**HEC MONTRÉAL**

# Flow experience in teams: The role of shared leadership

**par**

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**Sciences de la gestion**

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*Mémoire présenté en vue de l'obtention*

*du grade de maîtrise ès sciences*

*(M.Sc.)*

Avril 2015

HEC MONTRÉAL

**Retrait d’une ou des pages pouvant contenir des renseignements personnels**

## SOMMAIRE

Cette étude porte sur l'expérience de flow dans un contexte d'équipes de travail. Selon Csikszentmihalyi (1990), le flow constitue un état d'absorption profonde dans la réalisation d'une activité intrinsèquement intéressante. Sur le plan individuel, l'expérience de flow est associée à de multiples bénéfices (ex. : engagement envers la tâche, performance, bien-être) et ses antécédents ont fait l'objet de nombreuses recherches (ex. : personnalité, caractéristiques de la tâche). Nous en savons toutefois très peu sur la façon de favoriser le flow dans les équipes de travail. Basé sur la documentation existante, le leadership partagé et la confiance groupale (group potency) ont été identifiés comme deux antécédents collectifs du flow dans les équipes de travail. Ainsi, l'objectif principal de ce mémoire consiste à vérifier la relation entre le leadership partagé et le flow, ainsi que le rôle médiateur de la confiance groupale.

L'étude présentée dans ce mémoire est basée sur un échantillon de 156 équipes de travail ($n$ = 730) ayant participé à une simulation de gestion de projet dans le cadre d'un cours universitaire. Le mandat fictif confié à chacune des équipes était de construire, à l'aide de pièces Méccano, un véhicule ayant la capacité de transporter un objet contenant un gaz nocif. Les équipes disposaient d'un peu plus de six heures pour compléter leur mandat. Tout au long de la simulation, les participants devaient faire face à plusieurs décisions, concernant notamment la gestion de temps, du budget et des communications interpersonnelles. À la fin de la simulation, les participants étaient invités à compléter un questionnaire concernant, entre autres, leur expérience de flow durant la simulation, le degré de leadership partagé et la confiance groupale. Le rendement des équipes a été mesuré par le biais de la performance du véhicule construit.

Les quatre dimensions de leadership partagé sont l'accomplissement conjoint des tâches, le développement mutuel d'habiletés, le soutien émotionnel, et l'interaction décentralisée entre employés. Les résultats corroborent l'existence de relations positives entre trois des quatre dimensions du leadership partagé et le flow (l'accomplissement conjoint des tâches, le développement mutuel d'habiletés et le soutien émotionnel). De plus, les résultats indiquent que la confiance groupale exerce un effet médiateur complet dans les relations entre ces trois dimensions du leadership partagé et le flow.

Globalement, cette étude soutient que le leadership partagé et la confiance groupale sont positivement reliés au flow dans les équipes de travail. Pour ce qui est des implications pratiques, les résultats corroborent l'importance de promouvoir le leadership partagé afin de favoriser l'expérience de flow dans les équipes. Pour ce faire, différentes interventions peuvent être envisagées dont favoriser le partage du pouvoir au sein d'une équipe et de favoriser des styles de leadership qui allouent l'implication des employés.

***Mots-clés:*** *flow experience, expérience optimale, équipes de travail, leadership partagé, confiance groupale.*

## SUMMARY

This study concerns flow experience in work teams. According to Csikszentmihalyi (1990), flow experience consists of a state of deep absorption in the involvement in an activity that is intrinsically interesting. On the individual level, the experience of flow is associated with multiple benefits (i.e.: engagement towards a task, performance, well-being) and its antecedents have been extensively studied (i.e.: personality, characteristics of the task). However, very little is known as to ways to favour flow experience in work teams. Based on the existing literature, shared leadership and team confidence (group potency) have been identified as two collective antecedents of flow experience in teams. Therefore, the main objective of this thesis consists of verifying the relation between shared leadership and flow experience, as well as test the mediating role of team confidence.

The study presented in this thesis is based on a sample of 156 teams ($n$ = 730) that participated in a project management simulation as part of a course requirement. Teams were given a fictitious mandate, which required for the participants to build a vehicle using *Méccano* pieces and the vehicle had to be able to transport a hazardous gas. Teams had slightly over six hours to complete their mandate. Throughout the simulation, the teams had to make several decisions pertaining to time management, budget and interpersonal communications. At the end of the project simulation, participants were invited to complete a questionnaire regarding their flow experience during the simulation, the degree of shared leadership and team confidence. Team performance was also assessed based on the vehicle performance at the end of the simulation.

The four dimensions of shared leadership were *joint completion of tasks*, *mutual skill development, emotional support* and *decentralized interaction among personnel.* As hypothesized, the results support positive relations between three of the four dimensions of shared leadership and flow experience (*joint completion of tasks*, *mutual skill development,* and *emotional support).* Additionally, team confidence played a complete mediating effect on the relations between these three dimensions of shared leadership and flow.

Globally, this study corroborates that shared leadership and group potency are significant antecedents to flow experience in teams. As for the practical implications, these results support the importance of promoting shared leadership in order to favour flow experience in teams. To accomplish this, it may be possible to stimulate the sharing of power in teams and to encourage styles of leadership that promote employee involvement.

***Keywords**: flow experience, optimal experience, work teams, shared leadership, team confidence.*

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**POS:** Positive organizational scholarship

**IV:** Independent variable

**DV:** Dependent variable

**MV:** Mediating variable

**CFA:** Confirmatory factor analysis

## ACKNOWLEDGEMENTS

First of all, I would like to thank my direct family, Dadou, Mami and Stephanie, for your continued support over the years. You have always been there for me on the sunny days, and to weather all of the storms. I would never be where I am today if it was not for your constant love and guidance. You have taught me priceless values and have given me the tools to relentlessly pursue all of my dreams. I am so proud to be *your daughter, your sister, your granddaughter, your niece and your cousin*. Words cannot express my endless gratitude.

Laura, we have travelled a long path together, we have grown up together and have created so many wonderful memories. Although we are not physically able to be with each other, we are still together regardless of the distance. You are a true gift and I want to thank you for constantly being a source of loving encouragement.

Julien, thank you for being my rock and such an understanding person during this whole process. This project will be the second thesis that I complete with you by my side, and you have been a wonderful source of encouragement. I look forward to continue enjoying future activities together.

I must thank my thesis supervisor, Caroline Aubé, you have been so much more than a supervisor to me. Truly, you have been an amazing guide throughout this process and even more importantly, you are an incredible mentor. I have constantly been resourced by your generosity, patience, happiness and kindness. I firmly believe that you are the key person who has defined my master's experience at HEC Montréal.

I would like to express thanks to the Social Sciences and Humanities Research Council (SSHRC) for funding this research project and this thesis. Granting agencies provide the opportunity for great research to be completed and for students to gain skills that cannot necessarily be taught in a classroom. Finally, I would like to thank HEC Montréal for offering me the opportunity to grow as an individual and join an amazing academic community.

Whatever path you follow

Push on ‘til tomorrow,

**Love all,**

Serve all and,

Create no sorrow

-Trevor Hall

**Courage** does not always roar.

Sometimes courage is the quiet voice at the end of the day saying,

*“I will try again tomorrow”*

-Mary Anne Radmacher

# INTRODUCTION

According to Csikszentmihalyi (1990), flow is a state of deep absorption in an activity that is intrinsically enjoyable. Flow is characterized as the ultimate form of well-being which enables intrinsic motivation for the individual. It is important to note that for flow to occur, there must be a fit between personal skills and the task challenge (Csikszentmihalyi, 2003, 2004). The individual must feel a sense of challenge while simultaneously feeling a sense of enjoyment. Often times, flow is referred to as "being in the zone" and is not easily accessible. Therefore, once the individual is able to overcome the challenge, they are rewarded with a sense of personal accomplishment. Several theorists inspired the conceptualization of flow experience with their work regarding play, confidence, control and pleasure (Bandura, 1982; Buhler, 1922; Callois, 1958; Groos 1899; Piaget, 1951; White, 1959). Also, flow experience reflects concepts of self-consciousness and mindfulness related to South-eastern religions. Flow has been recognized as a beneficial experience across a variety of situations (i.e., sports, creative arts, music composition, virtual world, leisure activities, and work; Barker, Dozier, Weiss, & Borden, 2014; Chilton, 2013; Jackson, Thomas, Marsh, & Smethurst, 2001; MacDonald, Byrne, & Carlton, 2006; Martin & Jackson, 2008; Meyer & Jones, 2013; Ryu & Parsons, 2012). In a work team context, flow experience is associated with multiple benefits, such as an augmentation of productivity and creativity (Aubé, Brunelle, & Rousseau, 2014; Heyne, Pavlas, & Salas, 2011; Hooker & Csikszentmihalyi, 2003; Ryu & Parsons, 2012).

Nine different characteristics distinguish flow experience (Csikszentmihalyi, 2003). The first is being mindful of the current situation; the most important task is the one that is currently at hand. The person cannot allow for past nor future concerns to occupy his mental resources. All resources must be mobilized by the present task.

The second characteristic of flow is having a match between skills and task challenge. This is salient because if a task is too easy for the person to complete, then he will view the task as mundane and will lose motivation. On the other hand, the person should have a sense of challenge but not to the extent of feeling defeated by the task. Furthermore, with the person being challenged, an added benefit will be an increased skill level and the possibility of working on more complex tasks.

The third characteristic is entering a given action without having to reflect upon this fact. This type of automatic behaviour is characteristic of someone who is attached to his task and works on his project without having to deliberately push himself.

The fourth characteristic is the presence of explicit goals that allow the person to focus on the task because its requirements are clear. This allows for the individual to reduce the chances of making mistakes.

The fifth is receiving clear feedback from the surroundings. A person can correct and redirect expressed behaviour with the appropriate feedback. This can increase the awareness of the individual's skills.

The sixth aspect is having control, along with no fear of failing. In this situation, the person must feel as if he has the capacity to face a situation with a sense of level-headed control, if need be. At the same time, this reflects a sense of confidence in oneself and minimal fear of failing.

The seventh characteristic of flow is experiencing no self-consciousness. This characteristic of flow state pertains to work enjoyment and fulfillment. The individual is not concerned with himself because he is feeling a sense of connection to a greater purpose. Feeling connected is an interesting state of being because the person is putting aside concerns and tapping into a greater inner purpose. This is a beneficial feeling, as it also validates the person and provides a sense of meaning.

The eighth feature of flow is experiencing a loss of awareness of time. This loss of awareness can have two speeds, either time passes very quickly, or time passes very slowly. In each situation, the person who is in a flow state is extremely concentrated, and consumed by his current task.

The final characteristic of flow is being motivated by the given activity. This is related to the intrinsic motivation generated by flow state. In other words, entering a flow state will create motivation and engagement towards the activity that allows for flow experience to take place.

In the literature, the workplace antecedents of flow experience have been studied and can be regrouped in one of two categories. The first contains antecedents pertaining

to the task and environment, while the second category regroups antecedents that are related to the individual (Csikszentmihalyi, 2007; Driskell, Goodwin, Salas, & O'Shea, 2006; Emerson, 1998; Keller & Landhäußer, 2012; Nakamura & Csikszentmihalyi, 2005; Salanova, Rodriguez-Sanchez, Schaufeli, & Cifre, 2014). Most studies do not take into consideration the organization's work structure, even though several authors mention that team work and social interactions favour flow (Csikszentmihalyi & LeFevre, 1989; Hatfield, Cacioppo, & Rapson, 1994; Hoffman & Novak, 2009; Jackson, 1995; Lin & Joe, 2012; Walker, 2010). Some studies indicate however that flow in teams could have many interesting consequences, such as maximization of the potential for collective productivity, innovation, and work team engagement (Aubé, Brunelle, & Rousseau, 2014; Heyne, Pavlas, & Salas, 2011; Ryu & Parsons, 2012). Nonetheless, despite the noted benefits to flow in teams, the particular antecedents of this experience in this context have not been clearly identified. Therefore, this master's thesis will attempt to determine the antecedents of flow experience in work teams.

Based on the current literature, we selected to elaborate on the roles of shared leadership and group potency as predictors of flow experience in work teams. Shared leadership is the degree of leadership sharing amongst teammates (Pearce & Manz, 2005; Pearce & Sims, 2000), while group potency is the team's capacity to reach success in a global manner (Guzzo, Yost, Campbell, & Shea, 1993). Although these variables have never been integrated in a model aiming to explain flow experience in teams, the existing documentation indicates that it is an interesting path to explore. Certain studies demonstrate the relations between shared leadership and group potency, as well as between group potency and flow. The justification in looking at shared leadership as an antecedent of flow stems from the support of shared leadership as a means to stimulate the involvement and the transformation of work into an intrinsically motivating activity (Hooker & Csikszentmihalyi, 2003; Lovelace, Manz, & Alves, 2007). Shared leadership is related to flow experience because it would stimulate the teammates to converge on their interactions and adopt the appropriation of work tasks, thus making their work more meaningful. In return, in this thesis, group potency is believed to be the mediating mechanism in the relation between shared leadership and flow experience because the teams will believe they have the necessary skills to

overcome the task challenge. This is related to the flow channel theory, which requires a fit between the skills and the task challenge in order to access a flow experience (Nakamura & Csikszentmihalyi, 2005).

Thus, the main research objectives of this thesis are to verify the relation between shared leadership and flow experience, as well as the mediating role of group potency of this relation. Furthermore, Wood's (2005) conceptualization of shared leadership will be used, as it is multidimensional (*joint completion of tasks, mutual skill development, emotional support* and *decentralized interaction among personnel*). A multidimensional approach of shared leadership will allow for a more precise judgement to be made concerning the predictor role of shared leadership on flow experience. The contribution of this thesis will be to empirically verify an inclusive mediation model composed of shared leadership, group potency and flow experience. As for the managerial implications related to this research, it is important to note that flow has been associated with increased levels of productivity, efficiency and creativity, therefore it is relevant to identity and to understand the potential precursors of flow (Aubé, Brunelle, & Rousseau, 2014; Heyne, Pavlas, & Salas, 2011; Hooker & Csikszentmihalyi, 2003; Ryu & Parsons, 2012). Managers can enable this stimulating work context through a greater understanding of the particular conditions leading to flow in teams.

# CHAPTER 1: LITERATURE REVIEW

The following chapter will introduce the concept of flow experience, and will synthesize what is known regarding the antecedents and the consequences of flow experience in the workplace. This will allow for a deeper understanding of the literature. More specifically, the following topics will be covered: flow experience, positive organizational scholarship (POS), flow at work and in teams. Ultimately, this chapter will lead to a formulation of the study research question.

## 1.1 Flow experience

Flow experience is a state of being which takes place when a person is simultaneously enjoying the activity he is engaged in and feels a sense of challenge (Csikszentmihalyi, 2003; Csikszentmihalyi & LeFevre, 1989). Flow experience is valuable because it represents intrinsic motivation for the person submerged in this state. This experience attracts people because it stimulates well-being and the feeling of personal accomplishment (Csikszentmihalyi & Mei-Ha Wong, 1991; Emerson, 1998). Csikszentmihalyi (1990) developed flow experience theory after contemplating how a painter was able to put aside all exterior demands (basic needs like hunger) to complete what he was undertaking (Nakamura & Csikszentmihalyi, 2005). His contemplation led him to consider, at a deeper level what drives an individual's capacity for inner (intrinsic) motivation. Flow experience, although very coveted is not easily accessible. According to Germain (2003), only 15 to 20 percent of people enter a flow experience daily. Flow has been studied in the field of sports, arts, creative activities, music composition, teaching, internet-related activities, and work (Martin & Jackson, 2008; Jackson, Thomas, Marsh, & Smethurst, 2001; MacDonald, Byrne, & Carlton, 2006; Ryu & Parsons, 2012).

