A separate group of independent judges was also recruited to provide creativity ratings

for the ideas generated in the team idea generation task. As with past studies (e.g., de Dreu et al.,

2008; Diedrich et al., 2015), ideas generated was rated in terms of how novel and how practical

they were. Judges were tasked to assign a score of 1 to 5 for each idea generated, with 1 being

"not novel at all" and 5 being "extremely novel", and a score of 1 to 5 for practicality of ideas

generated, with 1 being "not practical at all" and 5 being "extremely practical". Additionally,

consistent with past studies (e.g., Kurtzberg, 2005), fluency of ideas was assessed in terms of the number of unique ideas each team generated.

Based on our proposed dual-process team mood framework of team creativity, it is hypothesized that teams in the positive mood condition would exhibit significantly greater engagement in team generative processing. This relationship is postulated to be mediated by increased cognitive flexibility among members of the team. On the other hand, it is hypothesized that teams in the negative mood condition would exhibit significantly greater engagement in team information elaboration. This relationship is postulated to be mediated by increased epistemic motivation among members of the team. Lastly, it is hypothesized that team generative processing would be positively related to both fluency of ideas and novelty of ideas generated, whereas team information elaboration would be positively related to novelty and practicality of ideas generated. These hypotheses were examined via a series of regression analyses and path analyses.

Measures

Manipulation check. Team mood was assessed following the mood induction procedure to assess its efficacy in inducing positive team mood and negative team mood. It was measured via the same 20-item PANAS measure detailed within our pilot study, wherein team members were tasked to rate themselves based on what they were feeling "right now" on ten positive affect terms and ten negative affect terms, on a scale of 1, being "very slightly or not at all", to 5, being "extremely". Cronbach's α calculated was .943 for items assessing positive affect and .922 for items assessing negative affect.

The mean r_{wg} (using a uniform null distribution) and ICC(1) values for positive affect scores were .640 (median r_{wg}= .725) and .467 respectively. Whereas the mean r_{wg} (using

uniform null distribution) and ICC(1) values for negative affect scores were .752 (median r_{wg}= .820) and .267 respectively. Whilst most of these indices meet the previously-mentioned recommended values of being at least .70 for r_{wg} (James et al., 1993; Lance et al., 2006) and .12 for ICC(1) (James, 1982; Schneider et al., 1998) for the substantiation of within-group score aggregations, our mean r_{wg} value obtained for positive affect scores was slightly below the recommended level. Additionally, past studies on team mood have typically observed r_{wg} values of approximately .75 to .89 and ICC(1) values of approximately .12 to .19 for their respective team mood measures (e.g., Grawitch, Munz, Elliott, et al., 2003; Tsai et al., 2012).

Nonetheless, as noted by Schneider et al. (1998), slight deficiencies in within-group agreement indices do not prohibit aggregation. Furthermore, it is worth noting that while our mean r_{wg} obtained for positive affect scores was slightly deficient, its median r_{wg} value, which is often the only type of central tendency measure reported for r_{wg} values (e.g., Farh et al., 2010), was found to be well above the recommended level. As such, positive and negative affect scores were aggregated to the team level by taking the average among members of each team, providing us with overall indicators of positive mood experienced among members of a team, and negative mood experienced among members of a team.

We expect teams assigned to the positive mood condition to exhibit significantly higher levels of positive team mood as compared to those assigned to the negative mood condition and neutral mood condition. We also expect teams assigned to the negative mood condition to exhibit significantly higher levels of negative team mood as compared to teams assigned to the positive mood condition and neutral mood condition.

Dispositional affect. Individual participants' dispositional affect was also assessed using the same 20-item PANAS measure. As detailed by the authors of the PANAS measure, changing

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the temporal instructions from "right now" to "generally" reliably transforms the scale into a measure of dispositional affect (Watson et al., 1988). As such, at the beginning of the study prior to any mood manipulation, participants were tasked to rate themselves based on how they felt "generally" on the scale's ten positive affect terms and ten negative affect terms, from 1, being "very slightly or not at all", to 5, being "extremely". It should be noted that the order of these affective terms presented was randomized such that it differs to that of the subsequent PANAS administered, which assessed state affect (i.e., mood) to assess our mood manipulation's efficacy. Cronbach's α calculated was .910 for items assessing dispositional positive affect and .914 for items assessing dispositional negative affect.

Team creativity: Novelty. Team creativity was assessed via a team idea generation task adopted from de Dreu et al. (2008), where, as a team, participants were tasked to generate as many ideas as they can to improve the university's quality of education, which is stated to be strained due to burgeoning student intake. Consistent with past studies (e.g., de Dreu et al., 2008; Diedrich et al., 2015), two independent judges were employed to assign a score of 1 to 5 for novelty of ideas generated, with 1 being "not novel at all" and 5 being "extremely novel". Both judges provided novelty ratings for all 105 teams. Inter-rater reliability was found to be acceptable, with ICC(2)= .709 and mean r_{wg} (using a uniform null distribution)= .916 (median r_{wg}= .938).

Team creativity: Practicality. The practicality facet of team creativity was assessed via the same previously-mentioned team idea generation task. Likewise, consistent with past studies (e.g., de Dreu et al., 2008; Diedrich et al., 2015), two independent judges were employed to assign a score of 1 to 5 for practicality of ideas generated, with 1 being "not practical at all" and 5 being "extremely practical". Both judges provided practicality ratings for all 105 teams. Inter-

rater reliability was found to be acceptable, with ICC(2)= .655. and mean r_{wg} (using a uniform null distribution)= .738 (median r_{wg}= .750).

Team creativity: Fluency. The fluency aspect of team creativity was also assessed via the previously-mentioned team idea generation task. Consistent with past studies (e.g., Kurtzberg, 2005), fluency of ideas was assessed in terms of the number of unique ideas each team generated.

Team ideational flexibility. Team ideational flexibility was, likewise, assessed via the same previously-mentioned team idea generation task. Consistent with past studies, it was assessed in terms of the number of unique categories by which each team's generated pool of ideas could categorized into and served as an indicator of cognitive flexibility levels levels (de Dreu et al., 2008; Nijstad et al., 2010; Shaw & DeMers, 1986).

An independent judge was employed to classify each of the ideas generated by the 105 teams into one of eight distinct categories (*see* Appendix G for the list of categories). Consistent with previous studies, these categories were generated based on perusing all responses made by all participants and the number of distinct categories that ideas generated by a particular team in-question could be classified into served as an indicator of its members' overall level of cognitive flexibility (e.g., de Dreu et al., 2008; Nijstad et al., 2010; Shaw & DeMers, 1986). A separate, independent judge was then employed to assess the reliability of the categorizations done by the previous judge. This new, independent judge re-categorized the ideas generated by all 105 teams with reference to the same eight distinct categories and the number of distinct categories to which the ideas generated by each team could be classified into was computed yet again. Inter-rater reliability was deemed to be good, with ICC(2)= .927 and mean r_{wg} (using a uniform null distribution)= .845 (median r_{wg}= 1).

Team Persistence. Team persistence was also assessed via the same previously-mentioned team idea generation task. Consistent with past studies, it was assessed in terms of the amount of time a team was willing to spend on the team idea generation task (with no time limit) and served as an indicator of the epistemic motivation level among members of a team (e.g., Jones & Kelly, 2009; Kruglanski et al., 2006; Kruglanski & Webster, 1996; Nijstad et al., 2010). Time spent on the task was recorded in seconds, from the time the team idea generation task instructions were presented to a team till the time the team decided to terminate the task and submit their ideas, and divided by sixty to convert into minutes.

Perceived Team Epistemic Motivation. Reponses on the 3-item information processing motivation scale adopted from de Dreu, Koole, and Oldersma (1999) was taken to be a subjective indicator of team epistemic motivation. The information processing motivation scale is commonly used to assess the efficacy of experimental manipulations of epistemic motivation (e.g., Bechtoldt, De, Nijstad, & Choi, 2010; Scholten, van Knippenberg, Nijstad, & De Dreu, 2007). On a scale of 1 being "not at all" to 5 being "very much", each team member was tasked to provide their ratings on three questions pertaining to their team discussion session during the team idea generation task: "my team tried to take into consideration all possible perspectives", "my team tried to make judgments and decisions as thorough as possible", and "my team thought deeply during the discussion". Cronbach's α calculated was .871. The mean r_{wg} (using a uniform null distribution) and ICC(1) values were .608 (median r_{wg}= .727) and .379 respectively. These scores were then aggregated to the team level by taking the average among members of a team, providing us with an overall indicator of each team's members' subjective perception of their team's level of epistemic motivation.

Team information elaboration. Consistent with past studies, the extent to which teams engaged in team information elaboration was assessed based on a seven-point scale, with 1 reflecting that teams developed ideas with little to no systematic discussion of information or different perspectives among team members, and 7 indicating that team members systematically discussed various perspectives held by individual team members, elaborated upon each other's ideas, and made attempts at integrating these varied perspectives during idea development (e.g., Hoever, van Knippenberg, van Ginkel, & Barkema, 2012; Hoever et al., 2017; van Ginkel & van Knippenberg, 2008). The full scoring criteria can be found in Appendix F.

Video footages of each team's discussion session during the team idea generation task were randomly assigned to three independent judges. Each independent judge scored a total of 59 to 60 video footages, with 35 randomly-selected footages commonly assigned to all three judges for the assessment of inter-rater reliability. Inter-rater reliability among the three judges was deemed to be good, with ICC(2)= .873; although mean r_{wg} (using a uniform null distribution) was .510 (median r_{wg}= 500). Team information elaboration scores were averaged among the three judges for the aforementioned 35 teams whose video footages were commonly assigned to all three judges.

Team generative processing. The extent to which teams engaged in team generative processing was assessed based on the frequency to which team members made statements that were indicative of divergent thinking triggered by the input of other team members. Based on Hoever et al.'s (2017) guidelines, three distinct types of statements qualifies as such. One of which is when an idea is generated based on drawing parallels between the context of the task with other contexts as prompted by the previous input of another team member. Another of which is when team members articulate their idea generation thought process aloud, which

includes the sharing of incomplete or half-baked ideas, in response to the input of another team member. The last of which is when a team member takes a previous utterance made by another team member out of context and move the discussion in another direction. Three independent judges assessed the frequency to which such statements were made by each team's members.

As with the scoring of team information elaboration, the three judges independently provided their frequency ratings for team generation processing on their assigned video footages. Inter-rater reliability was assessed via their scores on the 35 randomly-selected video footages that were commonly assigned to all of them. Inter-rater reliability among the three judges was deemed to be good, with ICC(2)= .849; although mean r_{wg} (using a uniform null distribution) was .252 (median r_{wg}= 500). Team generative processing frequency scores were averaged among the three judges for the 35 teams whose video footages were commonly assigned to all three judges.

Procedure

378 participants (113 males and 265 females), age ranging from 18 to 27 years old, were recruited from the Singapore Management University subject pool system and randomly assigned to either three-member or four-member teams, yielding a total of 105 teams. Each team was then randomly assigned to one of three conditions; positive mood (36 teams), negative mood (35 teams), or neutral mood (34 teams). Participants were awarded SGD$12 for their participation in this one-hour study.

A cover story was provided to all participants, stating that the study aimed to examine the effects of different musical genre and states of mind on creativity. The cover story further explains that to achieve that aim, during the experiment, different teams will be exposed to different types of music and will read different types of statements. Participants were also told

that because music may affect one's mood, they will be asked to report their mood experienced at several time points during the study. As per IRB requirements, participants were also made known that video footages of their team discussion session would be captured during the study. A check of hypothesis guessing at the end of the study revealed that no participant had correctly guessed the true hypotheses of our study.

All participants were randomly assigned to teams of either three or four and led to separate discussion rooms. Participants first, independently, completed a basic demographic survey (e.g., age, gender, GPA, etc.) and the PANAS survey assessing their dispositional affect; wherein participants were instructed to rate themselves based on how they "generally" felt on 20 affective terms. Participants also completed additional individual differences measures on their personality and need for cognitive closure (*see* Appendix N), though these were not the primary focus of this present study. Following which, participants within each discussion room were given three minutes to introduce themselves to one another and to come up with a team name. The musical mood induction procedure commenced once a team name was established.

For teams assigned to the positive mood condition, the music "Coppelia" by Delibes was played in the background. For teams assigned to the negative mood condition, the music "Russia under the Mongolian Yoke" by Prokofiev was played at half-speed. Lastly, for teams assigned to the neutral mood condition, the music "Prelude l'Apres Midi d'un Faun" by Debussy was played. During the first two minutes of musical exposure, all participants were instructed to sit back, close their eyes, and immerse themselves in the music. Additionally, they were instructed to try to experience the feelings that they believe the composer was trying to make their listeners feel. The music continued to play in a perpetual loop throughout the entirety of the study from this point forth.

Following the first two minutes of musical immersion, the Velten mood induction procedure commenced. Members of each team were each given a bounded set of papers. Each set contained 25 pieces of paper, with a self-referent statement printed on each page. All members within teams assigned to the positive mood condition read positive mood-inducing self-referent statements (e.g., I feel cheerful), whereas members in teams assigned to the negative mood condition read negative mood-inducing self-referent statements (e.g., I feel cheated by life). Lastly, members in teams assigned to the neutral mood condition read neutral statements (e.g., Elephants carried the supplies).

Participants were instructed to read each Velten statement at their own pace. In addition, they were told that for each statement, they should focus on saturating themselves with the atmosphere expressed by that statement and to incorporate the feeling expressed in the statement into their minds. They were also instructed not to spend too much time on any particular statement and to return back to the first statement and cycle through the stack again once they have finished reading the last statement. The entire procedure lasted for seven minutes for all teams, regardless of condition assigned.

Upon completion of the Velten mood induction procedure, PANAS, this time administered as a state affect measure, was administered to all team members as a manipulation check for the mood induction procedures. All team members were independently tasked to rate themselves on how they were feeling "right now" on the same 20 affective terms (presented in a different order than before). Additionally, though not the primary focus of this study, participants also completed a measure of arousal at this time point (*see* Appendix N).

Teams were then presented with the idea generation task adopted from de Dreu et al. (2008), where they were instructed to, as a team, generate as many creative ideas as possible to

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improve the university's quality of education. They were explicitly told that creative ideas are those that are both highly novel and practical. No time limit was ascribed for the task and all teams were told that they could stop the task and submit their ideas whenever they were ready to do so. While total time spent on the task was recorded as an indicator of team epistemic motivation, participants were not made known of this.

Finally, all participants completed the information processing motivation scale independently, which was administered to retrospectively assess their team's level of epistemic motivation during the team idea generation task. Participants also completed additional measures assessing their team's level of collective efficacy, identification levels, viability, cohesion, satisfaction, learning and performance goal orientation, psychological safety, trust, perceived creative performance, reflexivity, and conflict (*see* Appendix N), though these were not the primary focus of this present study. Participants were thanked and debriefed following the completion of these measures.

The number of unique ideas each team generated served as indicator of their fluency of ideas. Two independent judges were then employed to peruse the ideas generated by each team to provide ratings of novelty and practicality. Additionally, a separate group of three independent judges were employed to peruse the video footages of the teams' idea generation discussion sessions and provide ratings reflective of the extent to which these teams engaged in team information elaboration and team generative processing. Lastly, two independent judges were employed to ascertain the number of distinct categories each team's ideas could be categorized into (i.e., team ideational flexibility), which served as an indicator of cognitive flexibility levels among members of each team.

Results

To assess the efficacy of our team mood manipulation, Analysis of Variance (ANOVA) tests were conducted on state positive and negative affect scores that were each aggregated to the team level by taking the mean among members of each team. Results revealed that significant differences exists among the three conditions for team positive affect scores, with $F(2, 102)=$ 45.392, $p < .001$, $\eta_p^2 = .471$. Further pairwise analyses, with Bonferroni adjustment to account for possible family-wise inflation error, revealed that teams assigned to the positive mood condition exhibited significantly higher levels of positive affect ($M= 2.858$, $SD= 0.364$) as compared to teams assigned to the negative mood condition ($M= 2.021$, $SD= 0.417$), $p < .001$ and teams assigned to the neutral mood condition ($M= 2.096$, $SD= 0.447$), $p < .001$.

Similarly, our ANOVA tests revealed that significant differences exists among the three conditions for team negative affect scores, with $F(2, 102)= 25.464$, $p < .001$, $\eta_p^2 = .333$. Further pairwise analyses, with Bonferroni adjustment to account for possible family-wise inflation error, revealed that teams assigned to the negative mood condition exhibited significantly higher levels of negative affect ($M= 2.065$, $SD= 0.444$) as compared to teams assigned to the positive mood condition ($M= 1.505$, $SD= 0.273$), $p < .001$ and teams assigned to the neutral mood condition ($M= 1.581$, $SD= 0.334$), $p < .001$. Collectively, these findings indicate that both our experimental induction of positive team mood and negative team mood were successful. Additionally, ANOVA tests conducted on participants' dispositional positive and negative affect scores that were collected right at the beginning of the study revealed no significant difference across the three conditions, with $F(2, 102)= 0.528$, $p= .591$, $\eta_p^2 = .010$ and $F(2, 102)= 2.327$, $p= .103$, $\eta_p^2 = .044$ respectively, suggesting that the resultant team mood induced were not attributable to such dispositional tendencies.

A series of regression analyses were then conducted to examine the effects of positive team mood and negative team mood on our proposed mediators and outcome variables. As our independent variable (team mood induced) is a categorical variable with three levels (positive, negative, and neutral mood), dummy variables were created; a positive team mood dummy variable was created by coding "1" for teams assigned to the positive mood condition and "0" for teams assigned to all other conditions, while a negative team mood dummy variable was created by coding "1" for teams assigned to the negative mood condition and "0" for teams assigned to all other conditions. As such, neutral team mood was our effective reference category. The results of these regression analyses conducted are detailed below and illustrated within Figures 2 and 3 of Appendix H. Additionally, a bivariate correlation table containing all variables measured within this present study is appended to Appendix I. A separate table containing within-group agreement indices for all additional measures included (e.g., collective efficacy, trust, etc.) is appended to Appendix J.

To examine the effects of team mood on the novelty aspect of team creativity, novelty ratings for ideas generated by each team were regressed on the abovementioned dummy variables. Results revealed that having a positive team mood (versus neutral team mood) significantly predicted increased novelty of ideas generated, B= .624, $t(102)$= 3.039, p= .003. Having a negative team mood (versus neutral team mood), however, did not significantly predict novelty of ideas generated, B= .164, $t(102)$= 0.792, p= .430. Separately controlling for number of team members and even time spent on the team idea generation task did not produce any significant changes to any of these findings.

To examine the effects of team mood on the practicality aspect of team creativity, practicality ratings for ideas generated by each team were regressed on the same previously-

detailed dummy variables. Results revealed that having a positive team mood (versus neutral team mood) significantly predicted decreased practicality of ideas generated, B= -.825, t(102)= -4.313, p< .001. Additionally, results also revealed having a negative team mood (versus neutral team mood) significantly predicted decreased practicality of ideas generated, B= -.539, t(102)= -2.796, p= .006. Separately controlling for number of team members and even time spent on the team idea generation task did not produce any significant changes to any of these findings.

To examine the effects of team mood on the fluency aspect of team creativity, the number of unique ideas generated by each team was regressed on the same previously-detailed dummy variables. Results revealed that having a positive team mood (versus neutral team mood) did not significantly predict fluency of ideas, b= .806, t(102)= 0.408, p= .684. Similarly, results revealed that having a negative team mood (versus neutral team mood) did not significantly predict fluency of ideas, B= 1.371, t(102)= 0.690, p= .492. Separately controlling for number of team members and even time spent on the team idea generation task did not produce any significant changes to our findings.

