



Business Research Unit (BRU-IUL)

Antecedents and Consequences of Collective Psychological Ownership

Ana Paula Giordano

Thesis submitted in partial fulfilment of the requirements for the degree of
Doctor in Management, Specialization in Human Resources and Organizational
Behavior

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Abstract

Abstract

We investigate Collective Psychological Ownership (CPO), a feeling of collective possessiveness toward organizational objects without formal assertion of this ownership (that is, we feel this is “ours”). Specifically, we focus on the Ownership Activating Experiences (OAEs) as antecedents of CPO toward teamwork products and their role in the development of CPO, both at the individual and team levels.

For that, we develop and test a scale to measure the three OAEs, initially proposed as crucial routes to the emergence of CPO by Pierce and Jussila (2010): control, investment, and knowledge. We also study CPO consequences, including team effectiveness evaluations, team turnover intentions, and championing intentions. Finally, we explore team membership change and its effect on CPO.

Our findings show that CPO mediates the relationship between investment in and intimate knowledge regarding the product and important team outcomes, at the individual level. At the team level, the OAEs form a global (unidimensional) construct and adding a new team member has a negative relationship with the OAE and the formation of CPO.

We also provide insights into CPO as an emergent state by proposing a process for its emergence at the team level and discussing the role of team dynamics based in the OAE and team identification. We highlight the importance of CPO to team effectiveness and the crucial role played by the OAE. In doing so, this work contributes to theory regarding both psychological ownership and teams and suggests important directions for future research in the intersection of both areas.

Keywords: Collective Psychological Ownership, teams, emergent state, team membership change

PsycINFO Classification Categories and Codes: 3660 Organizational Behavior; 3020 Group & Interpersonal Processes

Resumo

Resumo

Este trabalho centra-se no constructo Collective Psychological Ownership (CPO), um sentimento de posse coletiva em relação aos objetos organizacionais sem que haja uma formalização dessa propriedade. Especificamente, estudamos as Ownership Activating Experiences (OAEs), isto é, experiências de ativação de propriedade como antecedentes do CPO em relação aos produtos do trabalho em equipa e o seu papel no desenvolvimento do CPO, tanto ao nível individual como da equipa.

Primeiramente, desenvolvemos e testamos uma escala para medir as três OAEs: controlo, investimento e conhecimento. Adicionalmente, estudamos as consequências do CPO, incluindo avaliações de eficácia da equipa, intenções de saída da equipa e intenções de defesa do produto do trabalho. Por fim, exploramos a mudança de membros da equipa e seu efeito no CPO.

Ao nível individual, o CPO medeia a relação entre investimento e conhecimento sobre o produto e importantes resultados da equipa. Ao nível da equipa, verificou-se que as OAEs formam um constructo global (unidimensional) e que a entrada de um novo membro nas equipas tem uma relação negativa com as OAE e a formação de CPO.

Neste trabalho contribuímos para a elucidação do CPO enquanto estado emergente, propondo um processo para seu surgimento ao nível da equipa, envolvendo as dinâmicas da equipa baseadas nas OAE e na identificação. Salientamos também a importância do CPO e das OAE para a eficácia da equipa. Assim, este trabalho contribui para a teoria dos sentimentos propriedade psicológica nas equipas e aponta para a importância de investigação futura na ligação entre ambas as áreas.

Palavras chave: Collective Psychological Ownership, equipas, estados emergentes, team membership change

Classificação e códigos PsycINFO: 3660 Organizational Behavior; 3020 Group & Interpersonal Processes

Extended summary

Extended Summary

In this PhD thesis we explore Collective Psychological Ownership (CPO) both theoretically and empirically. The term psychological ownership (PO) is defined as employee feelings of personal ownership toward organizational targets (e.g., jobs, organization, projects) without the formal assertion of ownership (Pierce, Kostova, & Dirks, 2001). In this research we specifically explore CPO toward teamwork products (that is, we feel this work product “ours”) (Pierce, Kostova, & Dirks, 2001).

We open the thesis by presenting the motives underlying PO, which make it an integral part of the human experience, by highlighting explanations based on both social cognition and also on the needs for affectance and identity. In alignment with these propositions, CPO is proposed to emerge through one or more specific experiences relating to the target of ownership: having control over the target, having invested part of the self into the target, and having intimate knowledge about the target (Pierce & Jussila, 2010), that in our work we have termed Ownership Activating Experiences (OAE).

In two empirical chapters, we study the emergence of CPO at the individual and team level and also CPO consequences at the individual level of analyses. In the first empirical chapter, we validate measures for the three OAE using two samples of individual team workers. Additionally, we use surveys in two multiwave designs to show that team workers’ feelings of CPO mediate the relationship between investment in and intimate knowledge regarding the product and team effectiveness evaluations, team turnover intentions, and intentions to champion the work product. In a study with 48 teams, CPO was also predicted by the OAEs, at the team level.

In the second empirical chapter, in two studies we investigate the relation between team members’ feelings of CPO and team members’ response to team membership change, both as an individual response and as a team emergent state. Our findings show that team membership change (through adding or removing a member) has a detrimental impact on individual feelings of CPO. CPO mediates the relationship between team membership change and team effectiveness outcomes in a scenario study. In an experimental lab study, results show that, at the team level, team membership change by adding a new team member negatively impacts the OAE and consequently the emergence of CPO.

In closing, this thesis highlights that in a modern workplace increasingly characterized by physical distance among team members, more than ever we need to encourage team members to acknowledge the contributions of other team members as an important way to nurture feelings of CPO within teams, in both virtual and face-to-face interactions. Organizations need to make sure that employees interact in relation to shared products and are aware of the contributions of their fellow team members, in relation to both tangible and intangible work products. When team members share important experiences in relation to a teamwork product, feelings of “me and mine” will become feelings of “us and ours.”

Keywords: Collective Psychological Ownership, teams, emergent state, team membership change

Sumário alargado

Sumário alargado

Neste trabalho, explora-se teórica e empiricamente o conceito de Propriedade Psicológica Coletiva ou Collective Psychological Ownership (CPO), especificamente a CPO em relação aos produtos do trabalho em equipa. O termo Propriedade Psicológica ou Psychological Ownership (PO) é definido como sentimentos de propriedade dos colaboradores em relação a objetos organizacionais (e.g., função, organização, projetos) sem que haja uma formalização desta propriedade (Pierce, Kostova & Dirks, 2001).

Começamos por apresentar os motivos subjacentes à PO, que a tornam parte integrante da experiência humana, destacando as explicações baseadas na cognição social e também nas necessidades de efetividade e identidade. Em alinhamento com estas, propomos que a CPO surja por meio de uma ou mais experiências específicas relativas ao objeto da propriedade: ter controlo sobre o objeto, ter investido parte do *self* no objeto e ter conhecimento íntimo sobre o objeto (Pierce & Jussila, 2010), que neste trabalho denominamos de Experiências de Ativação de Propriedade ou Owneship Activating Experiences (OAE).

Nos dois capítulos empíricos, estudamos o surgimento de CPO ao nível individual e da equipa e exploramos as consequências de CPO ao nível individual de análise. No primeiro capítulo empírico, validamos medidas para as três OAE usando duas amostras. Adicionalmente, em dois estudos longitudinais, mostramos que os sentimentos de CPO dos membros das equipas medeiam a relação entre investimento e conhecimento íntimo e as avaliações de eficácia da equipa, intenções de saída da equipa e intenções de defender o produto do trabalho. Num estudo subsequente com 48 equipas, a CPO também foi prevista pelas OAEs, ao nível da equipa.

No segundo capítulo empírico, com dois estudos, investigamos a relação entre os sentimentos de CPO e a resposta à mudança de membros da equipa, tanto como resposta individual, quanto como estado emergente da equipa. Os nossos resultados mostram que a mudança de membros pertencentes à equipa (através da adição ou remoção de um membro) tem um impacto negativo nos sentimentos individuais de CPO. O CPO medeia a relação entre a mudança de membros da equipa e os resultados de eficácia da equipa, no estudo de cenário. No estudo em laboratório, os resultados mostram que, ao nível da

equipa, a mudança de membros da equipa através da adição de um novo membro, afeta negativamente as OAE e, consequentemente, o surgimento da CPO.

Como conclusão, esta tese destaca que, nas organizações modernas, pautadas cada vez mais pela distância física entre os membros das equipas, precisamos mais do que nunca de incentivar os colaboradores a reconhecerem as contribuições de outros membros da equipa como uma forma importante de nutrir sentimentos de CPO, tanto nas interações virtuais como nas presenciais. As organizações deverão promover uma interação clara de todos os membros da equipa e que todos os membros estejam cientes das contribuições dos colegas em relação aos produtos tangíveis e intangíveis do seu trabalho. Quando os membros da equipa compartilham experiências importantes em relação a um produto do trabalho em equipa os sentimentos de "eu e meu" poderão assim transformar-se em sentimentos de "nós e o nosso".

Palavras chave: Propriedade Psicológica Coletiva, Collective Psychological Ownership, equipas, estados emergentes, team membership change

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Overview of the dissertation

Overview of the dissertation

Researchers have proposed that high performing teams experience feelings of “us” and “ours” with respect to team and teamwork outputs, termed Collective Psychological Ownership (CPO; Pierce & Jussila, 2010). However, the paths that lead to CPO were still not operationalized, measured, and related to other constructs within the team literature. Given the individual level benefits displayed by employees who express strong feelings of ownership over their work products (e.g., Van Dyne & Pierce, 2004), there is a strong theoretical rationale to justify investigating CPO and its impact on team outcomes. This is the central motive behind this dissertation, guided by the following research questions:

1. What is the role of control, investment and knowledge in the development of feelings of CPO?
2. What are the consequences of CPO for team effectiveness?
3. What is the effect of team membership change in CPO?

From a managerial point of view, encouraging employee feelings of CPO over work products may be an important strategy to promote collective efforts and commitment to team objectives. In today’s rapidly changing organizations, where employees frequently change team membership, feelings of collective ownership toward work products could be an important leverage point for managers to increase collective efforts and commitment to team objectives. Research on CPO in teams is, therefore, important for both theory on employee feelings of ownership and team emergent states, and also for organizations interested in improving team management and performance through feelings of “us” and “ours” in work teams.

This dissertation is organized in two parts. The first part includes the abstract and executive summary of the dissertation and also, the present overview of the thesis, the main research questions and studies of this work. In the second part is the main body of work of this thesis, composed by four chapters. In Chapter 1, we overview the main theories in which this dissertation is grounded, relating to the psychology of possession and to team effectiveness, processes, and emergent states. Chapters 2 and 3 present the empirical work from this research.

Table 1 summarizes the main objectives of the six empirical studies on Collective Psychological Ownership antecedents and consequences, presented in these two chapters written in research paper format.

Table 1 - *Summary of empirical chapters*

Chapter	Research question	Reference/Aimed journal
2- Antecedents and Consequences of Collective Psychological Ownership: The Validation of a Conceptual Model	What is the role of control, investment and knowledge in the development of feelings of CPO? What are the consequences of CPO for team effectiveness?	Giordano, A. P., Patient, D., Passos, A. M., & Sguera, F. (2020). Antecedents and consequences of collective psychological ownership: The validation of a conceptual model. <i>Journal of Organizational Behavior</i> , 41(1), 32-49. https://doi.org/10.1002/job.2418
3 - “This is our idea!”: The impact of team membership change in Collective Psychological Ownership and team effectiveness outcomes	What are the consequences of CPO for team effectiveness? What is the effect of team membership change in CPO?	“This is our idea!”: The impact of team membership change in Collective Psychological Ownership and team effectiveness outcomes. Aimed for the <i>Human Resource Management Journal</i>

In chapter 2, we investigate antecedents and consequences of CPO. As no prior scale existed for the OAE proposed by Pierce and Jussila, it was necessary to first develop and validate a scale that captured its three dimensions: control over, investment in, and knowledge regarding the target of ownership. Specifically, in Study 1, we validate measures for each of the proposed experiences and test the factor structure in two different samples. In Study 2, we assess the impact of the OAE (measured at T1) on feelings regarding CPO (T2). In Study 3, we use a three-wave design to test the mediating role of CPO on the relationship between the OAE and important team outcomes. In Study 4, we use a referent-shift consensus composition model (Chan, 1998) to study CPO as a team “shared sense”. In chapter 3, we study a contextual factor that may affect the development of feelings of CPO – team membership change – in both a scenario study (Study 1) and an experimental study (Study 2).