### 1.1.1 Flow experience and positive organizational scholarship

Flow research is included in the field of positive organizational scholarship (POS). As an experience, it stems from a cluster of positive states, which is the main

focus of POS. Positive organizational scholarship is a fairly new field that came to light in 2003 and focuses on the positive aspects of situations that occur in organized bodies (Cameron & Spreitzer, 2012; Wooten & Cameron, 2010). The field received recognition from the scientific community because of advancements in the application of structured methods and practices, notably for evaluation practices, definition of organizational philosophies, understanding generational differences, redefining leadership, employee engagement, transmitting work meaningfulness, supporting work-life balance, optimizing work teams and alternative practices (Cameron & Spreitzer, 2012).

In POS, not only is it important to understand what enables positive successes in an organization, but it is essential to identify ways through which people can sustain positive practices (Cameron & Spreitzer, 2012; Wooten & Cameron, 2010). POS focuses on improving work through positivity, however traditionally the nature of work has not been well perceived. Oftentimes, work has been portrayed as a duty that does not validate the person (Cottraux, 2012; Csikszentmihalyi, 2004; Martin-Krumm & Tarquinio, 2011). Results from studies on happiness in the workplace showed that happy workers will be more likely to be productive and enjoy their work (Harter & Blacksmith, 2010; Lyubomirsky, King, & Diener, 2005; Martin, 2005). Csikszentmihalyi (2004) noted that people fail to see the opportunity for growth because they are focused on the negative areas of work. He also stated that personal growth can be achieved through flow experience. Flow experience is studied in this field because of the benefits it yields for individuals and organizations. As such, by engaging in positive experiences like flow, it may be possible for the individual to face his work environment more efficiently (Nakamura & Csikszentmihalyi, 2009). It is by using POS as a springboard that it is feasible to consider the benefits that can be brought about with a flow experience.

### 1.1.2 Flow experience conceptualizations

Csikszentmihalyi's conceptualization of flow experience is the most recognized and it includes a detailed list of characteristics (Csikszentmihalyi, 2003, 2004). These

characteristics determine the identification of this experience. Each characteristic will be explained below.

1) *Mindfulness.* A person experiences flow when he is being mindful of the current situation and the most important task is the one that is currently at hand. The person cannot allow for past nor future concerns to occupy his mental resources. All resources must be mobilized by the present task.

2) *Matching.* A person experiences flow when he strikes a match between skills and task challenge. This is salient because if a task is too easy for the person to complete, then he will view the task as mundane and will lose motivation. On the other hand, the person should have a sense of challenge but not to the extent of feeling defeated by the task. Furthermore, with the person being challenged, an added benefit will be an increased skill level and the possibility of working on more complex tasks.

3) *Automaticity.* A person experiences flow when he will engage in a given action without having to reflect upon it. This type of automatic behaviour is characteristic of someone who is attached to his task and works on his project without having to deliberately push himself.

4) *Goal clarity.* A person experiences flow when he has explicit goals that allow him to focus on the task because its requirements are clear. This allows for the individual to reduce the chances for mistakes.

5) *Feedback.* A person experiences flow when he receives clear feedback from his surroundings. This feedback allows him to assess goal-attainment and receive endorsement on his skills. Ultimately, allowing the person to gauge his performance accordingly.

6) *Control.* A person experiences flow when he has a feeling of control and no fear of failing. In this situation, the person must feel as if he has the capacity to face a situation with a sense of level-headed control, if need be. At the same time, this reflects a sense of confidence in oneself and a minimal fear of failing.

7) *Confidence.* A person experiences flow when he loses self-consciousness. This characteristic of flow state pertains to work enjoyment and fulfillment. He is not concerned with himself because he is feeling a sense of connection to a greater purpose. Feeling connected is an interesting state of being because the person is putting aside concerns and tapping into a greater inner purpose. This is a beneficial feeling, as it also validates the person and provides them with a sense of meaning.

8) *Time distortion.* A person experiences flow when he senses a loss of awareness of time. This loss of awareness can go in two directions, either time passes very quickly, or time passes very slowly. In each situation, the person who is in a flow state is extremely concentrated, and consumed by his current task.

9) *Motivation.* A person experiences flow when he is motivated by the given activity. This final characteristic is related to intrinsic motivation generated from the flow state. In other words, entering a flow state will create motivation and an engagement towards the activity that allows for flow experience to take place.

Importantly, it is noted that flow can be experienced to different degrees. According to Csikszentmihalyi and LeFevre (1989), flow does not occur as a state of being either "on" or "off". In other words, contrary to a dichotomous state, flow is situated on a continuum and can exist to varying degrees. On one end of the continuum, there is a deep flow ("macroflow"), however on the other end, there are also instances of

"microflow", such as drawing or doing mentally challenging word games (Emerson, 1998).

Csikszentmihalyi's flow experience theory is a product of different ideas from various theorists. Theories from Piaget (1951), Callois (1958), Groos (1899) and Buhler (1922) were used to develop flow theory. Piaget and Callois brought forward the play aspects of flow, which are linked to motivation. Groos (1899) and Buhler (1922) investigated the benefits experienced while people executed tasks. Other theorists who inspired Csikszentmihalyi to build his theory were Hebb (1955), Berlyne (1960), White (1959), DeCharms (1968) and Maslow (1968). Hebb (1955) and Berlyne (1960) worked on the biological/ psychological aspects of motivation that could provide an adequate amount of stimulation. White (1959) explained how pleasure could be derived from manipulation of context. This capacity for successful manipulation also gives a sense of confidence and control (self-efficacy; Bandura, 1982). Additionally, White (1959), and DeCharms (1968) also supported individuals interested in manipulating and creating experiences in their environments. Furthermore, Maslow proposed that certain experiences are deemed as "peak experiences" which represent moments of self-actualization. Self-actualization is a need for personal growth that is beneficial to the overall well-being of the individual. Moreover, Maslow (1968) proposed that such experiences could be meditative contexts or spiritual venues allowing individuals to have a fulfilling and beneficial experience. All these theorists stemming from different fields of research have influenced Csikszentmihalyi while he formulated the comprehensive theory of flow. There was a balance between psychological and contextual environments that allowed for flow experience theory to be conceptualized.

Even more, not only is flow based on theories, but it has roots in spiritual and religious practices. In South-eastern religions, notably Hinduism and Buddhism, achieving flow experience is done through physical movement (yoga) and meditation (Csikszentmihalyi, 1990; Kabat-Zinn, 2003). In these practices, it is very common to re-center your thoughts and actions upon yourself and be mindful of your external and internal environment. Most interestingly, these practices are aimed at controlling and increasing awareness of one's consciousness.

Bakker (2005) proposes a conceptualization of flow experience that is more parsimonious, however it remains extremely coherent with Csikszentmihalyi's original conceptualization. Bakker distinguishes his conceptualization of flow by emphasizing that in the workplace, flow will last a short period of time and will be characterized by three themes. Bakker (2005) explains that these three dimensions are based on his observations of the most recurring and respected definitions in the literature. He places value on these three core dimensions of a flow experience, due to their applicability to the workplace. The first is being totally consumed by work (absorption). In this environment, he defines absorption as a complete involvement in the work task. The second is enjoyment of work. Enjoyment is important as happiness motivates employees to make better work-related decisions. The third theme is inner motivation. Inner, or intrinsic motivation, is salient because it indicates that employees are self-motivated and receive personal benefits from engaging in work-related tasks (Bakker, 2005). Furthermore, he supports his flow at work conceptualization with the emotional contagion theory through which, flow experience can be explained as having a contagious nature (Hatfield et al., 1994).

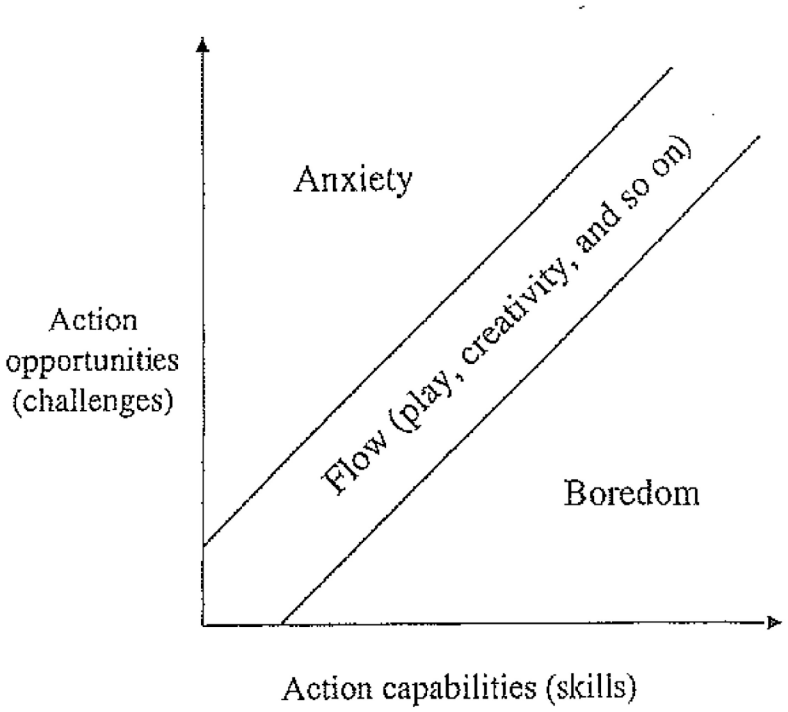
Furthermore, there are also differentiations as to how flow experience is lived. Engeser and Schiepe-Tiska (2012) note there is a lack of consensus as to whether to define flow as a trait or as a state. In other words, flow can either be a trait experience or a state experience. A trait experience will last for a longer period of time, and a state experience is much more transient (Fullagar & Kelloway, 2009). The authors explain that flow as a state experience, is often associated with a given activity that is being executed at a specific time. Therefore, when discussing a state type of experience, there is often reference to the present time. Contrary to this, flow as a trait experience is related to a constant overall evaluation of a person's reality. Nevertheless, in the majority of studies, flow is considered as a temporary state.

### 1.1.3 Flow channel models

Csikszentmihalyi elaborated the main theoretical conceptualization of flow and explained the various characteristics of this experience, he also proposed a formal

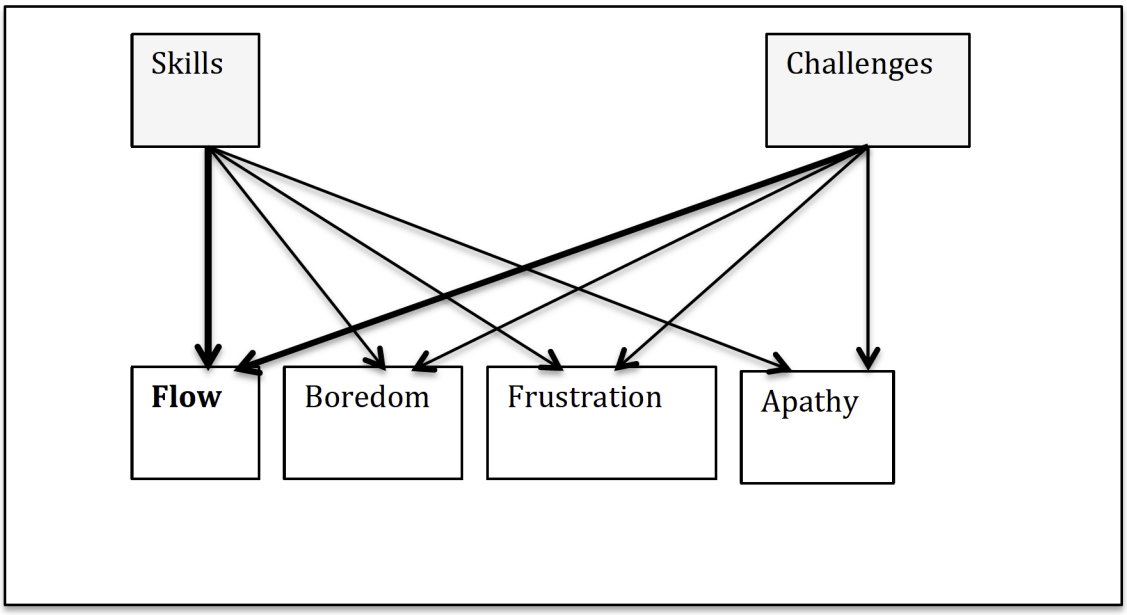
model. Overall, the flow state is accessed through a fit between skills and challenges of a task. Even more, it is important to note that the challenges and skills must be elevated in order for flow to occur. The original channel model depicts that flow experience is found somewhere between boredom and anxiety. In this depiction, boredom is the result of a task that is too easy and anxiety is the product of a task that surpasses the individual's capacities (see figure 1; Csikszentmihalyi, 1975). Furthermore, Csikszentmihalyi notes that flow is an adequation between skills and challenges, but also the perception of the individual plays an important impact on flow.

**Figure 1. The original flow experience channel model (Csikszentmihalyi, 1975, p. 49)**



Afterwards, the four-channel model was developed, thus expanding the outcomes of skills and challenge (Csikszentmihalyi & Csikszentmihalyi, 1992). This newer model elaboration emerged because flow was understood as being much more than just a balance between skills and challenges (see figure 2 adapted from Teng & Huang, 2012). The outcomes in the four-channel model are flow, boredom, frustration and apathy. Therefore, when challenge and skill are both at high levels, the individual will experience flow. Boredom occurs when skill level is high but the challenge level is low. Frustration is the product of skills that do not meet the level of task challenge. Finally, apathy is the result of challenge level and skill level, which are both at low levels.