To examine the effects of team mood on team generative processing levels, team generative processing frequency ratings was regressed on the same previously-detailed dummy variables. Results indicated that having a positive team mood (versus neutral team mood) predicted increased team generative processing levels with marginal significance, B= .940, t(102)= 1.846, p= .068. Having a negative team mood (versus neutral team mood), however, did not significantly predict team generative processing levels, B= .646, t(102)= 1.260, p= .211. The marginally significant effect of positive team mood (versus neutral team mood) held even after separately controlling for number of team members, B= .984, t(101)= 1.947, p= .054, and time spent on the team idea generation task, B= .878, t(101)= 1.993, p= .049. No significant changes

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in results were found for the non-effects of negative team mood (versus neutral team mood) even after controlling for these variables.

To examine the effects of team mood on team information elaboration levels, team information elaboration scores were regressed on the same previously-detailed dummy variables. Results revealed that having a positive team mood (versus neutral team mood) did not significantly predict team information elaboration levels, $B= .218$, $t(102)= 0.537$, $p= .592$. Similarly, results revealed that having a negative team mood (versus neutral team mood) did not significantly predict team information elaboration levels, $B= -.373$, $t(102)= -0.912$, $p= .364$. Separately controlling for number of team members and even time spent on the team idea generation task did not produce any significant changes to our findings.

To examine the effects of team mood on team ideational flexibility, the number of unique categories to which ideas generated by each team could be categorized into was regressed on the same previously-detailed dummy variables. Results revealed that having a positive team mood (versus neutral team mood) did not significantly predict team ideational flexibility, $B= -.134$, $t(102)= -0.364$, $p= .717$. Similarly, results revealed that having a negative team mood (versus neutral team mood) did not significantly predict team ideational flexibility, $B= .360$, $t(102)= 0.970$, $p= .334$. Separately controlling for number of team members and even time spent on the team idea generation task did not produce any significant changes to our findings.

To examine the effects of team mood on team persistence, the amount of time (in minutes) each team was willing to spend on the team idea generation task was regressed on the same previously-detailed dummy variables. Results revealed that having a positive team mood (versus neutral team mood) did not significantly predict team persistence, $B= 0.294$, $t(102)= 0.239$, $p= .811$. Similarly, results revealed that having a negative team mood (versus neutral team

mood) did not significantly predict team persistence, B= -0.182, $t(102)$= -0.147, p= .883. Controlling for number of team members did not produce any significant changes to our findings.

To examine the effects of team mood on perceived team epistemic motivation, aggregated scores on the information processing motivation scale were regressed on the same previously-detailed dummy variables. Results revealed that having a positive team mood (versus neutral team mood) did not significantly predict perceived team epistemic motivation, B= 0.030, $t(102)$= 0.211, p= .833. Similarly, results revealed that having a negative team mood (versus neutral team mood) did not significantly predict perceived team epistemic motivation, B= -0.181, $t(102)$= -1.271, p= .207. Controlling for number of team members did not produce any significant changes to our findings. It should be noted that team persistence and perceived team epistemic motivation were found to be significantly correlated, r=.359, p<.001.

Mediation analyses were then conducted to examine our mediational hypotheses. The same dummy variables were used for these analyses; a positive team mood dummy variable which was created by coding "1" for teams assigned to the positive mood condition and "0" for teams assigned to the other conditions, and a negative team mood dummy variable which was created by coding "1" for teams assigned to the negative mood condition and "0" for teams assigned to the other conditions, with teams assigned to the neutral mood condition effectively being our reference category. Results of these analyses are detailed below and illustrated from Tables 3 – 8 and Figures 4 – 9 in Appendix K.

To examine team generative processing levels as a mediator of the relationship between positive team mood (versus neutral mood) and the fluency aspect of team creativity, a mediation analysis was conducted via the SPSS PROCESS macro (*see* Hayes, 2012) as detailed in Table 3

of Appendix K. Results revealed that having a positive team mood (versus neutral team mood) predicted increased levels of team generative processing at marginal significance, $B= 0.940$, $t(102)= 1.846$, $p= .068$. Levels of team generative processing, in turn, significantly predicted increased creative fluency, $B= 2.432$, $t(101)= 8.083$, $p< .001$ while the positive team mood dummy variable loss its statistical significance completely when levels of team generative processing was added to the model, $B= -1.480$, $t(101)= -0.941$, $p= .349$, thereby indicating complete mediation. This indirect effect was tested using a bootstrap estimation approach with 5000 samples (*see* Shrout & Bolger, 2002). Results indicated that the indirect effect was statistically significant ($B= 2.286$, SE= 1.269, 95% C.I.= 0.064, 5.035). These effects held even after separately controlling for number of team members and time spent on the team idea generation task.

To examine team generative processing levels as a mediator of the relationship between positive team mood (versus neutral team mood) and the novelty aspect of team creativity, a mediation analysis was conducted via the SPSS PROCESS macro as detailed in Table 4 of Appendix K. Similarly, results revealed that having a positive team mood (versus neutral team mood) predicted increased levels of team generative processing at marginal significance, $b= 0.940$, $t(102)= 1.846$, $p= .068$. Levels of team generative processing, in turn, significantly predicted increased novelty of ideas generated, $b= 0.151$, $t(101)= 4.050$, $p< .001$, although the positive team mood dummy variable remained statistically significant, $b= 0.482$, $t(101)= 2.479$, $p= .015$, thereby indicating partial mediation. This indirect effect was tested using the same bootstrap estimation approach with 5000 samples. Results indicate that the indirect effect was statistically significant ($b= 0.142$, SE= 0.083, 95% C.I.= 0.021, 0.363). These effects held even

after separately controlling for number of team members and time spent on the team idea generation task.

A path analysis was then conducted using MPlus to examine these hypothesized mediational relationships pertaining to positive team mood within a single model (*see* Muthén & Muthén, 2005). Specifically, our path model examined the relationship between having a positive team mood (versus neutral team mood) and the resultant levels of engagement in team generative processing, illustrated as path (a) of Figure 1 in Appendix A, and the relationships between levels of engagement in team generative processing and both the fluency and novelty aspects of team creativity, illustrated as paths (c) and (d) respectively in Figure 1 of Appendix A. The same dummy variables were used for this analysis; positive team mood dummy variable which coded for "1" for teams assigned to the positive mood condition and "0" for teams assigned to the other conditions, and a negative team mood dummy variable which coded for "1" for teams assigned to the negative mood condition and "0" for teams assigned to the other conditions. The exact statistical model tested, along with all factor loadings obtained, is illustrated in Figure 10 of Appendix L. Fit indices obtained were indicative of good model fit, χ^2 (4, N= 105)= 9.930, p= .042, CFI= .924, SRMR= .060.

Next, to examine team information elaboration levels as a mediator of the relationship between negative team mood (versus neutral team mood) and the novelty aspect of team creativity, a mediation analysis was conducted via the SPSS PROCESS macro as detailed in Table 6 of Appendix K. Results indicated that having a negative team mood (versus neutral team mood) did not significantly predict levels of team information elaboration, B= -0.373, t(102)= -0.912, p= .364. Levels of team information elaboration was, however, found to predict increased novelty of ideas generated at marginal significance, B= 0.091, t(101)= 1.837, p= .069. This

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marginal statistical significance held even after controlling for number of team members, $B=$ 0.088, $t(100)= 1.766$, $p= .080$.

To examine team information elaboration levels as a mediator of the relationship between negative team mood (versus neutral team mood) and the practicality aspect of team creativity, a mediation analysis was conducted via the SPSS PROCESS as detailed in Table 7 of Appendix K. Similarly, results revealed that having a negative team mood (versus neutral team mood) did not significantly predict levels of team information elaboration, $B= -0.373$, $t(102)= -0.912$, $p= .364$. Levels of team information elaboration was also not found to significantly predict practicality of ideas generated, $B= 0.055$, $t(101)= 1.172$, $p= .244$. Controlling for number of team members did not produce any significant changes to our findings.

A path analysis was then conducted using MPlus to examine these hypothesized mediational relationships pertaining to negative team mood within a single model. Specifically, our path model examined the relationship between having a negative team mood (versus neutral team mood) and the resultant levels of engagement in team information elaboration, illustrated as path (b) of Figure 1 in Appendix A, and the relationships between levels of engagement in team information elaboration and both the novelty and practicality aspects of team creativity, illustrated as paths (e) and (f) respectively in Figure 1 of Appendix A. The same dummy variables were used for this analysis; positive team mood dummy variable which coded for "1" for teams assigned to the positive mood condition and "0" for teams assigned to the other conditions, and a negative team mood dummy variable which coded for "1" for teams assigned to the negative mood condition and "0" for teams assigned to the other conditions. The exact statistical model tested, along with all factor loadings obtained, is illustrated in Figure 11 of

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Appendix L. Fit indices obtained, however, were indicative of poor model fit, χ^2 (4, N= 105)= 20.145, p< .001, CFI= .773, SRMR= .094.

An overall path analysis was then conducted using MPlus to test our proposed dual-process pathways within a single model, simultaneously examining all paths from (a) to (f) of Figure 1 in Appendix A. The same previously-mentioned dummy variables were used for this analysis. The exact statistical model tested, along with all factor loadings obtained, is illustrated in Figure 12 of Appendix L. Unfortunately, fit indices obtained were generally indicative of poor model fit, χ^2 (9, N= 105)= 57.919, p< .001, CFI= .709, SRMR= .114.

Finally, mediation analyses were conducted to examine cognitive flexibility and epistemic motivation levels among team members as mediators in the relationship between positive team mood and team generative processing levels, and between negative team mood and team information elaboration levels respectively. Likewise, the same previously-detailed dummy variables were used for these analyses.

To examine cognitive flexibility levels among team members as a mediator of the relationship between positive team mood (versus neutral team mood) and levels of engagement in team generative processing, a mediation analysis was conducted via the SPSS PROCESS as detailed in Table 9 of Appendix M using team ideational flexibility as an indicator of cognitive flexibility levels among team members. Results indicated that having a positive team mood (versus neutral team mood) did not significantly predict levels of team ideational flexibility, B= -0.134, t(102)= -0.364, p= .717. Team ideational flexibility, however, was found to be significantly, positively associated with levels of engagement in team generative processing, B= 0.653, t(101)= 5.388, p< .001. Separately controlling for number of team members and even time spent on the team idea generation task did not produce any significant changes to our findings.

To examine epistemic motivation levels among team members as a mediator of the relationship between negative team mood (versus neutral team mood) and levels of engagement in team information elaboration, mediation analyses was conducted via the SPSS PROCESS macro as detailed in Tables 10-11 of Appendix M, using team persistence and perceived team epistemic motivation levels respectively as indicators of epistemic motivation levels among team members.

Using team persistence as an indicator of epistemic motivation levels among team members, it was found that having a negative team mood (versus neutral team mood) did not significantly predict team persistence levels, B= -0.182, $t(102)$= -0.147, p= .884. Team persistence levels, however, was found to significantly predict increased levels of team information elaboration, B= 0.205, $t(101)$= 7.944, $p<$ .001. Controlling for number of team members did not produce any significant changes to our findings.

Using levels of perceived team epistemic motivation as an indicator of epistemic motivation levels among team members, it was found that negative team mood (versus neutral team mood) did not significantly predict levels of perceived team epistemic motivation, B= -0.181, $t(102)$= -1.271, p= .207. Levels of perceived team epistemic motivation, however, was found to significantly predict increased levels of team information elaboration, B= 1.014, $t(101)$= 3.791, $p<$ .001. Controlling for number of team members did not produce any significant changes to our findings.

Discussion

Our results were generally in support of our hypothesis that positive team mood would increase a team's engagement in team generative processing, which would, in turn, enhance team creativity in terms of the quantity of ideas generated and novelty of ideas generated (depicted as

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paths (a), (c), and (d) in Figure 1 of Appendix A). Although the relationship between positive team mood and team generative processing was found to be only marginally significant, the entire mediation model was tested via path analysis which yielded fit indices indicating of good model fit. This supports our postulation that having a positive team mood increases team members' ability to attain creative insight based on the input of others and, consequently, generate even more creative ideas on their own (i.e., team generative processing), thereby leading to increased fluency and novelty of ideas generated as a team.

Our results, however, did not support our hypothesis that negative team mood would increase a team's engagement in team information elaboration, which would, in turn, enhance team creativity in terms of novelty and practicality of ideas generated (depicted as paths (b), (e), and (f) in Figure 1 of Appendix A). Having a negative team mood was found to be unrelated to the subsequent levels of engagement in team information elaboration. Additionally, having a negative team mood was found to be negatively related to practicality of ideas generated and unrelated to novelty of ideas generated. These findings suggest that having a negative team mood may not be beneficial for team creativity at all; corroborating past studies which have found that positive team mood, rather than negative team mood, enhances team creativity (e.g., Grawitch, Munz, Elliott, et al., 2003; Grawitch, Munz, & Kramer, 2003; Klep et al., 2011).

These findings, however, are in contrast to past studies demonstrating the benefits of having a negative team mood in enhancing team creativity (e.g., Jones & Kelly, 2009; Richter et al., 2012). In particular, Jones and Kelly (2009) found that teams under a negative mood exhibited higher levels of team persistence and, consequently, increased team creativity in terms of novelty of ideas generated. However, not only did we not find any positive effect of having a negative team mood on novelty of ideas generated, our analyses also revealed that negative team

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mood did not significantly predict increased levels of team persistence or perceived team epistemic motivation among team members.

It is, however, possible that we did not find a positive relationship between negative team mood and team information elaboration, and team creativity due to the the strength (or, rather, lack thereof) of our negative mood induction procedure. While our positive mood induction procedure managed to elicit, on average, about a full point increase in state positive affect on the 5-point PANAS measure, our negative mood induction procedure only managed to elicit, on average, a 0.523-point increase in state negative affect. This may have been insufficient in heightening epistemic motivation among team members and encouraging team information elaboration, which are posited to be fuelled by potent negative emotions that signal unsatisfactory performance on the task at hand.

It is also possible that the experiencing of negative mood inadvertently induced some levels of task avoidance motivation among team members. Past research has shown that while the experiencing of negative emotions is capable of inducing approach-oriented behaviours (e.g., task persistence), it is also equally capable in eliciting avoidance-oriented behaviours (Ahern & Schwartz, 1979; Wallace, Ready, & Weitenhagen, 2009). Carver (2006) posited that certain individual difference factors, such as behavioural approach and inhibition sensitivity (BAS and BIS) and perceived confidence in being able to ameliorate the less-than-desirable situation, may determine whether the experiencing of negative affect leads one to relent (avoid) or try harder (approach). While we did not assess these individual difference variables within our study, our findings do suggest for the possibility that some level of avoidance motivation may have been induced, such that team members under a negative mood were not particularly motivated to

persist longer on the task or to engage in deeper and more in-depth discussions among each other.

We conducted a series of post-hoc analyses on some of the additional variables measured within this study to examine the abovementioned notion. A series of regression analyses revealed that having a negative team mood was associated with decreased team arousal B= -0.184, $t(102)$= -2.384, p= .019 and team performance goal orientation B= -0.278, $t(102)$= -1.921, p= .057. Both team arousal levels and team performance goal orientation, were, in turn, positively related to team information elaboration levels, with B= 1.247, $t(101)$= 2.433, p= .017 and B= 0.485, $t(101)$= 1.752, p= .083 respectively. These results suggest that negative team mood induced in our study may have induced some levels of task avoidance motivation, which, in turn, precludes these teams under a negative mood from actively engaging in critical discussion and deliberations among one another to generate creative ideas. Nonetheless, future studies should aim to adopt a stronger negative mood induction procedure that does not reduce the team's arousal levels and include a direct measure of avoidance goal orientation in order to ascertain this. It should be noted, at this point, that we did not find team arousal levels to exert any significant impact on any of our mediational hypotheses involving team generative processing levels.

We also found that even though team persistence or perceived team epistemic motivation levels were found to be unrelated to experiencing of negative team mood, they were significantly, positively related to team information elaboration levels as hypothesized. Additionally, increased engagement in team information elaboration was found to predict increased novelty of ideas generated (in support of path (e) of Figure 1 in Appendix A). This renders support to our postulation that increased team epistemic motivation would encourage

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team members to search for, attend to, and make integrations among the inputs of other team members (i.e., team information elaboration), thereby leading to increased novelty of ideas generated as a team.

Contrary to our postulation however, team information elaboration was found to be unrelated to the practicality of ideas generated (failing to support path (f) of Figure 1 in Appendix A). This suggests that while actively deliberating upon and making integrations among team members' inputs may enhance the novelty of ideas generated by the team, it does not necessarily enhance the practicality of these ideas generated. A possible explanation for this finding is that the novelty aspect of the idea generation task was much more salient to the team members than the practicality aspect, such that all deliberative and integrative efforts were expanded exclusively toward the furthering of novel, rather than practical, ideas. Future studies may wish to explore this further.

Our hypothesis that increased cognitive flexibility among team members, as assessed via team ideational flexibility, would underlie the relationship between positive team mood and increased engagement in team generative processing was also not found to be supported. Having a positive team mood was not found to be related to team ideational flexibility levels. Team ideational flexibility, however, was found to be positively related to team generative processing levels; the latter of which, as previously-detailed, has been found to predict increased fluency and novelty of ideas generated. This suggests that while increased cognitive flexibility among team members may facilitate the engagement in team generative processing, this is not the mean by which positive team mood enhances team generative processing.

Perhaps more importantly, the abovementioned finding draws into question the validity of the widespread assumption inherent in the Broaden-and-Build perspective of the team mood-

team creativity relationship, which specifies increased cognitive flexibility among team members as the primary mechanism by which positive team mood heightens team creativity (e.g., Grawitch, Munz, Elliott, et al., 2003; Tsai et al., 2012). It is, however, possible that we did not find a positive relationship between positive team mood and cognitive flexibility levels among team members because the latter was measured at the team level via team ideational flexibility, rather than at the individual level where the effect has been typically observed (e.g., Carnevale & Isen, 1986; Isen, Daubman, & Nowicki, 1987). If this is indeed the case, it would suggest that cognitive flexibility elicited among individual team members by the experiencing of a positive mood does not translate directly into team-level gains, such that it only manifests at the individual level and not at the team level. It is, therefore, via increased engagement in team generative processing that explains the subsequent increased fluency and novelty of ideas generated by teams experiencing a positive mood rather than increased cognitive flexibility among team members. We believe these findings further underscore the importance in considering the effects of team mood in relation to processes that originate and operate at the team level, such as team generative processing, in order to explicate its effects on creativity at the team level.

Perhaps the most surprising finding in our current study was the effect of team mood on the practicality aspect of team creativity. Not only was negative team mood found to predict decreased practicality of ideas generated, but positive team mood was also found to be significantly detrimental toward the practicality of ideas generated. This suggests that the experiencing of any sort of mood deviating from neutrality within a team negatively impacts the practicality of ideas subsequently generated.

The observed negative relationship between positive team mood and practicality of ideas generated could possibly be explained by consulting the cognitive neuroscience literature; specifically, the antagonistic relationship between the amygdala and the prefrontal cortex. The amygdala is an area of the brain that is responsible for the processing of emotions and is posited to drive impulsivity and risk-taking behavior (Cyders et al., 2015). The experiencing of activating positive mood may have roused team members' amygdala, which has been shown to exert an attenuating effect on the functioning of the prefrontal cortex, which is an area of the brain responsible for level-headed logical reasoning (Arnsten, Raskind, Taylor, & Connor, 2015; Saez, Rigotti, Ostojic, Fusi, & Salzman, 2015). This may have then resulted in reduced scrutiny of ideas and suggestions put forward by each other and, consequently, resulting in the generation of ideas which were significantly less practical. This is characteristically similar to the flight of ideas episodes typically observed in patients afflicted with manic disorder, whereby their highly positive mood drives them to generate a barrage of ideas that are highly novel yet impractical (Carlson & Goodwin, 1973; Geller et al., 2004; Young, Abrams, Taylor, & Meltzer, 1983).

