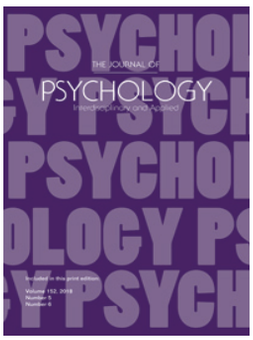

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The Conceptualization of Team Flow

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ABSTRACT

Despite the noted potential for *team flow* to enhance a team's effectiveness, productivity, performance, and capabilities, studies on the construct in the workplace context are scarce. Most research on flow at the group level has been focused on performance in athletics or the arts, and looks at the collective experience. But, the context of work has different parameters, which necessitate a look at individual and team level experiences. In this review, we extend current theories and essay a testable, multilevel model of team flow in the workplace that includes its likely prerequisites, characteristics, and benefits.

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One of the supposed holy grails of today's business world is the ability to get top performance from employees through their discretionary efforts over and above the requirements of the job (Schaufeli, 2006; Schaufeli, Bakker, & Van Rhenen, 2009; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Though most of the research in this area has been focused on individuals, the reality is that companies face a challenging business environment in which tasks are complex enough to require teams rather than individual employees to accomplish them (Carton & Cummings, 2012). Further potential advantages to using teams include synergistic levels of performance and creativity, and a reduction in production costs and absenteeism (Delarue, Van Hootegem, Procter, & Burridge, 2008; Larson, 2010; Richter, Dawson, & West, 2011). Although the value of coherent, high-performing teams is obvious, creating them is something of a challenge, especially in the context of *ad hoc* business teams. One of the keys to doing this, however, is focusing not just on building a healthy team dynamic, which has been well-researched (e.g., Guzzo & Dickson, 1996; Katzenbach & Smith, 1993), but also on intrinsic motivation, satisfaction, and psychological well-being at both the individual (Bakker & Demerouti, 2008) and team levels (Hackman & Wageman, 2005). Past research has explored how these latter concepts can foster creativity, productivity, and higher work performance (Dolan & Metcalfe, 2012; Eisenberger, Jones, Stinglhamber, Shanock, & Randall, 2005; Fisher, 2010; Lyubomirsky, King, & Diener, 2005; Wright & Cropanzano, 2004), all of which suggests that it behooves companies to foster high-

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performing teams to reap the benefits at the individual, team, and even organizational levels (Fisher, 2010).

One of the major correlates of intrinsic motivation, satisfaction, and psychological well-being is the ability to have optimal experiences (*flow*; Csikszentmihalyi, 1990) with some degree of frequency and consistency. Flow experiences are considered to be some of the most enjoyable, rewarding, and engaging experiences of all, and typically involve automatic and effortless action coupled with intense focus (Csikszentmihalyi, 1990, 1996, 1997). The benefits of having flow experiences are still being catalogued, but include improved overall quality of life, increased self-efficacy, and a stronger sense of self. In this respect, work produced during a flow experience tends to be more creative and of higher quality, giving rise to more satisfaction and positive emotion (Bryce & Haworth, 2002; Csikszentmihalyi & LeFevre, 1989; Fredrickson, 2001; Hektner, Schmidt, & Csikszentmihalyi, 2007; Massimini & Carli, 1988). Additional benefits gained from high engagement (potentially created by flow experiences) are a stronger emotional connection to the workplace and increased willingness to put in discretionary effort (Maslach, Schaufeli, & Leiter, 2001), which can in turn contribute to high team performance (cf. Kirkman & Rosen, 1999; Seligman, 2011). In the work domain, several studies have linked flow to positive outcomes like job satisfaction, intrinsic motivation, and vigor (Amabile & Kramer, 2007; Bryce & Haworth, 2002; Csikszentmihalyi & LeFevre, 1989; Demerouti, Bakker, Sonnentag, & Fullagar, 2012).

Furthermore, flow is associated with high levels of constructs related to psychological capital (Luthans, Youssef-Morgan, & Avolio, 2015), such as self-efficacy (Salanova, Bakker, & Llorens, 2006), self-esteem (Wells, 1988), personal resources such as self-efficacy beliefs (Salanova et al., 2006), and organizational resources such as social support that, in turn, positively affect workers' ability to marshal these resources to improve their performance (Luthans, Avolio, Avey, & Norman, 2007). Given the role of flow in the promotion of both well-being and high performance at the *individual level*, we propose that flow could have even more benefits and stronger positive effects at the *team level* by promoting optimal experiences, well-being, and meaningful experiences in entire teams, all of which tend to promote more creative production and higher performance (cf. Csikszentmihalyi, 1996, 1997; Sawyer, 2003, 2006, 2007).

Our intention to study team flow follows from the suggestion that collective flow ought to be studied more extensively and from a broader perspective (cf. Chen & Kanfer, 2006). Our research subjects therefore include both the experiences of the individual (aggregated or otherwise) and the *context* in which they occur (Fisher, 2010; Salanova, Rodríguez-Sánchez, Schaufeli, & Cifre, 2014; Sawyer, 2006; Walker, 2010). As noted by Snow (2010), little work has been done on the dynamics of team flow experiences in the workplace outside the context of creative production. To remedy that, our focus here is on group flow experiences as they apply to work teams. This necessitates a more nuanced conception of team flow: one that includes a *definition*, its *elements* (a description of how each facet of individual flow is represented in the dynamics of the team), and its *benefits* (the consequences and outcomes of team flow experiences). To that end, we review the literature regarding flow at the individual and group levels and apply these findings to the context of work teams. From there, we distill a definition for team flow in the work context and present a testable model of team flow that includes the elements of the team flow experience.

Flow Theory in the Context of Work Teams

Defining "Flow"

Flow experiences tend to be characterized by nine key elements (Csikszentmihalyi, 1990; Nakamura & Csikszentmihalyi, 2009). Three of them have been identified as prerequisites for entering the flow state (Nakamura & Csikszentmihalyi, 2002): (1) Clear proximal goals at every stage of the activity; (2) Clear and relatively immediate feedback on one's actions and progress (see Amabile & Kramer, 2011, for the value and importance of immediate feedback); (3) Perceived challenges, or opportunities for action, that require high levels of skill. That last element generally refers to activities with balanced, if high, levels of challenge and skill (but see Abuhamdeh & Csikszentmihalyi, 2009, for a caveat).

With these elements in place, a person is able to experience six subjective, emergent states (cf. Hamilton & Hurford, 2007; Nakamura & Csikszentmihalyi, 2009), which comprise the other elements of flow: (4) A sense that one has control over the situation and no fear of failure, that is, a sense that one can deal with the situation because one knows how to respond to whatever happens next (Hektner et al., 2007; Jackson & Eklund, 2004); (5) Intense and focused concentration on the activity at hand, such that all of one's thoughts, effort, and attention are directed at the current task, and distractions are totally excluded from consciousness; (6) A merging of action and awareness, meaning that one's involvement in an activity is so intense that the appropriate and constructive responses become spontaneous and automatic; (7) The loss of reflective self-consciousness, such that all concern for the self disappears and the person perceives a sense of unity with the activity (i.e., loss of awareness of oneself as a social actor); (8) A distorted sense of the passage of time (Csikszentmihalyi, 1990, 1996); and finally (9) *Autotelicity* — the activity is done for its own sake or is intrinsically rewarding, such that the stated goal tends to be an excuse for engaging in the process (Csikszentmihalyi, 1975; cf. Ryan & Deci, 2000).

Creating an Environment Conducive to Flow

Flow is more likely to occur when people perceive a challenge or an opportunity for action that meets (or slightly exceeds) their skill level, which promotes deeper engagement (Abuhamdeh & Csikszentmihalyi, 2009; Asakawa, 2004; Csikszentmihalyi, 1990; Moneta & Csikszentmihalyi, 1996). At that level of challenge relative to skill, individuals stretch their abilities, which is likely to cause them to enhance their skills and increase their self-efficacy and personal complexity (Csikszentmihalyi & LeFevre, 1989; cf. Ullén et al., 2012). When people focus on what they are doing and are intrinsically motivated to pursue their chosen activity (both elements typical of a flow experience), likely outcomes include better performance and a desire to engage in the activity again in the future (Csikszentmihalyi, 1997; Landhäußer & Keller, 2012).

One of the key implications of these findings is the extent to which the opportunity to experience flow is under the control of those who engage in the relevant activity. For instance, the choice of a goal, and the refinement thereof into clarity, can be a deliberate instantiation of an activity. Indeed, when working as a team, refining the goal can be a key part of the team's unity and *raison d'etre* (O'Leary-Kelly, Martocchio, & Frink, 1994). An example would be a computer programmer not just writing the code to a program, but determining a tangible outcome that is an obvious sign of

achievement, such as solving a particular problem by writing a program that can generate a solution.

Likewise, determining the specific mechanisms for feedback and how to know whether progress is being made are also intentional ways to ensure a successful flow experience at any level. For instance, many sports teams create code words that direct the flow of play, along with actions and phrases that quickly indicate correction and encouragement, all of which provide an indicator of how both the individuals and the team are progressing towards the goal.