**Figure 2. The four-channel model of flow experience (adapted from Teng & Huang, 2012)**

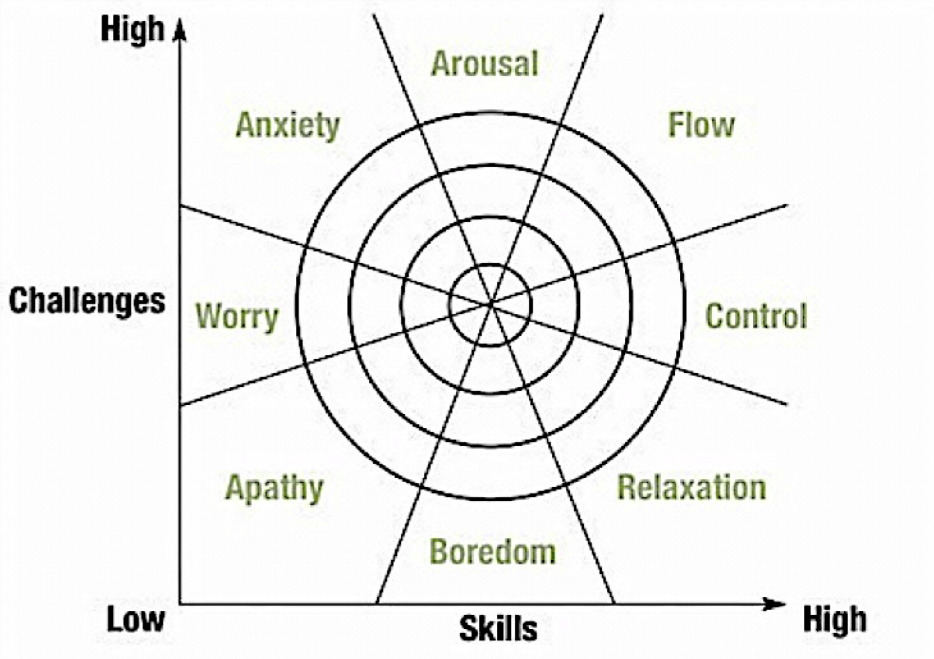



The Milan Group then developed the eight-channel model, which is currently the most prevalent model. The eight-channel model includes arousal, flow, control, relaxation, boredom, apathy, worry and anxiety (Nakamura & Csikszentmihalyi, 2005; see figure 3). They elaborated the model to further discriminate between the various

flow channels. The Milan Group also added concentric circles, which represent the degree of intensity in each channel. If a task is too challenging and the person does not have the necessary capacities to deal with the task, then the "anxiety channel" will be experienced. On the other hand, if a person is overly skilled for a given task, then he will experience a range between the "boredom channel" to the "relaxation channel". The most interesting balance is between a reasonable amount of skills and a challenging situation, which ultimately leads to the desired "flow channel" (Emerson, 1998).

Some studies will use the four-channel model (Chen, Wigand, & Nilan, 1999; Csikszentmihalyi, 1975; LeFevre, 1988; Massimini, Csikszentmihalyi, & Carli, 1987; Wells, 1988). The eight-channel and sixteen-channel models are elaborations of the four-channel model. The eight-channel model has been commonly used (Carli, Delle Fave, & Massimini, 1988; Csikszentmihalyi & Mei-Ha Wong, 1991; Massimini, Csikszentmihalyi, & Delle Fave, 1988) and there has also been testing of a sixteen-channel model, however it has not been depicted, nor commonly employed (Csikszentmihalyi & Csikszentmihalyi, 1992).

**Figure 3. The eight-channel model of flow (Nakamura & Csikszentmihalyi, 2005)**



## 1.2 Flow in the workplace

It appears that the workplace is a propitious environment to experience flow compared to other situations (Csikszentmihalyi & LeFevre, 1989). This type of environment generates social interactions and provides a constant source of challenge, which allows the possibility to apply personal skills. It is interesting to look at flow in the workplace because it is a positive experience, which offers several gains. Flow is beneficial since it increases job performance, work satisfaction, positive emotions and efficacy (Burke & Matthiesen, 2004; Chu & Lee, 2012; Eisenberger, Jones, Stinglhamber, Shanock, & Randall, 2005; Maeran & Cangiano, 2013). Flow at work is linked with greater performance and the delivery of a higher quality of work because employees feel happier in their work environment since they are more satisfied and more motivated (Csikszentmihalyi & LeFevre, 1989; Fullagar & Kelloway, 2009; Nakamura & Csikszentmihalyi, 2005, 2009). It has also been suggested that flow could create more engagement and loyalty towards the company on behalf of the individual (Bakker & Demerouti, 2008; Nakamura & Csikszentmihalyi, 2009; Salanova, Bakker, & Llorens, 2006).

Consequently, given the advantages stemming from flow experience, it becomes pertinent to develop what is known concerning the antecedents of this psychological state. Therefore, the antecedents of flow experience in the workplace will be exposed.

### 1.2.1 Flow antecedents

Considering the flow channel, it is evident that certain conditions need to be in place in order for flow experience to occur. Even more, there must be particular conditions favouring flow in the workplace and these components are not mutually exclusive. The following section will present antecedents that are related to the workplace, however this is not an exhaustive description of all flow antecedents. The listed antecedents are the most prevalent in the literature. Two categories of flow antecedents will be presented; the task characteristics and the individual characteristics. The antecedents have been classified in these two categories in order to keep a similar structure to what has been highlighted in the literature. In flow theory, there is always a

balance between personal skills and task challenge (Csikszentmihalyi, 1975; Nakamura & Csikszentmihalyi, 2005), therefore it was logical to categorize the antecedents in a similar way. See table 1 for a summary of flow experience antecedents.

#### 1.2.1.1 Individual characteristics

The individual characteristics that are the most susceptible to favour the occurrence of flow experience are the individual's personality, his degree of self-efficacy, his mindset and his capacity for self-regulation. These characteristics will be covered in this sub-section of flow precursors.

##### *1.2.1.1.1 Personality*

Some authors state that an autotelic personality is an antecedent to flow experience (Csikszentmihalyi, 1975, 1990; Engeser, 2012). An autotelic personality is the characterization of a person who has intrinsic motivation to complete many tasks (Csikszentmihalyi & Massimini, 1985). Autotelic personalities are reported to be very favourable to harbour flow because they are open to new experiences, as well as willing to actively engage in situations and taking control of the situation (Engeser, 2012; Keller & Blomann, 2008; Martin-Krumm & Tarquinio, 2011). Autotelic personalities contribute greatly to the degree of involvement, and more importantly towards flow (Nakamura & Csikszentmihalyi, 2005). People with this type of personality will seek out situations that are challenging and will meet their skill level. Csikszentmihalyi (2004) noted that these people have a special interaction with their environment through their curiosity and creativity. These individuals have an internal motivation, which incites them to manipulate and understand their environment, compared to people who require exterior sources of motivation in order to function in their environment. In addition, neuroscientific evidence and theories indicate that people with autotelic personalities have more cognitive flexibility and experience flow more naturally (Csikszentmihalyi, 1990; Dietrich, 2004; Engeser, 2012). Evidence supports that people who are able to frequently experience flow have reduced mental activity when having to

focus on a task, thus indicating that they need to express less energy in order to perform a task (Hamilton, Haier, & Buchsbaum, 1984). For these individuals, concentration is effortless because of their propensity to experience flow.

#### *1.2.1.1.2 Self-efficacy*

Self-efficacy is the belief in oneself and one's capacity to successfully achieve a particular task (Bandura, 1982; Salanova et al., 2006). This is a type of confidence that defines the individual's belief in his skills. As a positive consequence, self-efficacy supports the likelihood of a flow experience at work (Fagerlind, Gustavsson, Johansson, & Ekberg, 2013). Access to the flow channel will occur if there is the appropriate level of personal skills and task challenge. The flow channel model portrays this type of confidence since the individual must have confidence in their skills in order to approach the task challenges. Bandura (1982) also stated that doubting one's capacity would reduce the potential for learning and performance, therefore having confidence is a key stimulator of flow experience.

#### *1.2.1.1.3 Mindset*

To enter flow experience at work it has also been suggested that a person must adopt a mindset that encourages consistent happiness (Csikszentmihalyi, 2009). Feelings of contentment and happiness would be more likely to lead to flow experience because the individual is not worried. As portrayed in the original flow model (figure 1), worry and anxiety can distract the experiencing flow. These negative states hinder concentration because the individual will be focused on negativity instead of on the positive aspects of the current situation. As such, the individual will concentrate on negativity instead of seeing the opportunities that are available in the environement due to displaced focus.

#### *1.2.1.1.4 Self-regulation*

Another individual characteristic that is conducive to flow experience is self-regulation. Often times, work environements can be restrictive to the individual. It has been proposed for individuals to develop their sense of self-regulation, awareness and be alert of flow antecedents to control for such restrictive work environements and to experience flow (Moneta, 2012). It is believed that if an individual is mindful of the conditions that can foster flow, then they will be able to re-create this particular environement. If they cannot re-create the environment, then at least they will be more aware of the triggers of a flow experience. The individual could look towards re-creating the environement that enabled flow experience because he was mindful during the experience (Csikszentmihalyi, 2003). For example, the person might want to have a peaceful work environment with bright lighting and a clean workspace. Once these antecedents are in place, it would be more probable for an employee who is in an unchallenging work environment to flourish through flow because it will become an environement that is intrinsically motivating (Eisenberger et al., 2005; Lyubomirsky et al., 2005).

### 1.2.1.2 Task and work environment characteristics

The task and work environment characteristics that are likely to favour flow experience are the presence of clear goals, clear and timely feedback, requirements of a given task and social interactions. These antecedents will be presented in the following sub-section.

#### *1.2.1.2.1 Clear goals*

The presence of clear goals is one of the main antecedents of flow experience that is consistently mentioned in the literature (Csikszentmihalyi, 1997; Emerson, 1998; Keller & Landhäußer, 2012; Salanova et al., 2014). As previously stated, the presence of clear goals was a characteristic of flow experience (see nine characteristics), however there is empirical evidence that it also acts as an antecedent (Salanova et al., 2006;

Sawyer, 2007; Walker, 2010). It became evident that goals must be explicitly stated in order for employees to understand what is expected from them. Clear goals will eliminate any confusion and will allow for employees to perform according to the stated expectations. The presence of clear goals is important, however there must also be a response as to whether or not these goals are attained. As such, with increased goal clarity, the more the individual has the ability to concentrate and engage in their work and ultimately reach flow experience.

#### *1.2.1.2.2 Clear and timely feedback*

Clear and timely feedback are essential antecedents of flow experience (Csikszentmihalyi, 1997; Emerson, 1998; Keller & Landhäußer, 2012; Salanova et al., 2014). There must be a well-timed response to the action of the employees. This feedback must be clear in order to minimize any misinterpretations. However, if the feedback is formulated in a clear manner but the delivery is untimely, then the message will not resonate optimally with the recipient. Therefore, clear feedback and proper timing are supported antecedents of flow experience in the workplace (Salanova et al., 2006; Sawyer, 2007; Walker, 2010). The combination of both of these antecedents will allow for the employee to correct any behaviours and potentially experience flow. Feedback allows for a confirmation of the individual and his skills. Feedback gives individuals a sense of whether they are going to meet their goals. Furthermore, feedback also supports the efforts and skills that are being exerted by the individual. If feedback is positive, then the individual will not worry, thus building confidence and motivation (Csikszentmihalyi, 1990).

#### *1.2.1.2.3 Task requirements*

Task requirements such as challenge and capacity to use skills are crucial antecedents of flow experience (Nakamura & Csikszentmihalyi, 2005). Situations that will allow for flow are ones that will mostly create a challenge for the individual, create a sense of pleasure, along with activities that are not characterized as routine (Bakker,

2005; Csikszentmihalyi & LeFevre, 1989; Forest, 2008). As previously mentioned, a balance between challenge and skills is characteristic of the flow channel. The environment must make place for tasks that are rich with opportunities for personal development (Massimini & Delle Fave, 2000). Notably, these types of environments allow for personal growth and development of skills.

#### *1.2.1.2.4 Social interactions*

Social interactions are a fundamental component of teamwork. As such, interactions can also foster a positive work environment where individuals can bond together and find common ground (Driskell et al., 2006; Rousseau et al., 2006). The degree of social interactions is a very important antecedent to consider regarding flow experience (Hoffman & Novak, 2009; Salanova et al., 2014; Sawyer, 2007; Walker, 2010). Furthermore, it is often seen that individual will share similar thought patterns and emotions when they interact together. As such, if one individual is in a flow state, then this could increase the likelihood of experience sharing in others (Hatfield et al., 1994).

Table 1 summarizes the most prevalent antecedents of flow experience. The antecedents of flow have been divided into two categories. The first category is a presentation of antecedents pertaining to the individual, and the second one presents the task and work environment antecedents. This division is a reflection of the necessary classical balance in order for flow to occur. In other words, between the task challenge and the individual's skill level.

**Table 1. Summary of workplace antecedents of flow experience**

| Dimensions | | Antecedents |
|---|---|---|
| A | Individual | • Personality<br>• Self-efficacy<br>• Mindset<br>• Self-regulation |
| B | Task and work environment | • Clear goals<br>• Clear and timely feedback<br>• Task requirements<br>• Social interactions |

## 1.3 Flow in work teams

Today, teams are a highly common component of an organization's work structure that is integral and inevitable. Many organizations are based partly, if not totally, on the use of work teams. Surprisingly, the current studies on flow in the workplace rarely take into consideration the work structure, even though task requirements and the work environment appear to be antecedents to flow experience. The literature reveals that a challenging, rich and interesting environment, such as teams, would stimulate the occurrence of flow experience (Hoffman & Novak, 2009; Massimini & Delle Fave, 2000). As previously explained, some authors state that positive social interactions are particularly conducive to the flow experience (Jackson, 1995; Lin & Joe, 2012; Walker, 2010). However, few studies have considered this psychological state in a work team setting (e.g., Bakker et al., 2011; Heyne, Pavlas, & Salas, 2011; Ryu & Parsons, 2012). The lack of studies on the antecedents of flow in work teams is surprising, seeing as there are noted consequences of flow in teams. Aubé and colleagues (2014) found that flow could favour engagement towards team objectives and performance. Furthermore, flow is beneficial to the management of

problems related to collaboration, to the quality of team performance, and to the degree of openness in communicating information (Heyne et al., 2011; Ryu & Parsons, 2012). It is evident that flow experience is helpful with issues pertaining to management, to productivity, collaboration, communication. These positive consequences justify the interest in studying the antecedents of flow in teams.

A work team can be established as a permanent formal group with a minimum of two interdependent members, who are collectively responsible for attaining tasks determined by the organization (Gladstein, 1984; Sundstrom, De Meuse, & Futrell, 1990). In the literature, authors will make a distinction between teams and groups, or they will use these terms interchangeably (Franz, 2012; Kozlowski & Bell, 2003). Notable characteristics of a group are that it will have a leader, each member is responsible for their duties, there is a focus on individual productivity and the work is assigned to independent members (Kozlowski & Bell, 2003). On the other hand, a team is centered on a collective spirit. In the ideal situation, a team will display shared leadership, members are individually but also collectively responsible, productivity is based on the team's effort, and work is completed together as a team. For the purpose of this review, the distinction between teams and groups will be made. As such, the definition of teams will be preferred, due to their collective spirit of having shared leadership instead of only one leader.

Work in teams increases the possibility of social interactions and the involvement of teammates, thus the likelihood of entering flow experience is heightened (Schiepe-Tiska & Engeser, 2012). Flow can be considered as a collective phenomenon because of the contagious nature of positive events. Emotional contagion (or affective contagion) is a theory in psychology explaining that emotions are transferred between people (Hatfield et al., 1994). Therefore, people will mimic and share their emotions when they interact with each other. As previously mentioned, in team contexts, there is a high level of communication and people will share their experiences. Thus, when flow experience occurs in a team setting, the individual will share with his peers and they will mimic the flow experience. As such, flow experience can become a collective experience because of the social setting in which it occurs.

In neuropsychology, emotional contagion is supported by the existence and functioning of mirror neurons in order to assess imitation in social situations (Gallese, 2001; Heyes, 2010; Iacoboni, 2009; Oberman, Pineda, & Ramachandran, 2007). Mirror neurons will be stimulated following the observation of someone else's behaviour. Therefore, not only can flow experiences be shared on a psychological level, but there is also physical support that humans are hardwired to be socially responsive to other people in collective situations.