The negative relationship between negative team mood and practicality of ideas generated, on the other hand, may be potentially explained by increased task avoidance motivation as previously-discussed, such that the experiencing of deactivating negative mood may have tempered their motivation to perform in the task, reducing their desire to engage in critical deliberation among one another; thereby resulting in the production of ideas that were significantly less practical. Nonetheless, further studies are required to replicate and validate these unexpected findings before they can be further expounded upon.

In summary, partial support was obtained for our proposed dual-process team mood framework of team creativity. Specifically, it was found that teams experiencing a positive mood

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exhibited increased engagement in team generative processing, which resulted in the production of both more ideas and ideas which were more novel (i.e., paths (a), (c), and (d) of Figure 1 in Appendix A). Our findings lend support to proponents of positive team mood asserting that positive team mood, rather than negative team mood, boosts team creativity. The successful identification of team generative processing, an integral team-level process of team creative idea generation, as a mediator represents the first major step forward in elucidating the effects of positive team mood on team creativity via team-level processes.

On the other hand, negative team mood did not seem to predict increased team information elaboration (path (b) of Figure 1 in Appendix A) or novelty of ideas generated. Instead, it predicted reduced practicality of ideas generated. Levels of engagement in team information elaboration, though, was found to be significantly, positively related to novelty of ideas generated (path (e) of Figure 1 in Appendix A). Along with the finding that levels of engagement in team generative processing predicted increased novelty of ideas generated (path (d) of Figure 1 in Appendix A), this lends support to past studies positing that both team generative processing and team information elaboration represent two distinct processes by which teams can engage in order to generate novel ideas (e.g., Hoever et al., 2017). While we provided a number of plausible explanations for our unexpected findings pertaining to negative team mood, further studies are needed in order to ascertain them.

Collectively, our findings suggest that team managers should endeavor to quell negativity within their teams and lift the mood of their teams in order for them to produce more ideas and ideas that are more novel. Having ascertained that the positive effect of positive team mood on fluency and novelty of ideas generated stems from increased engagement in team generative processing, which entails the successive generation of ideas based on creative insight obtained

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from the inputs of other team members, team managers may then wish to consider techniques aimed at improving the rate at which ideas or inputs are shared, such as a round-robin format (*see* Thompson, 2003). While such techniques may potentially limit the extent to which information and ideas could be elaborated on, such techniques may be particularly beneficial for teams under a positive mood which depend primarily on the engagement of team generative processing to attain greater levels of team creativity in terms of fluency and novelty.

We, however, unexpectedly found that both positive and negative team mood resulted in the generation of ideas that were significantly less practical than those generated by teams under a neutral mood. This suggests that team managers may be better off stopping at quelling negative mood within their teams rather than to go further and attempt to induce a positive mood within their teams if practicality of ideas takes precedence over quantity and novelty of ideas, though it should be cautioned that this finding requires further validation.

Our study represents the first in which the team mood-team creativity relationship was expounded upon by experimentally manipulating all three valences of team mood (positive, negative, and neutral) and considering their effects on the very processes involved in team idea generation itself, beyond that of mere aggregated variables grounded by individual-level theories and team emergent states. Additionally, it provided an empirical assessment of the hitherto untested mediators of cognitive flexibility and epistemic motivation levels at the team level. Last but not least, our study looked beyond the novelty facet of team creativity and examined the effects of team mood on the fluency and practicality aspects of team creativity, allowing us to obtain a much more nuanced understanding of the relationship between team mood and team creativity. We believe that our current findings and approach represent a major step forward

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towards the elucidation of the relationship between team mood and team creativity and would

serve to guide future studies in this area.

References

Ahern, G. L., & Schwartz, G. E. (1979). Differential lateralization for positive versus negative emotion. *Neuropsychologia*, *17*(6), 693–698. https://doi.org/10.1016/0028-3932(79)90045-9

Albersnagel, F. A. (1988). Velten and musical mood induction procedures: A comparison with accessibility of thought associations. *Behaviour Research and Therapy*, *26*(1), 79–95. https://doi.org/10.1016/0005-7967(88)90035-6

Amabile, T. M., Barsade, S. G., Mueller, J. S., & Staw, B. M. (2005). Affect and Creativity at Work. *Administrative Science Quarterly*, *50*(3), 367–403. https://doi.org/10.2189/asqu.2005.50.3.367

Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behavior*, *19*(3), 235–258. https://doi.org/10.1002/(SICI)1099-1379(199805)19:3<235::AID-JOB837>3.0.CO;2-C

Arnsten, A. F. T., Raskind, M. A., Taylor, F. B., & Connor, D. F. (2015). The effects of stress exposure on prefrontal cortex: Translating basic research into successful treatments for post-traumatic stress disorder. *Neurobiology of Stress*, *1*, 89–99. https://doi.org/10.1016/j.ynstr.2014.10.002

Barsade, S. G., & Gibson, D. E. (1998). Group emotion: A view from top and bottom. In *Composition.* (pp. 81–102). US: Elsevier Science/JAI Press.

Barsade, S. G., & Gibson, D. E. (2007). Why does affect matter in organizations? *The Academy of Management Perspectives*, *21*(1), 36–59. https://doi.org/10.5465/AMP.2007.24286163

Barsade, S. G., & Knight, A. P. (2015). Group affect. *Annual Review of Organizational Psychology and Organizational Behavior*, *2*(1), 21–46. https://doi.org/10.1146/annurev-orgpsych-032414-111316

Barsade, S. G., Ward, A. J., Turner, J. D. F., & Sonnenfeld, J. A. (2000). To your heart's content: A model of affective diversity in top management teams. *Administrative Science Quarterly*, *45*(4), 802–836. https://doi.org/10.2307/2667020

Bechtoldt, M. N., De, C. D., Nijstad, B. A., & Choi, H. S. (2010). Motivated information processing, social tuning, and group creativity. *Journal of Personality and Social Psychology*, *99*(4), 622–637. https://doi.org/10.1037/a0019386

Bouhuys, A. L., Bloem, G. M., & Groothuis, T. G. G. (1995). Induction of depressed and elated mood by music influences the perception of facial emotional expressions in healthy subjects. *Journal of Affective Disorders*, *33*(4), 215–226. https://doi.org/10.1016/0165-0327(94)00092-N

Carlson, G. A., & Goodwin, F. K. (1973). The stages of mania: A longitudinal analysis of the manic episode. *Archives of General Psychiatry*, *28*(2), 221–228. https://doi.org/10.1001/archpsyc.1973.01750320053009

Carnevale, P. J. D., & Isen, A. M. (1986). The influence of positive affect and visual access on the discovery of integrative solutions in bilateral negotiation. *Organizational Behavior and Human Decision Processes*, *37*(1), 1–13. https://doi.org/10.1016/0749-5978(86)90041-5

Carver, C. S. (2006). Approach, avoidance, and the self-regulation of affect and action. *Motivation and Emotion*, *30*(2), 105–110. https://doi.org/10.1007/s11031-006-9044-7

Chen, C. X., Williamson, M. G., & Zhou, F. H. (2012). Reward system design and group creativity: An experimental investigation. *The Accounting Review; Sarasota*, *87*(6), 1885–1911.

Collins, A. L., Jordan, P. J., Lawrence, S. A., & Troth, A. C. (2016). Positive affective tone and team performance: The moderating role of collective emotional skills. *Cognition and Emotion*, *30*(1), 167–182. https://doi.org/10.1080/02699931.2015.1043857

Crawford, J. R., & Henry, J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *43*(3), 245–265. https://doi.org/10.1348/0144665031752934

Cross, N. (1997). Descriptive models of creative design: Application to an example. *Design Studies*, *18*(4), 427–440. https://doi.org/10.1016/S0142-694X(97)00010-0

Cyders, M. A., Dzemidzic, M., Eiler, W. J., Coskunpinar, A., Karyadi, K. A., & Kareken, D. A. (2015). Negative urgency mediates the relationship between amygdala and orbitofrontal cortex activation to negative emotional stimuli and general risk-taking. *Cerebral Cortex*, *25*(11), 4094–4102. https://doi.org/10.1093/cercor/bhu123

de Dreu, C. K. W., Baas, M., & Nijstad, B. A. (2008). Hedonic tone and activation in the mood-creativity link: Towards a dual pathway to creativity model. *Journal of Personality and Social Psychology*, *94*(5), 739–756. http://dx.doi.org/10.1037/0022-3514.94.5.739

de Dreu, C. K. W., Nijstad, B. A., Bechtoldt, M. N., & Baas, M. (2011). Group creativity and innovation: A motivated information processing perspective. *Psychology of Aesthetics, Creativity, and the Arts*, *5*. http://dx.doi.org/10.1037/a0017986

de Dreu, Carsten K. W., Koole, S. L., & Oldersma, F. L. (1999). On the seizing and freezing of

    negotiator inferences: Need for cognitive closure moderates the use of heuristics in

    negotiation. *Personality and Social Psychology Bulletin*, *25*(3), 348–362.

    https://doi.org/10.1177/0146167299025003007

Diedrich, J., Benedek, M., Jauk, E., & Neubauer, A. C. (2015). Are creative ideas novel and

    useful? *Psychology of Aesthetics, Creativity, and the Arts*, *9*(1), 35–40.

    https://doi.org/10.1037/a0038688

Dreisbach, G., & Goschke, T. (2004). How positive affect modulates cognitive control: Reduced

    perseveration at the cost of increased distractibility. *Journal of Experimental Psychology.*

    Learning, Memory, and Cognition, *30*(2), 343–353. https://doi.org/10.1037/0278-

    7393.30.2.343

Dugosh, K. L., Paulus, P. B., Roland, E. J., & Yang, H. (2000). Cognitive stimulation in

    brainstorming. *Journal of Personality and Social Psychology*, *79*(5), 722–735.

Farh, J. L., Lee, C., & Farh, C. I. C. (2010). Task conflict and team creativity : A question of how

    much and when. https://doi.org/10.1037/a0020015

Feldman, D. C. (1984). The development and enforcement of group norms. *Academy of*

    Management Review, *9*(1), 47–53. https://doi.org/10.5465/AMR.1984.4277934

Feldman, L. A. (1995). Variations in the circumplex structure of mood. *Personality and Social*

    Psychology Bulletin, *21*(8), 806–817. https://doi.org/10.1177/0146167295218003

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*,

    2(3), 300–319. https://doi.org/10.1037/1089-2680.2.3.300

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical*

    Transactions: Biological Sciences, *359*(1449), 1367–1377.

Geller, B., Zimerman, B., Williams, M., DelBello, M. P., Bolhofner, K., Craney, J. L., …
Nickelsburg, M. J. (2004). DSM-IV mania symptoms in a prepubertal and early
adolescent bipolar disorder phenotype compared to attention-deficit hyperactive and
normal controls. *FOCUS*, *2*(4), 586–595. https://doi.org/10.1176/foc.2.4.586

George, J. M., & King, E. B. (2007). Potential pitfalls of affect convergence in teams : Functions
and dysfunctions of group affective tone. *Affect and Groups*.

Gooty, J., Connelly, S., Griffith, J., & Gupta, A. (2010). Leadership, affect and emotions: A state
of the science review. *The Leadership Quarterly*, *21*(6), 979–1004.
https://doi.org/10.1016/j.leaqua.2010.10.005

Grawitch, M. J., Munz, D. C., Elliott, E. K., & Mathis, A. (2003). Promoting creativity in
temporary problem-solving groups: The effects of positive mood and autonomy in
problem definition on idea-generating performance. *Group Dynamics: Theory, Research,
and Practice*, *7*(3), 200–213. https://doi.org/10.1037/1089-2699.7.3.200

Grawitch, M. J., Munz, D. C., & Kramer, T. J. (2003). Effects of member mood states on creative
performance in temporary workgroups. *Group Dynamics: Theory, Research, and
Practice*, *7*(1), 41–54. https://doi.org/10.1037/1089-2699.7.1.41

Hancock, J. T., Gee, K., Ciaccio, K., & Lin, J. M.-H. (2008). I'M Sad You'Re Sad: Emotional
Contagion in CMC. In *Proceedings of the 2008 ACM Conference on Computer Supported
Cooperative Work* (pp. 295–298). New York, NY, USA: ACM.
https://doi.org/10.1145/1460563.1460611

Hargadon, A. B., & Bechky, B. A. (2006). When collections of creatives become creative
collectives: A field study of problem solving at work. *Organization Science*, *17*(4), 484–
500. https://doi.org/10.1287/orsc.1060.0200

Hinsz, V. B., Tindale, R. S., & Vollrath, D. A. (1997). The emerging conceptualization of groups

    as information processors. *Psychological Bulletin*, *121*(1), 43–64.

Hoever, I. J., van Knippenberg, D., van Ginkel, W. P., & Barkema, H. G. (2012). Fostering team

    creativity: Perspective taking as key to unlocking diversity's potential. *The Journal of*

    Applied Psychology, *97*(5), 982–996. https://doi.org/10.1037/a0029159

Hoever, I. J., Zhou, J., & Knippenberg, D. van. (2017). Different strokes for different teams: The

    contingent effects of positive and negative feedback on the creativity of informationally

    homogeneous and diverse teams. *Academy of Management Journal*, amj.2016.0642.

    https://doi.org/10.5465/amj.2016.0642

Homan, A. C., Hollenbeck, J. R., Humphrey, S. E., Knippenberg, D. V., Ilgen, D. R., & Kleef, G.

    A. V. (2008). Facing differences with an open mind: Openness to experience, salience of

    intragroup differences, and performance of diverse work groups. *Academy of*

    Management Journal, *51*(6), 1204–1222. https://doi.org/10.5465/AMJ.2008.35732995

Huntsinger, J. R., Isbell, L. M., & Clore, G. L. (2014). The affective control of thought:

    Malleable, not fixed. *Psychological Review*, *121*(4), 600–618.

    https://doi.org/10.1037/a0037669

Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative

    problem solving. *Journal of Personality and Social Psychology*, *52*(6), 1122–1131.

    https://doi.org/10.1037/0022-3514.52.6.1122

Isen, A. M., Johnson, M. M. S., Mertz, E., & Robinson, G. F. (1985). The influence of positive

    affect on the unusualness of word associations. *Journal of Personality and Social*

    Psychology, *48*(6), 1413–1426.

James, L. R. (1982). Aggregation bias in estimates of perceptual agreement. *Journal of Applied Psychology*, *67*(2), 219–229. https://doi.org/10.1037/0021-9010.67.2.219

James, L. R., Demaree, R. G., & Wolf, G. (1993). rwg: An assessment of within-group interrater agreement. *Journal of Applied Psychology*, *78*(2), 306–309. https://doi.org/10.1037/0021-9010.78.2.306

Javadi, E., Gebauer, J., & Mahoney, J. (2013). The impact of user interface design on idea integration in electronic brainstorming: An attention-based view. *Journal of the Association for Information Systems*, *14*(1), 1–21.

Jennings, P. D., McGinnis, D., Lovejoy, S., & Stirling, J. (2000). Valence and arousal ratings for velten mood induction statements. *Motivation and Emotion*, *24*(4), 285–297. https://doi.org/10.1023/A:1010745016868

Jonassen, D. H. (1992). What are cognitive tools? In *Cognitive Tools for Learning* (pp. 1–6). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-77222-1_1

Jones, E. E., & Kelly, J. R. (2009). No pain, no gains: Negative mood leads to process gains in idea-generation groups. *Group Dynamics: Theory, Research, and Practice*, *13*(2), 75–88. https://doi.org/10.1037/a0013812

Kaplan, H., Hill, K., Lancaster, J., & Hurtado, A. M. (2000). A theory of human life history evolution: Diet, intelligence, and longevity. *Evolutionary Anthropology: Issues, News, and Reviews*, *9*(4), 156–185. https://doi.org/10.1002/1520-6505(2000)9:4<156::AID-EVAN5>3.0.CO;2-7

Kelly, J. R., & Barsade, S. G. (2001). Mood and emotions in small groups and work teams. *Organizational Behavior and Human Decision Processes*, *86*(1), 99–130. https://doi.org/10.1006/obhd.2001.2974

Kim, M., & Shin, Y. (2015). Collective efficacy as a mediator between cooperative group norms and group positive affect and team creativity. *Asia Pacific Journal of Management*, *32*(3), 693–716. https://doi.org/10.1007/s10490-015-9413-4

Kitsantas, A., & Chow, A. (2007). College students' perceived threat and preference for seeking help in traditional, distributed, and distance learning environments. *Computers & Education*, *48*(3), 383–395. https://doi.org/10.1016/j.compedu.2005.01.008

Klep, A., Wisse, B., & Van der Flier, H. (2011). Interactive affective sharing versus non-interactive affective sharing in work groups: Comparative effects of group affect on work group performance and dynamics. *European Journal of Social Psychology*, *41*(3), 312–323. https://doi.org/10.1002/ejsp.775

Knight, A. P. (2013). Mood at the midpoint: Affect and change in exploratory search over time in teams that face a deadline. *Organization Science*, *26*(1), 99–118. https://doi.org/10.1287/orsc.2013.0866

Knight, A. P., & Eisenkraft, N. (2015). Positive is usually good, negative is not always bad: The effects of group affect on social integration and task performance. *Journal of Applied Psychology*, *100*(4), 1214. https://doi.org/10.1037/apl0000006

Koza, J. R., Keane, M. A., Streeter, M. J., Adams, T. P., & Jones, L. W. (2004). Invention and creativity in automated design by means of genetic programming. *AI EDAM*, *18*(3), 245–269. https://doi.org/10.1017/S089006040404017X

Kruglanski, A. W., Pierro, A., Mannetti, L., & De Grada, E. (2006). Groups as epistemic providers: Need for closure and the unfolding of group-centrism. *Psychological Review*, *113*(1), 84–100.

Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review*, *103*(2), 263–283.

Kurtzberg, T. R. (2005). Feeling creative, being creative: An empirical study of diversity and creativity in teams. *Creativity Research Journal*, *17*(1), 51–65. https://doi.org/10.1207/s15326934crj1701_5

Kurtzberg, T. R., & Amabile, T. M. (2001). From guilford to creative synergy: Opening the black box of team-level creativity. *Creativity Research Journal*, *13*(3–4), 285–294. https://doi.org/10.1207/S15326934CRJ1334_06

Lance, C. E., Butts, M. M., & Michels, L. C. (2006). The sources of four commonly reported cutoff criteria: What did they really say? *Organizational Research Methods*, *9*(2), 202–220. https://doi.org/10.1177/1094428105284919

Martin, M. (1990). On the induction of mood. *Clinical Psychology Review*, *10*(6), 669–697. https://doi.org/10.1016/0272-7358(90)90075-L

Murray, N., Sujan, H., Hirt, E. R., & Sujan, M. (1990). The influence of mood on categorization: A cognitive flexibility interpretation. *Journal of Personality and Social Psychology*, *59*(3), 411–425. https://doi.org/10.1037/0022-3514.59.3.411

Nijstad, B. A., Dreu, C. K. W. D., Rietzschel, E. F., & Baas, M. (2010). The dual pathway to creativity model: Creative ideation as a function of flexibility and persistence. *European Review of Social Psychology*, *21*(1), 34–77. https://doi.org/10.1080/10463281003765323

Nijstad, B. A., Stroebe, W., & Lodewijkx, H. F. M. (2002). Cognitive stimulation and interference in groups: Exposure effects in an idea generation task. *Journal of Experimental Social Psychology*, *38*(6), 535–544. https://doi.org/10.1016/S0022-1031(02)00500-0

Nijstad, B., Diehl, M., & Stroebe, W. (2003). Cognitive stimulation and interference in idea-generating groups. *Group Creativity: Innovation through Collaboration*. https://doi.org/10.1093/acprof:oso/9780195147308.003.0007

Paulus, P. (2000). Groups, teams, and creativity: The creative potential of idea-generating groups. *Applied Psychology*, *49*(2), 237–262. https://doi.org/10.1111/1464-0597.00013

Paulus, P. B., Larey, T. S., & Ortega, A. H. (1995). Performance and perceptions of brainstormers in an organizational setting. *Basic and Applied Social Psychology*, *17*(1–2), 249–265. https://doi.org/10.1080/01973533.1995.9646143

Paulus, P. B., & Yang, H.-C. (2000). Idea generation in groups: A basis for creativity in organizations. *Organizational Behavior and Human Decision Processes*, *82*(1), 76–87. https://doi.org/10.1006/obhd.2000.2888

Peters, M., Marginson, S., & Murphy, P. (2009). *Creativity and the global knowledge economy*. Peter Lang Publishing Group. Retrieved from https://researchbank.rmit.edu.au/view/rmit:4365

Pretz, J. E., & McCollum, V. A. (2014). Self-perceptions of creativity do not always reflect actual creative performance. *Psychology of Aesthetics, Creativity, and the Arts*, *8*(2), 227–236. https://doi.org/10.1037/a0035597

Rhee, S.-Y. (2007). Group emotions and group outcomes: The role of group-member interactions. *RESEARCH ON MANAGING GROUPS AND TEAMS*, *10*, 65–96.