The third established prerequisite of a flow experience, which pertains to challenge and skill, is also under the control of the individual/team. First, the challenge level can be set/altered with the establishment of the goal and/or the means used to achieve it. The allocation of resources thus becomes a key detail in enabling flow, along with how others may participate in the experience by making it more or less challenging, or providing more or less skill to aid the individual performer. A chess player, for example, might attempt the game with fewer pieces when playing a weaker opponent, while an improv troupe might require a skilled member to use only one-word answers that start with a specified letter. And, of course, skills can be developed intentionally through practice.

Another three of the subjective characteristics of flow can also be controlled to a degree, such that they can (but do not always) function as prerequisites of a flow experience. First, concentration can be developed through practice and/or training (e.g., Lutz, Slagter, Dunne, & Davidson, 2008; Jha, Krompinger, & Baime, 2007), and people are also capable of excluding distractions from a task environment (e.g., moving the task to a quiet room and turning off paging devices).

A similar notion applies to the element of having a sense of control and no fear of failure. One can engineer the situation such that the consequences of failure pale in comparison to the consequences of not engaging in the task, or likewise engage in deliberate practice that prepares one for a wide range of eventualities. This relates directly to self-efficacy, which can be built up intentionally to reduce one's concerns about failure (cf. Bandura, 1997), and likewise to having sufficient psychological safety to take relevant risks (see below). Relatedly, one can also adjust the challenge to the optimal degree relative to skills such that one feels sufficient confidence without being certain of success or overconfident. In this, the interactions between the characteristics of flow become evident, and one starts to see the complexity of the flow experience. As such, one can use elements of the flow experience and/or alter the context so that one has a sense of control over the situation to the degree that one believes oneself capable of responding appropriately to any situation, stimulus, or even that could arise.

It is also easier for people to recall the experience of an activity as intrinsically rewarding when the activity they chose to engage in was one they love. This element of flow, *autotelicity*, is about engaging in a behavior for its own sake. Autotelic goals fit and feed the identity of the people in a virtuously cyclical fashion such that engaging in these personally meaningful activities and having a positive flow-type experience in the process will increase motivation for engaging in these activities in the future, developing skill related to these activities, increasing the challenge, and producing even more effective results (cf. Csikszentmihalyi, 1997; Fredrickson, 2001; Nakamura & Csikszentmihalyi, 2009; Sawyer, 2007). As such, the autotelic experience can also be considered a prerequisite of flow, and implies that those who choose to play a specific instrument, or a specific kind of sport, or a specific position (task or role) in a team (etc.) are more likely not only to experience flow themselves, but incite others to experience flow, as well (cf. Snow, 2010; Walker, 2010). Thus, autotelicity is a recursive aspect of flow in that it both promotes future flow

Table 1. Classification of the Nine Elements of Flow.

Prerequisites		*Elements that need to be created, or at least present, in the work environment*	1) Challenges matched to skill level 2) Clear proximal goal(s) 3) Clear and immediate feedback
	Characteristics	*Elements that can be influenced (like prerequisites) but are also indicative of flow (like characteristics)*	4) No fear of failure; Sense of control 5) Total concentration; Oblivious to distraction 9) Intrinsic motivation; Autotelic experience
		Elements describing internal states that only occur during flow experiences	6) Merging of action and awareness 7) Loss of reflective self-consciousness 8) Distorted experience of time passing

experiences through the boost it receives from current flow experiences. As will be noted below, this recursiveness becomes even more important at the team level.

The three remaining elements (merging of action and awareness; loss of reflective self-consciousness; distortion of temporal experience), are wholly emergent and thus cannot be considered prerequisites of the flow experience. Trying to create these elements for oneself invariably backfires (Csikszentmihalyi, 1997; Gardner, Csikszentmihalyi, & Damon, 2001), causing people to experience their exact opposites. Therefore, these elements are strictly characteristics of the flow experience and are effective indicators of its presence.

Thus, of the nine elements that define the flow experience, three are prerequisites for the flow experience that depend on the external task environment and are almost fully under the control of the individual/team, three others bridge the gap between the external environment and the internal experience of the subject and are partially determined by the individual/team, and the last three are purely emergent and strong indicators of whether flow is being experienced (see Table 1).

Having established a conception of flow, we now turn to providing a working definition of the "team" part of team flow.

Defining "Teams"

In order to consider the application of flow to teams (especially business teams, as opposed to artistic ensembles, etc.), we must define what constitutes a team and give some initial indication of how flow can be integral to the nature of a team. As a working definition of a team, we will use Katzenbach & Smith's (1993): "a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable" (p. 112). This is in line with most definitions for teams in the work context (e.g., Forsyth, 2009) and highlights several key aspects of a team's makeup. First, it maintains that a team is small, which is important because it is difficult for all of the members of a large group to be part of the *same* dynamic (e.g., flow experience; Moreland, Levine, & Wingert, 1996). Second, the mention of complementary skills highlights one of the main purposes for having a team in the first place: there is a job to be done that a single person cannot do alone. Indeed, if everyone had the same skills, then the group would likely devolve into individuals engaged in parallel processing. Complementary skills allow for the synergy that high-performing teams exhibit and utilize (Moreland & Levine, 1992).

Members of a team must hold each other mutually accountable, whereas members of a group need not. Being collaborators, team members are utterly dependent upon one another's contributions, whereas a group can consist of mostly independent operators engaged in parallel processing. As such, the common purpose is a core aspect of the team's definition. It guides the actions of all members and forces each member to rely on the complementary

skills of each other member in order to achieve the team's shared goals. Performance benchmarks and accountability inform the provision of feedback, which maintains the cohesiveness of the team and guides both the team dynamic and the application of each individual's unique skill set (Katzenbach & Smith, 1992). In turn, this ties in nicely with several of the aforementioned characteristics of flow experiences.

Having defined both the "flow" and "team" parts of team flow, we turn to the need for such a concept separate from established work on flow experiences, such as group flow, dyadic flow, and social flow. Even as this research shows constructs that do not quite cover the phenomenon of team flow, they still provide strong grounding for establishing the construct.

A Review of Research on Flow Experiences Involving Multiple Individuals

One of the pioneers in group flow research is R. Keith Sawyer, who defined group flow as "a collective state that occurs when a group is performing at the peak of its abilities" (Sawyer, 2003, p. 167). His work is mainly based on groups in the performing arts, such as jazz bands and improvisational theatre companies. Sawyer (2007) contends that group flow emerges in contexts where ten key flow-enabling conditions are present. They are: (1) the group's goal, (2) close listening, (3) complete concentration, (4) being in control, (5) blending egos, (6) equal participation, (7) familiarity, (8) communication, (9) moving it forward, (10) the potential for failure. These conditions were ascertained through qualitative research methods and are not (to our knowledge) validated by quantitative measures.

Sawyer (2006) defines group flow as a property of the group as a collective unit:

> Group flow is not the same thing as the psychological state of flow. It depends on interaction among performers and it emerges from this process. The group can be in flow even when the members are *not* [emphasis added]; or the group might not be in flow even when the members are. The study of group flow thus requires a fundamentally social psychology and must proceed by examining the interactional dynamics among members during performance. (p. 159)

While we concede that a group can attain a 'collective state of mind,' we disagree with Sawyer's view that group flow allows for individuals not to experience flow. Studies on athletes experiencing flow in group sports (cf. Jackson & Eklund, 2004; Jackson, Kimiecik, Ford, & Marsh, 1998; Jackson & Csikszentmihalyi, 1999; Russell, 2001), as well as a report on flow in motorcycle gangs in Japan (Sato, 1988), show that it is the individual who experiences flow as a function of participating in a group activity and that flow is experienced by the collective when all individuals share this flow experience. For instance, Russel (2001) mentioned the importance of team interaction as an antecedent for flow in sports teams, while Jackson (1995) spoke of partner unity and Armstrong (2008) balanced decentralization and synchronization. As such, our conception of team flow (below) is a concatenative one rather than being solely a group phenomenon.

To incorporate flow into theories of knowledge, performance, and social networks, Quinn (2005) defines individual flow in knowledge work as the merging of situational awareness with activity-relevant knowledge and skills, and collective flow as the experience of people "moving together toward shared or complementary goals, adjusting in real time to each other's expectations, needs, and contributions, and learning how others work and how to interact effectively along the way" (p. 637). In his doctoral thesis, Quinn (2003)

identified three key differences between individual and collective flow, which he described as additional antecedents for the experience of collective flow. They are (1) the coordination of activities between members of the collective through both cognitive and affective processes, (2) a collective goal that takes precedence over the other elements of the collective structure, and (3) the need for comparable levels of skill. As these characteristics overlap effectively with the characteristics of flow and teams provided by Csikszentmihalyi (and colleagues) and Katzenbach and Smith [et al.] (respectively), they provide a basis for several of our proposed 'elements of team flow', provided in Table 2, that will be in further substantiated in the following sections.

By contrast, Walker (2010) coins the term *social flow* to refer to the experience of flow in a social context and argues that social flow must be similar to solitary flow because the characteristics of the latter are required in order to experience the former. On the other hand, social and solitary flow may be qualitatively different experiences. "After all, people act, think, and feel qualitatively differently within a group than they do by themselves (cf. Allport, 1954; Asch, 1956; Latane & Darley, 1968; Lewin, 1952; Milgram, 1965; Zimbardo, 1969)" (Walker, 2010, p. 4).