Taken altogether, the benefits of flow experience are explicit, therefore it would be important to understand the antecedents allowing for such an experience to take place in teams (Burke & Matthiesen, 2004; Chu & Lee, 2012; Eisenberger et al., 2005; Hoffman & Novak, 2009; Maeran & Cangiano, 2013; Massimini & Delle Fave, 2000; Schiepe-Tiska & Engeser, 2012). It is clear that teams represent contexts that can foster flow experience. However, the collective conditions of flow in work teams has not been extensively examined and it is considered to be a field with great potential for expansion in the future (Engeser & Schiepe-Tiska, 2012).

### 1.3.1 Collective antecedents of flow experience

Similar to individual flow experience, flow in teams also rests on multiple antecedents. These antecedents for flow in a collective setting will be presented. It is also important to note that research on the antecedents of flow experience in work teams is still in the early stages of development. Therefore, most of the developments on this topic have been theoretical in nature instead of empirical. Shared leadership, team confidence, shared mental models, and internal functioning have been identified in the literature as potential antecedents of flow experience in teams.

#### *1.3.1.1 Shared leadership*

Shared leadership may be a potential antecedent to flow experience because it transforms work into an autotelic activity that is intrinsically motivating and stimulates team confidence (Hooker & Csikszentmihalyi, 2003; Lovelace et al., 2007). Shared

leadership is characteristic of a horizontal or lateral organization that allows for all members to work together in a decentralized and fluid manner (D'Innocenzo, Mathieu, & Kukenberger, 2014; Day, Gronn, & Salas, 2006; Mendez, 2009; Pearce & Manz, 2005). Furthermore, shared leadership is ideal in situations when there are complex tasks, such as teams. As for the benefits of shared leadership, it increases performance in teams, enhances positivity in the workplace, supports healthy work habits, controls for negative stress, and engages loyalty (D'Innocenzo et al., 2014; Lovelace et al., 2007; Pearce & Manz, 2005).

The relation between shared leadership and flow experience is mostly based on theoretical argumentation. Lovelace, Manz and Alves (2007) recommended the use of shared leadership because it creates a work environment that is conducive to flow experience. It is important to note that shared leadership stimulates flow experience and can alter the perception of work from mundane to intrinsically motivating (Hooker & Csikszentmihalyi, 2003). Even more, shared leadership could stimulate the intrinsically motivating nature of flow experience through its existing supported relation to team confidence (Carson, Tesluk, & Marrone, 2007; Guzzo et al., 1993; Shamir, House, & Arthur, 1993; Sivasubramaniam, Murry, Avolio, & Jung, 2002). In other words, there is a supported relation between shared leadership and team confidence, and there is also support for confidence in order to access the flow channel.

This information indicates a potential link between shared leadership and flow experience, along with a link with shared leadership and team confidence, which would need to be further regarding a relation to flow experience.

#### *1.3.1.2 Team confidence*

Team confidence has been supported as a potential antecedent to flow experience (Salanova et al., 2014). Team confidence is the degree to which teammates believe in a successful team performance. Collective efficacy and group potency are two concepts that refer to this idea of team confidence (Bandura, 1982; Guzzo et al., 1993; Salanova et al., 2014). In comparison to collective efficacy, which refers to confidence regarding

the completion of a particular task, group potency employs a global level of confidence in team success (Guzzo et al., 1993).

A study investigated whether team confidence, conceptualized through collective efficacy, would be a predictor of flow experience in work teams (Salanova et al., 2014). Results corroborate that collective efficacy is positively related to flow experience. This study indicates that team confidence can favour flow, at least when team confidence is measured using collective efficacy. Theoretically, it has been proposed that confidence in skills is necessary in order to meet the challenges of a situation, and ultimately access the flow channel (Nakamura & Csikszentmihalyi, 2005). Therefore, team confidence could lead to flow experience because teammates are confident in successfully attaining their goals. Empirical studies need to be conducted in order to verify the potential relation between group potency, as a conceptualization of team confidence, and flow experience.

#### *1.3.1.3 Shared mental models*

The shared mental models concept corresponds to an unspoken agreement on sharing a similar cognitions and thought patterns adopted by the team. They are organized mental schemas that are pertinent for the team and are shared amongst teammates (Cannon-Bowers & Salas, 2001; DeChurch & Mesmer-Magnus, 2010; Mohammed, Ferzandi, & Hamilton, 2010, p. 877). Consequently, with the use of teamwork, people have to share ideas and information in order to successfully meet the goals set by the team (Sawyer, 2007; Walker, 2010). This would indicate that teammates have a common ground and can relate to one another, which could enhance a sense of belonging towards the team. In other words, the presence of shared mental models could encourage the appropriation of team tasks because the individuals become more collectively engaged.

Therefore, having shared mental models allows for teammates to coordinate their efforts as it is needed, without having to stop their work processes to validate their performance and previously communicated information (DeChurch & Mesmer-Magnus, 2010; Mohammed et al., 2010). This allows for a seamless flow at work experience. As

such, the teammates ultimately become one single unit because they have an agreed upon team cognition. By having a smooth team experience, the teams can maintain their concentration levels and as a consequence they can experience flow (Csikszentmihalyi, 2003, 2004). Meaning that, with a stronger sense of shared mental models, teammates will have a mobilizing environment, ultimately leading to flow experience (Csikszentmihalyi, 2003, 2004).

#### *1.3.1.4 Internal functioning*

Internal functioning in teams represents the behaviours that are adopted by the team in order to successfully complete team tasks (Morgan, Salas, & Glickman, 1993; Rousseau et al., 2006). For example, these behaviours can be related to communication, coordination and cooperation. Sawyer (2007) proposed a list of internal functioning behaviours as antecedents that would encourage flow experience. Notably, there are important aspects pertaining to communication as an aspect of internal functioning. It is proposed that teammates should contribute consistently to the team, share information, as well as provide deep listening and total concentration in order to provide better communication (Heyne et al., 2011; Sawyer, 2007). Furthermore, the task or project must encourage the teammates to coordinate internal processes to be as undisturbed as possible (Walker, 2010). Overall, these components of internal functioning are important for the stimulation of flow experience because they make functioning simpler. When the internal components of a team are streamlined, then the teammates can focus on the goals instead of being distracted by the noise that is created by the sub-optimal functioning of the team. It is important to have good internal functioning because poor functioning can lead to "process loss". "Process loss" refers to this sub-optimal functioning, and is the product of poor internal team functioning (Steiner, 1972). If internal functioning can be controlled, then it may be more likely for teams to focus on the tasks at-hand and reach flow experience with ease, because they are not disturbed by sub-optimal performance.

## 1.4 Summary and research question

The various benefits of flow in the workplace have been highlighted, as well as the most prevalent antecedents in general and particularly in the work team context. There is a great importance of studying the antecedents of flow in teams because there are valuable benefits associated with flow experience in work teams. Given this information, the antecedents of flow in a collective setting still remain unclear as it is an area in the literature that has not been extensively studied. It is important to note that the antecedents of flow experience in teams have been theoretically advanced, however there is still a lack of empirical studies to support these theoretical postulates (Engeser, 2012; Heyne et al., 2011; Lovelace et al., 2007; Salanova et al., 2014). Therefore, further research is required in order to better understand flow as a collective phenomenon (Csikszentmihalyi & LeFevre, 1989; Haworth & Hill, 1992; Hektner, Schmidt, & Csikszentmihalyi, 2007).

As discussed in the section of flow antecedents in teams, the four recurring antecedents in the literature were presented: shared leadership, team confidence, shared mental models and internal functioning. Although these four types of antecedents are susceptible of favouring flow experience in teams, only shared leadership and team confidence (as conceptualized by group potency) will be covered in further detail in this thesis. Along with being more theoretically supported, the role of these two variables in predicting flow could be integrated together in a mediation model. As previously stated in the section on flow in teams, there is evidence that shared leadership promotes flow experience because it creates a collaborative and interaction-rich work environment (Lovelace et al., 2007). Additionally, the relation between team confidence and flow experience is theoretically supported (Salanova et al., 2014). Therefore, accessing the flow channel is proposed through the fit between the correct levels of skills in order to meet the task challenges (Csikszentmihalyi, 1975; Nakamura & Csikszentmihalyi, 2005). This would indicate that with confidence, it might be more likely to access flow since the person believes that the skills are sufficient. Moreover, it is possible to include shared leadership and group potency in the same model, given that they are theoretically connected and have previously been included in mediation models (Campion, Medsker, & Higgs, 1993; Cohen, Ledford, & Spreitzer, 1996; Shea & Guzzo, 1987). In teams, it

may be possible that shared leadership and group potency create a unique social situation that is favourable for the occurrence of flow experience. It is expected that with increased levels of shared leadership, teammates will have more confidence in their capacities of achieving their goals. The combination of shared leadership and group potency would be related to flow experience. Group potency is anticipated to be the mediating mechanism between shared leadership and flow experience. This study will verify the possibility of these relations.

Given the extensive review of the literature, it is possible to formulate the research question of this master's thesis. In particular, the possible relations between shared leadership, group potency and flow experience can be discerned. Ultimately, the research question is: What roles do shared leadership and group potency play in predicting flow experience in work teams? More specifically, can group potency mediate the potential relation between shared leadership and flow experience? The following chapter will present the study's conceptual framework addressing this research question.

# CHAPTER 2: CONCEPTUAL FRAMEWORK

The purpose of the current chapter is to present and to justify the relevance of the hypothesized model proposed in this research. It is anticipated that shared leadership and group potency could act as potential antecedents of flow experience.

There have been studies conducted on flow in the workplace on an individual level (Bakker & Oerlemans, 2011; Chu & Lee, 2012; Eisenberger et al., 2005; Emerson, 1998), but few studies have specifically looked at the antecedents of flow experience in a work team context (Aubé et al., 2014; Heyne et al., 2011; Ryu & Parsons, 2012; Salanova et al., 2006, 2014). Consequently, these specific antecedents would gain from more empirical support.

As exposed in the previous chapter, there were four main potential antecedents of flow experience in work teams. Shared leadership and group potency appeared to be the most theoretically supported. Shared leadership is the team's propensity to decentralize and share power amongst teammates (Carson et al., 2007; Pearce & Manz, 2005). Additionally, group potency is the team's confidence in achieving their goals (Guzzo et al., 1993; Nakamura & Csikszentmihalyi, 2005; Salanova et al., 2014). Overall, the antecedents of flow experience in teams has been advanced theoretically, however there is a gap in the research as to the empirical evidence. Thus, the research question of this study is presented below.

*What roles do shared leadership and group potency play in predicting flow experience in work teams? More specifically, can group potency mediate the potential relation between shared leadership and flow experience?*

## 2.1. Retained conceptualization of flow experience

The original definition, based on nine characteristics, proposed by Csikszentmihalyi will be the focus of this study because it is the most frequently cited, as well as notorious and cohesive (Engeser & Schiepe-Tiska, 2012; Fullagar &

Kelloway, 2009). As a brief reminder, according to Csikszentmihalyi, the nine characteristics of a flow experience are:

1) Being mindful of the current situation;
2) Having a match between skills and task challenge;
3) Entering action without having to reflect upon this fact;
4) Having explicit goals;
5) Receiving clear feedback;
6) Having a feeling of control and no fear of failing;
7) Experiencing no self-consciousness;
8) Experiencing a loss of awareness of time;
9) Experiencing motivation by the activity.

From what is known about flow in teams, the following are recognized antecedents that have been selected for this master's thesis: shared leadership and group potency (Lovelace et al., 2007; Pearce & Manz, 2005; Salanova et al., 2014). The theoretical documentation supports a relation between shared leadership and team confidence, team confidence and flow, as well as shared leadership and flow (Guzzo et al., 1993; Hooker & Csikszentmihalyi, 2003; Lovelace et al., 2007; Pearce & Manz, 2005; Salanova et al., 2014). The particularity of this study is to empirically verify the respective roles of these variables in an integrated model.

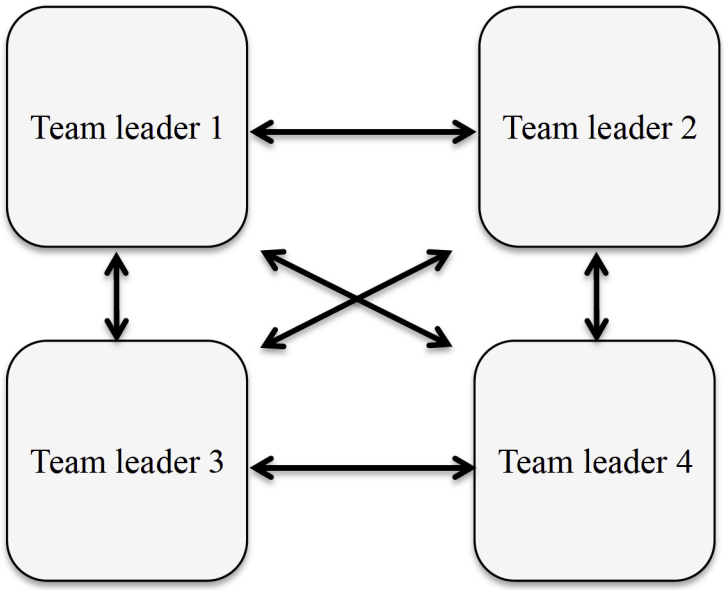
## 2.2 Retained conceptualization of shared leadership

The definition of shared leadership, as well as the conceptualization that will be retained for the study model will be explained in the following section.

Shared leadership is a way through which power is distributed within a team (Carson et al., 2007). Each member is a leader and all members cooperate to achieve goals in a bottom-up direction instead of top-down, the latter is often found in hierarchical organizations (Pearce & Manz, 2005). Power sharing allows for a decentralization of decision-making and for all members to participate. In shared

leadership, there is greater importance placed upon lateral interactions rather than vertical interactions as well as both unilateral and multidirectional interactions (D'Innocenzo et al., 2014; Wood, 2005). Lateral interactions are characterized by communication between members on a linear/ horizontal level. Lateral interactions differ from vertical interactions, in that vertical interactions can either be in an upward or downward direction. As depicted in figure 4, this is an example of a team composed of four members and there are different types of communication directions, such as bi-directional and multidirectional. The benefits of shared leadership are that it empowers the teammates, increases productivity, strengthens the bonds, increases effectiveness, and aids in managing complex tasks (Cannon-Bowers & Salas, 2001; D'Innocenzo et al., 2014; Pearce & Manz, 2005; Wang, Waldman, & Zhang, 2014).

**Figure 4. Shared leadership process (adapted from Ramthun & Matkin, 2012)**




As seen in table 2 below, there are several differences between shared leadership and more traditional forms of leadership. Notably, the main themes in shared leadership are the decentralization of authority, collaboration, solidarity and empowerment of all team members (Wood, 2005). Teammate actions are those that are pertinent to the

individual members of the team, whereas the collective team actions are related to the actions that the teams engage in collectively. Shared leadership is ideal in teams because it allows for collaboration and interactions amongst members.