Richter, A. W., Hirst, G., van Knippenberg, D., & Baer, M. (2012). Creative self-efficacy and individual creativity in team contexts: Cross-level interactions with team informational resources. *Journal of Applied Psychology*, *97*(6), 1282–1290. https://doi.org/10.1037/a0029359

Saez, A., Rigotti, M., Ostojic, S., Fusi, S., & Salzman, C. D. (2015). Abstract context

representations in primate amygdala and prefrontal cortex. *Neuron*, *87*(4), 869–881.

https://doi.org/10.1016/j.neuron.2015.07.024

Schneider, B., White, S. S., & Paul, M. C. (1998). Linking service climate and customer

perceptions of service quality: Tests of a causal model. *Journal of Applied Psychology*,

83(2), 150–163. https://doi.org/10.1037/0021-9010.83.2.150

Scholten, L., van Knippenberg, D., Nijstad, B. A., & De Dreu, C. K. W. (2007). Motivated

information processing and group decision-making: Effects of process accountability on

information processing and decision quality. *Journal of Experimental Social Psychology*,

43(4), 539–552. https://doi.org/10.1016/j.jesp.2006.05.010

Schwarz, N., & Clore, G. (1988). How do I feel about it? Informative functions of affective

states (pp. 44–62).

Sedikides, C. (1992). Mood as a determinant of attentional focus. *Cognition and Emotion*, *6*(2),

129–148. https://doi.org/10.1080/02699939208411063

Seibert, P. S., & Ellis, H. C. (1991). A convenient self-referencing mood induction procedure.

Bulletin of the Psychonomic Society, *29*(2), 121–124.

https://doi.org/10.3758/BF03335211

Shaw, G. A., & DeMers, S. T. (1986). The relationship of imagery to originality, flexibility and

fluency in creative thinking. *Journal of Mental Imagery*, *10*(1), 65–74.

Shin, Y. (2014). Positive group affect and team creativity: Mediation of team reflexivity and

promotion focus. *Small Group Research*, *45*(3), 337–364.

https://doi.org/10.1177/1046496414533618

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New

    procedures and recommendations. *Psychological Methods*, *7*(4), 422–445.

    https://doi.org/10.1037/1082-989X.7.4.422

Simpson, J., Rholes, W., & S. Nelligan, J. (1992). Support seeking and support giving within

    couples in an anxiety-provoking situation: The role of attachment styles. *Journal of*

    Personality and Social Psychology, *62*, 434–446. https://doi.org/10.1037/0022-

    3514.62.3.434

Sloan, T., & Telch, M. J. (2002). The effects of safety-seeking behavior and guided threat

    reappraisal on fear reduction during exposure: An experimental investigation. *Behaviour*

    Research and Therapy, *40*(3), 235–251. https://doi.org/10.1016/S0005-7967(01)00007-9

Soraci, S. A., Carlin, M. T., Chechile, R. A., Franks, J. J., Wills, T., & Watanabe, T. (1999).

    Encoding variability and cuing in generative processing. *Journal of Memory and*

    Language, *41*(4), 541–559. https://doi.org/10.1006/jmla.1999.2661

Stanley, J. (2008). Knowledge and certainty. *Philosophical Issues*, *18*(1), 35–57.

    https://doi.org/10.1111/j.1533-6077.2008.00136.x

Staw, B. M., Sandelands, L. E., & Dutton, J. E. (1981). Threat rigidity effects in organizational

    behavior: A multilevel analysis. *Administrative Science Quarterly*, *26*(4), 501–524.

    https://doi.org/10.2307/2392337

Sternberg, R. J., & Lubart, T. I. (1999). The concept of creativity: Prospects and paradigms. In

    Handbook of creativity (pp. 3–15). New York, NY, US: Cambridge University Press.

Tang, C., & Naumann, S. E. (2016). Team diversity, mood, and team creativity: The role of team

    knowledge sharing in Chinese R & D teams. *Journal of Management &*

    Organization, *22*(3), 420–434. https://doi.org/10.1017/jmo.2015.43

Teasdale, J. D., & Russell, M. L. (1983). Differential effects of induced mood on the recall of positive, negative and neutral words. *British Journal of Clinical Psychology*, *22*(3), 163–171. https://doi.org/10.1111/j.2044-8260.1983.tb00597.x

Thompson, L. (2003). Improving the creativity of organizational work groups. *Academy of Management Perspectives*, *17*(1), 96–109. https://doi.org/10.5465/ame.2003.9474814

Tiedens, L. Z., & Linton, S. (2001). Judgment under emotional certainty and uncertainty: The effects of specific emotions on information processing. *Journal of Personality and Social Psychology*, *81*(6), 973–988. https://doi.org/10.1037/0022-3514.81.6.973

Totterdell, P. (2000). Catching moods and hitting runs: Mood linkage and subjective performance in professional sport teams. *The Journal of Applied Psychology*, *85*(6), 848–859. https://doi.org/10.1037/0021-9010.85.6.848

Tsai, W.-C., Chi, N.-W., Grandey, A. A., & Fung, S.-C. (2012). Positive group affective tone and team creativity: Negative group affective tone and team trust as boundary conditions. *Journal of Organizational Behavior*, *33*(5), 638–656. https://doi.org/10.1002/job.775

van Ginkel, W. P., & van Knippenberg, D. (2008). Group information elaboration and group decision making: The role of shared task representations. *Organizational Behavior and Human Decision Processes*, *105*(1), 82–97. https://doi.org/10.1016/j.obhdp.2007.08.005

Walker, W. R., Skowronski, J. J., & Thompson, C. P. (2003). Life is pleasant--and memory helps to keep it that way! *Review of General Psychology*, *7*(2), 203–210. https://doi.org/10.1037/1089-2680.7.2.203

Wallace, H. M., Ready, C. B., & Weitenhagen, E. (2009). Narcissism and task persistence. *Self and Identity*, *8*(1), 78–93. https://doi.org/10.1080/15298860802194346

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063

West, M. (1996). Reflexivity and work group effectiveness : A conceptual integration. In M. A. West (Ed.), *The handbook of work group psychology :* (pp. 555–579). Chichester: John Wiley & Sons, Ltd. Retrieved from http://eprints.lancs.ac.uk/58928/

Wittrock, M. C. (1974). Learning as a generative process. *Educational Psychologist*, *11*(2), 87–95. https://doi.org/10.1080/00461527409529129

Young, M. A., Abrams, R., Taylor, M. A., & Meltzer, H. Y. (1983). Establishing diagnostic criteria for mania. *The Journal of Nervous and Mental Disease*, *171*(11), 676–682.

Appendix A
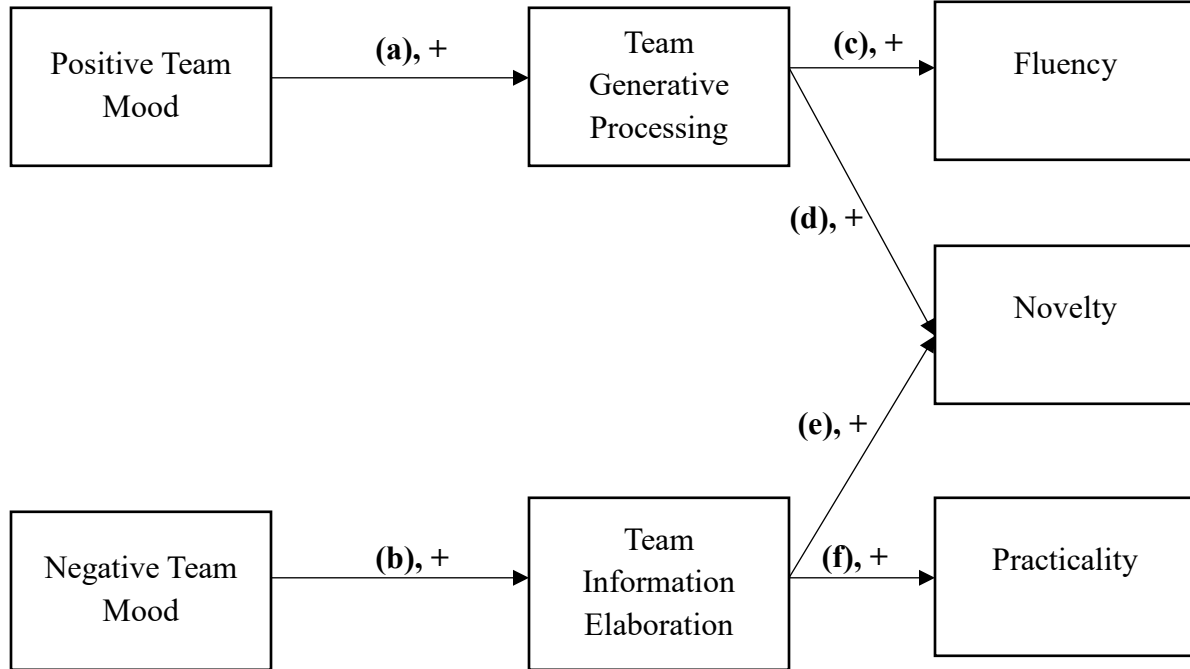
Figure 1. Proposed model of the relationship between team mood and team creativity

Appendix B

Article	Abstract
Tsai, W. C., Chi, N. W., Grandey, A. A., & Fung, S. C. (2012). Positive group affective tone and team creativity: Negative group affective tone and team trust as boundary conditions. *Journal of Organizational Behavior*, *33*(5), 638-656	Drawing on multiple group-level theories, we explored boundary conditions of the relationship between positive group affective tone (PGAT) and team creativity. We collected data from members and leaders of 68 research and development teams and performed hierarchical linear modeling analyses to test our hypotheses. Consistent with the "group-centrism" perspective, we found that PGAT was beneficial for team creativity only when team trust was low; when trust was high, PGAT had a negative relationship with team creativity. In accord with the "dual-tuning" perspective, the positive effect of PGAT on creativity was present only when team trust was low but negative group affective tone was high. We discussed the theoretical and practical implications
Shin, Y. (2014). Positive group affect and team creativity: Mediation of team reflexivity and promotion focus. *Small Group Research*, *45*(3), 337-364	The study explores group-level mechanisms linking positive group affective tone (PGAT) and team creativity. Drawing on Paulus and Dzindolet's group creativity model and the broaden-and-build theory of positive emotions, the mediating roles of team reflexivity and team promotion focus were examined. Survey data were collected from the leaders and members of 98 work teams in South Korea. Structural equation modeling results showed that when controlling for negative group affective tone, PGAT was significantly associated with team creativity. Furthermore, team reflexivity and team promotion focus fully mediated the relationship between PGAT and team creativity, and this effect held when team prevention focus was controlled for. The findings provide meaningful insights into the roles of team reflexivity and team promotion focus as critical social-cognitive and social-motivational processes in the group affect–creativity relationship.

Article	Abstract
Tang, C., & Naumann, S. E. (2016). Team diversity, mood, and team creativity: The role of team knowledge sharing in Chinese R & D teams. *Journal of Management & Organization*, *22*(3), 420-434	Research on the team diversity-team creativity relationship has been mixed. We present and empirically examine a model of mediated moderation in which team knowledge sharing intervenes in the impact of the interaction of team work value diversity and positive mood on team creativity. Survey participants included 458 employees working in 47 R&D teams from 17 research institutes in China. The interaction of team work value diversity and team positive mood positively affected team creativity and was mediated by team knowledge sharing. Our findings suggest that knowledge sharing and positive mood are necessary to facilitate the positive link between value diversity and creativity; otherwise, diversity can have negative effects on creativity. Thus, value diversity, mood, and knowledge sharing should be considered in the formation, training, and performance evaluation of teams.
Grawitch, M. J., Munz, D. C., & Kramer, T. J. (2003). Effects of member mood states on creative performance in temporary workgroups. *Group Dynamics: Theory, Research, and Practice*, *7*(1), 41.	Previous individual-level research suggests that positive mood promotes creative problem solving (A. M. Isen, 2000). The current study built on these results to investigate group-level phenomena. Temporary workgroups (N 57) were induced to experience positive, neutral, or negative mood before engaging in a creative production task. The results indicated that positive mood increased creative performance and implementation efficiency, whereas negative mood had no effect. Regarding group process, positive and neutral mood created a stronger task focus, whereas negative mood created a stronger relationship focus within the group, but this effect did not influence group performance. Implications for future research on the role of mood in group creativity and process are discussed.
Grawitch, M. J., Munz, D. C., Elliott, E. K., & Mathis, A. (2003). Promoting creativity in temporary problem-solving groups: The effects of positive mood and autonomy in problem definition on idea-generating	The current study examined the effect of mood and autonomy in problem definition on the idea-generating performance of temporary workgroups. Groups (N 54) were randomly assigned to a mood (positive vs. neutral) and

Article	Abstract
performance. *Group dynamics: Theory, research, and practice*, *7*(3), 200.	autonomy (high vs. low) condition and asked to brainstorm ways to improve university student life. It was found that positive mood increased the originality of ideas and that problems that provided low autonomy led to a greater number of ideas. Mood and autonomy interacted to affect group satisfaction. Furthermore, positive mood led to the identification of more important domains for improvement in the high-autonomy condition. Implications for future research using temporary problem-solving groups are discussed.
Jones, E. E., & Kelly, J. R. (2009). No pain, no gains: Negative mood leads to process gains in idea-generation groups. *Group Dynamics: Theory, Research, and Practice*, *13*(2), 75.	Research has consistently demonstrated that individuals tend to outperform groups on idea-generation tasks (e.g., Mullen, Johnson, & Salas, 1991). However, mood states have the capacity to alter the coordination and motivation of group members, leading to performance gains or performance losses. In this experiment, individuals and 3-person groups generated slogans for a fictitious company after experiencing a positive or negative mood induction. Contrary to previous research, negative mood groups in our study actually generated slogans that were more creative than those produced by negative mood individuals. No differences emerged for positive individuals and groups. In the negative conditions, the effect of level of analysis (individual vs. group) on creativity was mediated by persistence on the slogan-generation task. Results are presented in the context of feelings-as-information (N. Schwarz & G. L. Clore, 1988).
Jordan, P. J., Lawrence, S. A., & Troth, A. C. (2006). The impact of negative mood on team performance. *Journal of Management & Organization*, *12*(2), 131-145.	Although organisations often implement team-based structures to improve performance, such restructuring does not automatically ameliorate poor performance. The study in this article explores the relationship between team members' negative mood and team processes (social cohesion, workload sharing, team conflict) to determine if negative mood has a detrimental effect on team performance via team processes. Two

Article	Abstract
	hundred and forty one participants completed surveys and were involved in an independently rated performance task that was completed over eight weeks. Negative mood was found to influence team processes and as a consequence, team performance. The results, however, were not uniformly negative. Implications for theory and practice are discussed.
Knight, A. P. (2013). Mood at the midpoint: Affect and change in exploratory search over time in teams that face a deadline. *Organization Science*, *26*(1), 99-118.	The purpose of this paper is to advance the team dynamics and group development literatures by developing and testing a theoretical model of how affect shapes transitions in teams over time. Integrating the group transitions literature with theory and research on the mood-as-input theory, I propose that shared team mood influences the extent to which team members seek out and experiment with alternative ways of completing their work at different points in a team's life. In the first half of the team's life, when team members are relatively task-focused, I argue that team positive mood (i.e., a positively valenced affective state shared by team members at a given point in time) stimulates, whereas team negative mood (i.e., a negatively valenced affective state shared by team members) suppresses, exploratory search. At the temporal midpoint, however, when team members' focus on performance heightens, team positive mood acts as a shutoff switch for search, leading to a decline in exploratory search over the second half of the team's life. Team negative mood at the midpoint, on the other hand, leads team members to persist in exploratory search, even as a deadline draws near. A team's trajectory of exploratory search over time, I propose, influences team performance such that it is highest when teams engage in high exploratory search early in the team's life and decline in exploratory search over the second half of the team's life. The results of a longitudinal, survey-based study of teams

Article	Abstract
	preparing for a military competition largely support my predictions.
Klep, A., Wisse, B., & Van der Flier, H. (2011). Interactive affective sharing versus non-interactive affective sharing in work groups: Comparative effects of group affect on work group performance and dynamics. European Journal of Social Psychology, 41(3), 312-323	This study explores whether the dynamic path to group affect, which is characterized by interactive affective sharing processes, yields different effects on task performance and group dynamics than the static path to group affect, which arises from non- interactive affective sharing. The results of our experiment with 70 three-person work groups show that groups performed better on creative tasks than on analytical tasks when they were in a positive mood, and better on analytical tasks than on creative tasks when in a negative mood, but only when affect was interactively shared. Moreover, analysis of videotaped group member interactions during task performance showed similar results for work group dynamics, such that group affect influenced belongingness and information sharing only when affect was interactively shared and not when affect was non-interactively shared. Results support the idea that affective sharing processes are fundamental for understanding the effects of group affect on behavior.
Klep, A. H., Wisse, B., & Flier, H. (2013). When sad groups expect to meet again: Interactive affective sharing and future interaction expectation as determinants of work groups' analytical and creative task performance. British Journal of Social Psychology, 52(4), 667-685.	The present study examines the moderating role of future interaction expectation in the relationship between affective sharing and work groups' task performance. We argue that group affect, a group defining characteristic, becomes more salient to its members when it is interactively shared, and that the anticipation of future interaction may strengthen the effects of group defining characteristics on subsequent group member behaviour. As a consequence, interactive sharing (vs. non-interactive sharing) of negative affect is more likely to influence work group outcomes when group members expect to meet again. Results from a laboratory experiment with 66 three-person work groups indeed show that interactively shared (vs. non-interactively shared) negative