Walker (2010) describes a specific type of social flow, interactive social flow, which occurs when team members interact intensively in situations where they are highly interdependent and must cooperate to coordinate their performances within the established team, possibly serving as agents of flow for each other. Walker (2010) describes this form of flow as mutual and reciprocal and states that "interactive social flow should be easily seen in highly cohesive teams, in teams where there is agreement on goals, procedures, roles, and patterns of interpersonal relations and the competency of team members is uniformly high (Hackman, Wageman, Ruddy, & Ray, 2000)" (p. 4). Moreover, he found that when the level of social interdependence was manipulated, participants in highly interdependent teams reported more joy in flow than individuals performing less interdependently. We thus include interdependence in our conception of team flow, along with mutuality and elements of cohesiveness.

In the same year, Snow (2010) introduced the term *interpersonal flow* in the work context as:

> The state in which two people are mutually engaged in a shared activity such that both individuals would describe their the experience as (a) having their perspective broadened by the other person, (b) feeling a shared sense of identity, (c) not feeling self-conscious with each other, (d) not worrying about what outsiders think, (e) having total concentration on the shared activity, (f) feeling able to respond almost instantly to presenting situations as a pair, (g) time passing more quickly or slowly than usual, and (h) enjoyable and intrinsically rewarding. (p. 2)

Interpersonal flow was predictive of the exchange of knowledge. Specifically, interpersonal flow characterized by an interaction focus uniquely predicted the bestowal of knowledge, whereas a task focus uniquely predicted the absorption of knowledge. These two focus styles, of which team members may well be conscious as they cooperate on a task, could help team members achieve a smoother collaboration and even a team-level flow experience.

Sawyer, Snow, and Walker conceptualized their constructs of group flow, interpersonal flow, and social flow, respectively, using sets of constituent constructs, just as we will below. An overview comparing and contrasting the building blocks of these four different conceptualizations of plural flow as well as those of Csikszentmihalyi's conceptualization of individual flow is provided in Table 3.

Aubé, Brunelle, and Rousseau (2014) have studied the role of individual-level flow in work teams, testing the relationship between flow, team goal commitment, and team

Table 2. The Elements of Team Flow.

Element	Underlying constructs	Relates to individual flow element
Prerequisites		
Collective ambition The *raison d'etre* of the team	Participate in the activity for its own sake; (Re)convene with the team to tackle a future challenge	Intrinsic motivation (autotelicity)
Common goal A collective goal that is endorsed by everyone	Clear and meaningful to all members of the team; Compatible with members' individual goal(s); Internalized by all team members; challenging	Clear proximal goal(s)
Aligned personal goals The integration of personal goals with the common goal	Derive from, are consistent with, and contribute to a clear and shared team goal.	Clear proximal goal(s)
High skill integration The arrangement of individual capabilities into a collective strength	Knowing each other's strengths, interests, and skills; Team-level goals that require members to use their complementary skills at high levels; Facilitating the challenge level to skill level balance for each team member; Coordinated action	Challenges matched to skill level
Open communication Communication predicated upon the expectation that the listener will be willing, perceptive, and non-judgmental	Clear and unambiguous; Timely and consistent; Arises out of mutual accountability; Connects individuals' contributions to the common goal; Uses close listening; Is genuinely constructive and appropriate	Clear and immediate feedback
Safety The level of psychological safety needed to engage in action and take smart risks	Provides a potential to succeed or fail; Allows for taking necessary risks; Facilitates a feeling of being safe to act; Promotes mutual respect; Fosters trust; Allows for learning and growth	No fear of failure, sense of control
Mutual commitment Focus on the task at hand and how the task is part of the team's dynamic and goals	Full attention at the individual level; Awareness of the common goal and each other's contributions to it; No dealing with distractions external to the team's common task; Keeping one another on task; Cognizance of the interplay that is the team dynamic; Alignment with the *raison(s) d'être* and purposes of the team	Total concentration, oblivious to distraction

(*Continued on next page*)

Table 2. (*Continued*).

Element	Underlying constructs	Relates to individual flow element
Characteristics		
Sense of unity Emergence of a collective identity such that the team acts as a cohesive unit	Cohesion; Not feeling self-conscious around other members of the team; Blending of egos	Loss of reflective self-consciousness
Sense of joint progress A collective feeling of accomplishment through attention focused solely upon the scope of the team's activities	Synergistic interactions; All activities are focused on pursuing the collective goal(s); Moving it Forward; Creating a comprehensive feeling of accomplishment, satisfaction, and elevation	Merging of action and awareness
Mutual trust Mutual confidence in every team member's ability to perform well	Willingness to be vulnerable; Mutual respect; Confidence within the task environment; Team potency/efficacy.	No fear of failure, sense of control
Holistic focus The extent to which the team focuses exclusively upon the common goal	All team members concentrate on the task at hand; Complete alignment of each of those tasks to the common goal; Complete focus of the team as whole on its common goal to the extent that the team loses track of time.	Distorted experience of time passing, total concentration

performance among students working in a project management simulation. They found that flow was positively related to team performance and influenced by goal commitment and the level of information exchange (cf. Armstrong, 2008). The practical recommendations they made after finishing their study included the notion that managers should implement interventions that foster the flow experience in their teams, while at the same time encouraging information exchange between team members.

Keith, Anderson, Dean, and Gaskin (2014) introduce the importance of mutual commitment to the conceptualization of team flow and define the construct as a situation that "occurs when a team is able to become completely immersed in an interdependent task that members are intrinsically gratified together" (p.2). They argue that team flow is affected more by the nature of the task itself (i.e., enjoyment, time dissociation, control, curiosity, immersion, communication) than by team cohesion, the latter of which is determined by how team members evaluate each other (i.e. pride, unity, and social relations), and found support for their argument while doing research with teams participating in collaborative video gaming. We consider their definition of team flow insufficient insofar as it does not consider all of the characteristics of individual flow in Csikszentmihalyi's (1996) model (cf. Jackson & Eklund, 2004). By contrast, in another study, where secondary school students played a collaborative game that merged digital and urban spaces, aggregated individual flow experiences did predict game performance (Admiraal, Huizenga, Akkerman, & Dam, 2011). Thus, there is some precedent for aggregating scores.

In a study about flow at work, Salanova et al. (2006) found evidence for their contention that personal resources (i.e., self-efficacy beliefs) and organizational resources (i.e., social support and clear goals) facilitated work-related flow among secondary school teachers. They defined flow in terms of work absorption, work enjoyment, and intrinsic work motivation. In turn, these flow experiences had a positive influence on those resources, which provides support for the conceptualization of flow as a virtuous cycle. In a study elaborating on their earlier work, Salanova et al. (2014) extended Csikszentmihalyi's (1975, 1990) flow model to the collective level (work groups) by including collective efficacy beliefs as a predictor of collective flow. They found that collective efficacy beliefs predict collective flow over time, and that the two constructs are reciprocally related. Although these are important constructs in team flow, they do not cover a sufficiently large gamut of predictors of team success (cf. Salas, Cooke, & Rosen, 2008).

In a study among talented Dutch soccer players, Bakker, Oerlemans, Demerouti, Slot, and Ali (2011) showed that environmental resources, particularly social support from the coach, and performance feedback during the soccer game were positively related with performance measures. Flow at the team level was more prevalent when the match resulted in a draw or win than when the match resulted in a loss. This finding supports the idea that the individual flow condition of a balance between challenge and skill is also applicable at the team level, and likewise highlights a connection between flow and team performance. As noted above, however, Bakker's conception of flow does not have the full set of nine characteristics (e.g., Jackson & Eklund, 2004).

A key example of aggregating flow experiences is visible in an experiment by Heyne, Pavlas, and Salas (2011), in which flow was measured while teams completed a complex problem-solving task. In the study, researchers assessed the aggregate level of individual flow along with the standard deviation of this aggregated individual measure as a team-level measure. The results showed a correlation between a team's flow experience and task

Table 3. Comparing the Elements of Five Different Conceptualizations of Flow.