Finally, we conclude this dissertation with chapter 4, a general discussion of all the studies and findings where we shed a light on the importance of CPO in the future of work and of teams. The final section of this document lists all the references used in the dissertation.

Chapter I

Theoretical introduction

“Meum and tuum have rendered the world, and the noise of their quarrel reverberates everywhere, without end.”(Rudmin, 1991, p. 85)

Introduction

As we navigate our physical and social environments, we constantly interact and create relationships with relationships with people, objects, spaces, and even rules – usually without noticing. These relationships are reflected in the language we use to refer to them – personal and possessive pronouns, such as “mine”, “ours”, and “theirs”. These relationships connect us to material and immaterial objects (e.g., a car versus an idea) and can be based in actual property (e.g., ownership as the result of the purchase of land) or subjective experiences (e.g., feelings of ownership towards your neighborhood park). In this research, we focus on the subjective dimension of ownership – that is, the relationship we create with material and immaterial objects even without formal assertion of this ownership.

But why do we create these relationships even with objects we do not legally possess? Indeed, our world was built on property disputes (Rudmin, 1991) and for more than a century, scholars have debated the origin of these possessory relationships. We begin this chapter of the dissertation by reviewing literature on the concept of ownership. Although we do not delve in detail into this discussion, we review two arguments for the origin of feelings of ownership: ownership behavior as the result of evolution and ownership behavior as a result of socialization. Following Furby (1974), we propose causal affectance as a primary motivational foundation for the experience and development of feelings of ownership. Additionally, affective and identity related motives for developing feelings of ownership are overviewed. Following that, we will overview the concept of Psychological Ownership (PO), as it was introduced to the organizational behavior field by Pierce, Kostova and Dirks (2001). We conclude this literature review by introducing the concept of Collective Psychological Ownership (CPO) in teams and its importance to teamwork.

Psychological Ownership

The origin of feelings of ownership

Arguments for the innate nature of ownership-related behavior note evidence of property behavior by primitive humans due to its reproductive advantage, the presence of such behaviors in nonhuman species and also the universality of such behavior in all human societies. Beaglehole (1932), one of the first psychologists to use an anthropological approach to study the psychology of possession, suggested an innate psychological basis for property. He argued that humans have a tendency to integrate part of the self with objects they use and proposed that this was a basic characteristic of humans¹, albeit one shared with other animals. Scholars have found the drive to use and control objects to be a basic human drive that is universal and essentially unlearned. Defending one's physical self, domicile, food and territory is clearly a reproductive advantage. Property identification and marking behavior can be traced back to the first known use of written language, showing that human writing may have evolved in part due to the reproductive advantage of marking and transferring property (Ellis, 1985).

Two major arguments are presented for the socialization aspect of ownership behavior: the enculturation of ownership principles from parents to children and the organization of society that institutionalizes property as a social cognition. Following the work of Beaglehole (1932), Furby (1978) examined in different societies the socialization practices which children experience that contribute to adult behavior toward property. In particular, Furby examined the techniques used by adults to enculturate children's attitudes and cognitions towards property. She found five common themes. First, children observe disputes among adults around the boundaries of the land. Second, children observe or experience public ridicule of those with very little or those that do not share. Third,

¹ Nevertheless, the author also points out that the existence of ownership behaviors can also be shaped by environmental influences and social forces (i.e., established cultural patterns of the group that depend on historical and economic factors).

children experience punishment when breaking other's possessions and when they do not share. Fourth, children manage their own finances. Finally, children hear stories and fables about working hard to earn possessions, and about sharing. Additionally, and referring to the work of Mead (1930, cit.in Furby 1978), Furby explains that when children first learn to walk, adults and other children react with behaviors aimed at preventing damage to property. These behaviors include physical punishment and verbal admonitions, such as, "that's mine and not yours", or "don't touch what does not belong to you".

Rudmin (1991) said that as we are socialized to these constraints of property, ownership become a perceptual phenomenon, echoing Berkley (1710) who stated that "To own is to perceive to own". Rudmin (1991) refers to humans as geographic beings (we must be located and move on the surface of the planet) and utilitarian beings (we create and depend upon objects). Hence, we adapt our behavior according to where our property rights reside and expect others to do the same. The social cognition perspective of possession resides on the principle that our social world and its property structures are internalized in shared perceptions. Rudmin (1991) argues that the institution of property, that strongly guides our behavior, is relatively invisible: "Such internal acts of consent vastly outnumber those of quarrel. (...) We generally feel quite free as we keep to narrow sidewalks and roadways, as we live and work in the rooms to which we have keys, and as we make do with our own possessions or ask permission (...)" (p. 85-86).

Motivational aspect of ownership behaviors

Two main motivational roots are proposed by scholars to explain the development of feelings of ownership in humans that are affectance and identity related, in their nature. The need for affectance is pointed out as a motivational root for the development of feeling of ownership in relation to objects that we manipulate. Additionally, identity needs are point out as an explanation for the development of feelings of ownership as objects can be a symbolic representation of a person's identity and can also fulfil a need for having place.

Affectance roots

Furby (1978b) defines one's ability to affect the environment as a central and defining characteristic of possession: "The possibly universal desire to experience causal efficacy leads to attempts to control objects in one's environment. Further, since one's concept of self is at least partially defined by that which one controls, it is hypothesized that possessions are one constituent of a sense of self – that are experienced as an extension of the self." (p. 331). Following Seligman's (1975 cit. in Furby, 1978b) definition of self, this view of possessions equates what we possess to what we can control: "What does distinguish the self from the world, after all? Those things that are a part of me yield very high correlations when I voluntarily move them: I decide my hand is part of me, not part of others, because motor commands are almost invariably followed by the sight and feeling of the hand stretching out" (p. 141). Analogous to the control we have over our bodies, human beings have latent needs that shape the way they interact with objects within their environment, including a natural tendency to affect the environment (Furby, 1978b; Belk, 1988).

In his study on extension and structure of the self, Prelinger (1959) suggested that having affectance over an object brings this object into the "self-region". Rooted in the need for environmental exploration, we value objects that we manipulate and use, and thus those objects tend to be become regarded as part of the self (McClelland, 1951). Prelinger (1959) defines personal identity - the self - as constituting a spatial region "which can vary in its degree of extension depending upon what is included within its boundaries". The self (from the core to the outside) includes: body parts, intraorganismic and psychological processes, personal characteristics, objects close to the physical body, and possessions and created material or immaterial objects. Hence, the need for affectance is pointed out as a motivational root for the development of feeling of ownership in relation to objects that we can manipulate, control and affect and become linked to the self through self-extension (Belk, 1988).

Identity roots

The social constructionist view proposes objects of possession as reflections of how people view themselves and relate to their social and physical environment. Possessions can serve as an expression of the self as they convey our self-identity and individuality (Dittmar, 1992). An individual creates a relationship with objects and that relationship can contribute to self-understanding due to the shared meaning ascribed to the object of possession by oneself and others (Mead, 1934). Aligned with this social constructionist view, Dittmar (1989) proposed that possessions and the individual's sense of identity are linked through the shared notions we have about material objects and their symbolic representation of a person's social position, attitudes, conceptions, and personal qualities (e.g., Holman, 1981 cit. in Dittmar, 1989). Additionally, connecting object to self as possessions can be comforting (Kampter, 1989). Possessions provide self-continuity as they ease the transition of the self across diverse environments and through different life stages. For example, photographs can connect the past to the present (Kampter, 1989).

Another motivational aspect of ownership that relates to self-identity is our motivational need to have a space to call our own. Possessions give us a place to inhabit and to call "home" (e.g., Porteous, 1976). Porteous (1976) suggested that three territorial needs are satisfied by having a place: a sense of security, the assertion of identity (by marking and personalizing space), and stimulation (through defending space). In addition to the literal/geographical concept of home, Porteous also gives home a subjective/psychological facet. He explains that "home" is also the point of reference of the individual around which the individual structures his/her reality. In this sense, a place, an occupation, or any target that gives meaning to our lives can be felt as "our place".

Psychological ownership in the workplace

The workplace provides a rich context in which people can interact with their environment, fulfill their needs, and connect with other people and places, as well as with different tangible and intangible targets (Pierce, Kostova & Dirks, 2001). Feelings of possessiveness can lead individuals to defend targets of ownership as if they were part of their own bodies: "...the work of our hands may be as dear to us as our bodies are, and arouse the same feelings and the same acts of reprisal if attacked." (James, 1918, p. 291). Focusing on the workplace, Pierce and colleagues (2001) introduced the term psychological ownership (PO), defined as feelings of personal ownership toward organizational targets (e.g., jobs, organization, projects) that workers feel without the formal assertion of ownership. PO feelings emerge within individuals when they recognize the target as part of their extended selves (Belk, 1988; Pierce Kostova & Dirks, 2001). Pierce and Jussila (2011) proposed several specific motives for and routes to feelings of PO in the workplace, and possible consequences of PO. These are reviewed in the section that follows.

Routes to PO

PO is proposed to emerge through one or more specific experiences relating to the target of ownership: having control over the target, having invested part of the self into the target, and having intimate knowledge about the target (Pierce & Jussila, 2010; Pierce, Kostova & Dirks, 2003). A different status has been proposed for these experiences than for other antecedents of psychological ownership (Pierce & Jussila, 2010; Van Dyne & Pierce, 2004). Specifically, these authors suggest that without these routes – specific experiences that activate feelings of ownership - psychological ownership will not emerge. In contrast, more distal antecedents (e.g., autonomy; job enrichment) may affect PO only indirectly, through their influence on these experiences, which we term "ownership activating experiences" (OAE). These experiences leading to PO have previously been denoted by different authors as "paths", "routes", "key experiences" or "relevant experiences" (e.g., Pierce & Jussila, 2010; Nerdinger & Martins, 2016). However, due to their importance to PO and in order to distinguish them from other, more distal antecedents

we refer to them as “ownership activating experiences” (OAE, Giordano, Patient, Passos & Sguera, 2020²), a term that we believe succinctly captures their two most important elements: that they are experiences and that they lead to feelings of ownership. Each of the three proposed OAE are examined below in more detail.

Control

Control exercised over an object is a key determinant of feelings of ownership (Furby, 1978). As affectance is an important motivation for ownership behavior, experiences of control (such as, participating in decision-making or manipulating an object) are expected to lead to feelings of PO. Indeed, striving for experiences of control is rooted in the need to explore and affect our environment. Given that we connect to and more highly value the objects that we manipulate and use, those objects tend to be regarded as part of the self. Prelinger (1959) in his research on extension and structure of the self, proposed that having control over an object brings this object into the “self-region”. In the organizational environment, there are many possible experiences of objective and subjective control. For example, objects that are habitually used by a worker (e.g., a tool such as a computer, a stethoscope, a desk) can be targets of feelings of ownership. More subjective experiences of influence, such as over a decision-making process, can also lead to feelings of ownership relating to the process and resulting decision.

Intimate knowledge

According to Rudmin and Berry (1987), the more information known by a person about a target the stronger becomes his or her connection to that object. Getting to know intimately elements of our environment comes from our need to explore, to feel competent, and to affect our environment (Pierce & Jussila, 2011). Many authors have previously referred to the idea that ownership arises from the “living relationship” we have with targets (e.g., James, 1890). Indeed, knowledge regarding the details, history and features of, for example, the organization that an employee belongs to can address their need for “home”. Our intimate knowledge regarding a target can transform a place or institution with no specific meaning to us into something with a specific meaning and history, which

² Chapter 2 of this thesis.

may be shared with other workers. As Pierce and Jussila (2011) put it: “Home is realized as a result of an individual’s interaction with his/her surroundings to the point that it promotes familiarity, a sense of being one with, and the discovery of oneself within that the target of ownership” (p. 81).