Article	Abstract
	affect facilitated work groups' analytical task performance, whereas it inhibited performance on a creative fluency task when groups have expectations of future interaction and not when they do not have such expectations. The discussion focuses on how these results add to theory on group affect and contribute to insights in the effects of future interaction expectation.
Kaplan, S., LaPort, K., & Waller, M. J. (2013). The role of positive affectivity in team effectiveness during crises. *Journal of Organizational Behavior*, *34*(4), 473-491.	Organizational efforts to improve team effectiveness in crisis situations primarily have focused on team training initiatives and, to a lesser degree, on staffing teams with respect to members' ability, experience, and functional backgrounds. Largely neglected in these efforts is the emotional component of crises and, correspondingly, the notion of staffing teams with consideration for their affective makeup. To address this void, we examined the impact of team member dispositional positive affect (PA) on team crisis effectiveness and the role of felt negative emotion in transmitting that influence. A study of 21 nuclear power plant crews engaged in crisis training simulations revealed that homogeneity in PA, but not mean-level PA, was associated with greater team effectiveness. Mediation analysis suggested that homogeneity in PA leads to greater team effectiveness by reducing the amount of negative emotions that team members experience during crises. Furthermore, homogeneity in PA compensated for lower mean-level PA in predicting effectiveness. Discussion focuses on the implications of these findings for understanding and further exploring the importance of affective factors and especially team affective composition in team crisis performance.
Kim, M., & Shin, Y. (2015). Collective efficacy as a mediator between cooperative group norms and group positive affect and team creativity. *Asia Pacific Journal of Management*, *32*(3), 693-716.	In spite of a growing body of research on creativity in team contexts, very few researchers have paid attention to the team-level antecedents and mediating processes of team creativity. To fill this gap, drawing on

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Article	Abstract
	social cognitive theory and Dzindolet's group creativity process model, this study examined cooperative group norms and group positive affect as antecedents of team creativity and explored collective efficacy as an intermediary mechanism between these relationships. The current study was conducted with 97 work teams from 12 different South Korean organizations. As predicted, the results demonstrated that cooperative group norms and group positive affect were positively associated with team creativity, and that collective efficacy mediated these relationships. The findings offer theoretical and practical implications regarding the creativity of work teams.
Filaire, E., Bernain, X., Sagnol, M., & Lac, G. (2001). Preliminary results on mood state, salivary testosterone: cortisol ratio and team performance in a professional soccer team. *European journal of applied physiology*, *86*(2), 179-184.	Mood, as measured by the profile of mood states questionnaire (POMS), salivary cortisol (F) and testosterone (T) levels, and performance were examined in 17 male soccer players 4 times during a season. Soccer players provided three saliva samples when getting up (resting values, 8 a.m.), before breakfast (11.30 a.m.), and between 4.00p.m. and 6.00 p.m. The initial measures were performed 1 day following the start of season training (T1). They were then performed before and after a high-intensity training programme (T2 and T3, respectively) and 16 weeks after T3 (T4). Iceberg profiles of POMS were observed during T1, T2 and T3, which coincided with successful performance. Subsequent decreased performance between T3 and T4 coincided with a decrease in vigor and an increase in tension and depression. Indeed, when the normal nycthemeral rhythm for F was observed (i.e. a decrease from morning until evening at all times; T1–T4), there was seemingly a non-statistical elevation of F on the morning of T3, which only became statistically significant at 11.30 a.m. on T3. In spite of a post-high-intensity training programme (T3) increase in catabolism, the soccer players presented iceberg profiles together with a high

Article	Abstract
	percentage of winning. Our results could suggest that in team soccer, a decreased T:F ratio does not automatically lead to a decrease in team performance or a state of team overtraining. It appears that combined psychological and physiological changes during high-intensity training are primarily of interest when monitoring training stress in relation to performance.
Hoffman, J. R., Bar-Eli, M., & Tenenbaum, G. (1999). An examination of mood changes and performance in a professional basketball team. *Journal of Sports Medicine and Physical Fitness*, *39*(1), 74.	Background. The purpose of this study was to examine the relationship between the Profile of Mood States (POMS) and performance in a professional basketball team. Methods. Participants: seven male professional basketball players playing for the defending champions of the Israel Basketball League participated in this study. Experimental design: the POMS was administered seven times (Tl-T7) during the season. The initial POMS administration was performed three weeks following the start of preseason practice and one day prior to the first basketball game. Each of the other POMS administrations were performed two days following a game and no more than 2 days before the next game. Results. Typical iceberg profiles were observed during Tl, T2 and T3, which coincided with successful performance (winning percentages greater than 60% between each POMS administration). Subsequent decreases in performance between T3 and T4 (a 33% winning percentage) resulted in a decrease in vigor and an increase in anger. As team performance improved between T4 and T5 (winning percentage again above 60%), vigor returned to its original level. However, the mood states anger and depression remained elevated, even during successful team play. This may have been related to problems independent of basketball performance (coaching and financial). Conclusions. These results suggest that the mood state vigor may be reflective of team performance. In addition, mood states appear to be influenced more by performance

Article	Abstract
	or experience, rather than performance being influenced by changes in mood states.
Totterdell, P. (2000). Catching moods and hitting runs: Mood linkage and subjective performance in professional sport teams. *Journal of Applied Psychology*, *85*(6), 848.	Are the moods and subjective performances of professional sports players associated with the ongoing collective moods of their teammates? Players from 2 professional cricket teams used pocket computers to provide ratings of their moods and performances 3 times a day for 4 days during a competitive match between the teams. Pooled time-series analysis showed significant associations between the average of teammates' happy moods and the players' own moods and subjective performances; the associations were independent of hassles and favorable standing in the match. Mood linkage was greater when players were happier and engaged in collective activity. An intraperson analysis of data from these teams and 2 other teams showed that mood linkage was also greater for players who were older, more committed to the team, and more susceptible to emotional contagion. The results support and extend previous findings concerning mood linkage
González-Romá, V., & Gamero, N. (2012). Does positive team mood mediate the relationship between team climate and team performance?. *Psicothema*, *24*(1).	We tested whether the relationship between a team climate of support from the organization and team performance is mediated by positive team mood. Recent research has shown that this team climate facet is related to team performance, but we do not have any empirical evidence about the mechanisms involved in this relationship. The study sample was composed of 59 bank branches, and a longitudinal design with three data-collection points was implemented. The results showed that a team climate of support from the organization was positively related to positive team mood, which in turn was positively related to team members' ratings of team performance.
Lowther, J., & Lane, A. (2002). Relationships between mood, cohesion and satisfaction with performance among soccer players. *Athletic Insight*, *4*(3), 57-69.	The aim of this study was to investigate relationships between pre-competition group cohesion, mood, and performance in a soccer team over the course of a season. A male

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Article	Abstract
	soccer team in England played eight games and data were analyzed on a game-by-game basis. Participants completed the Group Environment Questionnaire (Carron, Brawley, & Widmeyer, 1985) and Brunel Mood Scale to assess Anger, Confusion, Depression, Fatigue, Tension, and Vigor (Terry, Lane, Lane, & Keohane, 1999) before each competition. Post-competition, participants rated the quality of performance on a two-item scale. Results indicated that GEQ scores related to Vigor, lending support to the notion that being part of a cohesive team is associated with positive mood states. Relationships showed that Vigor and AGTT were associated with perceiving performance to be successful. Depressed mood was shown to be associated with a poor perception of performance. We suggest that future research should investigate the efficacy of applied interventions designed to improve cohesion and mood.
Pfaff, M. S. (2012). Negative affect reduces team awareness: The effects of mood and stress on computer-mediated team communication. *Human Factors*, *54*(4), 560-571.	Objective: This article presents research on the effects of varying mood and stress states on within-team communication in a simulated crisis management environment, with a focus on the relationship between communication behaviors and team awareness. Background: Communication plays a critical role in team cognition along with cognitive factors such as attention, memory, and decision-making speed. Mood and stress are known to have interrelated effects on cognition at the individual level, but there is relatively little joint exploration of these factors in team communication in technologically complex environments. Method: Dyadic communication behaviors in a distributed six-person crisis management simulation were analyzed in a factorial design for effects of two levels of mood (happy, sad) and the presence or absence of a time pressure stressor. Results: Time pressure and mood showed several specific impacts on communication behaviors. Communication

Article	Abstract
	quantity and efficiency increased under time pressure, though frequent requests for information were associated with poor performance. Teams in happy moods showed enhanced team awareness, as revealed by more anticipatory communication patterns and more detailed verbal responses to teammates than those in sad moods. Conclusion: Results show that the attention-narrowing effects of mood and stress associated with individual cognitive functions demonstrate analogous impacts on team awareness and information-sharing behaviors and reveal a richer understanding of how team dynamics change under adverse conditions. Application: Disentangling stress from mood affords the opportunity to target more specific interventions that better support team awareness and task performance.
Pfaff, M. S., & McNeese, M. D. (2010). Effects of mood and stress on distributed team cognition. *Theoretical Issues in Ergonomics Science*, *11*(4), 321-339.	Team cognition under stress has come under increasing scrutiny, most often in the wake of unfortunate and catastrophic accidents. The role of mood in team cognition, however, has attracted markedly less attention. An exploration of laboratory research on the effects of mood and stress on cognition at the individual level reveals convergent and overlapping findings suggesting that mood plays a more significant role in team cognition than is currently acknowledged. This article proposes a theoretical approach for distinguishing between the impacts of moods and stressors upon team cognition. It is demonstrated that team experiments conducted using this approach can reveal compelling patterns in this complex research space and identify both mediators and moderators in the process. This framework provides further insights into team cognition under stress that point towards design recommendations for systems and procedures used in technologically complex work environments.
Esfahani, Nooshin, Hamid Ghezel Soflu, and Hassan Assadi. "Comparison of mood in	The purpose of this research is Comparison of mood in basketball players in Iran legue2 and

Article	Abstract
basketball players in Iran League 2 and relation with team cohesion and performance." *Procedia-Social and Behavioral Sciences* 30 (2011): 2364-2368.	relation with team Cohesion and performance. The statistical population consist of all male basketball players (n=75) that's participated in basketball matches in (March 2010). The Brunel Mood questionnaire with 6 sub-scales are rated on a 5-point Likert scale ranging from, and the group environment questionnaire (GEQ).The GEQ assess the two dimensions of group cohesion- task cohesion and social cohesion. The finding of research showed a significant difference in all mood sub-scales between winner and loser group (sig≤0.05) .There were direct relationship between mood with team cohesion and performance in basketball players.
Knight, A. P., & Eisenkraft, N. (2015). Positive is usually good, negative is not always bad The effects of group affect on social integration and task performance	Grounded in a social functional perspective, this article examines the conditions under which group affect influences group functioning. Using meta-analysis, the authors leverage heterogeneity across 39 independent studies of 2,799 groups to understand how contextual factors— group affect source (exogenous or endogenous to the group) and group life span (one-shot or ongoing)— moderate the influence of shared feelings on social integration and task performance. As predicted, results indicate that group positive affect has consistent positive effects on social integration and task performance regardless of contextual idiosyncrasies. The effects of group negative affect, on the other hand, are context-dependent. Shared negative feelings promote social integration and task performance when stemming from an exogenous source or experienced in a 1-shot group, but undermine social integration and task performance when stemming from an endogenous source or experienced in an ongoing group. The authors discuss implications of their findings and highlight directions for future theory and research on group affect.
Collins, A. L., Jordan, P. J., Lawrence, S. A., & Troth, A. C. (2016). Positive affective tone	Research on affect as a group-level phenomenon has shown that over time, individual members within a group become

Article	Abstract
and team performance The moderating role of collective emotional skills	highly similar in their affect (i.e., members experience and display similar emotions and moods), and often become similar enough that the aggregation of individuals' affect can meaningfully represent the "affective tone" of the group. It is generally assumed that a more positive affective tone will lead to better team performance. We challenge the conclusion that positive affective tone is always good for team performance, suggesting that the relationship between positive affective tone and team performance is subject to moderating influences. Across two studies, we demonstrate that the self-reported collective emotional skills of team members play a crucial role in determining whether positive affective tone is beneficial or detrimental to team performance. Implications for theory and practice are discussed.
Linnenbrink-Garcia, L., Rogat, T. K., & Koskey, K. L. (2011). Affect and engagement during small group instruction	Two studies (Study 1: n = 137; Study 2: n = 192) were conducted to investigate how upper-elementary students' affect during small group instruction related to their social-behavioral engagement during group work. A circumplex model of affect consisting of valence (positive, negative) and activation (high, low) was used to examine the relation of affect to social loafing and quality of group interactions. Across both studies, negative affect (feeling tired or tense) was associated with higher rates of social loafing. Neutral to deactivated positive affect, such as feeling happy or calm, was positively related to positive group interactions, while deactivated negative affect (tired) was negatively associated with positive group interactions. Follow-up cross-lagged analyses to examine reciprocal relations suggested that positive group interactions altered affect on subsequent group tasks, but affect was not related to changes in positive group interactions. These quantitative findings were supplemented with a qualitative analysis of six small groups from Study 2. The qualitative analyses highlighted the reciprocal

Article	Abstract
	and cyclical relations between affect and social-behavioral engagement in small groups.
Tanghe, J., Wisse, B., & Van Der Flier, H. (2010). The formation of group affect and team effectiveness The moderating role of identification	In the current research we use the social identity perspective to enhance our understanding of group affect (i.e. a collectively shared pattern of affective states among group members). Because higher identification (i.e. the extent to which group members define themselves in terms of their group membership) is related to higher attentiveness to fellow group members, we expected that group identification would foster affective convergence, and that the effects of group affective tone on team effectiveness would be stronger for higher identifying groups. A survey of teams (n571 teams) confirmed our expectations. A scenario experiment (n5121 participants) added to our findings by showing that identification does indeed lead group members to affectively converge to their fellow group members and that this affective convergence, in turn, explains subsequent team-oriented attitudes. Our study testifies to the notion that team managers may want to take notice of and manage affect in work groups, because, especially in higher identifying teams, affect may spread among team members and influence the team's effectiveness.

Appendix C

How frequently/often do you experience these feelings in-general?

Note: Peppy means lively and high-spirited

	Very Slightly or Not At All	.	.	.	.	Extremely or Very Often
Aroused	○	○	○	○	○	○
Surprised	○	○	○	○	○	○
Peppy	○	○	○	○	○	○
Sad	○	○	○	○	○	○
Disappointed	○	○	○	○	○	○
Satisfied	○	○	○	○	○	○
Calm	○	○	○	○	○	○
Sluggish	○	○	○	○	○	○
Afraid	○	○	○	○	○	○
Still	○	○	○	○	○	○
Sleepy	○	○	○	○	○	○
Relaxed	○	○	○	○	○	○
Enthusiastic	○	○	○	○	○	○
Happy	○	○	○	○	○	○
Nervous	○	○	○	○	○	○
Quiet	○	○	○	○	○	○

Appendix D

The PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent [INSERT APPROPRIATE TIME INSTRUCTIONS HERE]. Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

_____ interested   _____ irritable
_____ distressed   _____ alert
_____ excited   _____ ashamed
_____ upset   _____ inspired
_____ strong   _____ nervous
_____ guilty   _____ determined
_____ scared   _____ attentive
_____ hostile   _____ jittery
_____ enthusiastic   _____ active
_____ proud   _____ afraid

We have used PANAS with the following time instructions:

Moment   (you feel this way right now, that is, at the present moment)
Today   (you have felt this way today)
Past few days   (you have felt this way during the past few days)
Week   (you have felt this way during the past week)
Past few weeks (you have felt this way during the past few weeks)
Year   (you have felt this way during the past year)
General   (you generally feel this way, that is, how you feel on the average)

Appendix E

Negative Statements

I don't think things are ever going to get better.

I'm fed up with it all.

I wish I could be myself, but nobody likes me when I am.

I feel sad and blue.

I feel cheated by life.

I feel downhearted and miserable.

I feel like my life's in a rut that I'm never going to get out of.

I feel so tired and gloomy that I would rather just sit than do anything.

I just feel drained of energy, worn out.

There is no hope.

Every time I turn around, something else has gone wrong.

I feel I am being suffocated by the weight of my past mistakes.

I feel unhappy.

I doubt that I'll ever make a contribution in the world.

When I talk no one really listens.

Even when I give my best effort, it just doesn't seem to be good enough.

What's the point of trying?

Life is such a heavy burden.

Nobody understands me or even tries to.

Sometimes I feel really guilty about the way I've treated my parents.

I feel worthless.

I feel pretty low.

Today is one of those days when everything I do is wrong.

I feel heavy and sluggish.

Sometimes I feel so guilty that I can't sleep.

Neutral Statements

Many buildings in Washington are made of marble.

At the end appears a section entitled "bibliography notes".

The movie theater was located downtown.

The doorkeeper was dressed in red.

Some think that electricity is the safest form of power.

Elephants carried the supplies.

The rug was made according to an old Navajo pattern.

Olympia is the capital of the state of Washington.

Mules hauled the supplies up the mountain.

The wood was discolored as if it had been held in a fire.

Diamonds really can cut glass.

New York City is in New York state.

Black and white pictures are arranged in ten sections.
Significantly, these changes occur during the full moon.
Some baseball hats are made from the wood of the ash tree.
It snows in Idaho.
The names on the mailing list are alphabetically ordered.
She walked over to the shop and knocked on the door.
Santa Fe is the capital of New Mexico.
Basket weaving was invented before pottery making.
The ship was ancient and would soon be retired from the fleet.
The Gulf Islands are in British Columbia.
At low tide the hulk of the old ship could be seen.
Perennials bloom every year.
There are sixty minutes in one hour.

Positive Statements

I feel cheerful, confident.
Right now, I feel like smiling.
I feel happy.
I feel pretty good right now.
Nothing can bum me out now.
My parents brag about me to their friends.
I can feel a smile on my face.
I can make any situation turn out right.
I can make things happen.
Life's a blast: I can't remember when I felt so good.
My future is bright.
I feel so good I almost feel like laughing.
The world is full of opportunity and I'm trying to take advantage of it.
I really like this light-hearted feeling.
I have a feeling of lightness and joy.
I feel creative.
It doesn't get any better than this.
I'm going to have it all!
I know if I try I can make things turn out fine.
When it comes right down to it, I'm a cool person
It's great to be alive.
When I have the right attitude, nothing can depress me.
I know I can do it; I'm going to seize the day!
I feel completely aware.

Appendix F

Information Elaboration Coding Scheme

Information elaboration will be coded on a scale from 1 to 7 that indicates the extent to which teams engage in the full set of interrelated processes that jointly define elaboration

A score of 1 will be given to teams that immediately started developing ideas with little or no systematic discussion of the information and/or the different perspectives.

A score of 2 will be given to teams in which members articulate information regarding the creative problem and offer different perspectives of the presented creative problem, but this was largely ignored by the fellow team members.

Teams will receive a score of 3 when the information about the creative problem and the perspectives was expressed and acknowledged by some but not all team members.

Teams will receive a score of 4 if all members acknowledged the information and perspectives shared by their team members, but no attempts were made to jointly discuss or elaborate on this information.

A score of 5 will be awarded when all the previous conditions for a score of 4 were met, and teams additionally engaged in a constructive joint discussion in which different pieces of information and perspectives were used to elaborate on each other's ideas and suggestions.

Teams will be assigned a score of 6 if they additionally developed suggestions to combine at least two of the different perspectives and information sources.