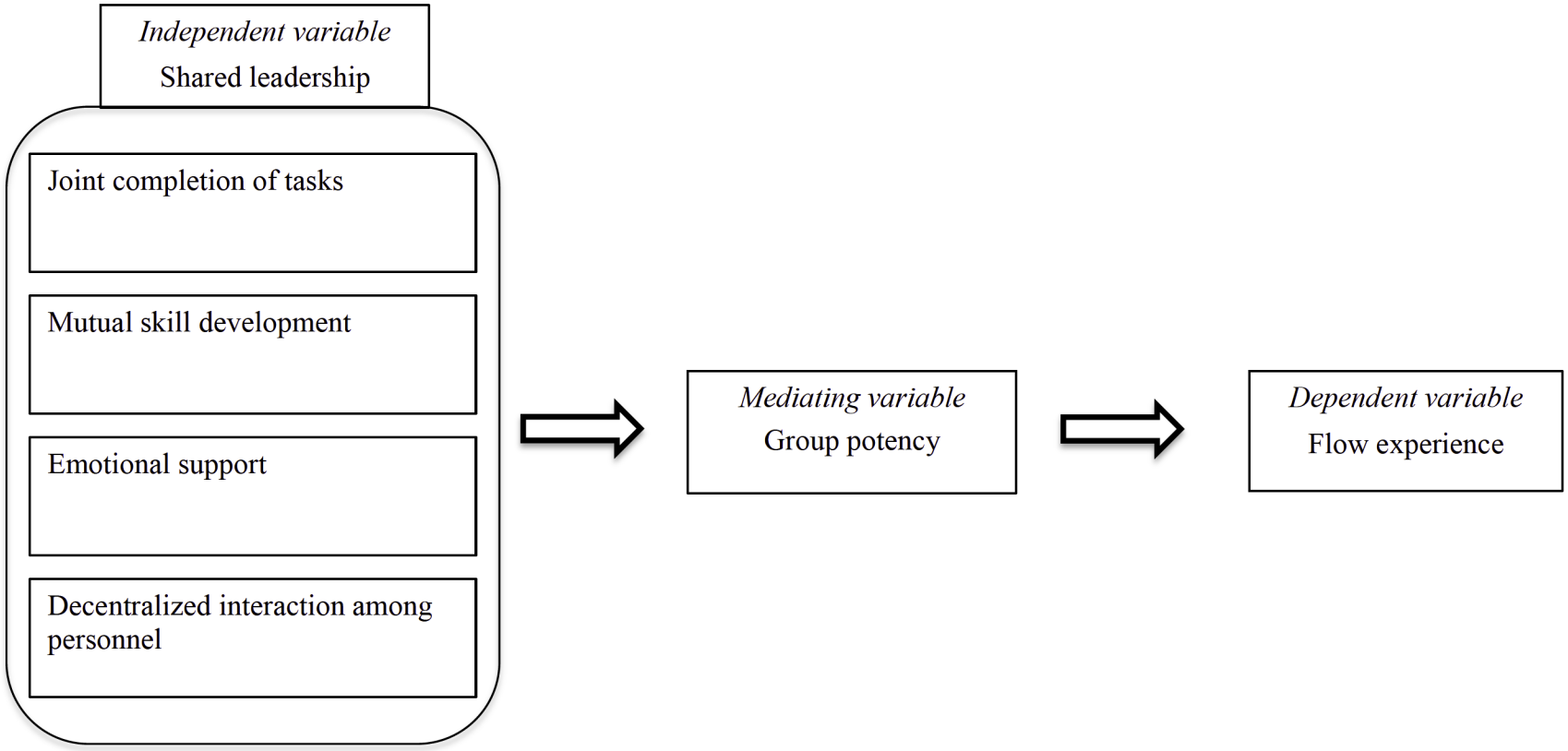
**Table 2. Shared leadership versus traditional types of leadership**

| Issues treated by leadership | Shared leadership | Traditional leadership |
|---|---|---|
| **Expressed behaviours** | Aggregated behaviour<br>(Cox, Pearce, & Perry, 2003; Cox, Pearce, & Sims, 2003) | Simple or multiple behaviours<br>(Yukl, 2001; Pearce, 1997) |
| **Type of organisation structure** | Lateral and decentralized structure<br>(Pearce, 1997; Pearce & Sims, 2000) | Hierarchical and centralized structure<br>(Hatch, 1997; Yukl, 2001) |
| **Teammate actions** | Autonomous and self-directed behaviours<br>(Pearce & Sims, 2002; Porter-O'Grady, Hawkins, & Parker, 1997) | Dependent and instructed response type of behaviour<br>(Hatch, 1997; Yukl, 2001) |
| **Collective team actions** | Collaboration, solidarity and agreement among members<br>(Graham & Barter, 1999; Spooner, Keenan, & Card, 1997) | Team follows the leader's direction<br>(Hatch, 1997; Yukl, 2001) |

Source: Table adapted from Wood (2005)

In this study, Wood's (2005) multidimensional conceptualization of shared leadership will be used. This conception of shared leadership is favoured because of the breakdown of this construct into four dimensions will allow for a more nuanced analysis. The four dimensions of this conceptualization are *joint completion of tasks*, *mutual skill development*, *emotional support* and *decentralized interaction among personnel*. *Joint completion of tasks* defines teammates who work congruently on tasks. As for *mutual skill development*, working in teams allows for teammates to build upon their skills and use their strengths and improve their weaknesses. The third dimension is *emotional support,* which is defined as the team's capacity to support each other emotionally and psychologically. The last dimension of shared leadership is characterized by the *decentralized interaction among personnel,* which means that behaviours, authority and communication can occur in any direction, and are not limited to one person. See figure 5 for a depiction of these dimensions of shared leadership in the study's hypothesized model.

**Figure 5. Hypothesized model including shared leadership, group potency, and flow experience.**



## 2.3. Shared leadership and flow experience

This section will present the argumentation suggesting the potential relation between shared leadership and flow experience. There is evidence for the relation between shared leadership and flow experience because shared leadership is able to increase the feelings of appropriation of work, the perception of work as meaningful, and the perception of the work environment as enjoyable and empowering for the employee (Hooker & Csikszentmihalyi, 2003; Lovelace et al., 2007).

It is expected that shared leadership is positively related to flow because in shared leadership the members will have to adopt similar ways of thinking and will have to converge on their interactions in order to arrive successfully at their goals. This is particularly pertinent to the *joint completion of tasks* dimension of shared leadership. Notably, flow experience will take place in a team where there is room for expression, which is represented by shared leadership (Csikszentmihalyi & LeFevre, 1989; Pearce & Manz, 2005). Also, shared leadership would increase flow experience by decreasing the external noise. In other words, shared leadership places focus on the tasks that are being worked on in the team at that given moment. The teammates will not be distracted by the exterior environment and will be further supported intrinsically because there is no pressure to allot resources on extrinsic factors. Therefore, shared leadership stimulates teammates to be actively engaged in their team tasks because they can remain concentrated. This may be related to the *mutual skill development* dimension of shared leadership since teammates can support each other in the application and progression of their skills. Furthermore, shared leadership places authority in all the members and the pressure is internally generated from the team and individuals, instead of coming from one sole leader. Shared leadership gives employees the opportunity to be responsible for tasks and to sustain each other when necessary, which allows for appropriation of their work. This appropriation refers to the emotional support and *decentralized interaction among personnel* dimensions of shared leadership. The authors note that shared leadership stimulates a sense of control and appropriation over the tasks. Shared leadership also encourages flow because it is a type of leadership that can change the

perception of work. In other words, work will have a different meaning and will be intrinsically rewarding for the employee. Therefore, shared leadership is a way through which teammates can transform their perception of work into an activity that is highly rewarding and intrinsically motivating.

We expect shared leadership to be related to flow experience, but we also expect for group potency to be a mediating mechanism between these concepts. This mechanism will be explained in the following section. See the first hypothesis and sub-hypotheses below.

**Hypothesis #1:** Shared leadership would be positively related to flow in work teams.

H1a - *Joint completion of tasks* is positively related to flow experience.

H1b - *Mutual skill development* is positively related to flow experience.

H1c - *Emotional support* is positively related to flow experience.

H1d - *Decentralized interaction among personnel* dimension is positively related to flow experience.

## 2.4. The mediating role of group potency

This master's thesis will allow for the verification of the mediating role of group potency in the relation between shared leadership and flow experience. The following section will present the retained conceptualization of group potency. Then the theoretical argumentation will be presented.

Group potency may be defined as the team's global collective confidence in achieving success (Costa, Passos, & Bakker, 2014; Guzzo et al., 1993). Group potency will be used in this study in order to understand confidence at the team level.

Group potency is believed to be the mediating mechanism between shared leadership and flow experience, and this relation can be justified through the flow channel. The reasoning behind this mediating role is that team members will perceive their tasks as a surmountable challenge because they believe in having the necessary

skills to successfully resolve the task, thus being able to access flow channel (Nakamura & Csikszentmihalyi, 2005). If the individual feels empowered, then he will engage in the team with confidence in his actions. As seen in the flow channel, if the teams are unable to strike the ideal balance, then there will be no flow. Accessing the flow channel highlights the importance of team confidence when regarding flow experience in teams.

No studies have explicitly tested the mediating role of group potency in the relation between shared leadership and flow experience. However, there are studies that support the relation between shared leadership and group potency (e.g., Sivasubramaniam et al., 2002), and other studies support the relation between team confidence and flow experience (Salanova et al., 2014). Even more, in previous studies, shared leadership and group potency have been included in the same model, with group potency as a mediating mechanism (Campion et al., 1993; Cohen et al., 1996; Shea & Guzzo, 1987). However, the latter studies have never included flow experience as the outcome variable. In this study, the inclusion of shared leadership, group potency, and flow experience in an inclusive model will be a new and unique contribution to the literature of flow in work teams. More specifically, it is expected that in this study, shared leadership increases group potency, which in return increases flow experience. The following series of hypotheses make reference to the mediating effect of group potency in the relation between shared leadership and flow experience.

**Hypothesis #2:** Group potency mediates the relations between each dimension of shared leadership and flow experience.

H2a - Group potency mediates the relation between *joint completion of tasks* and flow experience.

H2b - Group potency mediates the relation between *mutual skill development* and flow experience.

H2c - Group potency mediates the relation between *emotional support* dimension and flow experience.

H2d - Group potency mediates the relation between *decentralized interaction among personnel* dimension and flow experience.

All hypotheses were established to verify the antecedents that may lead team members to experience flow within the team context. There are two categories of hypotheses, the first category contains a series of relational hypotheses and the second category contains mediation hypotheses. The relational hypotheses concern the relations between each dimension of shared leadership and flow experience, while the mediation hypotheses pertain to the mediating role of group potency in each of these relations.

# CHAPTER 3: METHODOLOGY

This chapter will present the research design, the study procedure, details regarding the sample and the retained study measures. To conclude this chapter, the statistical analyses that were performed will briefly be summarized.

## 3.1. Research design

This master's thesis is part of a larger project funded by the Social Sciences and Humanities Research Council (SSHRC) and is directed by Caroline Aubé, who is also the supervisor of this thesis. The global research project aimed at understanding the effects of shared leadership on the effectiveness of work teams. This global project has allowed for the collection of several measures pertaining to work teams, notably data regarding shared leadership, group potency and flow experience, which were the core of this master's thesis. This thesis is based on a research that is cross-sectional and quantitative in nature. The participants took part in a simulation of team project management and the data were primarily collected through self-assessment questionnaires and an objective measurement of performance. Participants were students from a university population.

## 3.2. Procedure

The research was based on a team project management simulation named *Pegasus*. The simulation allowed for participants to gain a concrete experience of project management in teams and aimed at recreating an environment that could exist in a "real" workplace. For example, participants had to manage interactions with teammates, deadlines, budget restrictions, time management and information management. Another important aspect of this simulation was to place emphasis on the importance and value of the human in a project. Key success factors in this project were planning and organisation of the project, collecting information, team resources and capacities, team dynamics, management of unpredictable situations, management of key stakeholders and creativity.

The simulation took place on the weekend when participants were not attending regular weekday classes. Participants gathered in a room for the initial explanation of how the simulation would take place. Afterwards, participants were assigned to teams by their course professor and were instructed to come up with a team name. These teams were composed of four to six members. Teams then provided the simulation instructor with their team names. In turn, each team was assigned to a workroom and received the project briefing (at T: Start; see table 3 for a detailed timeline of the simulation day).

In this context, the participants are employees of a fictitious company called *Pegasus International*, which specializes in hazardous materials transportation. The teams are competing to obtain a contract, *project Isotope,* from *ARGON*. The contract stipulates that a successful deliverable would be a vehicle that can transport a hazardous gas. Further specifications as to the gas container dimensions were not provided and the visualisation of the approximate objet size was possible four hours after the simulation start time. The transportation of this object must be completed without any accidents and vehicles must drive on two different types of racetracks. It is with *Méccano* pieces that teams were instructed to build their vehicles. They had access to a variety of pieces ranging from bolts, chassis, transmissions, tires and several other pieces that could be used to build a vehicle. It is important to note that the technical skills required for this simulation were average and that the emphasis is placed on the global functioning of the team throughout the simulation.

Teams had slightly over six hours to complete their tasks and were responsible for time management (i.e. breaks) along with meeting several deadlines. Teams had to deliver several brief status reports, such deliverables were an executive summary, a vehicle design, a preliminary budget and a final budget. All of the deliverables had to be completed and submitted to the director of project from *Pegasus International*.

In their respective rooms, each team had access to a laptop, with which they could use an intranet site entitled "*Méccano Dépôt*". This was a virtual warehouse where the teams could order various automotive parts. Teams also had access to a messaging center via the intranet site through which they could communicate with the simulation instructor.

Teams were each initially given a budget of 475 000$ and had the possibility of purchasing different opportunities of communicating with several specialists. Teams could meet with a variety of professionals:

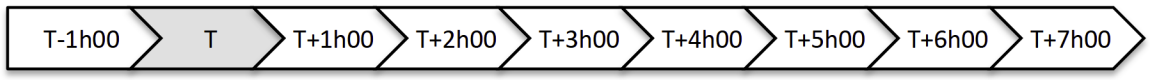
- The director of projects from *Pegasus International;*
- A consultant in project start-ups;
- A specialist in parts demonstration;
- A project planning consultant;
- A consultant in technology;
- The lead engineer of hazardous gases from *ARGON*.

Furthermore, the teams could test drive their transport vehicles on a mock racetrack. They also had the opportunity to see an approximate size of the hazardous gas container. The teams could select any of these aforementioned services, however because of their limited budgets, they could not afford all of these services. Thus, the teams had to make important decisions and manage their budget appropriately. Throughout the simulation, there were certain events that were “unpredictable”, which were presented to destabilize the teams. One example of a destabilizing event was the unavailability of motors and batteries. A budget decrease is another adjustment that occurs in the simulation. In these uncertain situations, the teams had to function and progress with a limited amount of information.

Once the allotted time was over, the teams had to submit their vehicle to the simulation manager, and note of the delivery time was taken. Then, all teams were invited to gather for the final race with the hazardous gas container. Each team had to make their transport vehicle function on two different types of tracks. Both tracks are made up of rubber that is placed on the ground. The first track was flat and did not have obstacles (regular track). As opposed to the first track, the second track was inclined and had several obstacles on it, which increased the degree of difficulty (“all-terrain”). Teams were allowed to make minor adjustments if the vehicle stopped on the track, however there were fines of 30 000$ if the vehicle stopped on the track or if it exited the track. Teams were timed for vehicle speed and were objectively assessed on their performance. Completion of the first track gave access to the second track, therefore

teams must complete the first track. Once the simulation was over, all teams were invited back into the initial meeting room and the simulation manager explained the main simulation themes. Afterwards, the questionnaires were distributed and completed by the participants.