Investment

Political philosophers have long discussed how the work we do can be experienced as a source of ownership feelings. Locke (1690) referred to the act of labor as a source of ownership towards what we produce (cit. Pierce, Jussila & Dirks, 2001). In addition, Durkheim (1957) referred to “things” as attached to the person that created them as they are their product, resulting from their efforts (cit. Pierce, Jussila & Dirks, 2001). Beaglehole (1932) stated that a sense of property is developed towards goods and values that satisfy fundamental needs. In this sense, the worker cares for what is built with his or her tools, as the object that is built fulfils the need for construction/affectance. Further, the memory of the energy, time, and labour spent on transforming raw material connects the worker to the product of that work. Similarly, Csikszentmihalyi and Rochberg-Halton (1981) identify the investment of energy, time, effort, and attention into objects as experiences that lead the self to become one with the object created. Hence, the worker who invests energy - in the form of ideas, knowledge, and time - into proposing and executing a project may refer to the project as “my project”, in spite of the fact that the project was created in to profit and otherwise benefit the organization.

Targets of ownership

PO can be felt over a variety of tangible and intangible targets. In a study on extension and structure of the self, Prelinger (1959) indicated that having affectance over an object brings this object into the “self-region”. In this study participants classified a variety of items on a continuum: from being a part of the self to not being part of the self. In descending order, the categories that were connected to the self were: body parts; psychological processes, personal attributes; possession and production; abstract ideas; other people; object within the immediate environment; and, objects within the distant environment.

The field of environmental psychology has identified the workplace as a source of feelings of territoriality that can be directed towards objects, spaces, roles, and relationships (e.g., Brown, Lawrence & Robinson, 2005). Environmental psychologists have proposed territoriality as a manifestation of feelings of ownership toward a physical or social object, with territorial behaviors including marking and defending targets of ownership (Brown, Lawrence, & Robinson, 2005). Both territoriality and PO are concepts that describe an employee's relationship with objects in the workplace. However, PO is defined as a cognitive-affective construct (that is, both a cognitive deliberation of who is connected to the object and the feeling of possession regarding that object) whereas territoriality is the behavioral response derived from PO (that is, the resulting marking and defending behaviors) (e.g., Pierce & Jussila, 2011; Brown, Lawrence & Robinson, 2005).

Pierce and Jussila (2011) proposed a number of categories of targets that may induce feelings of ownership in the workplace. In doing so, they looked at the potential of each target category to, firstly, satisfy motivational aspects of ownership and possessive behavior (that is, affectance and identity), and, secondly, to facilitate experiences of control, intimate knowledge, and investment.

Table 2 - *Targets of Psychological Ownership*

Category of target	Classified as "mine"	Classified as "ours"	Classified as "Others"
Personal attributes	✓		
Material objects (e.g., books, computer)	✓	✓	✓
People/relationships (e.g., assistant, co-worker)	✓	✓	✓
Space (e.g., cubicle, office)	✓	✓	✓
Responsibilities (e.g., workload, duties)	✓	✓	✓
Work outcomes (e.g., reports, product produced)	✓	✓	✓
Mental processes (e.g., beliefs, ideas)	✓	✓	✓
Actions (e.g., communication)	✓	✓	✓

Social systems (e.g., company)

✓

✓

✓

Source: Adapted from Pierce and Jussila (2011)

Table 2 presents the list of targets and target categories by Pierce and Jussila (2011), based on a survey asking employees to identify targets of ownership at work that could be felt as “mine” (belonging to me), “ours” (belonging to us), “others” (belonging to somebody else), and “no-ones” (items not belonging to anybody in particular). This list clearly shows that organizational members indeed have feelings of ownership towards material and immaterial objects in the workplace, including objects that are not formally theirs. Items that were identified as “no-one’s” included appliances (e.g., coffeemaker), certain rooms (e.g., bathroom), and certain responsibilities (e.g., writing rejection letters, drug testing).

To date, research on PO has mainly focused on job-related PO (e.g., Brown, Pierce, & Crossley, 2014), organization-based PO (e.g., O'Driscoll, Pierce, & Coghlan, 2006) and feelings of ownership towards objects in the workspace and the workspace itself (Brown & Zhu, 2016).

Working in a team – the importance of “us” and “ours”

Teams have become pillars of our organizations, facilitating and solving complex problems, adapting to ever evolving demands, and, consequently, fostering organizational competitiveness (Sundstrom, de Meuse, & Futrell, 1990). It has long been recognized that in many contexts, teams have the potential to achieve greater outcomes of productivity than one individual (Gladstein, 1984). From an employee perspective, work in groups can address our need as social beings to belong to and to identify with other people and groups. Teamwork is a fertile context to fulfil these needs while connecting the self with other people and allowing employees to flourish (West, 2017). Michael West (2017) identifies collaboration and teamwork as fundamental strategies for the survival of our species:

We face challenges on a huge scale (many of our making) including the need to reduce and reverse the effects of climate change; to reduce and reverse the effects of our species' role in wiping out most other large mammals and thousands of other species; to prepare for and respond to the emergence of viruses that could lead to global pandemics; to support and integrate people forced to migrate because of war, famine or rising sea levels; to foresee and ameliorate the effects of natural disasters; and to contain the potential threats posed by the commercial development of artificial superintelligence (Harari, 2015; Tegmark, 2014). Collaboration, team and interteam working are the fundamental strategies we require to be able to respond successfully to these challenges. (p. 590)

Hence, it is not surprising that the 2019 World Bank report on “The changing nature of work” pointed out that organizations in the globalized and automated economy now put a higher premium on teamwork and socio-behavioral skills, neither of which can be automated by machines (World Bank Group, 2019). Given the important roles of teams in the current and future organizational landscape, better understanding how to foster motivation and interconnectedness within them is an important field of study.

We adopt Kozlowski and Ilgen's (2006) definition of teams: entities of two or more individuals that interact socially, with at least one common goal and that are brought together to perform organizational relevant tasks, having different roles and responsibilities and working interdependently with each other and embedded in an

organizational system and task environment. An important feature of work teams that distinguishes them from other types of groups, as per this definition, is their interdependence and their focus on what they have to do together – the shared task and the work output they intend to produce.

Team effectiveness

Hackman (1983) identified three dimensions of team effectiveness: performance, attitude, and behavior. The performance dimension refers to the extent that the team is productive in terms of meeting quantity, quality, and timeliness requirements, and is often operationalized as team member perceptions of team effectiveness. The attitudinal dimension refers to the extent that the team experience contributes to team member satisfaction. The behavioral dimension refers to the extent that the team experience increases the ability of team members to work together in the future as a team. The latter attitudinal/behavioral dimensions are often operationalized as team member turnover intentions, which represent an intentional response based on team member satisfaction. Perceptions of effectiveness and turnover intentions have both been related to the success and viability of teams. More recently, Salas and colleagues (2014) have also described team effectiveness as the success of teams in performing the task-related dimension – taskwork (perform the task and achieve team goals) – and the behavioral dimension – teamwork (shared behaviors, attitudes, and cognitions that make team functioning and the achievement of their goals possible).

To understand the complexity of teamwork and to decode how teams achieve effectiveness scholars have used I-P-O (Input, Process, Output) models and IMOI (Input, Mediator, Output, Input) models (e.g., Marks, Mathieu, and Zaccaro, 2001; Ilgen et al., 2005). In these frameworks, inputs describe antecedents that may promote and hinder members' interactions. These include individual team member characteristics, team-level aspects, organizational and also external/contextual aspects which impact how teams would perform their processes and, in turn, their performance. In spite of their important influence on the conceptualization of teams and their empirical investigation, the I-P-O models do not capture the dynamic nature of teams. More recent models examine how

teams work overtime (in performance episodes) and across contexts, and team member dynamics, how team members interact with each other and with other people and contexts (Ilgen et al., 2005). Acknowledging the complexity and dynamism of teams (Arrow, McGrath, & Berdahl, 2000), Ilgen and colleagues (2005) complemented the static I-P-O model by introducing a revised input–mediator–output–input (IMOI) model, which considers the reciprocal nature of teamwork. The IMOI model also includes the emergent, team-level states that arise from teamwork (not only processes), and includes the bidirectional, multilevel, and temporal dimensions of team functioning (Grossman, Friedman & Kalra, 2017; Ilgen et al., 2005).

Team processes and emergent states

In both I-P-O and IMOI models, team processes and team emergent states are viewed as the transformative mechanisms between antecedents and team outcomes (Grossman, Friedman & Kalra, 2017). Grossman and colleagues (2017) propose that these mediator variables can be classified as affective, behavioral, or cognitive, where “affective mechanisms reflect what teams feel, behavioral mechanisms capture what teams do, and cognitive mechanisms encompass what teams think” (p. 248). The authors characterize team processes as behavioral mechanisms. These are the activities team members perform that are focused on task accomplishment, and are directly related to team worker interactions (Marks, Mathieu, and Zaccaro, 2001). Following the taxonomy of Marks and colleagues (2001), Grossman and colleagues (2017) propose three major types of behavioral mechanisms: transition processes (evaluation and planning activities that guide task accomplishment, such as mission analysis and strategy formulation); action processes (activities directly related to task and goal accomplishment, such as coordination and team monitoring); and, interpersonal mechanisms (actions that manage the team members relationships, such as conflict management and confidence building). Cognitive mediators in IMOI models include, for instance, team mental models, transactive memory systems, and team learning. These cognitive mechanisms capture how knowledge is organized, represented and distributed between team members and helps teams anticipate and execute their actions (Kozlowski & Ilgen, 2006). Affective mediators in IMOI models include mechanisms that describe team member relationships, affective responses and motivational

characteristics, such as team cohesion and team trust (Grossman, Friedman & Kalra, 2017).

Following Marks, Mathieu, and Zaccaro, (2001) classification of processes and emergent states, cognitive and affective mechanisms can be defined as emergent states, as both reflect shared team properties that develop over time through dynamic interactions among team members. More specifically, emergent states can be cognitive in nature (e.g., team mental models), affective (e.g., team cohesion), motivational (e.g., team potency), or mixed. Emergent states emerge through bottom-up processes and are amplified by interactions within teams and are manifested as higher level, collective phenomena, such as the attitudes, values, motivations, and cognitions of group members. As explained in the following section, CPO has both affective and cognitive elements, both of which can fluctuate over time depending on team dynamics. This makes CPO an emergent state.

Concept and measurement of CPO

In introducing the concept, Pierce and Jussila (2010) defined CPO as a “shared-sense” and as a feeling of collective possessiveness and attachment to organizational objects. In this research we build on this definition by introducing CPO as a “shared sense” of the collective ownership of an organizational target, that can have both an individual level and a collective level manifestation. CPO is a “shared sense of ours” that emerges within teams as a result of the interactions among team members in relation to the target of ownership (Pierce & Jussila, 2010), “a single and shared mind-set as it pertains to a sense of ownership for some object that is material (e.g., workspace, tools) or immaterial (e.g., ideas) in character” (Pierce & Jussila, 2010, p. 811). CPO is an emergent state, that can be defined as a shared sense of collective property of the team that develops over the life of the team and impacts team outcomes (Marks, Mathieu & Zaccaro, 2001). As has also been found for other affective-motivational constructs, such as team work engagement (Costa, Passos & Bakker, 2014), moving from an individual internal state – based on observable cues – to the awareness of a shared state may involve a more general perception of how a group is functioning.

In the following section, we define CPO and distinguish it from individual PO, as well as from attitudes towards the team, such as identification and commitment, and discuss different levels at which it can be conceptualized and measured.