Finally, a score of 7 will be awarded to teams that fulfilled the criteria of scale level 5 but developed suggestions to integrate more than two perspectives or information sources on the task

Source: Hoever, I. J., van Knippenberg, D., van Ginkel, W. P., & Barkema, H. G. (2012). Fostering team creativity: Perspective taking as key to unlocking diversity's potential. *Journal of Applied Psychology, 97*(5), 982–996. https://doi.org/10.1037/a0029159

Appendix G

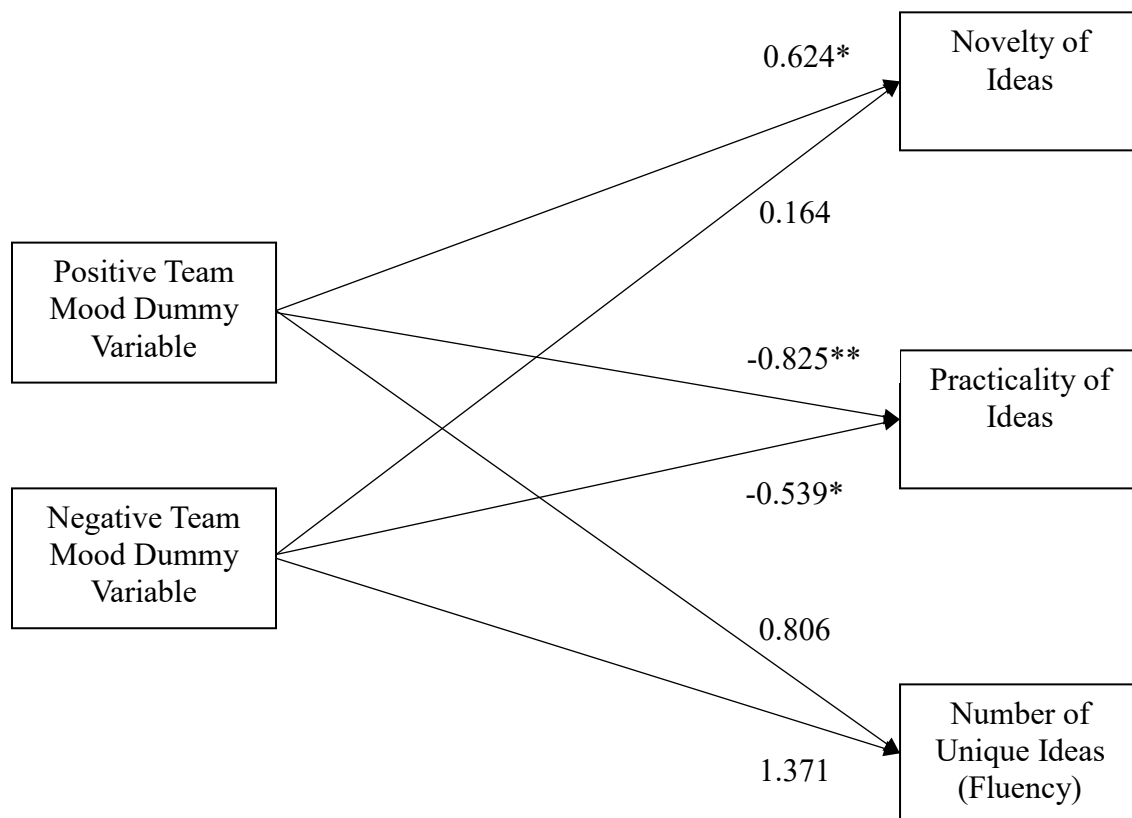| No.	Category	Description`	Example
1	**Research Activities**	Ideas relating to research activities of the school	• conducting experiments • More research opportunities • Conduct their research
2	**Increasing Students' Exposure and Opportunities**	Ideas pertaining to broadening students' horizon and providing them with more experience and opportunities to enhance their learning and/or future career	• Organise more networking sessions with industry experts • go field trip • More internship opportunity • Outdoor excursions • shadowing PHD students
3	**Infrastructure and Facilities**	Ideas relating to physical structures, facilities of the school	• more studying spaces • More comfortable chairs and facilities e.g. cushioned chairs • Open another psychology lab to have more studies
4	**Policies and Regulations**	Ideas relating to institutional rules and/or governing policies (including educational policies)	• remove bidding system • more module combinations • no GPA • Reduce professors and SMU staff salary and reduce students tuition fee • add S/U like NUS and NTU
5	**Management of students and teaching staffs**	Ideas pertaining to human resource management, including both teaching staffs and students. This spans across matters such as admission, recruitment, staffing/selection decisions, and firing and hiring (or expelling) criteria	• Hire better professors • Diversify the Professors (Different backgrounds) • Kick out boring professors • Kick out students who are not doing well • More stringent criteria on admission
6	**Student Welfare and Services**	Ideas pertaining to increasing comfort and/or wellbeing of students via the provision of commodities or services that are not academic-related	• free food on wed • dating circles • Air-con to be turn on all the time
7	**Pedagogical Methods and Instructional Strategies**	Ideas pertaining to the way in which lessons are being conducted (including mode of lesson delivery)	• professors should provide more feedback on assignments given • Learn more practical concepts rather than in theory
8	**Others**	All other uncategorized ideas	

Appendix H1

Figure 2. Regression coefficients for the relationship between team mood dummy variables and the three facets of team creativity. Note that separate regression models, each containing both dummy variables, were tested for each facet of team creativity.
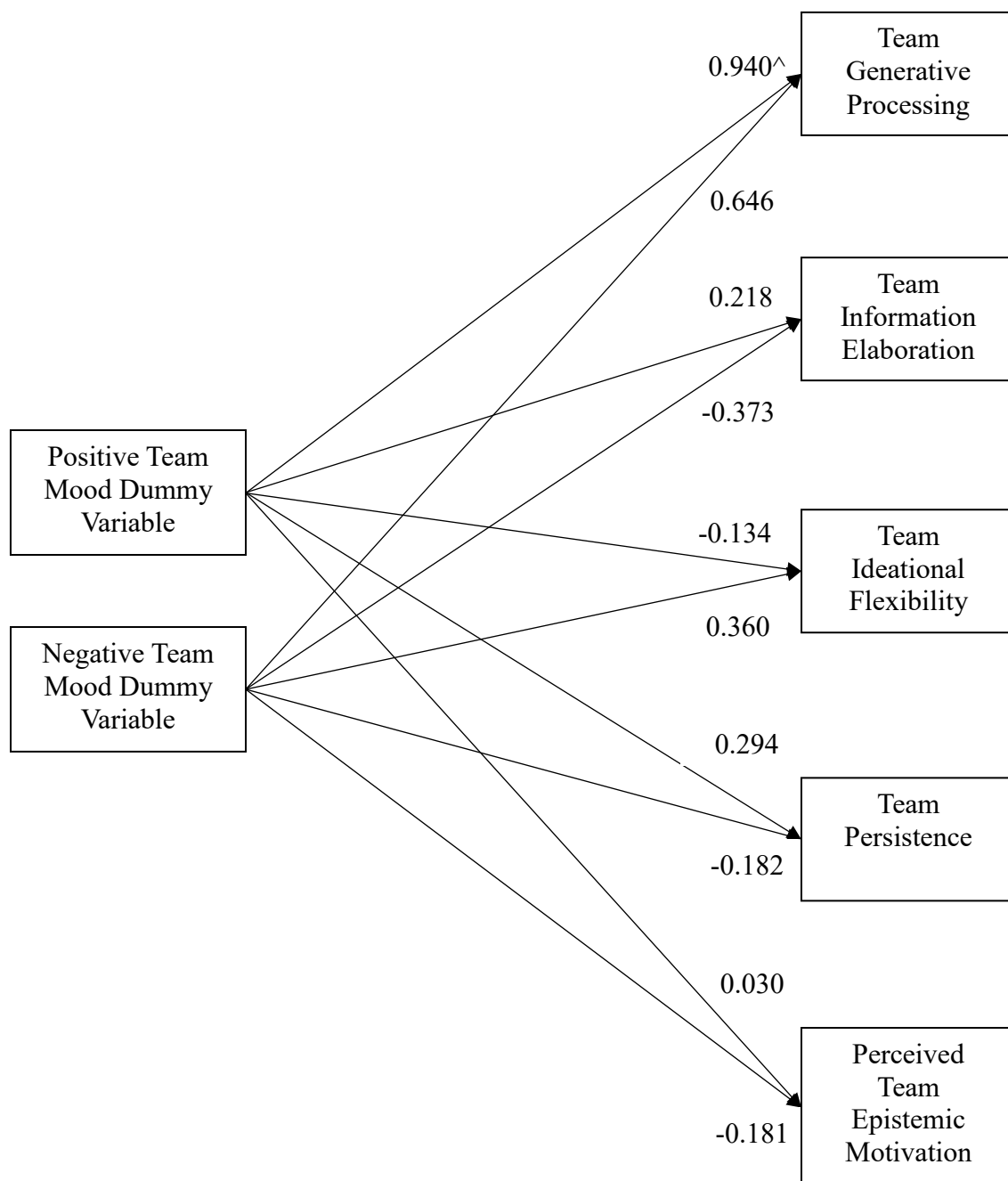
*p< .05

**p< .001

Appendix H2

Figure 3. Regression coefficients for the relationship between team mood dummy variables and

the proposed mediator variables. Note that separate regression models, each containing both

dummy variables, were tested for each proposed mediator variable.

Appendix H3

^*p*= .068

Appendix I1

Table 1

Correlations and Descriptive Statistics

Variables	*M* (*SD*)	1	2	3	4	5	6	7	8	9
1. Positive Team Mood (Dummy Variable)	0.343 (0.477)	1								
2. Negative Team Mood (Dummy Variable)	0.333 (0.474)	-.511**	1							
3. Team Generative Processing	2.949 (2.144)	.136	.036	1						
4. Team Information Elaboration	3.019 (1.702)	.114	-.135	.460**	1					
5. Team Ideational Flexibility	4.486 (1.539)	-.098	.132	.458**	.107	1				
6. Team Persistence	7.546 (5.096)	.036	-.031	.503**	.619**	.314**	1			
7. Perceived Team Epistemic Motivation	3.454 (0.593)	.098	-.157	.335**	.367**	.215*	.359**	1		
8. Arousal	2.984 (0.430)	.650**	-.482**	.161	.262**	-.015	.130	.182	1	
9. Dispositional Positive Affect	2.978 (0.416)	-.046	-.054	-.050	.085	-.014	.059	.199*	.043	1

Appendix I2

Table 1

Continued

Variables	M (SD)	1	2	3	4	5	6	7	8	9
10. Dispositional Negative Affect	2.118 (0.412)	-.063	-.139	-.118	-.180	.082	-.055	-.002	-.192*	.305**
11. Need for Cognitive Closure	3.634 (0.376)	.008	-.076	-.131	-.033	-.055	-.145	.074	-.153	.029
12. Extraversion	3.040 (0.432)	.150	-.069	.037	.068	.100	-.032	.166	.246*	.402**
13. Agreeableness	3.642 (0.378)	-.027	.011	-.033	.021	-.051	.086	-.089	.063	-.112
14. Conscientiousness	3.543 (0.336)	-.250*	.077	-.124	.038	-.090	-.014	.225*	-.077	.255**
15. Emotional Stability	3.166 (0.333)	-.068	.291**	.114	.137	-.004	.034	.088	.033	.294**
16. Intellect	3.217 (0.303)	.029	-.127	-.021	.157	.064	.084	.183	.258**	.293**
17. Honesty-Humility	3.764 (0.284)	-.063	-.033	.054	.218*	-.132	.138	.060	.068	.092
18. Team Collective Efficacy	4.843 (0.788)	.070	-.091	.313**	.286**	.351**	.255**	.716**	.251**	.226*

Appendix I3

Table 1

Continued

Variables	M (SD)	1	2	3	4	5	6	7	8	9
19. Team Identification	3.398 (0.495)	.063	-.163	.156	.210*	.212*	.155	.590**	.185	.111
20. Team Viability	3.632 (0.489)	.094	-.082	.070	.138	.020	.039	.509**	.194*	.081
21. Team Cohesion	4.364 (0.842)	.046	-.156	.213*	.292**	.165	.173	.597**	.253**	.104
22. Team Satisfaction	3.908 (0.389)	.043	-.139	.019	.166	.035	.085	.419**	.251**	.019
23. Team Learning Goal Orientation	3.204 (0.463)	.151	-.183	.314**	.384**	.209*	.423**	.688**	.260**	.176
24. Team Performance Goal Orientation	3.103 (0.612)	.138	-.230*	.296**	.198*	.273**	.282**	.655**	.113	.186
25. Team Psychological Safety	4.952 (0.529)	.028	-.083	.247*	.268**	.197*	.271**	.555**	.189	.314**
26. Team Trust	4.945 (0.537)	.146	-.147	.233*	.294**	.118	.247*	.647**	.317**	.200*
27. Perceived Performance - Novelty of Ideas	3.153 (0.598)	.042	-.128	.099	.132	.104	.104	.578**	.169	.169

Appendix I4

Table 1

Continued

Variables	*M* (*SD*)	1	2	3	4	5	6	7	8	9
28. Perceived Performance – Practicality of Ideas	3.898 (0.580)	.053	-.020	.094	.211*	-.179	.093	.367**	.093	.183
29. Team Reflexivity	2.889 (0.272)	.058	-.109	.073	.122	-.061	.117	.520**	.072	.197*
30. Team Relationship Conflict	1.878 (0.583)	.065	.007	-.044	-.127	.026	-.093	-.227*	-.065	-.162
31. Team Task Conflict	2.271 (0.800)	-.097	.053	.148	.145	.085	.229*	-.025	-.123	-.083
32. Team Process Conflict	2.056 (0.664)	-.056	-.018	.146	-.074	.156	.034	-.082	-.199*	-.152
33. Number of Members	3.600 (0.492)	-.066	.041	.154	.086	.170	.117	.002	-.105	<.001
34. Number of Ideas (Fluency)	11.733 (8.199)	.006	.055	.624**	.112	.741**	.417**	.156	.035	-.052
35. Novelty of Ideas	2.533 (0.891)	.290**	-.084	.399**	.196*	.223*	.277**	-.028	.190	.063
36. Practicality of Ideas	3.391 (0.863)	-.305**	-.063	-.122	.093	-.079	.064	.228*	-.149	.028

Appendix I5

Table 1

Continued

Variables	*M* (*SD*)	10	11	12	13	14	15	16	17	18
10. Dispositional Negative Affect	2.118 (0.412)	1								
11. Need for Cognitive Closure	3.634 (0.376)	.316**	1							
12. Extraversion	3.040 (0.432)	-.337**	-.225*	1						
13. Agreeableness	3.642 (0.378)	-.379**	-.205*	-.023	1					
14. Conscientiousness	3.543 (0.336)	-.107	.218*	.148	.091	1				
15. Emotional Stability	3.166 (0.333)	-.395**	-.118	.419**	.057	.315**	1			
16. Intellect	3.217 (0.303)	-.039	-.071	.314**	-.085	.232*	.293**	1		
17. Honesty-Humility	3.764 (0.284)	-.350**	-.008	.099	.355**	.302**	.300**	.225*	1	
18. Team Collective Efficacy	4.843 (0.788)	-.072	-.155	.233*	-.091	.121	.114	.181	-.010	1

Appendix I6

Table 1

Continued

Variables	*M* (*SD*)	10	11	12	13	14	15	16	17	18
19. Team Identification	3.398 (0.495)	.060	.024	.120	.032	.158	-.036	-.029	-.111	.632**
20. Team Viability	3.632 (0.489)	-.042	-.148	.075	.204*	.131	-.024	.056	-.089	.534**
21. Team Cohesion	4.364 (0.842)	-.038	-.021	.143	.007	.210*	.030	.135	-.080	.657**
22. Team Satisfaction	3.908 (0.389)	-.062	-.026	.044	.145	.164	-.005	.087	.022	.464**
23. Team Learning Goal Orientation	3.204 (0.463)	-.013	-.065	.073	.006	.142	.003	.017	-.004	.647**
24. Team Performance Goal Orientation	3.103 (0.612)	.048	.013	.215*	-.119	.113	-.115	.174	-.004	.599**
25. Team Psychological Safety	4.952 (0.529)	.064	-.028	.112	.101	.147	.082	.202*	.050	.609**
26. Team Trust	4.945 (0.537)	-.112	-.032	.167	.124	.218*	.058	.168	.063	.625**
27. Perceived Performance - Novelty of Ideas	3.153 (0.598)	.148	.084	.147	-.174	.133	-.012	.103	-.079	.541**

Appendix I7

Table 1

Continued

Variables	*M* (*SD*)	10	11	12	13	14	15	16	17	18
28. Perceived Performance – Practicality of Ideas	3.898 (0.580)	-.089	.036	.143	.067	.217*	.042	.009	.058	.199*
29. Team Reflexivity	2.889 (0.272)	.125	.043	.076	-.075	.171	.029	.008	.009	.336**
30. Team Relationship Conflict	1.878 (0.583)	.094	.056	-.116	-.179	-.129	-.156	-.118	-.143	-.199*
31. Team Task Conflict	2.271 (0.800)	.075	.067	-.166	-.186	-.012	-.023	-.008	-.023	-.075
32. Team Process Conflict	2.056 (0.664)	.205*	.097	-.181	-.211*	-.157	-.180	-.099	-.179	-.076
33. Number of Members	3.600 (0.492)	.052	.028	.053	-.066	-.012	-.032	.082	-.010	.142
34. Number of Ideas (Fluency)	11.733 (8.199)	.090	-.210*	.003	-.006	-.229*	-.072	.035	-.121	.300**
35. Novelty of Ideas	2.533 (0.891)	-.016	-.155	.169	-.147	-.406**	.015	.094	-.120	.039
36. Practicality of Ideas	3.391 (0.863)	-.005	.124	-.086	.111	.353**	-.106	-.012	.220*	.082

Appendix I8

Table 1

Continued

Variables	M (SD)	19	20	21	22	23	24	25	26	27
19. Team Identification	3.398 (0.495)	1								
20. Team Viability	3.632 (0.489)	.727**	1							
21. Team Cohesion	4.364 (0.842)	.827**	.717**	1						
22. Team Satisfaction	3.908 (0.389)	.714**	.792**	.764**	1					
23. Team Learning Goal Orientation	3.204 (0.463)	.601**	.526**	.648**	.469**	1				
24. Team Performance Goal Orientation	3.103 (0.612)	.506**	.399**	.461**	.280**	.636**	1			
25. Team Psychological Safety	4.952 (0.529)	.576**	.494**	.604**	.464**	.500**	.413**	1		
26. Team Trust	4.945 (0.537)	.708**	.728**	.740**	.717**	.654**	.563**	.686**	1	
27. Perceived Performance - Novelty of Ideas	3.153 (0.598)	.541**	.343**	.572**	.403**	.463**	.455**	.391**	.454**	1

Appendix I9

Table 1

Continued

Variables	M (SD)	19	20	21	22	23	24	25	26	27
28. Perceived Performance – Practicality of Ideas	3.898 (0.580)	.193*	.296**	.204*	.198*	.372**	.240*	.312**	.395**	.005
29. Team Reflexivity	2.889 (0.272)	.463**	.342**	.387**	.250*	.526**	.433**	.374**	.424**	.385**
30. Team Relationship Conflict	1.878 (0.583)	-.282**	-.456**	-.275**	-.511**	-.195*	-.093	-.299**	-.456**	-.078
31. Team Task Conflict	2.271 (0.800)	-.173	-.362**	-.105	-.343**	-.045	.047	-.059	-.229*	-.017
32. Team Process Conflict	2.056 (0.664)	-.151	-.363**	-.122	-.378**	-.053	.090	-.159	-.337**	.034
33. Number of Members	3.600 (0.492)	-.035	.057	.040	-.089	.066	.155	.002	.005	-.062
34. Number of Ideas (Fluency)	11.733 (8.199)	.123	.023	.136	-.017	.165	.317**	.137	.108	.122
35. Novelty of Ideas	2.533 (0.891)	-.123	-.196*	-.025	-.204*	.011	.025	.003	-.054	.136
36. Practicality of Ideas	3.391 (0.863)	.165	.101	.092	.167	.191	.179	.201*	.206*	-.018

Appendix I10

Table 1

Continued

Variables	*M* (*SD*)	28	29	30	31	32	33	34	35	36
28. Perceived Performance – Practicality of Ideas	3.898 (0.580)	1								
29. Team Reflexivity	2.889 (0.272)	.290**	1							
30. Team Relationship Conflict	1.878 (0.583)	-.199*	-.158	1						
31. Team Task Conflict	2.271 (0.800)	-.143	-.046	.685**	1					
32. Team Process Conflict	2.056 (0.664)	-.267**	-.041	.692**	.767**	1				
33. Number of Members	3.600 (0.492)	-.010	.001	.029	-.064	.033	1			
34. Number of Ideas (Fluency)	11.733 (8.199)	-.176	-.115	.006	.075	.158	.200*	1		
35. Novelty of Ideas	2.533 (0.891)	-.265**	-.084	.150	.237*	.184	.053	.371**	1	
36. Practicality of Ideas	3.391 (0.863)	.423**	.201*	-.109	-.123	-.195*	.054	-.186	-.595**	1