Team Flow Element	Related element(s) of Interpersonal Flow[2.]	Related element(s) of Group Flow[3.]	Related element(s) of Social Flow[4.]	Related element(s) of Individual Flow[5.]
Collective ambition	Feeling a shared sense of identity		Emergent challenges are important and meaningful to the entire group	Intrinsic motivation (autotelicity)
	Enjoyable and intrinsically rewarding		Joy, elation and enthusiasm felt and shared throughout group performance	
			The experience builds meaning and a collective sense of purpose	
			The group desires to the repeat the experience	
Common goal		Group's goal		Clear proximal goal(s)
Aligned personal goals				Clear proximal goal(s)
High skill integration		Blending egos	The collective competency of the group is sufficient to dispatch challenges	Challenges matched to skill level
		Equal participation	Group members are uniformly highly competent	
		Familiarity		
Open communication	Having one's perspective broadened by the other person	Close listening	Group members have task-relevant knowledge and skills about each other	Clear and immediate feedback
		Familiarity	Task feedback is clear and immediate	
		Communication	Task feedback is primarily cognitive and secondarily affective	
			Social process feedback is primarily affective and secondarily cognitive	
			Emotional communication during group work	
Safety	Not worrying about what outsiders think	The potential for failure		No fear of failure / Sense of control
Mutual commitment			Group members focus on each other as well as the task to receive feedback	Total concentration / Oblivious to distraction

Sense of unity	Not feeling self-conscious with each other Feeling a shared sense of identity	Blending of egos	Shared intense absorption in and engagement with the task Less awareness of self surrender of self to the group Emotional contagion within the group and observers external the group	Loss of reflective self-consciousness
Sense of joint progress	Feeling able to respond almost instantly to presenting situations as a pair	Moving it forward		Merging of action and awareness
Mutual trust		Being in control		No fear of failure/ A sense of control
Holistic focus	Having total concentration on the shared activity	Complete concentration	Group members focus on each other as well as the task to receive feedback	Distorted experience of time passing
	Time passing differently than normal (faster or slower)		Shared intense absorption and engagement with the task High attention to group members or teammates Loss of sense of time	Total concentration
(Elements that should not be considered elements of plural flow)			The unit of performance is a group or team Tasks prescribe interdependence, coordination and cooperation Tasks are conjunctive and require complementary participation[5] Rituals may be established to institutionalize social flow[6]	

Notes. [1](Snow, 2010).
[2](Sawyer, 2007).
[3](Walker, 2010).
[4](Csikszentmihalyi, 1990).
[5]We consider these inherent in the definition of a team, and thus not explicitly part of team flow.
[6]This is more an intervention to foster team flow than it is an element of team flow.

performance and between its flow experience and the processes members engage in. This suggests that flow functions similarly in teams and individuals, with the understanding that teams are subject to additional considerations, specifically team communication, information sharing, and team member perceptions of teammate performance and effort. Thus, the work of Heyne et al. (2011) supports the idea of developing and testing a comprehensive measure of flow at the team level (cf. Salanova et al., 2014; Walker, 2010). In a similar vein, Zumeta, Basabe, Wlodarczyk, Bobowik, & Páez (2016) found that sharing a flow experience in a group promoted personal well-being, social cohesion, and collective efficacy, which directly suggests the extrapolation of the effects of individual flow to flow at the team level.

In this, we have established a precedent for aggregating individual flow experiences into team flow, and establishing a basis for a conception of group flow that largely fits earlier work but extends to cover a fuller range of characteristics of flow and predictors of high team performance. We now delineate our theory of team flow, along with propositions that can be tested in future studies.

Team Flow Theory

In this section, we will describe how individual team members derive flow from the team dynamic and aggregate it into a shared, team-level experience. First, we will introduce the proposed theory by delineating the nature and experience of team flow. Second, we will clarify the relationship between this new theory and the extant theories about the nature of both flow and team dynamics.

Team Flow Definition

In this article, team flow is defined as *a shared experience of flow derived from an optimized team dynamic during the execution of interdependent personal tasks*. In this definition, 'shared' means that individual team members are experiencing flow simultaneously and collectively while executing their personal tasks for the team's purpose(s). Our conception of an "optimized" team dynamic is one that is typified by seven prerequisites and four characteristics (see below). Team flow experiences can occur when multiple team members experience individual flow at the same time and in pursuit of the same goal, provided all of the prerequisites for team flow are present. Because some of the elements of team flow are co-created and maintained by the team, there are group-level aspects to team flow, so the theory of team flow presented here is consistent with both Csikszentmihalyi's (1990) and Sawyer's (2003, 2006, 2007) theories (see Table 3).

Bridging Individual Flow and Team Flow

An important difference between team flow and individual flow is that individual experiences of flow arise from a set of circumstances created, maintained, and eventually terminated by the individual. By contrast, in team flow the individual takes part in a team dynamic over which (s)he has limited control and which also limits the individual's control over the situation and circumstances in which (s)he (and the team) work. That team dynamic can have profound effects on both the individual and the team. For this reason, we concur with Walker (2010) and Snow (2010) when they challenge the notion that flow must be entirely in the control of the individual. In addition, while all flow research to date has made the

construct contingent upon a flow *activity*, we are examining a flow experience that occurs because of a *team dynamic* that is centered around a common activity.

Consistent with Kozlowski and Klein's (2000) multilevel approach, as well as Gully, Incalcaterra, Joshi, and Beaubien's (2002) contention that constructs experienced at the individual level can (and should) be aggregated when they are being assessed at the team level, we maintain that when a team's members are experiencing flow while pursuing the team's common purpose, there is a collective flow experience that we call *team flow* (see Figure 1).

Several research teams, including Csikszentmihalyi (1990) and Marotto, Roos, and Victor (2007), concur with this view of team flow as an individual phenomenon aggregated at the team level. For example: "Surgeons say that during a difficult operation they have the sensation that the entire operating team is a single organism, moved by the same purpose; they describe it as a 'ballet' in which the *individual* [emphasis added] is subordinated to the group performance, and all involved share in a feeling of harmony and power" (Csikszentmihalyi, 1990, p. 65).

When analyzing flow at the team level, the elements of individual flow must be reconceptualized, since they operate differently in a team context. Given that those elements can be created by a participant in any given activity (Csikszentmihalyi, 1993), then extending that idea to the team level suggests that each participant has the ability to facilitate the creation of the elements of individual flow both for themselves and for other team members. As such, these elements become embedded in the team dynamic such that each member can derive a flow experience from that dynamic, and the individual flow experiences can aggregate into a team-level experience, which is to say that the team-level experience is greater than the sum of the individual flow experiences from which it emerges. For example, team members can set goals together, give and receive feedback on one another's progress, set the difficulty level of the tasks (i.e., the challenge), make additional skill(s) available, promote safety measures to assuage any fears of failure, and/or help team members maintain focus by removing distractions and making timely contributions to the team's progress. In each example, and indeed in each element of team flow, an element of individual flow is merged with an aspect of team dynamics, which can then form a set of individual flow experiences that also comprise a Gestalten team flow experience (see below). Therefore, we propose an integrative multilevel model of individual and team flow that is presented in Figure 2. From this perspective, we make the following testable propositions (abbreviated P, and depicted in Figure 2):

P1: The elements and experience of individual flow (involving the prerequisites and characteristics of flow at the individual level) and the elements and experience of team flow all affect each other, such that any team member can experience flow from this interplay and such that the individual experiences of team flow can aggregate to a Gestalt team flow experience.

P2a: The prerequisites of flow at the individual and team levels affect each other (correlation).

P2b: The characteristics of flow at the individual and team levels affect each other (correlation).

P3: The prerequisites of flow at the team level affect the emergence of the characteristics of flow at the individual level (causal effect).[1]

P4: The 'gestalt' elements of flow at the individual and team levels affect each other (correlation).

[1]Though the inverse should technically occur, this effect is nominal and should be much weaker

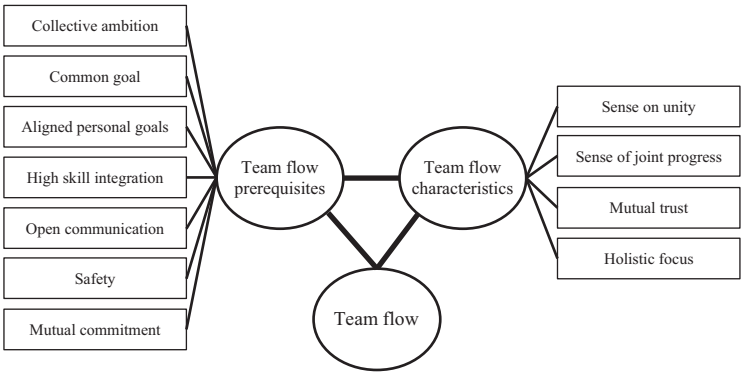

Figure 1. A preliminary conceptual model of team flow.

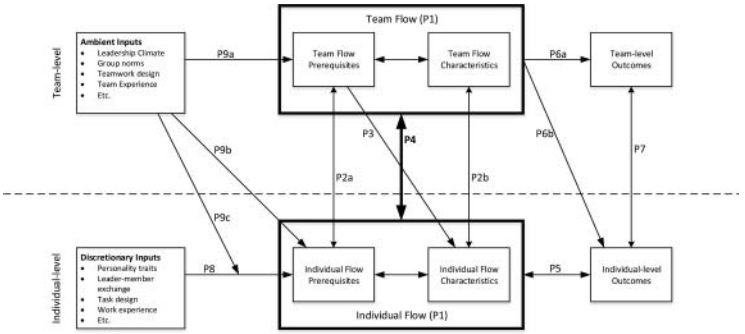

Figure 2. An integrative theoretical multilevel model of individual flow and team flow.

In the following sections we will first further explain the theoretical backgrounds for the elements (prerequisites and characteristics) of team flow. Then we will further explain Figure 2 in terms of inputs and outcomes, following by propositions 5 till 9c.

Elements of Team Flow

Prerequisites of Team Flow

The team dynamic is the sum total of all actions, processes, and changes that occur within and among teams (Forsyth, 2009). It is the collection of forces that influence a team's behavior and performance. Team dynamics are created by the nature of a team's work, the personalities within that team, their working relationships with other people, and the environment in which the team operates. Team dynamics can be good, such as when they improve overall team performance and/or get the most out of individual team members. They can also be bad, such as when they cause unproductive conflict, demotivate the team, or prevent the team from achieving its goals. The following paragraphs will describe which positive aspects of team dynamics facilitate team flow, that earlier have been introduced as the prerequisites of team flow. In doing so, they will also explain how the dynamics in the team allow every single member of the team to experience team flow.