Construct definition

CPO has several important characteristics that distinguish it from attitudes towards the team, such as identification or commitment. CPO has at its core strong feelings of possessiveness. In contrast, team identification can be described as the connection between the individual self and a group to which they belong and interact (Henry, Arrow & Carini, 1999). Whereas cohesion describes an individual’s acceptance of team goals and values, willingness to exert effort on behalf of the team, and strong desire to maintain membership in that team (Bishop & Scott, 2000). Notably, neither team identification or team commitment capture possessive feelings towards the team, or towards what the team produces.

It is important to also note ways in which CPO is distinct from IPO. Whereas IPO emerges through person-target interactions, CPO emerges from a combination of person-object, other person-object, and person-to-person interactions. Indeed, a group member feels that the teamwork output is “ours” only so long as three conditions are satisfied. First, s/he invested time and energy into influencing and creating the target (i.e., the work output). Second, s/he perceives that the other team members invested time and energy into influencing and building the target. Third, the group member has to perceive that team members interacted and shared experiences relating to the work output. In the case of CPO, these feelings are a “shared sense”, insofar as they develop not only as a tie to the individual self (“me-mine”) but also in relation to the collective self (“us-ours”). Verkuyten and Martinovic (2017) explain this process using self-categorization theory (Turner, et al., 1987): people self-categorize at different levels of abstraction: one level refers to our personal identity (“I”), and another to collective self-categories that is defined by our groups or collective identities (“we”). Hence, our self-concepts are connected to the teams we belong to. Therefore, team workers by collectively perceiving themselves as “us” can have a collective sense of objects (e.g., teamwork products) that are “ours.”

Feelings of CPO are expected to emerge through interactions and shared experiences relating to a target. As with IPO, feelings of ownership are expected to emerge through specific experiences relating to controlling, investing oneself in, and acquiring intimate knowledge regarding the target. However, in the case of CPO, these specific experiences not only connect the worker with the target of ownership, but also connect the worker with other workers and with the target. CPO additionally requires an awareness of sharedness among team members (“we are one and it is ours”) resulting from shared experiences relating to the teamwork output that can be felt as an emergent state in the team (Kozlowski & Bell, 2013; Costa, Passos & Bakker, 2014).

As indicated in Table 3, we define psychological ownership as, first, either personal or collective (“mine” versus “ours”), and, second, with reference to the perspective (individual versus group). Ownership – including ownership at the group level – can be evaluated from the individual perspective (“I feel this is owned by all of us ...”) or from the perspective of the team (“all of us feel this is

owned by all of us ...”). Thus, CPO can be either a collectively held perspective (e.g., Pierce, Jussila & Li, 2017) or an individual perspective.

Table 3 - *Types and Levels of Psychological Ownership*

	PERSONAL Psychological Ownership	COLLECTIVE Psychological Ownership
INDIVIDUAL PERSPECTIVE	Personal Psychological Ownership at the Individual-level: The extent to which the individual agrees “I feel the work output is mine.”	Collective psychological ownership at the individual level: The extent to which the individual agrees “I feel the work output is ours.”
GROUP PERSPECTIVE	Personal psychological ownership at the group level: The extent to which the group agrees “Each one of us feels “the work output is mine.”.”	Collective psychological ownership at the group level: The extent to which the group agrees “We (me and my teammates) feel “the work output is ours.”.”

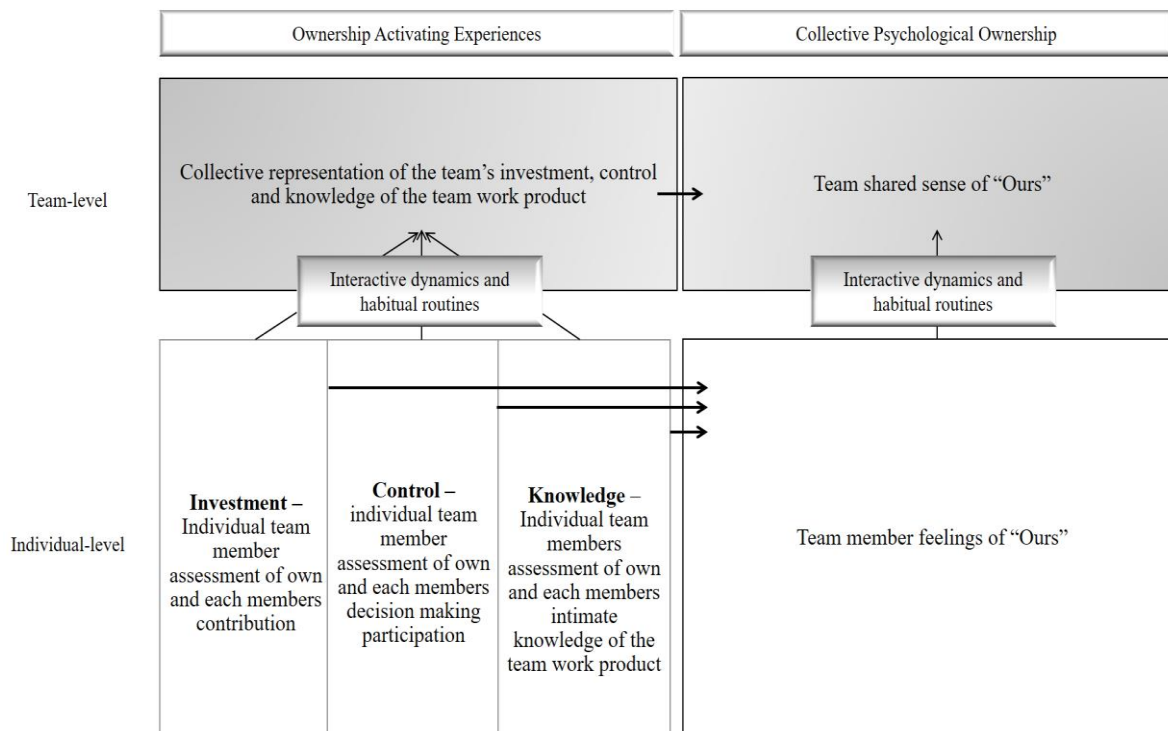
It is important to note from Table 3 that personal ownership (PO) and CPO constructs are not fully conceptually isomorphic in that the latter cannot be considered as a level of the first because feelings of ours are not the same as shared feelings of mine.

CPO as an emergent state

In this section, we propose several ways in which CPO manifests in teams as an emergent state, considering its cognitive and affective components. Cognitively, team members determine who is part of the collective “us”. In doing so, they consider the alignment between the formal “us” and team member contributions and history with the target. For team members to develop feelings of CPO over the teamwork products (“the

report/idea/campaign is ours”), individuals must recognize that others are also related to the work product, within a team context where members have a sense of “us” within the team (Giordano, Patient, Passos & Sguera, 2020; Pierce & Jussila, 2010; Henry, Arrow, & Carini, 1999). Specifically, for CPO to emerge, team members assess whether all team members have invested themselves into, have acquired intimate knowledge regarding, and have exercised control over the shared work product (i.e., have experienced the OAE). Affectively, feelings of CPO include team members’ identification with the group (Turner, et al., 1987). The sense of “us” held by individual team members creates a basis for the “self-extension” of the team to bring work products within its collective self-identity, as “ours”. In sum, the deliberation on boundaries relating to determining who owns the teamwork product includes deliberations on person-object, other person-object, and person-to-person interactions (Pierce, Jussila & Li, 2017), rooted in cognitive assessment of the OAE and feelings of identification.

Figure 1 - *Emergence of CPO from individual to the team level*



At the team level, CPO is a socially constructed representation resulting from cognitive interdependence and affective identification within the group. Pierce and Jussila (2010, p. 810) proposed that “collective psychological ownership emerges through interactive dynamics whereby individuals come to a single and shared mind-set as it relates to a sense of ownership for a particular object.” As depicted in Figure 1, the OAEs at the individual level are amplified by interactions within the team via members’ interdependent “habitual routines” (Gersick & Hackman, 1990) to form a collective perception regarding the control over, intimate knowledge regarding, and investment in the teamwork product. Thus, at the collective level, perceptions regarding the three OAEs are expected to converge among team members. Shared perceptions regarding the OAEs are then expected to lead to the emergence of feelings of CPO in the team regarding the teamwork product. The interactions and shared experiences build team-level agreement regarding perceptions of team members’ investment in, control over, and knowledge acquired regarding teamwork output. This agreement is reflected in the language used to related to the teamwork product (“our”) that, in turn, will support the emergence of feelings of CPO in the team.

Work output as targets of CPO

As with psychological ownership at the individual level, CPO can be felt toward a variety of tangible and intangible targets. These can include material objects, people and relationships, physical space, task responsibilities, and even mental processes, such as beliefs and ideas. Previous research on CPO has tended to focus on feelings of ownership toward jobs (Brown, Pierce, & Crossley, 2014) and organizations (e.g., Tseng & Uen, 2013). However, as pointed out by Pierce, Kostova and Dirks (2003), the “most obvious and perhaps the most powerful means by which an individual invests him/herself into an object is to create it” (p. 17). In teams, the product on which they work together can play an important role in identifying boundaries to the team (those who work on the output together versus those who do not), and in creating a collective identity among team members. Just as individuals define themselves in part through what they do (Wang, Law,

Zhang, & Liang, 2019), they can similarly identify an “us” based on what the group members *all* do in relation to a work product. In addition, the interdependency that must exist among team members to fulfill their roles and responsibilities (Hackman, 1983) is strengthened by team member investment, control, and intimate knowledge regarding the work product, which leads to the emergence of feelings of “ours” as a shared collective state in teams (Kozlowski et al., 2013).

In spite of their importance, teamwork products as a target of collective ownership feelings have received little research attention. This is especially surprising given the importance to teams of collectively created material and non-material products, and especially to teams that are dynamic in composition or operate in uncertain environments. For instance, feelings of collective ownership over work products can provide individual employees with a sense of continuity and connection to the team and to their work. In the context of team membership changes, the teamwork product can become especially important to establishing this sense of “us”, insofar as it provides a continuing focus for team efforts and visible outcome of its collective efforts. The shared experiences of investment, control and intimate knowledge that are antecedents to CPO (Pierce & Jussila, 2010) also relate team members to one another and to the work they do (Pierce & Jussila, 2010; Pierce, Kostova, & Dirks, 2001). Therefore, in the current work, we investigate employee feelings of CPO toward specific teamwork products.

Conclusion

Having possessions is a natural, built in and important need in the lives of human beings. Indeed, we have innate and socialized needs to control and connect to objects, people and places. These relationships are of such importance that we incorporate them into our self, through the process of self-extension, and build our lives around the objects we feel as ours and places that we call home. Given the central role of work in the lives of many people, it is hardly surprising that their identity extends to incorporate and “own” different aspects of their work environment. In today’s world this may be especially important, as in uncertain environments feelings of ownership can provide continuity of the self, and connect past and present. In teams, especially in teams where membership is dynamic, feelings of shared ownership can be an important aspect of team members working hard together and connecting to products of their shared work. Therefore, teamwork is a fertile context in which people can fulfill their needs for both affecting the environment and also for connecting to others.

Research on CPO has tended to focus on feelings of possessiveness toward jobs and organizations. However, as pointed out by Pierce, Kostova and Dirks (2003), the “most obvious and perhaps the most powerful means by which an individual invests him/herself into an object is to create it” (p. 17). Feelings of collective ownership (“ours”) can emerge when people create something with others and share experiences of controlling, getting to know intimately, and investing themselves into the target. A better understanding of how CPO develops in teams can provide ways for managers to enhance team members’ feelings of CPO, including toward important work products, thereby helping employees maintain high effort and commitment to team objectives (Dirks, Cummings, & Pierce, 1996). It is important to note, however, that feelings of collective ownership only emerge if certain conditions are met. Not only are the OAEs – controlling, investing and/or intimately knowing – necessary to activate feelings of ownership at the team level. In addition, for CPO to emerge, a feeling of collective identification is needed so that team members can develop a single and shared mindset.