**Table 3. Detailed timeline of the simulation day**




| Time | Action |
|---|---|
| T-1h00 | Participants arrive at the meeting room |
| T: Start | Briefing from the simulation organizer |
| T+1h00 | Offer from a consultant in project start-ups |
| T+1h30 | Access to "*Méccano Dépôt*" (stock shortage) |
| T+1h45 | Offer from a specialist in parts demonstration |
| T+2h00 | Restocking of parts (except for motors and energy sources) |
| T+2h00 | Offer from a project planning consultant |
| T+3h00 | First visit from the client (*ARGON*) |
| T+3h00 | Offer from a consultant in technology |
| T+3h00 | Price increase for parts |
| T+4h00 | Arrival of motor stocks |
| T+4h00 | Availability to set a meeting to preview and try the racetracks |
| T+5h00 | Arrival of the energy sources |
| T+6h00 | Tryouts on the racetracks |
| T+6h45 | Handing in of vehicles and final races |
| T+7h00 | Simulation debriefing and completion of questionnaires |

### 3.3. Sample

Participants were students from HEC Montréal and Polytechnique Montréal who participated in the team project simulation as part of a course requirement. The sample was composed of 730 participants, 345 females (47.3%) and 385 males (52.7%) ranging in age from 20 to 58 years old. Participants ranged in age from 20 to 25 years, which represented 51.4% of the sample, and 25.3% of the sample ranged in age from 26 to 31 years of age. The average team size was five members (4.73) and the participation rate of teams was 99.6%. See table 4 for a summary of sample descriptive statistics.

**Table 4. Summary of descriptive statistics**

| | |
|---|---|
| Gender | |
| Male | 52.7% |
| Female | 47.3% |
| Average age | 27.8 years |
| Average team size | 4.73 teammates |
| Participation rate per team | 99.6% |

Note. $N = 730$ participants in 156 teams.

### 3.4. Measures

The data were collected using self-assessment measures. Quantitative data were collected in order to test the study model and hypotheses. Self-assessment measures were used because the variables under study required for the individuals to evaluate their own experience. A factual measure of team performance was also included, even though the research hypotheses do not make direct reference to this variable. The inclusion of this measure will allow for additional analyses justifying the importance of the current research variables in the work context.

At the end of the simulation, team members were invited to evaluate their experience by completing the questionnaire (see table 12 for a summary of study measures). All measures were in French because this was a francophone sample. The measures for flow experience (Martin & Jackson, 2008) and for group potency (Guzzo et al., 1993) were validated in French in previous studies (Aubé et al., 2014; Rousseau & Aubé, 2013). The shared leadership measure (Wood, 2005) was translated from English to French for the purpose of this study.

### 3.4.1 Shared Leadership

Shared leadership is the propensity of members to share leadership amongst teammates. To measure shared leadership, we used the *Shared Leadership Perception questionnaire* developed by Wood (2005), which has 18 items divided amongst four dimensions: *joint completion of tasks* (9 items), *mutual skill development* (2 items), *decentralized interaction among personnel* (4 items) and *emotional support* (3 items). The items of these four dimensions are presented in tables 5 to 8. Shared leadership viewed under four dimensions would allow for a more detailed understanding of this construct in relation to flow. For all items, participants were asked to rate their simulation experience of shared leadership on a 5-point Likert scale (1= "*Pas du tout vrai*" to 5= "*Tout à fait vrai*").

**Table 5. Shared leadership items for the dimension Joint completion of tasks (Wood, 2005)**

| |
|---|
| 1) Chaque membre de l'équipe collaborait avec les autres pour prendre les décisions concernant notre projet. |
| 2) Chaque membre a contribué à définir la vision du projet. |
| 3) Chaque membre partageait au reste de l'équipe les informations qu'il possédait afin que nous puissions travailler plus efficacement. |
| 4) Chaque membre "mettait la main à la pâte" afin de s'assurer que l'équipe rencontre ses engagements. |
| 5) Chaque membre était imputable envers les autres. |
| 6) Chaque membre de l'équipe partageait les mêmes objectifs dans la réalisation du projet. |
| 7) Chaque membre avait son mot à dire quant à la façon de prioriser l'allocation des ressources de l'équipe. |
| 8) Lorsqu'un problème se présentait, chaque membre contribuait à mettre en place un plan d'action. |
| 9) Chaque membre aidait à identifier, diagnostiquer et résoudre les problèmes rencontrés. |

**Table 6. Shared leadership items for the dimension Mutual skill development (Wood, 2005)**

| |
|---|
| 1) Les membres ont appris des compétences professionnelles grâce aux autres membres. |
| 2) Les membres se sont entraidés à développer leurs compétences professionnelles. |

**Table 7. Shared leadership items for the dimension Emotional support (Wood, 2005)**

| |
|---|
| 1) Une "connexion" existait entre les membres de notre équipe. |
| 2) Les membres ont fait preuve de patience avec les autres membres de l'équipe. |
| 3) Les membres se sont encouragés les uns les autres durant les périodes plus difficiles de la simulation. |

**Table 8. Shared leadership items for the dimension Decentralized interaction among personnel (Wood, 2005)**

| |
|---|
| 1) Il y avait un "ordre hiérarchique" dans notre équipe. (R) |
| 2) Le slogan "chacun pour soi" représente bien notre équipe. (R) |
| 3) Un membre décidait ce que les autres membres devaient faire. (R) |
| 4) Chaque membre était considéré comme étant égal aux autres. |

Note. (R) indicates items that were reversed.

### 3.4.2 Group potency

Guzzo and colleagues (1993) elaborated a measure that assesses group potency, which evaluates the confidence that teammates have towards their team's potential of being successful. This measure holds a total of eight items (see table 9). Similarly to shared leadership items, participants were asked to rate what they thought about their respective teams on a 5-point Likert scale (1= "*Pas du tout vrai*" to 5= "*Tout à fait vrai*").

**Table 9. Group potency items (Guzzo et. al. 1993)**

| |
|---|
| 1) Nous avions confiance en notre capacité de réussir. |
| 2) Notre équipe était capable de faire un travail de très grande qualité. |
| 3) Nous avions le potentiel d'être reconnu comme une équipe hautement performante. |
| 4) Nous étions confiants de pouvoir résoudre les problèmes qui surgissent. |
| 5) Nous pouvions être très productifs. |
| 6) Nous étions en mesure d'accomplir une grande quantité de travail si nous travaillions fort. |
| 7) Nous croyions pouvoir effectuer efficacement les tâches qui nous incombaient même les plus difficiles. |
| 8) Nous pouvions faire bouger les choses. |

### 3.4.3 Flow experience

To measure flow experience throughout the simulation, Martin and Jackson's (2008) 9-item measure was used (see table 10). Therefore, participants were asked to rate their individual perception of flow experience on a 7-point Likert scale (1= "*Fortement en désaccord*" to 7= "*Fortement d'accord*").

**Table 10. Flow experience items (Martin & Jackson, 2008)**

| |
|---|
| 1) Je me sentais suffisamment compétent pour rencontrer les exigences élevées de la situation. |
| 2) Je faisais les choses spontanément et automatiquement, sans avoir à réfléchir. |
| 3) Je savais clairement ce que je voulais accomplir. |
| 4) J'avais une perception assez nette de mon rendement pendant le travail. |
| 5) J'étais complètement concentré(e), « focusé(e) » sur la tâche à effectuer. |
| 6) Je sentais que je contrôlais parfaitement mes actions. |
| 7) Je ne me préoccupais pas de ce que les autres pouvaient penser de moi. |
| 8) Le temps ne semblait pas s'écouler au même rythme que d'habitude. |
| 9) Je trouvais cette expérience extrêmement valorisante. |

### 3.4.4 Team performance

Based on factual criteria, team performance was directly evaluated by a member of the research group. This factual information was based upon the engine performance on both types of track terrains (regular and "all-terrain"). The use of a 7-point scale was used to measure engine performance and corresponded to the team's completion of the two types of tracks (see table 11).

**Table 11. Team performance evaluation scale**

| |
|---|
| 0) No vehicle delivered. |
| 1) Delivered vehicle, but dysfunctional. |
| 2) Delivered vehicle, engine starts but track 1 is unfinished. |
| 3) Completed track 1 with road exit(s). |
| 4) Completed track 1 without road exits, but track 2 is unfinished. |
| 5) Completed both tracks with road exit(s). |
| 6) Completed both tracks without road exit(s). |

### 3.4.5 Control variable: Team size

In this study, team size was controlled because past literature indicates relations between this variable and various team processes (i.e., Hausknecht, Trevor, & Howard, 2009; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008). Team size is negatively related to a team's functioning, in that with larger teams, there is an increased difficulty in maintaining proper processes. Furthermore, large teams represent more possibility for tension between teammates (Campion et al., 1993). In controlling for team size, the effects of this variable on the mediation model will be accounted for.

**Table 12. Summary of study measures**

| *Variables* | Authors | Number of items |
|---|---|---|
| Shared leadership | Wood (2005) | 18 |
| Group potency | Guzzo et. al. (1993) | 8 |
| Flow experience | Martin & Jackson (2008) | 9 |

### 3.5. Statistical analyses

In the following chapter, the results of the statistical analyses will be exposed. Interrater agreement indexes were calculated to ensure the coherence of answers within teams and to justify data aggregation ($r_{wg}$., James, Demaree, & Wolf, 1984). Once data were aggregated, a confirmatory factor analysis was conducted to verify the internal validity of the shared leadership measure. The following analyses were also completed using the aggregated data. The sample descriptive statistics and measures were analyzed. Also, internal consistency was verified with Cronbach's alphas. To test the study hypotheses, correlational analyses and analyses of multiple regression were completed. More specifically, the mediating effects were verified based upon the method proposed by Baron and Kenny (1986).

# CHAPTER 4: RESULTS

This chapter will expose the statistical analyses that were performed in order to test the study hypotheses. All analyses were conducted using SPSS and AMOS. First, data were aggregated. Data aggregation was possible because the within-group interrater agreement indexes ($r_{wgs}$) were strong enough. With the aggregated data, confirmatory factor analyses (CFA) were conducted in order to verify if the measure of shared leadership can be decomposed into four dimensions. Following the CFA, internal consistencies were tested using Cronbach's alphas for each measure. The descriptive statistics for each of the model variables are presented. Finally, correlational and multiple regression analyses were conducted, which allowed for the verification of the mediation model using the Baron and Kenny method (1986).

## 4.1. Preliminary analyses

This section will explore the data aggregation, the confirmatory factor analyses and the descriptive statistics pertaining to this study.

### 4.1.1 Aggregation of data

In the context of this study, team realities will be of interest. Therefore, the data collected on an individual basis were aggregated at the team level. The within-group interrater agreement indexes ($r_{wg}$) were calculated, in order to ensure participant convergence on the team data and to justify the data aggregation. These results allow the assessment of the legitimacy of data aggregation. For three of the four shared leadership dimensions, the $r_{wgs}$ were above .70, indicating that individual data scores can be aggregated with success (James et al., 1984). The dimension of *mutual skill development* had an $r_{wg}$ that was slightly weaker than the established cut-off score ($r_{wg}$ = .68), which may be explained by the fact that this dimension is only composed of two items. See table 13 for interrater agreement indexes ($r_{wg}$).

**Table 13. Means, standard deviations and within-group interrater agreement**

| *Variables* | *M* | *SD* | $r_{wg}$ |
|---|---|---|---|
| Shared leadership (global score) | 4.12 | .32 | .96 |
| Joint completion of tasks | 4.11 | .36 | .93 |
| Mutual skill development | 3.84 | .50 | .68 |
| Emotional support | 4.23 | .38 | .85 |
| Decentralized interaction among personnel | 4.19 | .36 | .98 |
| Group potency | 4.21 | .40 | .93 |
| Flow experience | 5.11 | .44 | .85 |
| Team performance | 2.56 | 1.64 | - |
| Team size | 4.73 | .59 | - |

Note. $N = 156$ teams. *M*: mean; *SD*: standard deviation; $r_{wg}$: within-group interrater agreement. Shared leadership and Group potency were measured using a 5-point Likert scale, Flow experience was measured using a 7-point Likert scale, and Team performance was assessed on a 7-point scale.

### 4.1.2 Confirmatory factor analyses

A confirmatory factor analysis is a type of analysis that allows for the verification of the measure's internal validity. More specifically, a CFA tests the variation of latent variable and how they covary with the indicators (Brown, 2006). The goal of a CFA is to better understand how the items are inter-correlated and how they relate to the measure's construct.

A confirmatory factor analysis was conducted to evaluate the internal validity of shared leadership measure. Thus, the CFA was used to verify whether the shared leadership measure had four distinct dimensions. The four-factor model was compared to a one-factor model, which regroups all the items in one factor. The four-factor model was superior to the one-factor model because it presented better fit indexes.

We used several indexes to compare both models. Comparative fit index (CFI), incremental fit index (IFI) and Tucker-Lewis index (TLI) will all indicate a good fit with score above .90 (Hu & Bentler, 1999). The standardized root mean square residual (SRMR) will indicate a good when the score is less than, or equal to .08 (Hu & Bentler, 1999). Chi-square is an absolute fit index and for this study the model was significant, which indicates a poor fit ($X^2$ = 197.303, p < 0.001). However, all other fit indexes indicate a good model fit (see table 14). Globally, the four-factor model was a superior fit to the data ($X^2$ [129] = 219.42, $p < 0.001$; $X^2/df$ = 1.70; comparative fit index [CFI] = .94; incremental fit index [IFI] = .94; Tucker-Lewis index [TLI] = .92; standardized root mean square residual [SRMR] = .06), thus it can be concluded that it is superior to the one-factor model.

**Table 14. Model fit summary of confirmatory factor analysis for shared leadership**

| Model fit indexes | Four-factor model | One-factor model |
|---|---|---|
| $X^2$ | 219.42* | 360.50* |
| *df* | 129 | 135 |
| $X^2/df$ | 1.70 | 2.67 |
| CFI | .94 | .84 |
| IFI | .94 | .84 |
| TLI | .92 | .82 |
| SRMR | .06 | .07 |

Note. $N$ = 156 teams. $X^2/df$ = ratio chi-squared/ degrees of freedom; CFI= comparative fit index; IFI= incremental fit index; TLI= Tucker-Lewis index; SRMR= standardized root mean square residual.

* $p < 0.001$

### 4.1.3 Descriptive statistics

Measures of overall shared leadership indicated that teams experienced a definite sharing of leadership within the group ($M$ = 4.12; $SD$ = .32). All four dimensions of shared leadership also have strong mean scores: *joint completion of tasks* ($M$ = 4.11; $SD$ = .36), *mutual skill development* ($M$ = 3.84; $SD$ = .50), *emotional support* ($M$ = 4.23; $SD$ = .38) and *decentralized interaction among personnel* ($M$ = 4.19; $SD$ = .36). Notably, the *emotional support* and *decentralized interaction among personnel* dimensions have the most elevated scores compared to the other dimensions of shared leadership. These results indicate that, on average, teammates were supporting each other emotionally, as well as decentralizing their communication to share it amongst each other.