Collective Ambition

In general, a flow experience involves engagement in an activity that one feels intrinsically drawn to or driven to perform. For the individual, this is the autotelicity that inspires one to engage in a given activity, and which is likewise boosted by a flow experience such that the individual wants to continue engaging in the activity at some later time. Applying this to the group level, we build on Sawyer's (2007) notion that, when all members of a group or team experience flow together, they will each feel increased intrinsic motivation to engage, as a team, in the same flow-producing activity in the future. This, in turn, reinforces the raison dêtre (the mission, as it were) or collective ambition of the team (cf. Posner, Kouzes, & Schmidt, 1985; Ready & Truelove, 2011; Weggeman, 2007). A team's collective ambition is shaped by its members' reasons for collaborating, their values and beliefs about how they should accomplish their goals, and their recognition of one another's complementary skills. This shared intrinsic motivation therefore involves the construct of 'group potency,' which is the collective belief within a group that it can be effective (Guzzo, Yost, Campbell, & Shea, 1993).

This collective ambition also forms the basis for a shared identity that Snow (2010) considered a condition for interpersonal flow. This collective ambition is the starting point of team formation and the underlying reason everyone feels connected as a team. We therefore define collective ambition as the shared sense of intrinsic motivation to operate and to perform as a team based on shared values and the recognition of complementary skills, and classify it as a prerequisite for team flow. As with autotelicity in individual flow, however, collective ambition is recursive, and thus can emerge as the experience of team flow develops for the first time with a team, and can then reinforce future gatherings of the team. Often, the team's purpose and dynamic will at first provide opportunities for individuals to engage in autotelic activities in concert with the team's dynamics, which in turn aggregates to a group experience of autotelicity in the pursuit of the team's shared goal. Since this shared goal necessarily relates to the team's raison d'etre, a collective ambition (i.e., the desire to achieve the goal together) must arise before the team can experience flow. Though autotelicity may be emergent at the individual level, and likewise at the team level, it is so tightly bound to the shared goals and the core reasons for convening the team that it is more directly dependent upon the choices made by the individuals and the team. As such, collective ambition is sufficiently engineered by the team and the individuals, and also sufficiently a sine qua non for the emergence of the characteristics of team flow, to qualify as a prerequisite of team flow.

With a collective ambition, we find autotelicity at both the individual and team levels. It is characterized by an intrinsic motivation to both (a) participate in the activity for its own sake and (b) convene with the team in the future to tackle additional challenges.

Common Goal

One of the characteristics of individual flow is a clear proximal goal, which we define as *an object or aim that an individual strives to attain* (cf. Locke & Latham, 1990). As long a person is committed to the goal, has the resources and abilities required to attain it, and has no conflicting goals, research shows a positive, linear relationship between goal difficulty and task performance (cf. Hackman & Oldham, 1980; Locke & Latham, 1984). Moreover, achieving

challenging, important, and meaningful goals can promote not only feelings of success, but also of growth (Locke & Latham, 2006; O'Leary-Kelly et al., 1994).

As with individuals aiming to experience flow, teams require a clear, team-level common goal, which is internalized by all members of the team (cf. Sawyer, 2007). It should be an ambitious goal that promotes growth and is compatible with the team members' personal goals. It is important for the goal to be clear and supported by all concerned; only then can team flow be achieved. The difference between a collective ambition and a long-term common goal is that the latter is more concrete, like medaling at the Olympics, whereas the former is about striving to be an excellent rowing squad by moving through the water smoothly, powerfully, and at tremendous speed. Optimally, the goal is also sufficiently challenging to incite growth and motivate team members to apply their highest skill levels, which in turn relates to the challenge-skill balance aspect of flow, and thus becomes a clear, challenging, collective [CCC] goal.

The common goal is classified as a prerequisite of team flow. During team flow, the team's common goal(s) are: (a) clear and meaningful to all members of the team, (b) compatible with the members' individual goal(s), (c) internalized by all team members, and (d) challenging.

Aligned Personal Goals

Because team flow exists at both the individual and team levels, there must be a bridge that aligns personal and team-level goals, especially because of the importance of avoiding conflicting goals among team members. In order for a team to achieve a difficult goal, research shows that each team member's personal goals need to be compatible with the specific, clearly-established goal(s) of the group (O'Leary-Kelly et al., 1994; Seijts & Latham, 2000). Furthermore, clear, shared goals help teams to define tasks for their members, coordinate their actions, and develop efficient work procedures (Klein & Mulvey, 1995).

Having group members participate in the goal-setting process has the potential to enhance intrinsic motivation and performance (Hackman & Oldham, 1980). A group might begin with the goal that was the reason for their initial formation, and then develop additional ones as their collaboration develops. Ideally, individual team members contribute to the definition of the team's goal[s] and adopt [it/them] as personal (Ellemers, Gilder, & Haslam, 2004). As Lencioni (2002) notes, "[a] functional team must make the collective results of the group more important to each individual than individual members' goals" (pp. 217–218). Otherwise, individual members are not effectively part of the team, meaning they do not contribute to the team dynamic and will not be able to derive team flow from it. Hence, goals need to be clear to all members of the team, such that they understand how their actions contribute to the overarching goals of the team (Weggeman, 2007). The same requirement can ensure that the team refrains from continually rehashing old business so that it can make consistent progress toward the goal or goals that define it (Amabile & Kramer, 2011; Sawyer, 2007).

Thus, in order to experience team flow, team members must generate for themselves clear proximal goals that derive from, are consistent with, and contribute to a clear and shared team goal.

High Skill Integration

Another aspect of individual flow is the balance between challenge and skill. This translates readily to teams, because a major reason for assigning a task to a team in the first place is

that the task is too difficult, too big, or too complex for any one person to perform (Salas et al., 2008), requiring instead the complementary skills of a team (Trausan-Matu, Stahl, & Sarmiento, 2006).

Tasks should be distributed with due consideration for each team member's skill set (Katzenbach & Smith, 1992; Salas et al., 2008) so that the optimal balance is struck for each of the team members between their abilities and the challenge(s) assigned to them, thus facilitating the attainment of the team's goals and supporting the team dynamic. It is therefore necessary for all team members to be aware of each other's abilities and contributions in their operational environment (Salas & Fiore, 2004) and to adjust their own contributions accordingly (a connection between the individual and team levels). To generate the flow prerequisite of 'challenges matched to skill level' for the whole team and achieve team flow, every member of the team must simultaneously be facing an individual challenge that matches his/her skill level. For that to happen, each team member's actions should be directed toward achieving the common goal via coordinated action of attaining aligned individual goals, creating what Gevers (2004) calls "the situation where optimal working relations are established within the team and members execute task activities in an integrated and timely manner" (p. 8).

High skill integration acts as a prerequisite for team flow and is characterized by: (a) team members knowing each other's strengths, interests, and skills; (b) team-level goals that necessitate high-level use of team members' complementary skills, (c) matching the challenge assigned to each team member to his/her abilities, and (d) coordinated action.

Open Communication

Research shows that clear and unambiguous feedback fosters individual flow (Nakamura & Csikszentmihalyi, 2009). Said feedback needs to be sufficiently timely and consistent for the individual to know whether his/her actions-of-the-moment contribute to achieving the goal (Csikszentmihalyi, 1996). At the team level, performance monitoring and feedback behaviors include monitoring other team members' contributions as well as monitoring overall team progress, identifying errors, providing constructive feedback, and offering advice for performance improvement (Guzzo & Salas, 1995), all of which contribute to goal-oriented situational awareness at the team level (Kozlowski & Bell, 2012; Marks & Panzer, 2004; Salas, Prince, Baker, & Shrestha, 1995). This also implies that team members hold themselves and each other mutually accountable for achieving the group's goal and understand themselves to be interdependent (Hülsheger, Anderson, & Salgado, 2009; Isaksen & Lauer, 2002). But, team members only accept those conditions when they buy into the team's goals and adopt them as personal (Csikszentmihalyi, 1996; Eisenberg, 1990; Sawyer, 2007). Notably, feedback is occurring at multiple levels – the individual monitors the individual work both with respect to his/her personal judgment but also with respect to the team's activities in pursuit of the shared goal (bridging the levels), and likewise receives direct feedback from the team.

All of this feedback, especially that coming directly from the team, is predicated upon the team's communication. Informal interpersonal communication is the principal way in which information flows through organizations, and involves the exchange of both explicit and tacit knowledge (Koskinen, Pihlanto, & Vanharanta, 2003). Compared to explicit knowledge, tacit knowledge is more complex, ambiguous, and subjective. It is accumulated through observation, imitation, and repeated interactions (Nonaka & Takeuchi, 1995) and requires close listening to be understood fully and efficiently. During close listening, members of the

team do not plan what they are going to say ahead of time. Their statements are genuinely unplanned, appropriate responses to what they hear (Sawyer, 2007).