The complexity of CPO and its potential benefits call for the closely examination of its proximal antecedents, that is, the OAE. The OAEs are particularly important

because, unlike other antecedents, one or more of these are necessary for ownership feelings to emerge (Pierce & Jussila, 2010). However, prior to this research, the important role of the OAE on CPO had not been empirically tested, nor had measures of the OAE been developed and empirically tested, in spite of the crucial role they are believed to play. Additionally, the CPO construct and the interactive dynamics that lead to feelings of CPO at the team level merit further conceptual elaboration and empirical exploration. Because CPO is not isomorphic to PO at the individual level, we cannot necessarily assume the same process of emergence nor can the outcomes of CPO be expected to be the same.

In chapter 2, we examine CPO as a team emergent state using theories of social identity and self-extension. Specifically, as antecedents we examine OAEs proposed by Pierce and Jussila (2010) – control, intimate knowledge, and investing oneself into the work product – by developing and testing a scale for the OAEs and testing its effects on CPO and team outcomes. In chapter 3, we explore an important contextual aspect of the emergence of CPO, namely adding and removing team members, and the resulting consequences for team effectiveness. Specially in teams experiencing frequent changes in membership, managing CPO can be crucial to provide individual employees with a sense of continuity and connection to the team and to their work. It seems that work products created become a symbolic expression of self-identity and work performance becomes an important means of strengthening and communicating that identity. The impact of changes in membership on CPO is the objective of our work presented in chapter 3.

With this work, we hope to contribute to theory and empirical findings on psychological ownership, and shed light on its emergence, manifestation, and consequences in teams.

Chapter II

Antecedents and Consequences of Collective Psychological Ownership: The Validation of a Conceptual Model

Abstract

We investigate team member feelings of Collective Psychological Ownership (CPO) over teamwork products, the psychological paths that lead to it, and its impact on team workers' evaluations of team effectiveness, turnover intentions, and intentions to champion teamwork products. We focus on the teamwork product as an important target of ownership feelings, building on theories of self-extension, psychological ownership and team emergent states. In Study 1, we validate measures for three Ownership Activating Experiences (OAE) that have been proposed as paths to CPO (control over, intimate knowledge regarding, and investment in the teamwork product) using two samples of individual team workers ($n = 210$ and $n = 140$). In Study 2 ($n = 183$) and Study 3 ($n = 200$), we use surveys and a multiwave design to show that team workers' feelings of CPO mediate the relationship between investment in and intimate knowledge regarding the product and team effectiveness evaluations, team turnover intentions, and intentions to champion the work product. In Study 4 ($n = 48$ teams), CPO was predicted by the OAEs, at the team level. This research additionally highlights the benefits to organizations of creating conditions for the emergence of employee feelings of shared ownership over teamwork products.

Keywords: collective psychological ownership, ownership activating experiences, teamwork, scale development, team emergent state

Introduction

Business media have long espoused the importance of feelings of ownership toward work projects (e.g., Bullock, 2014) to strengthen employee motivation. Yet only in the last 20 years has research rigorously examined employee feelings of ownership (without formal assertion of legal ownership) toward organizational objects, which is termed psychological ownership (PO; Pierce, Kostova, & Dirks, 2001). PO addresses the latent needs that individuals have to influence and to identify with people, groups, and objects in their environment (Pierce, Kostova, & Dirks, 2003). Teamwork is a fertile context in which to fulfill these needs because of the way it connects people with each other and with different tangible (e.g., written report; product design) and intangible (e.g., idea for a process improvement) products of work. When people create something with others, they can experience the output of their work as an extension of the group, as “ours.” A better understanding of how Collective Psychological Ownership (CPO) develops in teams can provide ways for managers to enhance team members’ feelings of CPO toward important work products, thereby helping employees maintain high effort and commitment to team objectives (Dirks, Cummings, & Pierce, 1996).

Research on CPO has tended to focus on employee feelings of ownership toward jobs and organizations (e.g., Tseng & Uen, 2013; Brown, Pierce, & Crossley, 2014). However, as pointed out by Pierce, Kostova and Dirks (2003), the “most obvious and perhaps the most powerful means by which an individual invests him/herself into an object is to create it” (p. 17). In uncertain environments, for instance, and in teams experiencing frequent changes in membership, feelings of collective ownership over work products can provide individual employees with a sense of continuity and connection to the team and to their work. Therefore, in the current paper, we investigate employee feelings of shared ownership toward specific teamwork products.

Although the mechanisms for CPO to emerge as a shared state within teams have been conceptually elaborated, how this emergence occurs over time has not been empirically explored. We examine CPO as a team emergent state using theories of social identity and self-extension. Specifically, as antecedents, we examine the three Ownership Activating Experiences (OAEs) proposed by Pierce and Jussila (2010)—control, intimate

knowledge, and investing oneself into the work product—by developing and testing a scale for the OAEs and testing its effects on CPO and on team worker team effectiveness evaluations and behavioral intentions.

In Study 1, we validate the measures for each of the proposed OAEs and test the factor structure in two different samples. In Study 2, we assess the impact of the OAEs (at T1) on feelings of CPO (at T2). In Study 3, by using a three-wave design, we test the mediating role of CPO between the OAEs and team workers' evaluations of team effectiveness, team turnover intentions, and intentions to champion the work product. In Study 4, we use a referent-shift consensus composition model (Chan, 1998) to study CPO as a team “shared sense”. In this final study, we investigate the effects of the OAEs on CPO as an emergent state in a sample of 48 teams competing in a multiwave simulation. Thus, we answer to calls for more detailed theory regarding specific team emergent states (Kozlowski, et al., 2013; Mathieu & Luciano, 2019) and for research integrating PO into the organizational behavior field (Dawkins, Tian, Newman, & Martin, 2017) by investigating CPO toward the teamwork product, relating CPO to team theories, and empirically investigating CPO at the collective level.

Theoretical Framework and Hypotheses

Psychological Ownership within Individuals and Groups

Psychology, anthropology, and political philosophy authors have long referred to the products of work as a natural source of personal ownership. By interacting with and reflecting on possessions, “our sense of identity, our self-definitions, are established, maintained, reproduced and transformed” (Dittmar, 1992, p. 86). James (1890) characterized the work of our hands as something that we feel as “ours” and that may be “as dear to us as our own bodies.” Locke (1690) stated that the creator of a material object or an abstract thought incorporates a connection to that object of creation into his or her identity. Pierce, Kostova and Dirks (2001) introduced the term PO as feelings of personal ownership toward organizational targets (e.g., jobs, organization, projects) without the formal assertion of ownership. PO is a feeling that emerges within individuals when they

recognize the target as part of their extended selves (Belk, 1988; Pierce Kostova & Dirks, 2001). Whereas individual psychological ownership (IPO) refers to feelings of “mine,” CPO specifically refers to feelings of “ours” and hence always has a collective agent (i.e., This is ours [versus mine]; This belongs to the group [versus to me]). Therefore, in addition to feelings of ownership, “a social-identity motive underpins the development of collective psychological ownership” (Pierce & Jussila, 2010, p. 815).

The Emergence of CPO over Teamwork Products

CPO is a “shared sense of ours” that emerges within teams as a result of the interactions among team members in relation to the target of ownership (Pierce & Jussila, 2010), “a single and shared mind-set as it pertains to a sense of ownership for some object that is material (e.g., workspace, tools) or immaterial (e.g., ideas) in character” (Pierce & Jussila, 2010, p. 811). CPO is an example of an emergent state, which can be defined as a property of the team that develops over the life of the team and impacts team outcomes (Marks, Mathieu & Zaccaro, 2001). Emergent states can be cognitive in nature (e.g., team mental models), affective (e.g., team cohesion), motivational (e.g., team potency), or mixed; indeed, they emerge through bottom-up processes and are amplified by interactions within teams and are manifested as higher level, collective phenomena, such as the attitudes, values, motivations, and cognitions of group members. Team emergent states capture the alignment (or misalignment) of team coordination efforts and task demands that are key to team viability (Kozlowski & Ilgen, 2006).

For CPO to emerge, individuals must recognize that others are also related to the work product within a team context, where members have a sense of interdependence and cohesion within the team (Henry, Arrow, & Carini, 1999). In teams working toward the common goal of creating a teamwork product, the interdependence between members to produce this product creates a sense of “us” within the team (Henry, Arrow, & Carini, 1999). The shared relationship that team members have with a teamwork product can be one way in which team members perceive the differences among themselves to be less than the differences between them and those not on the team, such that their self-concept is derived, in part, from belonging to the group (Turner, et al., 1987). This sense of “us” held

by individual team members creates a basis for the “self-extension” of the team to include work products within its collective identity as “ours.” Determining the boundaries of a team and the “*sharedness*” of a specific teamwork product (Pierce & Jussila, 2010) requires attention to person–object, other person–object, and person–person interactions. Thus, CPO requires the activation of a collective self, with each team member recognizing that not only is he or she psychologically tied to the work product, but also that others are too, prompting a referent shift from the self to the group, from “mine” to “ours” (Pierce, Jussila, & Li, 2017). This shows the importance of not only how members relate to *one another*, but also how members relate to *the work they do*, that is, the specific tasks undertaken collectively and the work products they produce (McGrath, Arrow, & Berdahl, 2000).

Important to promoting one’s own, others’, and, finally, shared connections to a work product are experiences that demonstrate control over, intimate knowledge regarding, and investment into the shared work product (Pierce & Jussila, 2010), i.e., the ownership activating experiences (OAEs). The interdependency that must exist among team members to fulfill their roles and responsibilities (Hackman, 1983) is strengthened by team member control, intimate knowledge, and investment regarding the work product, which leads to the emergence of feelings of “ours” as a shared collective state in teams (Kozlowski et al., 2013).

Control

When exercised over a target, control is a key determinant of feelings of ownership (Furby, 1978). Control refers to using, shaping, and influencing a work product and controlling its use by others. According to Belk (1988), the self is experienced through a concrete set of persons, places, and things rather than simply through ideas of who we are. Because we connect to and value objects that we manipulate and use, those objects that we exercise control over are incorporated into and become part of the self (Prelinger, 1959), tapping into an intrinsic need for autonomy that is addressed by affecting our environment (Deci & Ryan, 2008). By controlling objects in their environment, individuals and groups can feel that they have efficacy and effectance (Pierce, Kostova & Dirks, 2001). Because ownership implies the ability to use and control the use of objects, exercising control over a work product for a period of time is likely to give rise to feelings of ownership. Thus, the

objects that can be controlled become incorporated into the self, as we feel we own what we create, shape, or produce (Locke, 1690).

However, this collective sense of “us” within the team is likely to emerge gradually (Pierce, Kostova & Dirks, 2003) because individuals, on the one hand, use, influence, and shape a shared product and, on the other hand, observe other team members using, influencing, and shaping the shared product. In this way, just as individuals define themselves in part through what they do (Wang, Law, Zhang, Li & Liang, 2019), they can identify an “us” based on what the group members *all* do in relation to a work product. Repeated use of and influence exercised over a work product connect a team member to the work product both psychologically and in the eyes of other team members. When individuals observe team members exercising control over a work product that they also exercise control over, it clearly shows who is in the group and that the individual is part of it (Ashforth, Harrison, & Corley, 2008). Therefore, when people perceive that they share power over the final outcome, the final decisions are perceived as “their decisions” (Agarwal & Ramaswami, 1993).

Exercising shared control over a teamwork product requires close coordination among members of the team. The more control that is exercised over a work product by the group members and that is observed by other group members, the more the individual members will connect with the group and extend the resulting collective self to that work product. The objects of cocreation become an extension of “we” insofar as they are used, changed, and defined by the decisions of the team members. Thus, CPO is more likely to emerge within groups where individuals have sufficient opportunities to use and control a work product and where they also have opportunities to observe and interact with other team members doing so. For example, if a team of programmers is developing a new app, to the extent that all have participated in deciding on the features included in that app, they will see themselves as collectively responsible for the object they create, begin to see themselves as “the cause” for that outcome, and feel collective ownership.