* denotes significance at *p*<.05

Appendix I11

** denotes significance at *p*<.001

Note. All individual-level measures were aggregated to the team level by taking the average among members of each team

Appendix J1

Table 2

Summary of r_{wg} and ICC(1) values for all additional measures

Measure	Mean r_{wg}	Median r_{wg}	ICC(1)
Arousal	.840	.856	.397
Dispositional Positive Affect	.729	.760	.099
Dispositional Negative Affect	.717	.778	.029
Need for Cognitive Closure	.833	.879	.413
Extraversion	.713	.781	.116
Agreeableness	.775	.846	.086
Conscientiousness	.808	.846	.220
Emotional Stability	.826	.888	.232
Intellect	.875	.927	.154
Honesty-Humility	.843	.867	.043
Team Collective Efficacy	.481	.648	.543
Team Identification	.730	.805	.506
Team Viability	.730	.838	.538
Team Cohesion	.245	.468	.590
Team Satisfaction	.834	.907	.495
Team Learning Goal Orientation	.677	.764	.452
Team Performance Goal Orientation	.665	.741	.573
Team Psychological Safety	.587	.729	.280

Appendix J2

Table 2

continued

Measure	Mean r_{wg}	Median r_{wg}	ICC(1)
Team Trust	.683	.802	.459
Perceived Performance – Novelty of Ideas	.534	.542	.263
Perceived Performance – Practicality of Ideas	.641	.833	.391
Team Reflexivity	.835	.880	.194
Team Relationship Conflict	.475	.616	.387
Team Task Conflict	.294	.542	.372
Team Process Conflict	.315	.500	.211

Appendix K1

Table 3

Team Generative Processing as a Mediator between Positive Team Mood and Number of Ideas

(Creative Fluency)

Model	B	$SE (B)$	t	p	R^2
Outcome: Team Generative Processing					.034
Positive Team Mood^	0.940	0.509	1.846	.068	
Negative Team Mood	0.646	0.512	1.260	.211	
Outcome: Number of Ideas					.396
Positive Team Mood	-1.480	1.572	-0.941	.349	
Negative Team Mood	-0.199	1.570	-0.127	.899	
Team Generative Processing**	2.432	0.301	8.083	<.001	

^ denotes marginal significance at *p*= .068

** denotes significance at *p*<.001

Appendix K3
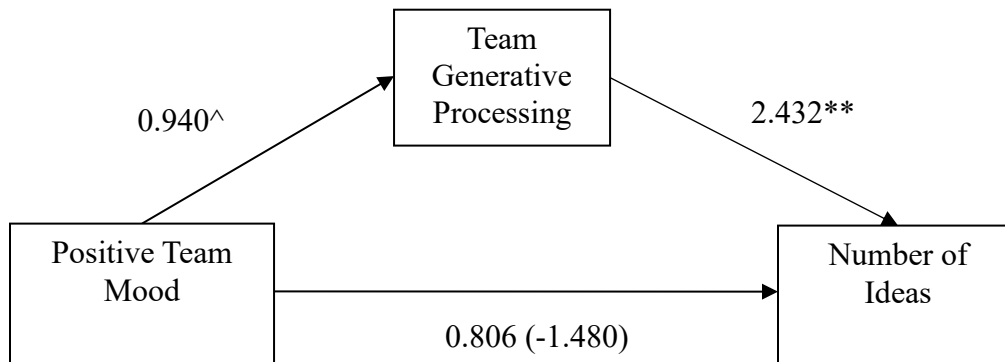
Figure 4. Regression coefficients for the relationship between positive team mood (vs neutral mood) and number of ideas (creative fluency) as mediated by team generative processing. The regression coefficient of the relationship between positive team mood (vs neutral mood) and number of ideas, controlling for team generative processing, is in parentheses.

^ *p*= .068

** *p<.001*

Appendix K4

Table 4

Team Generative Processing as a Mediator between Positive Team Mood and Novelty of Ideas

Model	B	$SE\ (B)$	t	p	R^2
Outcome: Team Generative Processing					.034
Positive Team Mood^	0.940	0.509	1.846	.068	
Negative Team Mood	0.646	0.512	1.260	.211	
Outcome: Novelty of Ideas					.465
Positive Team Mood*	0.480	0.195	2.479	.015	
Negative Team Mood	0.067	0.194	0.342	.733	
Team Generative Processing**	0.151	0.037	4.050	<.001	

^ denotes marginal significance at *p*= .068

* denotes significance at *p*<.05
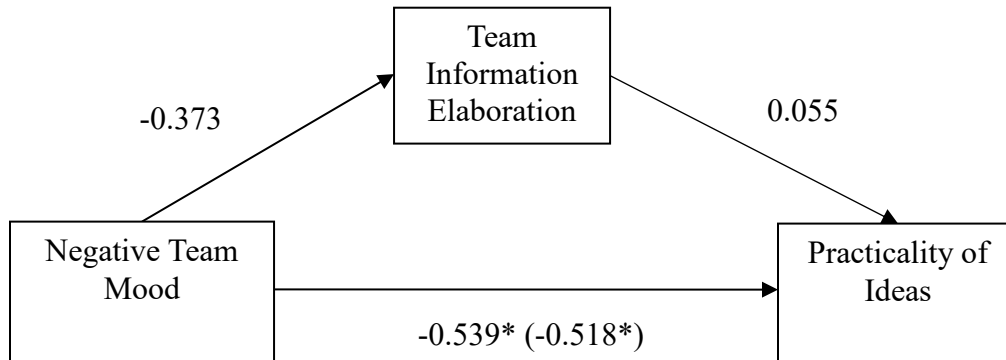
** denotes significance at *p*<.001

Appendix K5
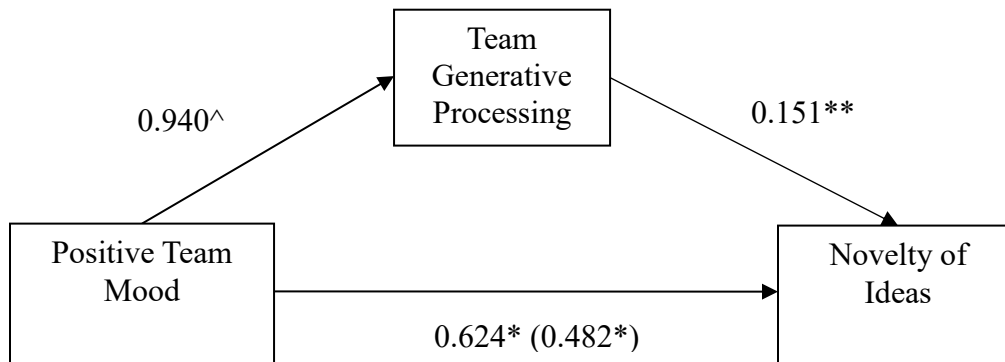
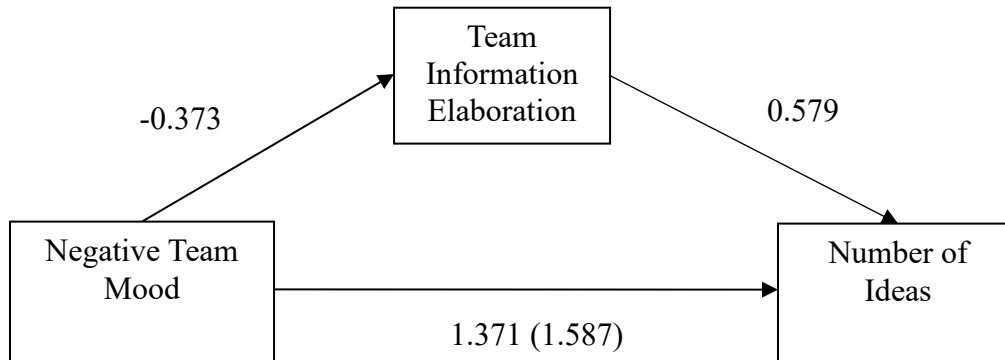*Figure 5.* Regression coefficients for the relationship between positive team mood (vs neutral mood) and novelty of ideas generated as mediated by team generative processing. The regression coefficient of the relationship between positive team mood (vs neutral mood) and novelty of ideas generated, controlling for team generative processing, is in parentheses.

^ *p*= .068

* *p<.05*

** *p<.001*

Appendix K6

Table 5

Team Generative Processing as a Mediator between Positive Team Mood and Practicality of

Ideas

Model	B	SE (B)	t	p	R^2
Outcome: Team Generative Processing					.034
Positive Team Mood^	0.940	0.509	1.846	.068	
Negative Team Mood	0.646	0.512	1.260	.211	
Outcome: Practicality of Ideas					.160
Positive Team Mood**	-0.806	0.195	-4.130	<.001	
Negative Team Mood*	-0.526	0.195	-2.697	.008	
Team Generative Processing	-0.020	0.037	-0.547	.586	

^ denotes marginal significance at *p*= .068

* denotes significance at *p*<.05

** denotes significance at *p*<.001

Appendix K7
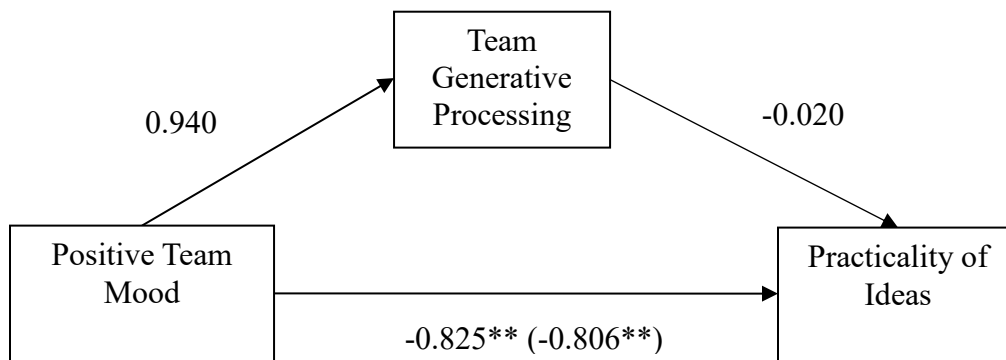
Figure 6. Regression coefficients for the relationship between positive team mood (vs neutral mood) and practicality of ideas generated as mediated by team generative processing. The regression coefficient of the relationship between positive team mood (vs neutral mood) and practicality of ideas generated, controlling for team generative processing, is in parentheses.

** p<.001

Appendix K8

Table 6

Team Information Elaboration as a Mediator between Negative Team Mood and Novelty of Ideas

Model	B	SE (B)	t	p	R^2
Outcome: Team Information Elaboration					.021
Positive Team Mood	0.218	0.407	0.537	.592	
Negative Team Mood	-0.373	0.409	-0.912	.364	
Outcome: Novelty of Ideas					.119
Positive Team Mood*	0.604	0.203	2.972	.004	
Negative Team Mood	0.198	0.205	0.963	.338	
Team Information Elaboration^	0.091	0.050	1.837	.069	

^ denotes marginal significance at *p*= .069

* denotes significance at *p*<.05

Appendix K9
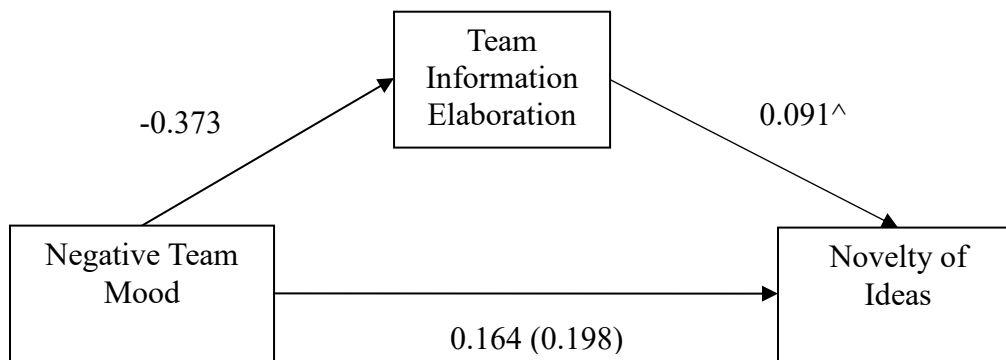
Figure 7. Regression coefficients for the relationship between negative team mood (vs neutral mood) and novelty of ideas generated as mediated by team information elaboration. The regression coefficient of the relationship between negative team mood (vs neutral mood) and novelty of ideas generated, controlling for team information elaboration, is in parentheses.

^ *p*= .069

Appendix K10

Table 7

Team Information Elaboration as a Mediator between Negative Team Mood and Practicality of Ideas

Model	B	$SE (B)$	t	p	R^2
Outcome: Team Information Elaboration					.021
Positive Team Mood	0.218	0.407	0.537	.592	
Negative Team Mood	-0.373	0.409	-0.912	.364	
Outcome: Practicality of Ideas					.169
Positive Team Mood**	-0.837	0.191	-4.377	<.001	
Negative Team Mood*	-0.518	0.193	-2.685	.009	
Team Information Elaboration	0.055	0.047	1.172	.244	

* denotes significance at $p<.05$

** denotes significance at $p<.001$

Appendix K11

Figure 8. Regression coefficients for the relationship between negative team mood (vs neutral mood) and practicality of ideas generated as mediated by team information elaboration. The regression coefficient of the relationship between negative team mood (vs neutral mood) and practicality of ideas generated, controlling for team information elaboration, is in parentheses.

* *p<.05*

Appendix K12

Table 8

Team Information Elaboration as a Mediator between Negative Team Mood and Number of

Ideas (Creative Fluency)

Model	B	$SE (B)$	t	p	R^2
Outcome: Team Information Elaboration					.021
Positive Team Mood	0.218	0.407	0.537	.592	
Negative Team Mood	-0.218	0.409	-0.912	.364	
Outcome: Number of Ideas					.019
Positive Team Mood	0.679	1.974	0.344	.731	
Negative Team Mood	1.587	1.993	0.797	.428	
Team Information Elaboration	0.579	0.480	1.205	.231	

Appendix K13

Figure 9. Regression coefficients for the relationship between negative team mood (vs neutral mood) and number of ideas generated (creative fluency) as mediated by team information elaboration. The regression coefficient of the relationship between negative team mood (vs neutral mood) and number of ideas generated (creative fluency), controlling for team information elaboration, is in parentheses.

Appendix L1
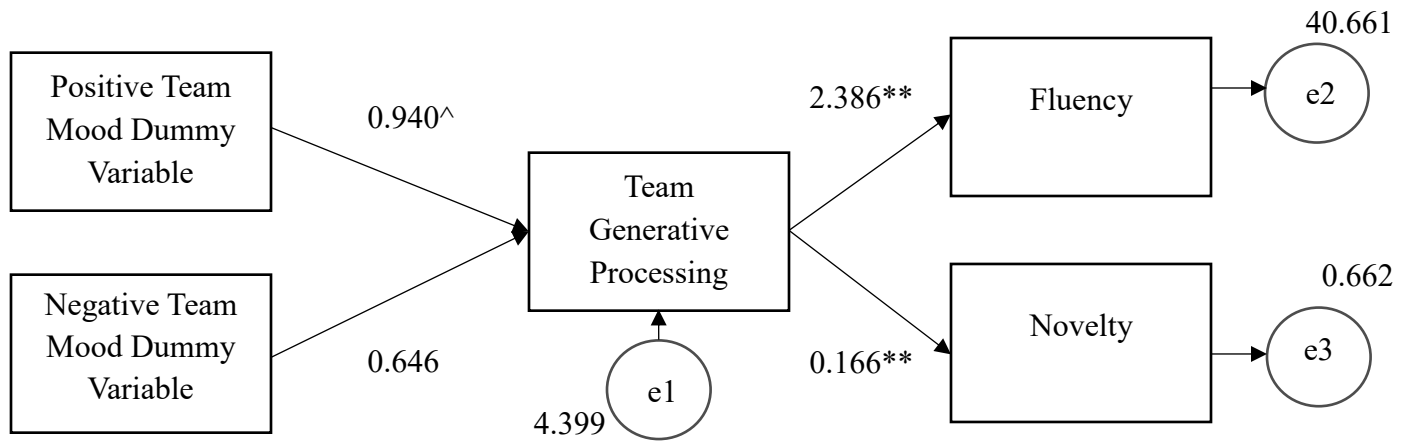
Figure 10. Model tested via path analysis on the hypothesized positive team mood process path

with unstandardized beta-coefficients obtained

^ p=.061

*** p<.001*

124
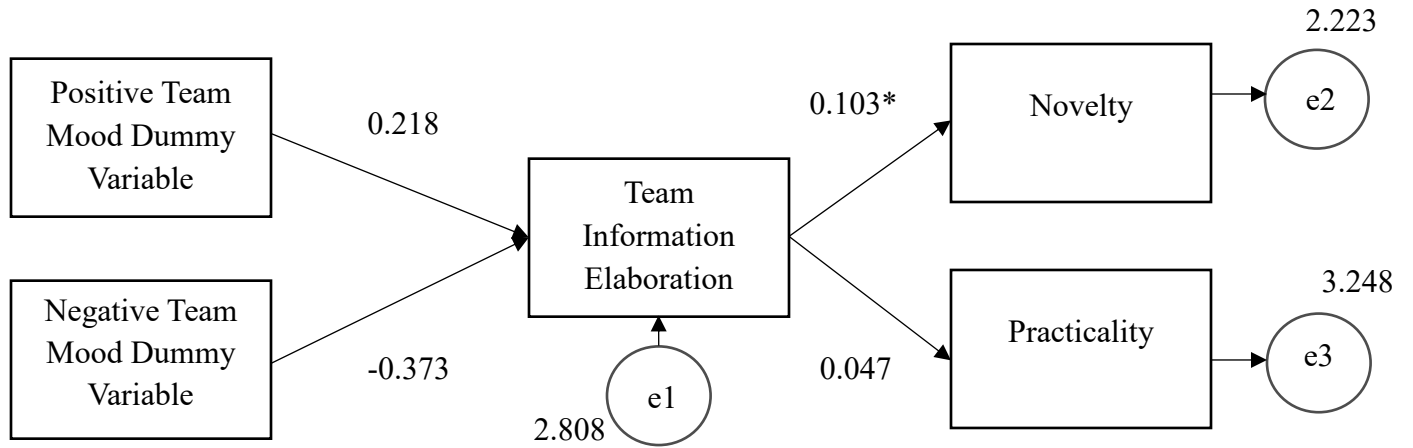
Appendix L2

Figure 11. Model tested via path analysis on the hypothesized negative team mood process path