As for group potency, results indicated that teams were confident in a successful completion of the simulation ($M$ = 4.21; $SD$ = .40). The highest score was on the item

*This team had confidence in itself ("Nous avions confiance en notre capacité de réussir.")* (*M* = 4.36; *SD* = .44). The lowest mean score and the highest standard deviation was on *This team expected to be known as a high-performing team* item *("Nous avions le potentiel d'être reconnu comme une équipe hautement performante.")* (*M* = 3.99; *SD* = .54). These results are interesting because they indicate that teams were highly oriented towards being confident in their capacities, all while remaining relatively humble since they did not have high expectations for out-performing the other teams.

The measure of flow experience indicated that teams were experiencing flow during the simulation (*M* = 5.11; *SD* = .44). In looking at the individual items of the flow experience scale, it is noted that the item *I found this experience extremely rewarding* (*"J'ai trouvé cette expérience extrêmement valorisante."*) had the strongest mean score (*M* = 5.75; *SD* = .72). The item *I was not worried with what my teammates might have thought of me* (*"Je ne me préoccupais pas de ce que les autres pouvaient penser de moi."*) had the lowest mean (*M* = 3.71; *SD* = .89). On average, these low scores indicate that participants truly cared about how their teammates perceived them throughout the simulation.

Also, team performance was on average 2.56, meaning that most teams are situated between level 2 performance; the team delivered the vehicle, the engine starts but track 1 is unfinished, and level 3; the team completed track 1 with road exit(s).

## 4.2. Analyses of internal consistency

Afterwards, it was necessary to verify that all items from the measures were properly representing the overall dimension of each given variable. Cronbach's alpha (α) were used, as this is the most widely accepted analysis of fidelity (Field, 2009, p.674). Furthermore, calculation of alphas allows for the determination of the internal consistency coefficients. When alphas are above .70 it can be safely determined that the measure is internally consistent.

All alphas are presented diagonally in table 15. Globally, the alpha coefficient for all four dimensions of shared leadership (IV) was .92. The alpha coefficient for each of the four dimensions of shared leadership range from .65 to .90. For group potency (MV), the alpha coefficient was .96, and for flow experience (DV) the alpha coefficient was .76. All alphas were above .70, except for the shared leadership dimension *decentralized interaction among personnel* (.65). The alpha coefficient associated with this last dimension may have been lower since three of the four items were reversed, therefore the items may not be optimally capturing this dimension.

## 4.3. Verification of the relational hypotheses

Correlational analyses are conducted in order to verify the strength of the relation between the studied variables. Field (2009) explains that Pearson's *r* is calculated by taking the standardized scores of each item, multiplying them in order to get the covariance between the variables. The covariance scores were then divided by the multiplied standard deviations. This calculation will provide an *r*-score that will lie between -1.00 and +1.00. A positive score will indicate that both variables are increasing in the same direction. While a negative score will indicate that one variable increases while the other decreases. If an *r*-score is a perfect +1.00 or -1.00, this indicates that both variables are correlated perfectly. A null score would indicate that the variables do not vary in a linear manner. Also, Cohen (1988) proposes a classification scale for Pearson's correlation results. Thus, a weak correlation is classified as having a Pearson's *r*-score of less than .30. An *r*-score between .30 and .60 is judged as medium, and a score above .60 is considered as a strong correlation.

**Table 15. Correlational analyses and internal consistency coefficients (Cronbach's alpha)**

| *Variables* | 1 | 1.1 | 1.2 | 1.3 | 1.4 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Shared leadership | (.92) | | | | | | | | |
| 1.1. Joint completion of tasks | .95** | (.90) | | | | | | | |
| 1.2. Mutual skill development | .67** | .54** | (.89) | | | | | | |
| 1.3. Emotional support | .83** | .76** | .59** | (.76) | | | | | |
| 1.4. Decentralized interaction | .69** | .55** | .29** | .38** | (.65) | | | | |
| 2. Group potency | .68** | .65** | .57** | .66** | .31** | (.96) | | | |
| 3. Flow experience | .38** | .38** | .33** | .36** | .14 | .50** | (.76) | | |
| 4. Team performance | .09 | .06 | .14 | .07 | .05 | .24** | .21** | - | |
| 5. Team size | -.02 | -.06 | -.02 | .03 | .03 | .03 | .20* | .11 | - |

Note. Cronbach's alphas are presented diagonally.

* $p < 0.05$ two-tailed

** $p < 0.01$ two-tailed

$N = 156$ teams

Results indicate an overall positive correlation between shared leadership and flow experience ($r$ = .38; $p$ < 0.01). Three of the four dimensions of shared leadership had moderate to strong correlations with flow (see table 15); *joint completion of tasks* ($r$ = .38; $p$ < 0.01); *mutual skill development* ($r$ = .33; $p$ < 0.01); *emotional support* ($r$ = .36; $p$ < 0.01). However, the dimension of *decentralized interaction among personnel* was not significantly related to flow ($r$ = .14; $p$ = 0.09). Hypotheses H1, H1a, H1b and H1c are corroborated by the relation between shared leadership and flow experience. More specifically, three dimensions of shared leadership are positively related to flow experience. However, the H1d hypothesis was not accepted.

## 4.4. Verification of the mediation hypotheses

There are certain conditions that must be met in order to successfully corroborate a mediation model. Baron and Kenny (1986) state that there are four conditions that must be verified in order to have a mediation model.

1- There must be a significant correlation between the independent variable and the dependent variable.

2- There must be a significant correlation between the independent variable and the mediating variable.

3- There must be a significant correlation between the mediating variable and the dependent variable.

4- There must be a significant relation between the mediating variable and the dependent variable when the independent variable is controlled for. In order to verify the fourth condition, a multiple regression analysis must be performed. The independent variable and the mediating variable are entered concomitantly. If the independent variable regression coefficient remains significant in this

multiple regression, then a partial mediating effect can be corroborated. A partial mediation indicates that the relation between the independent variable and the dependent variable is not completely mediated by the mediator variable. For a complete mediation, the independent variable regression coefficient must not be significant. In the event of a complete mediation, this indicates that the relation between the independent variable and the dependent variable is completely mediated by the mediating variable.

The first condition of Baron and Kenny (1986) mediation model is met for three of the four dimensions of shared leadership as they were positively correlated to flow experience: *joint completion of tasks* ($r$ = .38; $p < 0.01$), *mutual skill development* ($r$ = .33; $p < 0.01$) and *emotional support* ($r$ = .36; $p < 0.01$). However, the fourth dimension of shared leadership, *decentralized interaction among personnel,* was not significantly correlated to flow experience ($r$ = .14; $p$ = 0.09). Given this last result, the mediation analyses cannot be continued at this stage for this particular dimension. Furthermore, the second condition of Baron and Kenny mediation model is met by the significant positive correlation between shared leadership and group potency ($r$ = .68; $p < 0.01$). Additionally, the third condition of Baron and Kenny mediation model is met by the significant positive correlation between group potency and flow experience ($r$ = .50; $p <$ 0.01), thus the final condition will now be presented.

To verify the fourth condition, a regression analysis was conducted. Only three dimensions of shared leadership could be included in this regression because they were significantly correlated to flow experience (*joint completion of tasks, mutual skill development* and *emotional support*). The fourth condition of the mediation model is corroborated and is complete. As for the results corroborating this condition, the regression coefficient associated to the group potency variable remains significant in the multiple regression ($\beta$ = 0.40, $p < .01$), and the regression coefficients associated to three dimensions of shared leadership (*joint completion of tasks, mutual skill development* and *emotional support)* are not significant (See table 16 for complete results). To summarize, H2d was rejected, therefore the global mediation hypothesis

(H2), which proposed that group potency would mediate the relation between each dimension of shared leadership and flow experience is partially accepted. The mediation hypotheses H2a, H2b, and H2c are sustained by the multiple regression results (see table 17 for summary of relational and mediation hypotheses).

**Table 16. Multiple regression results**

| *Variables* | *β* | *t* | *Signif. of t* |
|---|---|---|---|
| Step 1 | | | |
| Team size | 0.20 | 2.47* | 0.02 |
| Step 2 | | | |
| Team size | 0.19 | 2.74** | 0.01 |
| Shared leadership | | | |
| *Joint completion of tasks* | 0.12 | 1.05 | 0.29 |
| *Mutual skill development* | 0.06 | 0.06 | 0.49 |
| *Emotional support* | -0.04 | -0.33 | 0.74 |
| Group potency | 0.40 | 4.06** | 0.00 |
| Coefficient of determination $R^2$ | 0.29 (%) | | |

Note. *β* indicates standardized regression coefficient; Flow experience is the DV.

** $p < 0.01$; * $p < 0.05$

$N = 156$ teams

**Table 17. Summary of results regarding the relational and mediation hypotheses**

| Hypotheses | | *Accepted* | *Rejected* |
|---|---|---|---|
| Shared leadership is positively related to flow in work teams. | | Partially accepted | |
| *Joint completion of tasks* is positively related to flow experience. | H1a. | ✓ | |
| *Mutual skill development* is positively related to flow experience. | H1b. | ✓ | |
| *Emotional support* is positively related to flow experience. | H1c. | ✓ | |
| *Decentralized interaction among personnel* is positively related to flow experience. | H1d. | | ✓ |
| Group potency mediates the relations between each dimension of shared leadership and flow experience. | H2 | Partially accepted | |
| Group potency mediates the relation between *joint completion of tasks* and flow experience. | H2a. | ✓ | |
| Group potency mediates the relation between *mutual skill development* and flow experience. | H2b. | ✓ | |
| Group potency mediates the relation between *emotional support* of tasks and flow experience. | H2c. | ✓ | |
| Group potency mediates the relation between *decentralized interaction among personnel* and flow experience. | H2d. | | ✓ |

# CHAPTER 5: DISCUSSION

The current chapter will expand upon the results of the statistical analyses. The results will be explained in relation to their respective theoretical implications. The study strengths, as well as the study limitations and the future directions proposed for new studies in this field. The chapter will end with the practical implications to consider and the conclusion.

## 5.1 Return on main results and links to theoretical literature

The study results support relational and mediation hypotheses. Globally, it was posited that shared leadership would be positively related to flow experience, and that group potency would mediate all the relations between shared leadership and flow experience. However, one dimension of shared leadership (*decentralized interaction among personnel*) was not related to flow, therefore the mediating effect of group potency could not be verified for this particular dimension. Nonetheless, shared leadership and group potency were significant predictors of flow experience. Moreover, group potency completely mediated the relations between, on the one hand, the dimensions *joint completion of tasks, mutual skill development* and *emotional support* and, on the other hand, flow experience. Overall, the results support rather well the suggested study model and provide empirical evidence of predictors of flow experience in teams.

### 5.1.1 Relation between shared leadership and flow experience

Correlational analyses revealed that, overall, shared leadership is positively related to flow experience in a team setting. Also, more detailed analyses allowed for the verification of the relations between the four dimensions of shared leadership (*joint completion of tasks, mutual skill development, emotional support,* and *decentralized interaction among personnel*) and flow experience. *Joint completion of tasks, mutual skill development* and *emotional support* were positively related to flow experience. However, the relation between *decentralized interaction among personnel* and flow

experience was not significant. It was expected that shared leadership would be related to flow experience because the teammates would be able to appropriate the simulation tasks and experience it as an autotelic activity (Hooker & Csikszentmihalyi, 2003; Lovelace et al., 2007). Even more, the literature revealed that social situations would be favourable to flow experience because people shared their experiences through emotional contagion. This theory explains the contagious nature of social interactions (Hatfield et al., 1994). Therefore, in teams it is possible that shared leadership was creating an autotelic activity for the participants and allowing for emotional contagion. In the study, shared leadership was present amongst team members, which contributed towards a significant experiencing of flow during the simulation.

### 5.1.2 Group potency mediation between shared leadership and flow experience

Group potency was the construct used in this study to conceptualize team confidence in successfully attaining their goals (Guzzo et al., 1993). The study results support the mediating mechanism of group potency in the relation between shared leadership and flow experience, since all of the Baron and Kenny (1986) mediation conditions were met for three of the four dimensions of shared leadership (*joint completion of tasks, mutual skill development* and *emotional support)*. There was not a significant correlation between the dimension of *decentralized interaction among personnel* and flow experience, therefore it could not be entered in the regression analysis. The lack of a relation between this dimension of shared leadership and flow experience, may be explained by the side effects of misalignment in the simulation work. It is possible that the *decentralized interaction among personnel* generated a lack of alignment in the work during certain moments of the simulation. In other words, there are “too many captains, and not enough sailors”, which could have compromised team functioning, due to the nature of the work and the deadlines that needed to be respected. Therefore, the teams may not have been functioning optimally because the simulation conditions created an increased level of demands that could not be met by the teammates. In relating this to the theoretical background, flow channel could not be accessed in this particular dimension because the simulation environment may have

created too much stress for the teams. Overall, the relations between the three other dimensions of shared leadership (*joint completion of tasks, mutual skill development* and *emotional support*) and flow experience were completely mediated by group potency. Furthermore, when the members of a team estimate that leadership is shared, then this will activate the team confidence mechanism, which will ultimately lead to accessing the flow channel.

Along with being a mediating mechanism, we can sustain that group potency is a predictor of flow experience because of the positive correlational results. Overall, these results also support the flow channel theory since, with higher levels of group potency there is a greater likelihood for flow experience to take place (Nakamura & Csikszentmihalyi, 2005). In other words, the greater teammates feel confident in the success of their team, the more likely they will experience flow. This increased likelihood of flow experience is due to their belief in having the adequate skills to face the challenges present in the simulation. It is proposed that because the teammates sensed confidence in the team, they felt validated for their skills, which encouraged the occurrence of a flow experience.

## 5.2 Study strengths and limitations

In this section, the study strengths and limitations will be presented in order to allow future studies to control for shortcomings, along with expanding and improving the current study results relating to flow experience in teams.

### 5.2.1 Study strengths

The first study strength is the sample size ($n$ = 730 participants; $n$ = 156 teams) since other empirical studies are smaller in comparison ($n$ = 85 teams, $n$ = 395 participants, Aubé et al., 2014; $n$ = 398 participants, Bakker, Oerlemans, Demerouti, Slot, & Ali, 2011; $n$ = 135, $n$ = 45 teams, Heyne et al., 2011; $n$ = 45 participants, Ryu & Parsons, 2012; $n$ = 250 participants, $n$ = 50 teams, Salanova et al., 2014). Also it is important to note that in research on teams, there is a difficulty in having large sample

sizes since one team, composed of several individuals, is equivalent to one subject. On the contrary, in studies on individuals, one individual is equivalent to one subject, thus larger sample sizes are easier to attain.

The second study strength is the methodology, which included a factual measurement of performance, along with self-assessment questionnaires. The use of an objective measure helps control for the common bias variance, which may artificially amplify the correlation scores (Podsakoff, MacKenzie, & Lee, 2003). The inclusion of a factual measure of team performance will minimize this bias for the statistical analyses in which it is included.