H1a: The extent to which a team member feels that all team members control the teamwork product is positively related to the degree to which a team member feels CPO toward the teamwork product.

Intimate knowledge

In addition to defining their self-concept by what they are and what they do, individuals also define themselves in terms of what they *have*. This can include knowledge regarding a work product: the more information one has about a work product, the stronger an individual's connection will be to that object, and the more likely it will be included in the individual's self-concept (Rudmin & Berry, 1987). In addition, having knowledge of a product taps into our psychological need for relatedness and belonging (Deci & Ryan, 2008).

Experiences that lead people to feel part of a team include experiences through which they gain knowledge of a shared work product. For example, if only the members of a software programming team understand the way in which different blocks of code are connected to each other and what functionality these blocks provide, this will reinforce individuals' cognitive awareness of being a part of that team. In this way, in-group feelings emerge based on shared knowledge regarding the work product and that are contrasted with the lack of knowledge possessed by out-groups. Therefore, understanding the knowledge of other team members is important for evaluating both the fulfillment of formal roles and the relationship between team members and the collective product (McGrath, Arrow, & Berdahl, 2000).

When team members actively participate in the creation of a collective work product, they experience the interactions that lead to product creation and learn about the product itself. Developing intimate knowledge regarding the work product requires team members to coordinate cognitively with each other, integrate ideas, and create new knowledge (Cooke, 2015). These visible exchanges of knowledge regarding a collective work product with others promote interdependence among team members, connect them to each other and to the team, and make visible the connections made by all in acquiring knowledge. Thus, feelings of ownership emerge from a "lived relationship" with the work product (Pierce, Kostova & Dirks, 2001), and it is this intimate knowledge of the target that makes it part of ourselves (Beaglehole, 1932, as cited in Pierce, Kostova, & Dirks, 2003). The more the interaction by team members with the work product, the more profound the knowledge acquired will be, and the more intimate the connection will be developed in relation to the work product. The members of a team in which everyone is

familiar with the details, the original purpose, and the history of the specific project are expected to experience higher levels of CPO toward the collectively created product.

H1b: The extent to which a team member perceives that all team members intimately know the teamwork product is positively related to the degree to which a team member feel CPO toward the teamwork product.

Investment

The physical, cognitive, and emotional investments made by individuals into objects connect these objects to the self (Csikszentmihalyi & Rochberg-Halton, 1981) and generate feelings of ownership toward the work output (Belk, 1988). According to Locke (1690), because we own our labor and ourselves, we feel that we own what we invest ourselves into. The time and energy—and even values and identity invested into the work product—“allows an individual to see their reflection in the target and feel their own effort in its existence” (Pierce, Kostova & Dirks, 2001, p. 17).

Within teams, the investments made by individuals and observed in other individuals can clarify the individuals’ sense of “us.” Seeing who has invested into a collective product is a straightforward way to cognitively identify the boundaries of a team and to clarify one’s own membership (McGrath, Arrow, & Berdahl, 2000). In addition, an individual’s collective identity will more likely incorporate team membership if being part of the team is regarded as both important and positive. Greater investments by an individual and observed investments by other individuals are likely to increase the extent to which belonging to the team is regarded as positive, which is an important predictor of collective identification (Ashforth, Harrison, & Corley, 2008). As team members demonstrate their contribution to the team product by expending effort and proposing new ideas, team coordination is facilitated, and team members’ connections to the collective task are clarified and strengthened (Mumford, Van Iddekinge, Morgeson, & Campion, 2008).

Individuals are more likely to acknowledge collective ownership of a product when other team members have significantly contributed to its creation. A sense of co-ownership with regards to the output of teamwork is more likely to emerge when individuals on a

team perceive the situation as equitable, as a result of all members contributing energy, time, and effort, to justify the co-ownership that they are recognized as being entitled to (Adams, 1965). Sharing the PO of a shared work product is thus a socioemotional reward that can substitute for material rewards, or “roses” in lieu of “bread,” as Martin and Harder (1994) termed it. Therefore, as in the example of the programming team, when team members perceive that all members have invested time and energy into creating the app, that product is more likely to be regarded as “ours.”

H1c: The extent to which a team member feels that all team members have invested in the teamwork product is positively related to the degree to which a team member feels CPO toward the teamwork product.

The Consequences of CPO

CPO is an emergent state that can be both cognitive and affective in nature, resulting in shared “feelings, knowledge, and beliefs about the target of ownership, and individual and collective rights (e.g., use, control) and responsibilities (e.g., protection of) in relation to that target” (Pierce & Jussila, 2010, p. 812). Cognitively, by activating the sense of “us” CPO may promote the alignment between the formal distribution of tasks and the contribution of team members. As a result of feelings of interpersonal attraction and team cohesion, CPO can also reinforce team members’ affective connection to the team and to the team product. Thus, CPO can have an important impact on team members’ attitudes and intentions toward both the teamwork product and the team itself. Accordingly, we propose specific effects of CPO attitudes and intentions toward the team (effectiveness evaluations and team turnover intentions) and toward the collective work product (championing the teamwork product).

Relationship Between CPO and Team Effectiveness

In effective teams, members feel connected to the other members and to the projects of the group, members coordinate their behaviors when pursuing collective projects, and members share tools, knowledge, and other resources (McGrath, Arrow, & Berdahl, 2000). The team's tasks shape the attitudes and intentions of individual members toward the team and its outputs by being a source of goals, roles, and team-based exchanges (Kozlowski & Klein, 2000). The emergence of CPO can play an important role in creating a functional network of member-task-tool relations that improves team performance (McGrath, Arrow, & Berdahl, 2000), driving teams to create solutions to problems related to the work product. Below, we review the effects of individual PO on performance, and then we explain how the emergence of CPO in teams can lead to additional benefits in terms of team performance, continuity, and extra-role behaviors.

Individual PO has been related to positive work behaviors, including organizational citizenship behaviors (Vandewalle, Van Dyne, & Kostova, 1995), feelings of responsibility (Druskat & Kubzansky, 1995, as cited in Druskat & Pescosolido, 2002), and pride and identity in outcomes (Pierce, Kostova, & Dirks, 2001; Wagner, Parker, & Christiansen, 2003). Employees invest more in the work products that they feel they own and that have become incorporated into the self, as means of advancing this part of their identity. Because the work object created becomes a symbolic expression of self-identity, work performance becomes an important means of strengthening and communicating that identity. Thus "owners" should seek to perform their tasks well and proactively engage in discretionary behaviors that enhance work outcomes.

Although CPO subsumes individual PO (Pierce & Jussila, 2010), feelings of collective ownership are expected to lead to additional performance benefits at the individual and team levels because of the social dynamics present within teams. When team workers feel CPO, the work product is considered "ours" and a part of "us" (Belk, 1988), so team members are motivated to not only work hard on behalf of the work product, but also to engage in behaviors that improve internal group functioning (Druskat & Pescosolido, 2002). That is, perceptions of shared ownership lead to a class of social intentions referred to by Bagozzi and Lee (2002) as "group-oriented we-intentions": an

individual's personal commitment to do his or her part toward a group goal in the belief that others within the group also will. Team members will also expect similar effort and behavior from other "co-owners" (Pierce & Jussila, 2010), creating social pressure to perform at a high level. As a result, individual employees are expected to increase their high-quality interactions with others directed at fulfilling the valued group goal, thereby increasing their contribution to and social prestige within the group (Wang et al., 2019).

Feelings of collective ownership are expected to be accompanied by feelings of shared responsibility to invest time and energy toward the work product. In a group where team members have high CPO, the shared creation is incorporated within the group boundaries and serves as a means for the team to demonstrate to each other and to external audiences the fruits of their shared efforts, including through their discretionary behaviors. Indeed, CPO has been empirically related to individual psychological empowerment, feelings of responsibility, affective commitment, job satisfaction, and citizenship behaviors (Pierce, Jussila & Li, 2017), which can be expected to enhance team performance. Pierce, Jussila and Li (2017) also found that CPO is positively related to group-level outcomes, including psychological safety, group potency, and group learning, all of which can be viewed as proxies for team effectiveness and are negatively related to social loafing. As a result of believing that the ownership of a work product is collective, team members realize that their goals and values are congruent and will be more willing to participate actively in activities that manifest the shared "we-intention": "we will all work hard to improve this product" (Bagozzi & Lee, 2002). Increased effort and cooperation resulting from the emergence of CPO is expected to lead to increased performance and consequently, also to higher evaluations of team effectiveness. Hence, we expect that:

H2: CPO is positively related to team effectiveness evaluations.

H3: CPO mediates the relationship between a) control, b) intimate knowledge, and c) investment regarding a work product and team effectiveness evaluations.

Relationship Between CPO and Turnover Intentions

Feelings of ownership toward organizational objects have been negatively related to turnover intention (Avey, Avolio, Crossley, & Luthans, 2009) and to several key

predictors of voluntary turnover, including job satisfaction, organizational commitment, and psychological empowerment (Avey et al., 2009; Van Dyne & Pierce, 2004; Tseng & Uen, 2013). When a team member feels CPO, the teamwork product addresses the needs for relatedness and belonging by connecting the team member to the team (Deci & Ryan, 2008). In this context, objects that we have created serve as visible examples of our influence over the environment, provide self-continuity, and tell other people who we are and what we do (Wang et al., 2019). Hence, the process mechanisms that contributed to the emergence of CPO will have strengthened team members' sense of "us." Members will be more reluctant to leave the group because this would risk damaging the collective product that they regard as an extension of themselves and that warrants protection (Belk, 1988; James, 1890). In addition, feelings of ownership are generally seen as accompanied by corresponding responsibilities, such as the obligation to invest time and energy on behalf of the target, which would be abrogated by exiting the team (Pierce, Kostova & Dirks, 2003). In contrast, if feelings of CPO are low or absent, team members feel less responsible for the proper functioning of the team and for the collective work product, making it easier and less consequential to leave.

Collective control, intimate knowledge regarding, and investments into the work product act as behavioral cues of a collective "sense of us" and of connection to the teamwork product, creating a social context that influences team members. CPO feelings emerge as a manifestation of the team's collective identity narrative: "We are one, so this is *ours*" (Ashforth, Harrison, & Corley, 2008). Hence, leaving a team that shares ownership of a work product also entails cutting off the connection to a work product that has become part of one's extended self. The shared work product is the visible evidence of past decisions, investments, and knowledge acquisition that can be identity-threatening to lose. Therefore, maintaining a connection to the work product protects, enhances, and provides continuity to the identity of team members, making it less desirable to give up membership in the group and co-ownership of the work product.

Just as employees cannot always act on their intentions to leave an organization, they may not be able to exit a team. As noted by Shore and Martin (1989), organizational turnover is much more difficult to predict than intentions to leave since numerous external factors can affect actual turnover behaviour. Similarly, team members with a desire to

leave will not always do so, and might not even be able to. Nonetheless, employees that intend to leave but do not do so can still harm the team and its performance by in other ways withdrawing (i.e., loafing or absenteeism) from the team (e.g., Karau & Williams, 1993). By measuring team workers' turnover intentions, we aim to tap into the teams' viability, in terms of participants' willingness to stay in the team, a form of behavioural commitment. This intention is especially relevant for individuals who are assigned to teams and unable to select their teammates, an arrangement prevalent in organizations (Bayazit & Mannix, 2003).

H4: CPO is negatively related to turnover intentions.

H5: CPO mediates the relationship between a) control, b) intimate knowledge, and c) investment regarding a work product and team turnover intentions.

Relationship Between CPO and Championing the Teamwork Product

Research on the ownership effect has demonstrated that people perceive the objects they own as more attractive and hence are more likely to defend and protect these objects (Beggan, 1992). Additionally, research on the "endowment effect" has shown that people evaluate an object more highly when it belongs to them (Kahneman, Knetsch, & Thaler, 1990). We hypothesize a similar affective reaction will occur in the presence of CPO feelings. PO has been theorized as increasing the pride and identity invested in a target (Pierce, Kostova, & Dirks, 2001; Wagner, Parker, & Christiansen, 2003) although this has not been empirically investigated at the individual or collective level. Because ownership is generally associated with the obligation to protect, care for, and make sacrifices for the target of ownership (Pierce, Kostova & Dirks, 2001), the emergence of CPO should engender a willingness in team members to actively promote something that has become incorporated into the group's collective identity (Pierce, Kostova, & Dirks, 2003).