with unstandardized beta-coefficients obtained

* *p<.05*

Appendix L3
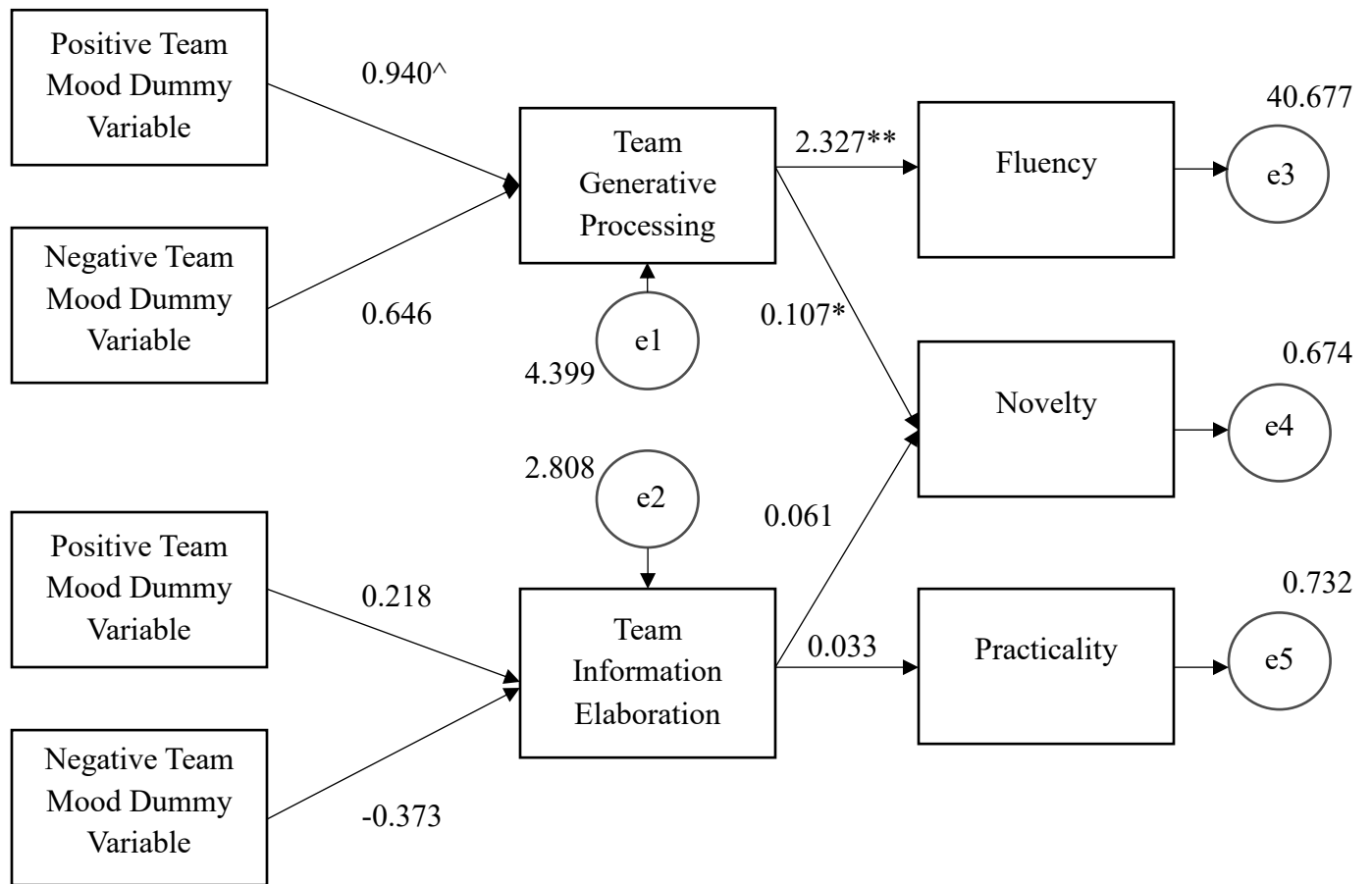
Figure 12. Dual-process model tested via path analysis with unstandardized beta-coefficients

obtained

^ p=.061

* p<.05

** p<.001

Appendix M1

Table 9

Team Ideational Flexibility as a Mediator between Positive Team Mood and Team Generative Processing

Model	B	$SE\ (B)$	t	p	R^2
Outcome: Team Ideational Flexibility					.019
Positive Team Mood	-0.134	0.368	-0.364	.717	
Negative Team Mood	0.360	0.371	0.334	.334	
Outcome: Team Generative Processing					.249
Positive Team Mood*	1.027	0.451	2.277	.025	
Negative Team Mood	0.411	0.456	0.901	.370	
Team Ideational Flexibility**	0.653	0.121	5.388	<.001	

* denotes significance at $p<.05$

** denotes significance at $p<.001$

Appendix M2
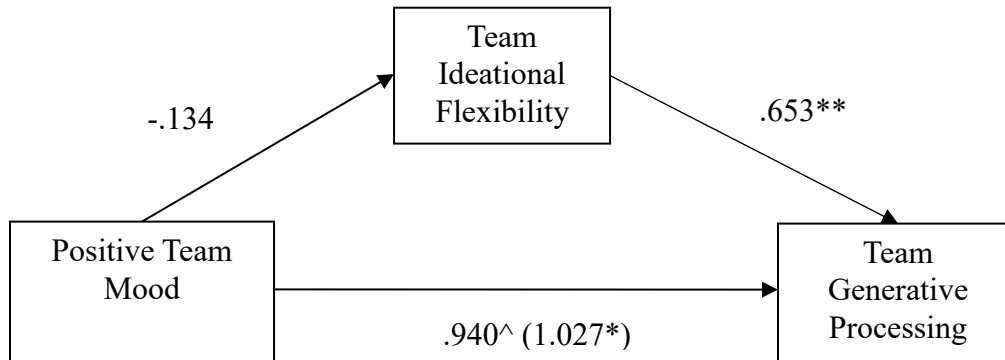
Figure 13. Regression coefficients for the relationship between positive team mood (vs neutral team mood) and team generative processing as mediated by team ideational flexibility. The regression coefficient of the relationship between positive team mood (vs neutral team mood) and team generative processing, controlling for team ideational flexibility, is in parentheses.

$^\wedge p$ =.068

$*p$ <.05

$** p<.001$

Appendix M3

Table 10

Team Persistence as a Mediator between Negative Team Mood and Team Information

Elaboration

Model	B	$SE (B)$	t	p	R^2
Outcome: Team Persistence					.002
Positive Team Mood	0.294	1.230	0.239	.811	
Negative Team Mood	-0.182	1.238	-0.147	.884	
Outcome: Team Information Elaboration					.398
Positive Team Mood	0.158	0.321	0.493	.623	
Negative Team Mood	-0.336	0.323	-1.041	.300	
Team Persistence**	0.205	0.026	7.944	<.001	

** denotes significance at *p*<.001

Appendix M4
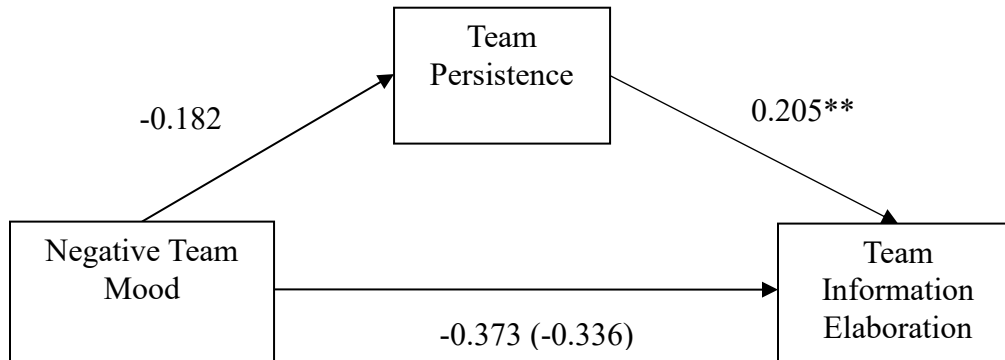
Figure 14. Regression coefficients for the relationship between negative team mood (vs neutral team mood) and team information elaboration as mediated by team persistence. The regression coefficient of the relationship between negative team mood (vs neutral team mood) and team information elaboration, controlling for team persistence, is in parentheses.

*** p<.001*

Appendix M5

Table 10

Perceived Team Epistemic Motivation as a Mediator between Negative Team Mood and Team

Information Elaboration

Model	B	SE (B)	t	p	R^2
Outcome: Perceived Team Epistemic Motivation					.025
Positive Team Mood	0.030	0.142	0.211	.833	
Negative Team Mood	-0.181	0.143	-1.271	.207	
Outcome: Team Information Elaboration					.143
Positive Team Mood	0.188	0.382	0.492	.624	
Negative Team Mood	-0.190	0.388	-0.489	.626	
Perceived Team Epistemic Motivation**	1.014	0.268	3.791	<.001	

** denotes significance at $p<.001$

Appendix M6
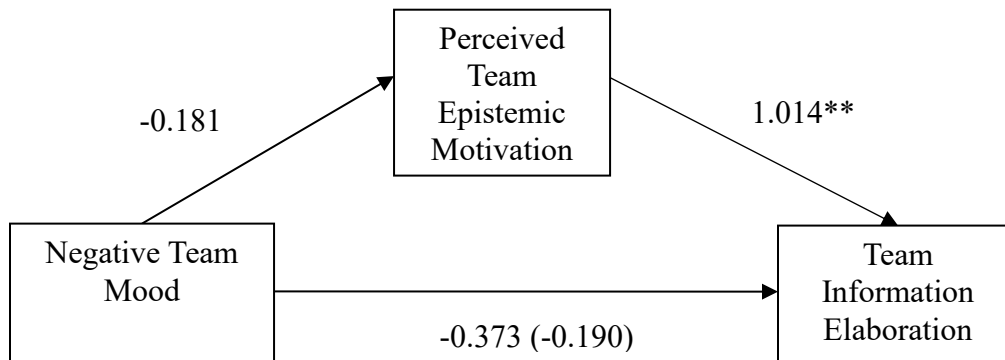
Figure 15. Regression coefficients for the relationship between negative team mood (vs neutral team mood) and team information elaboration as mediated by perceived team epistemic motivation. The regression coefficient of the relationship between negative team mood (vs neutral team mood) and team information elaboration, controlling for perceived team epistemic motivation, is in parentheses.

*** p<.001*

Appendix N1

Need for Cognitive Closure Scale (Brief Version)

1 = "strongly disagree"

6 = "strong agree"

1. I don't like situations that are uncertain.
2. I dislike questions which could be answered in many different ways.
3. I find that a well ordered life with regular hours suits my temperament.
4. I feel uncomfortable when I don't understand the reason why an event occurred in my life.
5. I feel irritated when one person disagrees with what everyone else in a group believes.
6. I don't like to go into a situation without knowing what I can expect from it.
7. When I have made a decision, I feel relieved
8. When I am confronted with a problem, I'm dying to reach a solution very quickly.
9. I would quickly become impatient and irritated if I would not find a solution to a problem immediately.
10. I don't like to be with people who are capable of unexpected actions.
11. I dislike it when a person's statement could mean many different things.
12. I find that establishing a consistent routine enables me to enjoy life more.
13. I enjoy having a clear and structured mode of life.
14. I do not usually consult many different opinions before forming my own view.
15. I dislike unpredictable situations.

Adopted From: Roets, A. & Van Hiel, A. (2011). Item selection and validation of a brief, 15-item version of the need for closure scale. *Personality and Individual Differences, 50,* 90-94.

Appendix N2

HEXACO Measure of Personality

Please indicate the extent to which you agree that each of the adjectives below describes you

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Active	○	○	○	○	○
Extraverted	○	○	○	○	○
Reserved	○	○	○	○	○
Withdrawn	○	○	○	○	○
Accomodating	○	○	○	○	○
Agreeable	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Aggressive	○	○	○	○	○
Intolerant	○	○	○	○	○
Careful	○	○	○	○	○
Conscientious	○	○	○	○	○
Disorganised	○	○	○	○	○
Negligent	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Secure	○	○	○	○	○
Stable	○	○	○	○	○
Emotional	○	○	○	○	○
Vulnerable	○	○	○	○	○
Intellectual	○	○	○	○	○
Wise	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Conventional	○	○	○	○	○
Unsophisticated	○	○	○	○	○
Honest	○	○	○	○	○
Modest	○	○	○	○	○
Arrogant	○	○	○	○	○
Hypocritical	○	○	○	○	○

Appendix N3

Adapted From: De Raad, B., Barelds, D. P., Levert, E., Ostendorf, F., Mlačić, B., Blas, L. D., ...

& Church, A. T. (2010). Only three factors of personality description are fully replicable across

languages: A comparison of 14 trait taxonomies. *Journal of Personality and Social Psychology*,

98(1), 160.

Appendix N4

The Perceived Arousal Scale

Instructions and Items Used in Experiment 1 (15 items total):

Perceived State of Arousal

Different people react very differently to the same situations. Please indicate how you currently feel by rating how well each of the following words describes how you feel. Use the following 7-point rating scale. Write the number corresponding to your rating on the blank line next to each word.

Does Not Describe How I Feel at All						*Accurately Describes How I Feel*
1	2	3	4	5	6	7

Active ____	Depressed* ____	Drowsy* ____	Dull* ____
Energetic ____	Excited ____	Exhausted* ____	Forceful ____
Lively ____	Sharp ____	Sluggish* ____	Tired* ____
Vigorous ____	Weak* ____	Weary* ____	

**Instructions and Additional Items
Used in Experiment 2 (24 items total):**

Perceived State of Arousal

Different people react very differently to the same situations. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following 5-point rating scale. Write the number corresponding to your rating on the blank line next to each word.

Very Slightly or Not At All	*A Little*	*Moderately*	*Quite a Bit*	*Extremely*
1	2	3	4	5

Alert ____	Aroused ____	Fatigued* ____	Inactive* ____
Powerful ____	Quiet* ____	Sleepy* ____	Slow* ____
Worn-out* ____			

NOTE: *Item was reverse scored.

Adopted From: Anderson, C. A., Deuser, W. E., & DeNeve, K. M. (1995). Hot temperatures, hostile affect, hostile cognition, and arousal: Tests of a general model of affective aggression. *Personality and Social Psychology Bulletin*, *21*(5), 434–448.

https://doi.org/10.1177/0146167295215002

Appendix N5

Team Collective Efficacy Scale

1. Members of our team are confident that the team will be able to successfully perform its task

2. Members of our team believe that the team has above-average ability

3. Members of our team feel confident that the team's skills and abilities excel those of other teams

(1 = strongly disagree, 5 = strongly agree)

Adopted From: Kim, M., & Shin, Y. (2015). Collective efficacy as a mediator between cooperative group norms and group positive affect and team creativity. *Asia Pacific Journal of Management, 32*(3), 693–716. https://doi.org/10.1007/s10490-015-9413-4

Appendix N6

Team Identification

Please answer the following questions regarding you and your team

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I identify with other members of my team	○	○	○	○	○
I see myself as a member of my team	○	○	○	○	○
I feel strong ties with members of my team	○	○	○	○	○
I am glad to be a member of my team	○	○	○	○	○

Adapted From:

Janssen, O., & Huang, X. (2008). Us and me: Team identification and individual differentiation as complementary drivers of team members' citizenship and creative behaviors. *Journal of Management*, *34*(1), 69-88.

Heere, B., James, J., Yoshida, M., & Scremin, G. (2011). The effect of associated group identities on team identity. *Journal of Sport Management*, *25*(6), 606-621.

Appendix N7

Team Viability

Please answer the following questions regarding you and your team

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
If we need to work on another task, this team will not continue to function as a team	○	○	○	○	○
This team is not capable of working together as a unit.	○	○	○	○	○
Given a choice, I would like to choose to continue working with my current team	○	○	○	○	○

Adapted From: Barrick, M. R., Stewart, G. L., Neubert, M. J., & Mount, M. K. (1998). Relating member ability and personality to work-team processes and team effectiveness. *Journal of applied psychology*, *83*(3), 377

Team Cohesion

Please answer the following questions regarding you and your team

	Not At All	.	.	.	.	.	A Lot
To what extent is your group cohesive?	○	○	○	○	○	○	○
How much do you feel like your team has group spirit?	○	○	○	○	○	○	○
To what degree would you talk up this group to your friends as a great group to work in?	○	○	○	○	○	○	○

Adapted From: Jehn, K. A., & Mannix, E. A. (2001). The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance. *Academy of management journal*, *44*(2), 238-251.

Appendix N8

Team Satisfaction

Please answer the following questions regarding you and your team

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
All in all, I am satisfied with my team	○	○	○	○	○
In general, I don't like my team	○	○	○	○	○
I am satisfied with the friendliness of my team members	○	○	○	○	○

Adopted From: Shaw, J. D., Zhu, J., Duffy, M. K., Scott, K. L., Shih, H.-A., & Susanto, E.

(2011). A contingency model of conflict and team effectiveness. *Journal of Applied Psychology*,

96(2), 391–400. https://doi.org/10.1037/a0021340

Appendix N9

Team Goal Orientation

Please answer the following questions regarding you and your team

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
My team wants to learn as much as possible on this task.	○	○	○	○	○
My team hopes to gain a broader and deeper knowledge on this task.	○	○	○	○	○
My team prefers material that really challenges us so we can learn new things on this task.	○	○	○	○	○
It is important for my team to do better than other teams on this task.	○	○	○	○	○
My team is striving to demonstrate abilities exceed those of other teams on this task.	○	○	○	○	○
My team is motivated by the idea of outperforming other teams on this task	○	○	○	○	○

Adapted From: Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of personality and social psychology*, *72*(1), 218.

Appendix N10

Team Psychological Safety

1. I had the impression the other group members wanted to hear what I had to say

4. I had the impression the other group members would appreciate discussion

2. I expected the other members to react positively when I disagreed with them

3. I expected this group to appreciate it when I mentioned new information

(1 = strongly disagree, 7 = strongly agree)

Adopted From: van Ginkel, W. P., & van Knippenberg, D. (2008). Group information elaboration and group decision making: The role of shared task representations. *Organizational Behavior and Human Decision Processes, 105*(1), 82–97.

https://doi.org/10.1016/j.obhdp.2007.08.005

Appendix N11

Team Trust

1. My team approaches the job with professionalism and dedication

2. I see no reason to doubt my team's competence and preparation for the job

3. I can rely on my team not to make my job more difficult by careless work

4. Members of my team trust and respect each other

5. Members of my team are trustworthy

6. If people knew more about my team, they would be more concerned and monitor our performance more closely

   (1 = strongly disagree, 7 = strongly agree)

Adapted From:

McAllister, Daniel. (1995). Affect- and Cognition-Based Trust Formations for Interpersonal Cooperation in Organizations. *Academy of Management Journal. 38*. 24-59. 10.2307/256727.

Tsai, W.-C., Chi, N.-W., Grandey, A. A., & Fung, S.-C. (2012). Positive group affective tone and team creativity: Negative group affective tone and team trust as boundary conditions. Journal of *Organizational Behavior, 33*(5), 638–656. https://doi.org/10.1002/job.775

Appendix N12

Perceived Performance

Overall, how would you rate the ideas generated by your team in terms of....

	Not At All	.	.	.	Extemely
...Novelty	○	○	○	○	○
...Practicality	○	○	○	○	○

Team Reflexivity

Please answer the following questions regarding you and your team

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The team often reviews its objectives	○	○	○	○	○
The methods used by the team to get the job done are often discussed	○	○	○	○	○
We regularly discuss whether the team is working effectively together	○	○	○	○	○
In this team, we modify our objectives in light of changing circumstances	○	○	○	○	○
Team strategies are rarely changed	○	○	○	○	○
The way decisions are made in this team is rarely altered	○	○	○	○	○

Adopted From: De Dreu, C. K. W. (2002). Team innovation and effectiveness: The importance of minority dissent and reflexivity. *European Journal of Work and Organizational Psychology, 11,* 285–298.

Appendix N13

Team Conflict

Task Conflict
- How much conflict of ideas is there in your work group?
- How frequently do you have disagreements within your work group about the task of the project you are working on?
- How often do people in your work group have conflicting opinions about the project you are working on?

Relationship Conflict
- How much relationship tension is there in your work group?
- How often do people get angry while working in your group?
- How much emotional conflict is there in your work group?

Process Conflict
- How often are there disagreements about who should do what in your work group?
- How much conflict is there in your group about task responsibilities?
- How often do you disagree about resource allocation in your work group?

1 = "none or not at all", 5 = "very much or very often"

Adopted From: Jehn, K. A., & Mannix, E. A. (2001). The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance. *Academy of management journal*, *44*(2), 238-251.