Research has also shown that positive social interactions are particularly conducive to the flow experience (Aubé et al., 2014; Jackson, 1995; Walker, 2010). From such social interactions (which include giving and receiving feedback), the team can develop new knowledge to use in pursuing their goal (Tsoukas, 2003) and build a shared mental model (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000) that can serve as an internalized, tacitly-understood basis for clear, unambiguous feedback in spite of the subtleties of informal communication. This requires that team members hold similar cognitive representations of the situation or phenomenon they are facing (Klimoski & Mohammed, 1994). Maintaining such shared mental models, however, requires both coordination and cooperation (Lewis & Herndon, 2011). Coordination helps to define what feedback is appropriate to offer at which times, and cooperation involves timely feedback and creating the openness needed to receive it.

For such an interactional dynamic of immediate, constructive, and supportive feedback at both the tacit and explicit levels for all team members to develop, a system of *open communication* is required. In this open system, any two parties will perceive each other to be willing and perceptive listeners who will refrain from responses that might be interpreted as negative, needlessly judgmental, or non-accepting (which consequently induce distraction or fear of failure; Driskell, Goodwin, Salas, & O'Shea, 2006; cf. Redding, 1972). One surgeon offered the following impromptu definition of appropriate communication: "You're nicest to people when the operation is difficult; you need them to perform well. You ignore personal gripes—Criticize later" (Csikszentmihalyi, 1975, p. 135).

In sum, to generate 'timely, unambiguous feedback' for each member of the team, there must be an open system of communication. *Open communication* can be classified as a prerequisite for team flow that (a) is clear and unambiguous (whether explicit or tacit), (b) is timely and consistent, (c) arises out of mutual accountability, (d) connects individuals' contributions to the team goal(s), (e) uses close listening, and (f) is genuinely constructive and appropriate.

Safety

An environment in which people can face challenging situations unafraid of failure can be structured or designed, at least partially, at both the individual (Hamilton & Hurford, 2007) and team levels (cf. Isaksen & Lauer, 2002). When there is no possibility of failure, there is no incentive for teams to exert themselves and no need for them to apply the level of skill needed to tackle a tough challenge (Sawyer, 2007). Although the potential for failure is inherent in high levels of challenge, team members should not fear such failure. Bold action allows team members to do what they must, including taking appropriate risks that might bring spectacular payoffs (Csikszentmihalyi, 1996). As Sawyer (2007) notes, it is important that failure be embraced as an occasion for learning and growth, especially in light of the fact that not every endeavor can become a success. Consequently, it is important for failure to be acknowledged as a potential reality, but not a damning one. To create a safe environment, unnecessary and unacceptable risks are eliminated, but the possibility of failure must still exist for each team member. After all, the team goal was designed to be challenging, inviting team members to fully apply themselves.

Another reason people fear failure emerges from their fear of judgment by other team members or close observers. Eliminating that fear requires constructive feedback; when team members can be ridiculed or castigated for failing (whether explicitly or tacitly), they are not likely to feel safe applying their talents outside their comfort levels, and thus surely will not contribute to team flow. The focus should therefore be on (tacit and/or explicit) encouragement, which can help an individual to overcome fear of failure or reframe the goal so that failure becomes less relevant. As such, the individual flow characteristic of 'no fear of failure' is best represented at the team level by *safety*. A safe environment reduces the fear of failure in all team members and gives each individual team member the opportunity to feel in control of what (s)he is doing. Here, the individual can experience the flow-related sense of control while doing his/her own task, but must also internalize the team's feeling of potency in order to serve the team fully by confidently taking appropriate risks. This aggregates up to the team level, consistent with the prerequisite aspects of a sense of control, but also emerges as the team builds and reinforces safety at the team level. Yet, as with collective ambition, there are aspects of team flow that cannot emerge at all unless there is safety, so we classify this construct as a prerequisite for team flow.

Our construct of safety matches what Edmondson (1999) describes as *team psychological safety*:

> Team psychological safety is defined as *a shared belief that the team is safe* [emphasis added] for interpersonal risk taking. It reflects *a sense of confidence* [emphasis added] that the team will not embarrass, reject, or punish someone for speaking up. This confidence stems from mutual respect and trust among team members (p. 354).

In this description of team psychological safety, Edmondson also distinguishes *a shared belief that the team is safe* (which we call the prerequisite of safety) from the shared sense of confidence (which we call the characteristic of mutual trust and is described below).

Safety can be classified as a prerequisite for team flow. Safe environments are places that: (a) encourage and reward effort rather than success, (b) allow necessary risks to be taken, (c) do not punish failure, (d) foster the feeling of being in control, and (e) encourage learning and growth.

Mutual Commitment

As described above, both Csikszentmihalyi (1990) and Sawyer (2007) acknowledge the importance of full attention upon the task at hand (distractions being excluded from consciousness), which could be designed or arranged by those engaged in the task (Hamilton & Hurford, 2007). It is worth noting that concentration emerges from the exclusion of distractions, which is both intentionally created and emergent at the individual level. At the team level, this would involve freeing team members from having to deal with distractions external to the team's goals, allowing them to focus instead on each other (due to their interdependence) and on the common goal. This is in keeping with Lencioni's (2002) conclusion that "the ultimate dysfunction of a team is the tendency of members to care about something other than the collective goals of the group" (p. 216). In a task-based view of teams, to suggest that a group is 'focused' effectively means that the group, as a whole, is progressing toward a [shared] goal (Isaksen & Lauer, 2002), which often implies that team members are keeping one another on task.

Even when each individual is performing a different task, the interdependence of the team members and the need for a synergistic product create an interplay that demands focus as a corollary to participation. This interplay effectively removes distractions from the individual members, or even reorients those who might be losing the thread of the activity (Hamilton & Hurford, 2007). This implies that team members should help each other direct their work to support the team's efforts and integrate their activities with the team's while causing the least possible disruption. Mutual awareness in a team reduces the number of distractions available to each member, which makes it possible for everyone to concentrate both on the individual task at hand and the way(s) in which said task coordinates with those of other team members in pursuit of the collective goal. Hence, this mutual awareness is about keeping all team members cognizant of one another's activities and the overall progress of the team, facilitating alignment and smooth cooperation (Bardram & Hansen, 2010; Dourish & Bellotti, 1992; Schmidt, 2002). Team members have to build a shared representation of their collective task and agree on how the task should be organized and executed, which means that the implementation and coordination of joint tasks is best regulated (and kept in mind and adjusted) by the team itself (Gevers, 2004).

The degree of commitment of the individuals is often mentioned as a potential driver of high performance, and this is likely due (at least in part) to the resultant enhanced focus (Aubé et al., 2014; Landhäußer & Keller, 2012; Nakamura & Csikszentmihalyi, 2009). When mutually committed, team members are intensely involved in a shared, meaningful activity and able to maintain focus for as long as required to achieve the common goals. Committed teams totally agree on clear and timely decisions and move forward with complete buy-in. Again, from Lencioni (2002): "They understand that reasonable human beings do not need to get their way in order to support a decision, but only need to know that their opinions have been heard and considered" (p. 207).

In summary, to generate the element of "total concentration; oblivious to distraction" for each person on the team, the members should commit themselves not just to focusing on their individual tasks, but to enhancing each other's contributions. Mutual commitment helps eliminate distractions by ensuring that team members keep each other on task and help each other maintain complete focus on the task at hand. In this, the team establishes a focused dynamic at the team level that is a prerequisite for team flow to emerge. Such mutual commitment is characterized by: (a) full attention at the individual level, (b) awareness of the common goal and each member's contribution(s) to it, (c) disregarding distractions external to the team's common task, (d) keeping one another on task, (e) cognizance of the team dynamic, (f) alignment with the team's purpose and reason for being.

Characteristics of Team Flow

The characteristics of team flow are the aspects of the construct that emerge once the prerequisites are established. Together, these characteristics signal the presence of team flow and cement the team's dynamic, resulting in synergy and higher performance.

Sense of Unity

A key aspect of a team's makeup is what actually prompts people to identify as members, namely *cohesion*: "[a] dynamic process that is reflected in the tendency of a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the

satisfaction of member affective needs" (Widmeyer, Brawley, & Carron, 1985, p. 3). Thanks to cohesion (which, like the collective ambition, reflects a shared intrinsic motivation to engage as a team), team members experience *a sense of unity*. This terminology was chosen with the aim of integrating several concepts. The first is Csikszentmihalyi's (1990) notion of a loss of self-consciousness, which is an emergent flow characteristic that refers to focusing primarily upon the activity at hand to the exclusion of all else, including one's own needs. In the context of a team, this means focusing on contributing to the team's goals and/or purposes as a result of having internalized the collective ambition. In accepting the shared goals of the team, joining with the collective effort, and investing in the cohesion of the team, one also necessarily loses a sense of oneself as actor (i.e., loss of reflective self-consciousness) both at the individual level and at the team level by subordinating one's identity to that of the collective (what Sawyer [2007] calls a *blending of egos*, and which is enhanced by optimal experiences in that team[cf. Ashforth & Mael, 1989; Tajfel, 1981; Tajfel & Turner, 2004]).

As such, the team flow element *sense of unity* can be classified as a characteristic of team flow and involves: (a) cohesion; (b) the loss of reflective self-consciousness (cf. Snow, 2010); and (c) blending of egos (Sawyer, 2007).