Individuals maintain a sense of self by engaging in stable patterns of behavior that bring personal meaning to their roles (Pierce, Kostova & Dirks, 2003). Within teams where members are closely connected to the group and to the collective products – and hence where CPO is experienced – team members will be motivated to engage in behaviors that promote and defend the teamwork product. For example, researchers have suggested that feelings of ownership should increase individuals' willingness to expand

their responsibilities and increase their work efforts (Brown, Pierce, & Crossley, 2014) and to engage in proactive work behaviors (Wang et al., 2019). One way to do so is through championing the product, which is defined as putting extraordinary effort into an idea or product (Shane, 1994). Championing arises from the strong commitment of an individual or group to a product or idea rather than from formal roles vis-a-vis the product, and includes the promotion of the work product to stakeholders and potential sponsors outside of the team (e.g., Van de Ven, 1986). Because of their strong attachment to a team's creation, team members with high versus low levels of CPO are expected to more intensively champion the team product.

H6: CPO is positively related to championing the teamwork product.

H7: CPO mediates the relationship between a) control, b) intimate knowledge, and c) investment regarding a work product and championing the teamwork product.

A Shared Perception of CPO

So far, we have proposed how at the individual level the OAEs act as process mechanisms that can lead to perceptions of CPO. Thus, we have focused on CPO and its activating experiences from the individual perspective with a collective referent – the extent to which individual team members feel that the collective work output belongs to all team members. As researchers have often done in other areas, we use constructs and collect data at a lower level as a starting point to explore a construct at a higher level (Chen & Kanfer, 2006; Costa, Passos, & Bakker, 2014). To further explore the bottom-up process whereby individual characteristics and dynamic social interactions result in a higher level property of CPO, we investigate how OAE perceptions, when aggregated to the team level, can influence collective CPO, measured as individual perceptions aggregated to the team level (Kozlowski & Klein, 2000).

Pierce and Jussila (2010, p. 810) proposed that “collective psychological ownership emerges through interactive dynamics whereby individuals come to a single and shared mind-set as it relates to a sense of ownership for a particular object.” The OAEs at the individual level are amplified by interactions within the team via members' interdependent “habitual routines” (Gersick & Hackman, 1990) to form a collective perception regarding

the control over, intimate knowledge regarding, and investment in the teamwork product. Thus, at the collective level, perceptions regarding the three OAEs are expected to converge among team members. These shared perceptions regarding the OAEs are then expected to lead to the emergence of feelings of CPO in the team regarding the teamwork product.

H8: Teams' shared sense of control, knowledge, and investment over the teamwork product are positively related to a shared sense of CPO toward the teamwork product.

Overview of the Studies

In Studies 1a and 1b, we generated, refined, and validated the items for the three proposed OAEs. In Study 2, we investigated the relationships among the three proposed OAEs (T1) and team members' CPO (T2, 1 month later). In Study 3, we used a three-wave design to test the discriminant validity of CPO (in relation to the proximal constructs – team identification, affective commitment, and IPO) and the mediating hypotheses – that is, OAEs leading to team member evaluations of team effectiveness and to behavioral intentions through CPO. In these studies, the OAEs and CPO were measured at the individual level with a team referent (Study 1, 2, and 3), and the outcomes were measured at the individual level (Study 3). In Study 4, we explored the dimensionality at the team level of the OAEs and their impact on CPO by aggregating at the team level individual OAE and CPO scores. For an overview of all studies, see Table 4.

Table 4 - *Chapter 2 studies overview*

Study	Main purpose	Level of analysis	Study Design	Key findings
1a - 1b.	Item development and psychometric validation of the OAEs scale	Individual	<p>Sample 1 Workers with team work experience N=210 Method: Cross-sectional survey</p> <p>Sample 2 Workers with team work experience N=140 Method: Cross-sectional survey</p>	EFA and CFA confirmed 3 OAEs; final scale with 12 items.
2.	Relationship between the OAEs and CPO	Individual	<p>Sample Workers with team work experience N=183 Method: Two-wave survey</p>	All OAEs (T1) correlate with CPO (T2). When all three OAEs included, investment and knowledge relate to CPO; control does not.
3.	a) Discriminant validity of CPO. b) Mediating role of CPO in the relationship between the OAEs and team workers' team effectiveness evaluations, team turnover intentions, and championing intentions	Individual	<p>Sample Employees working in team projects N=200 Method: Three-wave survey</p>	CPO is distinct from identification, affective commitment and IPO. CPO (T2) mediates the relationships between: knowledge and investment (T1) and a) team effectiveness evaluations b) team turnover intentions, and c) intentions to champion teamwork output (all measured at T3).
4.	Relationship between the OAEs and CPO as an emergent state at the team level	Team	<p>Sample Teams participating in a 5-week challenge, N=48 Method: Two-wave survey</p>	OAEs (T1, measured as a second-order factor) relate to CPO (T2, aggregated to team level from individual scores)

Study 1a: Creation of the OAE Measure

Item development

Based on the theoretical framework presented, the items were developed following the steps for scale validation proposed by Hinkin (1998) and DeVellis (2003). We initially proposed 10 items for the three OAEs first proposed by Pierce, Kostova and Dirks (2001): control (e.g., “Together, we all had a lot of control over how the TEAMWORK OUTPUT was created”), knowledge (e.g., “All of us know this TEAMWORK OUTPUT very well”), and investment (e.g., “All of us spent a great deal of energy building the TEAMWORK OUTPUT”). For a group of individuals to experience a referent shift from “I” to “us” and from “mine” to “ours,” the group must share experiences that are related to the target (Costa, Passos, & Bakker, 2014; Kozlowski et al., 2013). Therefore, consistent with Pierce, Jussila and Li (2017), in the current study, we use all the members of the team as a collective referent, that is, “We all...” / “All of us.” This sentence structure was designed to allow the measure to be easily adapted for different CPO targets, by simply replacing TEAMWORK OUTPUT (in capitals, to focus participants’ attention on the specific target they have selected) with another target of ownership feelings.

The 30 items were somewhat inclusive and redundant (e.g., “We all really understand the TEAMWORK OUTPUT” and “All of us know the TEAMWORK OUTPUT very well.”). It is better to initially be overinclusive because the content common to the items will be salient across the items while the less relevant characteristics will cancel out, and here, even extreme redundancy is acceptable as long as it is not included in the final scale (DeVellis, 2003).

Item validation

Next, the 30 items were presented in random order to 10 organizational behavior researchers who were asked to assign each item to one of four categories: control, knowledge, investment or “other.” Because item reliability can be affected by unclear wording that reflects extraneous factors (DeVellis, 2003), the expert reviewers were also asked to evaluate item clarity and conciseness and suggest clearer wording. The items retained in the scale were those that 80% or more of the experts assigned to the correct dimension (Hinkin, 1998). Of the 30 original items, 22 satisfied our criteria for capturing the proposed content domains.

Exploratory Factor Analysis

Procedures and sample

The first sample consisted of 210 working adults with teamwork experience and who came from a wide cross-section of organizations. The participants were contacted on MTurk³ to participate in a short web-based survey, and they were selected to participate if 1) they were currently working on a team project, and 2) if that team had been working together on the teamwork output for at least 1 month. The mean age was 42.2 years (SD 13.4), mean work experience was 20.5 years (SD 13.0), 63.8% were female, and 97.1% of the participants were from the United States, with the remainder from the UK. Most of the participants were employed full time (95.7%), 2.9% were employed part time, and 1.4% were students. The participants were asked to describe in a short sentence the product that they had created or were in the process of creating as a team. If the team had created or was creating more than one work product, the participants were asked to identify a single work product to focus on. Before each set of questions, the participants were asked to keep in mind the specific team and teamwork output that they had described earlier, referred to throughout as “TEAMWORK OUTPUT.”

Results

We conducted an exploratory factor analysis (EFA) of the 22 items using several well-recognized criteria. First, for each factor, all the items were correlated at a minimum of .4 with at least one other item, suggesting reasonable factorability. Second, the Kaiser-Meyer-Olkin measure of sampling adequacy was .96, which exceeds the recommended value of .6, and Bartlett’s test of sphericity was significant ($\chi^2 [231] = 3190.520, p < .05$). Given these overall indicators, a factor analysis was conducted with all 22 items using maximum likelihood extraction and Promax rotation. Three factors explained 64.2% of the variance. The following criteria were used to determine whether an item loaded onto an underlying factor: (a) the item had a factor loading of .60 or better on one factor; (b) the item had a loading of less than .40 on the second factor; and (c) the cross-loading differential across the two factors was less than .25 (Costello & Osborne, 2005). In total, 18 items satisfied these criteria (see Table 5).

³ We have addressed the limitations regarding the use of MTurk for data collection by including attention check items in our questionnaires. In Study 1, Study 2, and Study 3, in our final samples, we only included responses from participants who described a teamwork output and belonged to ongoing teams. Participants with descriptions that were unclear or with random entries of text were excluded.

As shown in Table 5, the first factor consists of eight items that assess team member investment in the teamwork output; this factor is referred to as “investment.” The items in this factor include “All of us spent a great deal of energy to build the TEAMWORK OUTPUT.” The second factor consists of six items that assess team member knowledge of the teamwork output, and is referred to as intimate knowledge. The items in this factor include “All of us know this TEAMWORK OUTPUT very well.” The third factor consists of four items that assess team member control over the teamwork output, and is referred to as control. The items in this factor include “All of us had control over how this TEAMWORK OUTPUT developed.” To further reduce the length of the scale to four items per dimension, we excluded six items because of content redundancy (items 8, 14, and 15) and, in the case of investment, because they extended the meaning to the quality of the team product, for example (items 1, 2, and 4). The final measure consists of four items for each subscale for a total of 12 items (see Table 3 for a complete list of the items).

Study 1b: OAEs Measure Validation

Confirmatory factor analysis

In Study 1b, we examined the validity of the revised scales using confirmatory factor analysis (CFA).

Procedures and sample

The sample for Study 1b consisted of 140 working adults with teamwork experience and who came from a wide cross-section of organizations. The participants received an e-mail requesting their participation in a short web-based survey, and they were contacted and selected using the same procedure as in Study 1a. The mean age of the participants was 46.5 years ($SD = 11.6$), their mean work experience was 23.5 years ($SD = 12.0$), 58.6% were female, and 99.3% were from the United States. The remaining participants were from the UK. Most of the participants – 95.7% – were employed full time, 2.9% were employed part time, and 0.7% were students.