A third strength was the use of a multidimensional measure of shared leadership. The purpose of using Wood's (2005) measure of shared leadership was to allow for a more nuanced analysis of the relation between shared leadership and flow experience. The use of a multidimensional measure allowed us to observe that certain dimensions of shared leadership were more associated to flow than others.

A fourth study strength is the ecological validity of the study. This study has ecological validity because the simulation realistically reproduces a true team project management context. Notably, the teams were submerged in a work team environment from the beginning of the study. The teams were presented with a detailed mandate and there was the presence of constraints such as time, budgets, deliverables and unforeseeable events, which created an authentic simulation of a work environment.

### 5.2.2 Study limitations

The first limitation of this current study was the sample composition. The sample was composed of university students. The use of university samples in research is criticized because they cannot be generalized to the larger population since it is not primarily constituted of university students (Peterson, 2001; Sears, 1986). Sears (1986) originally called this type of sample a "narrow database" because university students do not have completely crystallized personalities, they are more obedient to authority and they have unstable social relationships. Peterson (2001) reveals that university samples

are more homogeneous, thereby indicating an attenuation of potential relations between variables. Peterson (2001) notes that using this type of study sample should be done cautiously because of the implications for internal and external validity in social sciences research. Also, he suggests that studies should be replicated in a non-student environment in order to observe any changes in results. However, in this study, age of participants was relatively high, which may suggest that they have work experience. Even more, the study had ecological validity, which re-created rather well a realistic work environment.

The second study limitation was the use of self-assessment measures. Often times, a participant may complete a self-assessment questionnaire with answers that portray the best possible results. This is called social desirability bias since the participant will over-evaluate their performance, or their opinions because they want to protect their self-concept (Campbell & Sedikides, 1999; King & Bruner, 2000). Campbell and Sedikides (1999) noted that individuals will protect the image they have created (self-concept) of themselves at any extent. Ultimately, the participant will want to preserve their self-esteem. As a result, the self-assessment questionnaires may be biased because participants are distorting their questionnaire answers. However, the participants (team members) remain in an ideal position to evaluate the study variables, especially group potency and flow experience, since these are psychological states and can be evaluated with difficulty by a third party.

The third limitation of this study is the cross-sectional design. This design does not provide information concerning causality and relation direction. Shared leadership and group potency have been identified and supported as predictors to flow, but the direction of these relations cannot be confirmed. Theoretically, the direction would be as proposed by this study model (shared leadership, group potency, then flow experience), however this would have to be confirmed with the appropriate follow-up study. It would be informative to attempt to recreate this research setting with a longitudinal design study in order to understand how the variables act over a longer period of time. Even more, it would be interesting to recreate this study with an experimental design in order to make inferences regarding the relations.

Finally, the study simulation had good ecological validity, however it may be possible that not all inherent factors of project management found in an organizational environment could have been reproduced. For example, the simulation may not have been able to reproduce the entirety of the political environment that is usually present in an organization (Ferris et al., 2007; Vigoda-Gadot & Vashdi, 2012). Another example pertains to team maturity, the teams in this simulation were formed for a short period of time, contrary to the longer existence of a team in an organization. Taken together, these are examples of inherent factors that were not as well portrayed by this simulation, therefore reducing the generalizability of the results.

## 5.3 Future research directions

The results of this current study have provided several different paths to explore. Flow experience and its potential relation to different types of leadership, team development, neuroscience, and study environments will be presented in the following section.

### 5.3.1 Flow and leadership

Future research directions that could provide added information regarding flow experience in teams should pertain to varying types of leadership. It would be informative to conduct a study to determine which types of leadership would be most conducive to flow experience, for example transformational transactional, laissez-faire or charismatic. Given the results of this study, it is expected that any type of leadership that enhances group potency would most probably enhance the likelihood of flow experience.

Transformational leadership may be a good candidate as a type of leadership that enhances flow experience as it encourages members to develop their mental skills, thus performing at a higher level and in a collective manner (Avolio & Gardner, 2005; Avolio, Walumbwa, & Weber, 2009; Gardner, Avolio, Luthans, May, & Walumbwa, 2005; Sosik, Kahai, & Avolio, 1999). It is proposed that if the leader is able to

encourage healthy psychological mindsets, such as flow experience, then there may be more positive outcomes. Furthermore, this type of leadership works on encouraging intrinsic motivation, which is part of the essence of flow experience.

Leadership styles that may be favourable to flow experience would need to include emotional intelligence. Cacioppe (1997) characterized great leaders as individuals who have intellectual intelligence, but even more importantly who have emotional intelligence. Having both types, allows for the leader to be aware of their interior and exterior environments. Cacioppe (1997) explains that successful leaders are those who are able to experience flow. Therefore, it may be important in leadership for the leaders to be aware of the conditions that can stimulate flow, as well as be sensitive to co-worker's emotions. If the leader is attentive of their co-workers, then he could help them to attain flow experience by creating the conditions that will favour flow experience. In addition, if the leader is experiencing flow then the co-workers may also experience flow through emotional contagion (Hatfield et al., 1994).

Flow experience has also been proposed as an outcome of self-leadership (Lovelace et al., 2007). Self-leadership is a type of leadership that is determined by personal motivation, ability to deal with stressors and complete tasks effectively. Although this is not a collective level leadership, it could also be used to encourage others in a collective setting to use their skills to experience flow. Thus, it may be interesting to further study flow experience in teams by investigating the possibility of self-leadership or transformational leadership to predict the likelihood of flow in teams.

### 5.3.2 Flow and team development

Another aspect that could be further developed is the evolution of teams over time and how it can impact flow experience. Tuckman (1965) had proposed a model for small team development, which is composed of stages that affect the social and task aspects of the team. These stages are important for teams to progress over time. These four stages are forming, storming, norming and performing. Briefly, forming is characterized by the teammates becoming acquainted with each other and trying to get along. The second stage is storming and it is when teammates begin to feel enough trust

in order to express their disagreement. The third stage is norming, which is when the team truly begins to share similar thoughts and aims their efforts towards common goals. The final stage is performing, it is characterized by smooth internal functioning and the production of successful outcomes, however not all teams access this stage. In the norming and performing stages, there is an increased sense of sharing of leadership. Similarly, shared leadership is increasingly present in teams that are more mature. Therefore, future studies can look at how shared leadership evolves in teams over time, as well as determine the impacts on flow experience since the relation between these variables has been supported by the current study. Altogether, it could be reasoned that with team evolution and maturity, shared leadership and flow experience would also develop over time.

### 5.3.3 Flow and neuroscience

As previously stated, the activation of mirror neurons may be the physical foundation of the emotional contagion theory (Gallese, 2001; Hatfield et al., 1994; Heyes, 2010; Iacoboni, 2009; Oberman et al., 2007). The study results support the existence of sharing flow experience in a team context, which would indicate that a physical basis is being stimulated in these types of situations. Future studies could look at brain chemical levels post-flow in teams. The brain is receptive to the situation and if the simulation was a positive experience then it could be activating the brain's reward center (Berridge, 2000, 2003). Much like any pleasurable experience, once the brain is receiving stimulation from rewarding neurochemicals (neurotransmitters), such as dopamine, then the individual will be enticed to experience the validating situation once more (Schultz, 2010; Spanagel & Weiss, 1999). Taken altogether, flow is an experience that will be sought after in order to recreate the benefits of it and it will validate the efforts that were produced throughout the situation. Additionally, there could be future studies looking at the potential relation between flow experience and mirror neuron activation.

Currently, preliminary studies indicate that neuroscience could be pertinent to understanding flow experience (Dietrich, 2004; Klasen, Weber, Kircher, Mathiak, &

Mathiak, 2012; Nacke & Lindley, 2008). Psychophysiological measures for example, electroencephalogram (EEG), functional magnetic resonance imaging (fMRI) and electromyography (EMG) have been used to assess flow in participants on a solitary basis (Klasen et al., 2012; Nacke & Lindley, 2008). However, it could be relevant to look at flow in teams where the participants would have worked together as a team in order to reach a specific goal. Psychophysiological measures could be used to determine which areas of the brain are most active during the simulation and would allow for brain activation mapping. Therefore, this type of study would allow for the measurement in brain activity in a team simulation context, allowing for a deeper understand of flow in teams.

### 5.3.4 Flow and different study environments

Furthermore, given that this master's study was conducted in a university setting, the next logical study environment would be in the workplace (in the "real world"). Studying teams in the workplace would generate a more complex analysis. Additionally, by studying a "real" environment, it can be understood how teams have to manage different types of stressors. In this project simulation, the teams were subjected to external pressures, such as deadlines, budgets and resources constraints. However, in the "real" work environment there exist several other stressors. For example, there may be a political context at work that adds pressure on the team's performance. Therefore, it would be valuable for future studies to take into consideration a wider variety of external stressors in order to be as representative of the "real" work environment as possible.

It has also been suggested that flow in teams should be further explored in different types of work team contexts (Aubé et al., 2014). Seeing as the current results are favourable towards flow in a traditional type of work team context, it would be beneficial to extend this context to the virtual workplace because many are transforming or expanding into this direction (Cascio, 2000). Many work environments are more supportive of telework, which is the ability to work from home, or from an area that is not the physical company office building (Beranek & Martz, 2005). Another aspect that

contributes to telework is overall globalization of companies, which pushes employees to collaborate on an international scale (Bergiel, Bergiel, & Balsmeier, 2008). These increasingly present circumstances necessitate for an understanding of the conditions that can contribute to this type of work context (Peters & Manz, 2007). In relating flow to these new work team contexts, it is evident from the literature, that social interactions can favour flow experience (Csikszentmihalyi & LeFevre, 1989; Hoffman & Novak, 2009; Jackson, 1995; Lin & Joe, 2012; Walker, 2010). Therefore, the premise for flow in telework environments would require for teammates to create consistent forms of communication, such as the use of e-mail, video chat (Skype) and phone conversations. These types of communication would stimulate a sense of connection and could increase the likelihood of shared leadership in teams (Hooker & Csikszentmihalyi, 2003; Pearce & Sims, 2000). Nonetheless, this field represents an area that requires additional studies in order to understand the particularities related to flow experience.

## 5.4 Practical implications and conclusion

This discussion would not be complete without considering the practical implications related to the results of this study. These results are new additions to the literature on flow in work teams and have concrete applications in the workplace. Overall, there are implications for leadership, team confidence and flow in teams. Most importantly, it is essential to understand how predictors can enhance the likelihood of flow in teams. Ultimately, this section will conclude this master's thesis.

At the practical level, the study results indicate that in work teams there should be a decentralization of the power in order to allow for individual teammates to experience flow. Shared leadership would be favourable for employees to feel as though they have a degree of control over the situation and that their work environment has the potential to be intrinsically rewarding. Even more, shared leadership can give access to the multitude of benefits that are associated with flow experience.

Pearce and Sims (2000) explain that shared leadership is likely to occur if team characteristics, task characteristics and environmental characteristics are in place. Team characteristics are related to the teammates, the team size and familiarity. Task

characteristics correspond to the degree of task complexity, creativity, and time allotment. Environmental characteristics are related to the available support and feedback. These three categories of predictors of shared leadership are similar to the flow predictors that have been proposed in the literature review, since both treat the task and environmental aspects of the workplace, thus there may be a relation with flow experience. As a reminder, in the literature review, the predictors for general workplace flow were task and work environment characteristics (clear goals, clear and timely feedback, task requirements and social situations), as well as flow in teams with internal functioning aspects. In considering the study results, the three categories of predictors (team characteristics, task characteristics, and environmental characteristics) proposed by Pearce and Sims (2000) favour the emergence of shared leadership. More specifically, given the relation between shared leadership and flow experience it may be possible that once these shared leadership predictors are in place, it could increase the occurrence of flow experience through the activation of shared leadership.

The study results indicate that group potency is an antecedent of flow and a key mechanism of the relation between shared leadership and flow experience in teams. The implications for the workplace are important because certain factors could favour the stimulation of group potency. Therefore, knowledge as to the predictors of group potency can be highly valuable. It has been noted that group potency is especially stimulated when there is management support, group cohesion, and functional diversity (De Jong, De Ruyter, & Wetzels, 2005; Lee, Tinsley, & Bobko, 2002). In other words, there are predictors pertaining to external and internal factors of the team that can stimulate group potency. The first is management support, which stimulates group potency because it represents the capacity for management to provide the necessary resources and bridge the gap between the team and the organization. Therefore, the teams will feel more confident since their superiors support them. The second predictor is group cohesion which represents the degree of unity of a team (Lee et al., 2002). In other words, the more teammates feel like a close unit, the more they will have confidence, furthermore group cohesion will increase the adoption of shared mental models, or norms. Another predictor of group potency is functional diversity, which supports a team composition that includes people with different skill sets, since as a

whole, the team will be capable of dealing with a wider variety of situations. Taken together, it is important for these aspects to be considered in the workplace because they could be encouraged in order to stimulate group potency, and flow experience as a result. Consequently, group potency is related to flow experience, therefore by stimulating these predictors of group potency the likelihood of flow experience can also be heightened.

An interesting implication for managerial practices would be to sensitize employees to flow experience. This type of sensitization could be executed through the elaboration of a training session on flow experience. Employees could be instructed as to the precursors of flow experience, afterwards the training can enlighten the employees as to the particular precursors of flow in teams, and finally the multiple benefits for the teams and the individuals can be presented. Even more, it would be essential for managers to encourage teams to adopt shared leadership, or a style of leadership that is participative and decentralizes authority. Also, the teams would need the necessary confidence in order to reach the team goals. Thus, the managerial implications are closely related to sensitization towards the current state of the literature regarding flow experience. Altogether, education and training regarding these topics would create a combination of factors that could maximize the likelihood of flow experience in teams.

Essentially, flow has been linked to several benefits for teams in the workplace, such as increased productivity, engagement and creativity (Aubé et al., 2014; Heyne et al., 2011; Hooker & Csikszentmihalyi, 2003; Ryu & Parsons, 2012). Considering the multiple positive consequences stemming from flow experience, the objectives of this study were to develop and test an inclusive model concerning the predictors of flow experience in teams. The lack of empirical information regarding flow experience predictors in work teams, and the increased use of work teams in organizations justified the interest in studying this topic.

The current study aimed at determining if shared leadership and group potency were predictors of flow experience. Interestingly, the results indicated that three of the four dimensions of the multidimensional conceptualization of shared leadership (*joint completion of tasks, mutual skill development* and *emotional support*) were related to

flow experience. The study results bring about the importance of considering leadership styles in teams because they can be particularly conducive to stimulating flow. As determined by the results, group potency (team confidence) mediated the relations between the three dimensions of shared leadership (*joint completion of tasks, mutual skill development* and *emotional support*) and flow experience. Team confidence allows teammates to access flow channel since the teams have the correct levels of confidence in their skills. Therefore, confidence in their skills allowed for the teams to manage the challenges presented during the project simulation, thus accessing the flow channel (Nakamura & Csikszentmihalyi, 2005).

Nonetheless, future studies could continue developing an integrative model of the nomological network of flow experience in work teams, since there have not been any theoretical, nor empirical initiatives regarding the integration of both antecedents and consequences of flow in this context. Thus, with the creation and testing of a nomological network it would be possible to include several different constructs and to verify their interconnected relations. Testing a nomological network of flow experience in work teams would entail the verification of alternative predictors and different constructs as potential mediating mechanisms, as well as the various consequences of this psychological state.

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