Sense of Joint Progress

During individual flow, action and awareness merge. In a team context, the merging of action and awareness necessarily occurs at both the individual level and, when one is integrated into the team dynamic and the team's identity, at the team level. When all team members are so integrated, the team's collective awareness merges with its coordinated and synergistic actions. One's attention is narrowed to the scope of the team's activities (and how one contributes to them as an individual), which reflects a unity of purpose and application of skill that is analogous to a team-level application of Csikszentmihalyi's (1996) conception of merging action and awareness. For a given team member, all actions taken are in the service of the team's goals and/or purposes, which results in synergistic interactions (cf. Stewart, 2006) and creates the sense of joint progress. Everyone on the team is so intent on the pursuit of the goal that all communications and applications of skill are centered upon the task(s) the team must complete. The convergence, and consequent merging, of this focus on the team's tasks and of the actions team members take constitutes an interactional synchrony (cf. Bernieri & Rosenthal, 1991) that evokes *a sense of joint progress*. This feeling (or its absence) provides everyone with feedback on how well the team is doing and informs decisions about which collective action to take next and which personal contributions that requires. In this way, everybody feels able to provide instantaneous responses at both the individual and team levels to any unfolding situation (cf. Snow, 2010).

Experiencing a sense of joint progress is integral to experiencing team flow. Surgeons, for instance, are much more likely to experience flow when they lose themselves in a difficult or challenging operation that goes well, as exemplified by the following statements from Csikszentmihalyi's (1975) interviews with surgeons:

> An unusual case is most satisfying—particularly when the patient does well…It's very satisfying and if it is somewhat difficult it is also exciting. It's very nice to make things work again, to put things in their right place so that it looks like it should, and fits neatly. This is very pleasant, particularly when the group works together in a smooth and efficient manner: then the aesthetics of the whole situation can be appreciated. (p. 129)

A sense of joint progress can therefore be classified as a characteristic of the team flow experience. It is characterized by: (a) synergistic interactions; (b) directing all activities towards the pursuit of the collective goal; (c) building on each other's work; and (d) experiencing a comprehensive feeling of accomplishment and satisfaction.

Mutual Trust

When a person is in control of a situation, (s)he is not concerned about failing because (s)he knows how to respond to any situation, stimulus, or event that might arise, and is likewise unconcerned about factors beyond his/her control that could affect the outcome. Therefore, the feeling of control has become an important characteristic in flow research (Engeser & Schiepe-Tiska, 2012).

Due to the interdependence required of team members as they work to achieve the common goal, team members must trust that they will have sufficient control over the application of their skill set and their own actions that they need not fear failure. When team members do not fear failure, that means they trust each of their teammates to perform their tasks at a level commensurate with their respective skills. This represents a safe environment and a pervasive sense of confidence in both the self and each member of the team, which evokes feelings of *mutual trust*.

Formally, trust is usually defined as: "the willingness to be vulnerable" (Mayer, Davis, & Schoorman, 1995), which includes a willingness to accept limits on the degree of control one has over the final outcome as well as a willingness to depend on the other team members. In the context of teams, trust creates a climate where team members stop worrying about failure and feel empowered to act thanks to the acceptance and support they receive. Consistent with extant research on trust, team members in a safe environment are more likely to seek and receive feedback from others, act to resolve conflicts and ensure smooth interpersonal relations among team members, communicate more openly, and pool information in decision-making (Costa, Roe, & Taillieu, 2010; Dirks, 1999). The psychological safety that comes from appropriate feedback, encouragement, and a sense of progress (Amabile & Kramer, 2011) promotes self-efficacy in team members at the individual level, which can aggregate to the team level as mutual trust (which also contributes to team potency; Gully, Incalcaterra, Joshi, & Matthew, 2002 [see above for definition of the term]).

As noted above, the flow element related to having a sense of control and no fear of failure is both a prerequisite and an emergent characteristic of flow at the individual level. At the team level, this element has two manifestations, one that is largely under the control of the team (i.e., safety, which is a prerequisite), and one that is wholly emergent in the presence of all of the prerequisites, namely mutual trust. Mutual trust is characterized by: (a) a willingness to be vulnerable, (b) mutual respect, (c) confidence in the working environment, and (d) team potency/efficacy.

Holistic focus

Mutual commitment within the team helps create an environment in which team members can concentrate on their personal task(s) and/or contribution(s) to the team's common goals. Plus, the way team members pay attention to what the others are doing and consider how best to contribute implies an intentional focus that is simultaneously within and beyond the scope of an individual task. When all team members are completely focused on their personal task in support of the team's purpose (being cognizant of how their tasks fit into the

team's overarching goals), the team attains a shared state of holistic focus. This state of mind is characterized by a deep understanding of the self as part of a larger whole and the complete alignment of one's thoughts and actions to the objectives of that larger whole. In this state, each team member focuses on his/her particular task while keenly aware of its connection to the common purpose, which in turn incites him/her to pay attention to the present moment (cf. Weick & Roberts, 1993). This is comparable with Snow's (2010, p. 2) condition "having total concentration on the shared activity" for work relationships, but we contend that it also applies to the team as a whole.

In addition, when team members are fully concentrated on performing their individual tasks together and on the overall performance of the team at the same time, what emerges between them is a form of concentration at the team level that is so encompassing that the entire team loses its sense of time. This emergent characteristic is a direct extension of the individual flow characteristic (Csikszentmihalyi, 1990) to the team level. Consequently, this team-level *holistic focus* is classified as a characteristic of team flow and characterized by (a) all team members concentrating on the task at hand, (b) complete alignment of each of those tasks to the common goal, and consequently (c) complete focus of the team as a whole on its common goal to the extent that the entire team loses track of time.

The Benefits of Team Flow

When all of the elements of team flow are present, the team has made progress in expressing its existence (*raison d'ĉtre*) or fulfilling the collective ambition. In turn, this might give team members an even stronger feeling of belonging to this team (shared identity), and incite in them a desire to convene again and again to tackle ever greater challenges. We expect that team flow can give team members more positive outcomes in terms of satisfaction, performance (also in terms of creativity), skill development, and meaning. Team flow will result in [what Hackman and Wageman (2005) consider to be] greater team effectiveness in terms of productive output, better use of social processes in the context of carrying out the work, and higher personal well-being for individual team members. Considering the positive outcomes of experiencing flow as part of a team, flow gives team members at work an opportunity to maximize their potential to succeed (cf. Csikszentmihalyi, 1990, 1997).

Also, team members who have confidence in their team are likely to expend greater and more persistent effort (cf. Bandura, 1982). The fact that mutually committed team members are reluctant to let fellow team members down is yet another contributor to team performance (Lencioni, 2002). All of this leads to greater application of discretionary effort and more engagement with the task, which can lead to higher performance (Bakker et al., 2011; Bakker & Demerouti, 2008).

Likewise, in flow, people operate in a situation of high challenge where they have to show high levels of (sometimes new) skills to control the situation (Asakawa, 2004). Additionally, teammates greatly enhance each other's chances of exhibiting high levels of skill by giving feedback that allows for real-time improvement on task performance. In this regard, Aubé et al. (2014) found that the flow experience correlates positively with team performance and that this relationship is influenced by team goal commitment and the level of information exchange between team members. Following their intrinsic motivation (or desires) provides team members with satisfaction, enjoyment, and a sense of well-being, just as it does for individuals experiencing flow—it might even be possible that these post-flow feelings are

stronger after flow was experienced at the team level (cf., Csikszentmihalyi, 1975; Walker, 2010).

During the team flow experience, each member is contributing to the team's common goal as part of their holistic focus, which is more likely to occur when all team members find that goal meaningful and buy into it completely (which correlates with higher levels of internal motivation; Appelbaum & Batt, 1994; Campion, Medsker, & Higgs, 1993). Meaningfulness is enhanced by teams perceiving their work to be worthwhile and important, and task meaningfulness at the group level links positively with collective performance (Stewart, 2006).

It is important to note, however, that higher performance does not mean that the team "wins" necessarily, but rather that, all else being equal, the team performs better than in a situation in which team flow is less prevalent. Indeed, when team members experience team flow, better performance becomes more likely due to the fact that team members can correct and support each other with constructive or positive feedback. Such higher performance connotes mastery experiences that can enhance self-efficacy at both the personal and team levels (see Gully et al., 2002, for a review; cf. Csikszentmihalyi, 1990, 1997), which can, in turn, motivate team members to reconvene to tackle even greater challenges (Sawyer, 2007).

To illustrate a complete overview of possible inputs (factors) and outcomes that are involved during the emergence of the prerequisites and characteristics of individual and team flow, we presented in Figure 1 an integrative theoretical multilevel model of individual and team flow. This model includes inputs, prerequisites and characteristics for individual and team flow, as well as benefits that are included in terms of individual- and team-level work outcomes (e.g., task performance, work satisfaction). While we acknowledge that individual flow (and thus its prerequisites and correlates) relates to team flow, and thus indirectly to team-level outcomes, this effect is too indirect to be measured and is better captured by the direct impact of individual-level outcomes upon team-level outcomes. Thus, we make the following propositions:

P5: The emergence of individual flow positively affects individual level outcomes

P6a: The emergence of team flow positively affects team-level outcomes (e.g., team performance)

P6b: The emergence of team flow positively affects individual level outcomes (e.g., individual performance, individual work satisfaction)

P7: Individual-level outcomes (e.g., individual performance, work satisfaction) positively affect team-level outcomes (e.g., team performance)

In addition, we follow the suggestion of Chen and Kanfer (2006; see their paper for detailed discussion) to use Hackman's division of contextual factors are divided into ambient ("team-oriented stimuli that pervade the team as a whole" [Chen & Kanfer, 2006, p. 243]) and discretionary ("person-oriented stimuli that are directed or presented to specific team members," ibid.) inputs. The former contextual factors are established in/by either the work environment, the nature of the tasks/goals, or the group as a whole, while the latter are determined by some subset of the team (often an individual) and are likewise directed towards a subset of the team (e.g., encouragement, task assignment). While ambient factors, because of their pervasive nature (e.g., company-wide strategic goals and value proposition), affect both team- and individual-level components and characteristics of team flow, discretionary factors operate primarily upon team subsets (often individuals), and affect the team-level

constructs only indirectly (i.e., through their effects on the team subsets). As such, in addition to the propositions above, we posit the following:

P8: Discretionary inputs directly and positively affect individual flow prerequisites, and indirectly affect team flow through their effects on individual prerequisites.

P9a: Ambient inputs positively affect team flow prerequisites.

P9b: Ambient inputs positively affect individual flow prerequisites.

P9c: Ambient inputs moderate the effects of discretionary inputs on individual flow prerequisites, such that the effects of discretionary inputs on flow prerequisites become more positive as ambient inputs become more positive.

Discussion

Business is changing and becoming more dynamic. With the advent of the Knowledge Era, expertise and creativity are becoming the bases of commerce, which is causing jobs and tasks to become increasingly complex and is forcing people to specialize (Rousseau, 1997). Because of this, there is greater focus on heuristic tasks (creativity) rather than algorithmic tasks (cf. Amabile, Conti, Coon, Lazenby, & Herron, 1996; Hennessey & Amabile, 2010). This increased complexity also means that many tasks require multiple specialists to complete them, which necessitates the formation of a team. That is why it is so important to know how to maximize team performance. Flow is a means to creativity and high performance (Csikszentmihalyi, 1990, among others), but has mostly been explored at the individual level, and thus we chose to extend the concept to business teams.

The essence of a team is shared commitment. Without it, teams perform as clusters of individuals; with it, they become powerful units of collective performance. The best teams invest a tremendous amount of time into shaping a purpose that they can own. They also translate their purpose into specific performance goals, and members of successful teams pitch in and become accountable with and to their teammates. The fundamental distinction between teams and other forms of work groups revolves around the means for attaining high performance. A work group relies on the individual contributions of its members for group performance, but a team strives for something greater than what its members could achieve individually (Katzenbach & Smith, 1993). An effective team is always capable of more than the sum of its members' abilities. For managers, the key is to know how to build a team of people with a mission and complementary skills, and then empower them to develop the prerequisites of team flow.

Team flow could be a strong indicator that a group is flourishing, and its absence can suggest a need for intervention long before problems (e.g., low performance, low motivation) arise. As such, the presence or absence of team flow becomes a valuable diagnostic, and observing which aspects of the construct are missing can provide clues to a *set* of factors to adjust instead of having to modulate single, isolated factors to discover which of them are inhibiting high performance.

Implications of Defining Team Flow

Team flow is a shared experience of flow during the execution of interdependent personal tasks in the interest of the team. Because Csikszentmihalyi (1990, 1996, 1997) described flow in terms of individual experience, one conception of team flow suggests that each member

of the group experiences flow, and that this is related to the team dynamic because of the common activity. Another conception of group flow was generated by Sawyer (2003, 2006, 2007), and is based on the idea that the group as a unit experiences flow, and thus group flow is a collective phenomenon. While most of the current research supports the former definition, there is a body of research that supports Sawyer's view, and we have endeavored to unite the two understandings by defining team flow as the instance in which the individual team members share flow experiences together in a highly synergistic fashion. In our view, the team dynamic is structured by eleven elements, with seven prerequisites and four characteristics that typify the team flow experience. The prerequisites are (1) a collective ambition, (2) a common goal, (3) aligned personal goals, (4) high skill integration, (5) open communication, (6) safety, and (7) mutual commitment. The characteristics are: (8) a sense of unity, (9) a sense of joint progress, (10) mutual trust, and (11) holistic focus.

The more team members agree on the presence of the team flow prerequisites, the more they share the experience of the team flow characteristics. Experiencing the team flow characteristics signifies that team members are experiencing flow together during the execution of their interdependent tasks, but still experiencing flow as individuals (a key distinction from Sawyer's theory). Thus, we contend that putting all the prerequisites in place is what makes for a resilient and effective team.

We believe that team flow puts the team into a state where its members are all completely involved in their common activity; a state whose synergistic nature supports the creation of more team flow in a virtuous circle. During experiences of team flow, the team is in control as a unit, reacts swiftly as a unit, and accomplishes goals as a unit. Each of the team members' actions will flow naturally from what came before and overall performance will increase with every moment the team stays in flow. Those who have experienced team flow describe it as a unique experience they wanted to perpetuate or, failing that, at least experience again. In turn, this intricate coordination should yield more creative and complex products as befits the synergy one would hope to achieve by bringing people together to engage in an endeavor that no one could do alone.

In summary, the occurrence of team flow likely improves team performance and provides individual team members with a meaningful and satisfying experience. Team flow also fosters a desire to reconvene as a team (*autotelicity*) and represents a mastery experience that extends the team's capabilities and potential for increasingly higher levels of performance in the future.

Future Research

This proposed conception of team flow raises a number of important questions that future research will need to address. The first is a comparison of holistic and concatenative conceptions of team flow. For instance, it may be possible for a group to experience flow at a holistic level even as some individuals do not have an individual flow experience (Sawyer, 2003, 2007), and it is theoretically possible (though we contend that it is unlikely) that all of the individuals can be experiencing flow as a result of the group's dynamic without a group-level flow experience. But do either of these situations qualify as team flow? Similarly, what happens if most of the team is deriving flow from the team dynamic, but not everyone is, and there is no team-level experience—does that still constitute team flow? In response to those concerns, we posit the

existence of both *partial team flow*, which occurs when only some members of the team experience flow as a function of the team dynamic, and *full team flow*, which is when the entire team is experiencing flow as a function of the team dynamic. Future research will need to ascertain empirically whether having every member of the team deriving a flow experience from the team dynamic necessarily yields a team-level experience.

Future research could also examine whether the construct of team flow as defined and described in this paper (including each of the propositions both individually and in concert) is as useful to artistic and sports groups as it is to professional teams and whether it is more or less accurate in that context than Sawyer's conceptualization of group flow (e.g., Sawyer, 2007).

Team flow, then, is what happens when all members of a team experience flow that originates from a team dynamic and where its members share in feelings of harmony and power. Consequently, team flow can differ in its intensity depending on the degree to which the elements of team flow are present (cf. Davis, 2010). In this article, team flow is defined as a shared experience of flow during the execution of interdependent personal tasks in the interest of the team, originating from an optimized team dynamic and typified by seven prerequisites and four characteristics.

On a similar note, future studies should consider whether there is a 'tipping point' at which a certain amount of partial team flow creates the conditions required for team flow around the remaining members of the team. There is also the question of how experiencing flow from the team dynamic occurs in people, and how it spreads to become team flow. Is there a contagion effect within teams, such that flow starts in just one or two people and infects the others, or does it emerge for everyone (or a majority) simultaneously? For example, Bakker (2005) shows that the more often music teachers experience flow, the more likely their students are to experience an episode of flow as well. Likewise, according to Engeser and Schiepe-Tiska (2012), the more individuals are interacting, the greater this contagion effect. A further complication is the fact that the characteristics of the flow experience interact non-linearly (Lucía Ceja & Navarro, 2011), and no study to date has analyzed all of the characteristics using non-linear models. Thus, there is a great deal of research still to be conducted on this question.

Conclusion

Even though an increasing amount of work activities is done in team settings, and there have been decades of research focusing on workplace teams, flow research has largely confined itself to the individual levels, dyads, or groups outside of the business world. To fill this gap, we endeavored to broaden the concept of individual and group flow by creating an integrative, multilevel model that extends the existing constructs so that they can apply readily to business teams. This expanded team flow theory is a helpful analysis of factors that contribute to high performance and a gauge of team functioning whose absence can signal trouble before actual problems reveal themselves. As such, it is a highly valuable tool for monitoring team dynamics or similar aspects, and can be a benchmark for figuring out what a team needs to perform at a higher or more synchronous level. We intend for our theory on team flow to provide a common language for scholars and practitioners and shed light on

unanswered questions in the literature relevant to flow and work teams. Much work remains to be done if we are to make the most of this theory of team flow. We need to operationalize both models (Figures 1 and 2), test their validity, and collect more extensive empirical confirmation of the effects of team flow. We submit this theory to the research and practitioner communities as an invitation to find new, maximally effective ways to enable the highest levels of team performance.

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