Table 5 - OAE items exploratory Factor Analysis

	Items	Component		
		Inv.	Know.	Cont.
1	All of us invested a lot of time to improve this TWO ^a	.859	-.088	.042
2	We all invested ourselves into this TWO to make it the best it could be.	.845	-.027	.038
3	This TWO was made thanks to the energy invested into it by all of us.	.829	.114	-.169
4	The final TWO reflects the substantial effort put into it by all of us.	.810	.035	-.082
5	All of us invested great effort to create this TWO.	.786	-.014	.078
6	This TWO feels like one that we all made significant investments into.	.726	.044	.042
7	All of us spent a great deal of energy to build the TWO.	.719	.040	.130
8	The energy spent to produce the TWO came from all of us.	.690	.222	-.028
9	We all put a lot of ourselves into this TWO.	.523	.152	.182
10	All of us are very familiar with the characteristics of this TWO.	-.008	.903	-.075
11	All of us in the team are knowledgeable about the TWO.	-.078	.842	.016
12	All of us know this TWO very well.	.142	.822	-.097
13	We all can explain the TWO very well.	.024	.769	.012
14	All of us know this TWO in detail.	.187	.648	.043
15	The details of this TWO are very familiar to all of us.	.096	.642	.106
16	We all know the details of the TWO.	.166	.532	.154
17	In this team, we all had power over the development of the TWO.	-.108	.036	.868
18	All of us had control over how this TWO developed.	.175	-.204	.848
19	Together, we all had a lot of control over how the TWO was created.	-.003	.028	.767
20	We all had some power over the development of the TWO.	-.195	.401	.601
21	We all exercised substantial control during development of the final TWO.	.317	-.004	.490
22	We all know how this TWO is different than other TWO.	.130	.190	.299

Notes: Extraction method: Principal component analysis. Rotation method: Promax with Kaiser normalization; Rotation converged in six iterations; ^aTWO = Teamwork output; Inv = Investment; Know = Intimate knowledge; Cont = Control

Table 6 - *List of OAE scale final items*

Dimension	Item
Control	All of us had control over how this TEAMWORK OUTPUT developed.
	In this team, we all had power over the development of the TEAMWORK OUTPUT.
	Together, we all had a lot of control over how the TEAMWORK OUTPUT was created.
	We all had some power over the development of the TEAMWORK OUTPUT.
Knowledge	All of us are very familiar with the characteristics of this TEAMWORK OUTPUT.
	We all know this TEAMWORK OUTPUT very well.
	All of us in the team are knowledgeable about the TEAMWORK OUTPUT.
	We all can explain the TEAMWORK OUTPUT very well.
Investment	This TEAMWORK OUTPUT was made thanks to the energy invested into it by all of us.
	All of us invested great effort to create this TEAMWORK OUTPUT.
	This TEAMWORK OUTPUT feels like one that we all made significant investments into.
	All of us spent a great deal of energy to build the TEAMWORK OUTPUT.

Results

A CFA was performed on the second sample to cross-validate the three-factor solution from the EFA. Because the proposed three-factor structure exhibited a very good fit ($\chi^2(51) = 87.428, p < 0.01$; RMSEA = 0.071; CFI = 0.97; TLI = 0.96; SRMR = 0.050), the items loading on their respective factors were combined to form the constructs. The investment scale was correlated with the control scale ($r = .42, p < .001$) and intimate knowledge scale ($r = .54, p < .001$). The control scale was correlated with the intimate knowledge scale ($r = .57, p < .001$). The three four-item scales revealed moderate to very good internal consistency: Cronbach's alpha was .94 for investment ($M = 4.2, SD = 0.7$), .76 for control ($M = 4.0, SD = 0.6$), and .88 for intimate knowledge ($M = 4.3, SD = 0.63$).

Study 2: Predictive Validity of OAEs

Using the validated scales for the OAEs developed and tested in Study 1, Study 2 explores the relationship between the OAEs and CPO.

Procedures and sample

The sample for Study 2 consisted of 183 working adults with teamwork experience and who came from a wide cross-section of organizations. The target sample received an e-mail requesting participation in a short web-based survey via MTurk. The mean age for the sample was 46.9 years ($SD = 12.1$), the participants had on average 23.9 years ($SD = 11.2$) of work experience, 43% were female, and 98.3% were from the United States, with the remainder from the UK. Most of the participants were employed full time (97.3%). Data were collected in two waves, separated by 1 month. At Time 1 (the first wave), the participants were asked to describe the output or product of a team to which they belonged. At Time 1 and Time 2, when answering the questions, the participants were reminded of that specific teamwork output, which was referred to by the name they had provided and was referred to in the items and instructions as “TEAMWORK OUTPUT.”

Measures - Time 1

OAEs: Control, intimate knowledge, and investment. The OAEs were measured using the previously validated measure (Studies 1a and 1b). Responses were on a 5-point Likert scale that ranged from 1 = *strongly disagree* to 5 = *strongly agree*. The participants were told, “While working together in developing a TEAMWORK OUTPUT, team members can invest themselves into the work with their time, energy, and effort/ team members can influence the decisions made/ team members can get to know the TEAMWORK OUTPUT very well. Recall the specific work output and that specific team experience you reported. Please answer to what extent you agree with the following statements.”

Measures - Time 2

Collective psychological ownership. CPO was measured using Pierce, Jussila and Li’s (2017) five-factor scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The participants were asked to “think about the house, automobile, or some other item that you own or co-own with someone, and the experiences and feelings associated with the statement ‘this is ours!’ The following questions deal with the ‘sense of ownership’ that you and your work team members feel for (TEAMWORK OUTPUT). Indicate the degree to which you personally agree or disagree with each of the following.” The items for this factor included “We (my team members and I) have a collective sense that this (TEAMWORK OUTPUT) is ours.”

Results

The means, standard deviations, and correlations for all the variables are presented in Table 4. Cronbach's alpha values for the constructs, which are provided in the diagonal, range from .63 to .92, with most exceeding the .70 cutoff suggested in the literature.

Table 7 - Study 2: Descriptive Statistics, Internal Consistency Reliabilities, and Correlations

	Variable	<i>M</i>	<i>SD</i>	4	5	6	7
1.	Age	46.9	12.1				
2.	Gender ^a	.57	.50				
3.	Work Experience	23.9	11.2				
4.	Control	3.39	.54	(.63)			
5.	Knowledge	4.27	.63	.27**	(.88)		
6.	Investment	4.22	.66	.17*	.52**	(.89)	
7.	CPO ^b	4.20	.63	.17*	.39**	.35**	(.92)

Notes: *N* = 183; internal consistency reliabilities appear in parentheses along the diagonal;

^adummy coded: 1 = male, 0 = female; ^bCPO = collective psychological ownership; ***p* < .001

**p* < .05.

Confirmatory factor model. We used MPLUS 8.1 (Muthén & Muthén, 2017) to test the discriminant validity of our measures. The results of the CFA model indicate that the fit indices fall within an acceptable range ($\chi^2 = 199.722$; *p* < .001; *df* = 113, RMSEA = .07; CFI = .95; TLI = .94, SRMR = .06; Hu & Bentler, 1999).

To check for potential common method bias, we followed Podsakoff, MacKenzie, Lee, and Podsakoff's (2003) guidelines and added an orthogonal latent common method factor to our hypothesized confirmatory factor model. This model yielded a good fit ($\chi^2[96] = 126.60$, *p* = .02, CFI = .99, NNFI = .99, RMSEA = .00) and was significantly different from a model that did not include the method factor ($\Delta\chi^2[39] = 73.12$, *p* < .001). However, the factor loadings of all our measures of interest were medium to high (λ s range from .43 to 1.00, mean = .72) and remained significant (*t*-values range from 3.84 to 14.00) despite the addition of this unmeasured method factors. These findings further confirmed the psychometric adequacy of our measures (Bagozzi, 2011).

Structural equation model. We used MPLUS 8.1 (Muthén & Muthén, 2017) to test the relationships between the OAEs (control, intimate knowledge, and investment) and CPO. The

results of our model reveal that the fit indices fall within an acceptable range ($\chi^2 = 148.190$; $p < .01$; $df = 113$, RMSEA = .04; CFI = .98; TLI = .98, SRMR = .06). The regression analysis shows that investment ($\beta = .19$, $p < .01$) and knowledge ($\beta = .29$, $p < .01$) are related to CPO, whereas control is not ($\beta = .05$, ns). Thus, H1b and H1c are supported, whereas H1a is not.

Study 3: CPO Antecedents and Consequences

Building on Study 2, which found positive relationships between two OAEs (investment and intimate knowledge) and CPO, Study 3 relates the OAEs and CPO to important team worker perceptions and intentions while distinguishing CPO from IPO and from team member attitudes toward the team, such as team identification and affective commitment.

Procedures and sample

The antecedents, mediators, and consequences were measured in three different waves. We used the TurkPrime platform to obtain team members (a) working in real teams; (b) working on a project for at least 1 month prior to the screening; and (c) working on a project that would last at least 3–6 months (the duration of our study). We contacted 5,048 workers and administered a screening questionnaire to determine whether a specific teamwork output was being created and to gather information regarding professional status, teamwork experience, team size, team interdependence, and teamwork project duration. The participants in teams with more than 10 members or less than three members were excluded. We asked the participants to name and describe what they were creating in their teams and included only the participants who described a specific tangible product, such as a budget template, or an intangible product, such as a resourcing process, that was being collectively created by an interdependent team.

Data were collected through a screening survey and, in waves, three subsequent waves to test the mediation model. Dormann and Van de Ven (2014) state that the variables measured and their operationalization should inform how long the lags between waves should be. The screening survey was conducted at T0, and the three data collections were conducted at T0 plus one month (T1), T0 plus three months (T2), and T0 plus 4 months (T3). Because participants had been working together long enough, i.e., at least one month, to reflect on levels of control, intimate knowledge, and investment in the teamwork product, each of which is a precursor to

CPO, OAE were measured in T1. CPO itself and measures for discriminant validity were measured in T2, after which participants had experienced at least three months of teamwork related to a specific product. Workplace outcomes were measured in T3, including team effectiveness, intentions of leaving the team, and championing of the teamwork output. In each wave, prior to answering questions, participants were reminded of the teamwork output they had initially described in the screening survey.

Following the screening process, 627 workers were invited to participate in our three-wave study. At T1, 322 participants responded to the survey, followed by 254 at T2 and 200 at T3. Hence, the final sample for the study was 200 working adults with teamwork experience and who came from a wide cross-section of professional backgrounds. The mean age for the sample was 35.2 years (SD 10.3), the mean work experience was 14.6 years (SD 10.0), and 44% were female.

Measures

Unless otherwise indicated, all Study 3 scales were measured using a 5-point Likert-type scale that ranged from 1 = strongly disagree to 5 = strongly agree.

Predictors (Time 1) and mediators (Time 2). *OAEs* and *CPO* were measured in the same way as in Study 2.

Outcomes (Time 3). Team effectiveness evaluations were assessed using four items created for the current research to measure specific aspects of team effectiveness, such as meeting deadlines and avoiding technical problems. The items included “To what extent did the team respect deadlines?” The participants evaluated each on a 5-point scale that ranged from 1 = not at all to 5 = very much so. The participants could indicate “not applicable” if they felt a specific aspect of team effectiveness did not apply to their team context.

Team *turnover intentions* were measured using three of the five items from Rusbult, Farrell, Rogers, and Mainous (1988) adapted to a team context. The items included, “I seriously consider quitting this team.”

Championing the teamwork output was assessed using five items created for the current study. The items included, “I am willing to represent the TEAMWORK OUTPUT outside my team.”

Team identification was assessed using four items from Mael and Ashforth's (1992) six-item scale, adapted to a team context. The items included "When someone criticizes this team, it feels like a personal insult."

Affective commitment was measured using four items from Meyer, Allen, and Gellatly's (1990) affective commitment scale, adapted to a team context. The items included, "I really feel as if the team's problems were my own."

IPO was measured using four items from Van Dyne and Pierce's (2004) seven-item scale adapted to a team context. The items included, "I have a sense that the TEAMWORK OUTPUT is mine."

Results

First, we report the measurement model and discriminant validity analyses. Second, we test the hypotheses using structural equation modeling and mediation analyses. The correlations, means, and standard deviations for all the variables are presented in Table 5. Cronbach's alpha values are provided in the diagonal and ranged from .72 to .93.

Discriminant validity

To study the discriminant validity of CPO, we conducted a series of CFAs for the three OAEs, CPO, team identification, affective commitment, and IPO. We first conducted a CFA to assess the fit of our hypothesized seven-factor model. The items were specified to load on their respective scales. The results in Table 6 indicate that the seven-factor model provided an overall good fit to the data, clearly demonstrating discriminant validity in terms of CPO being distinct from team commitment, identification, and IPO. Specifically, $\chi^2 / df = (813,098/443) = 1.84$, which is close to 2, thus indicating a good fit; the CFI and TLI are, respectively, .91 and .90, which also indicates an acceptable fit; and the RMSEA and SRMR values of .064 and .061, respectively, are below the .08 cutoff suggested by Hu and Bentler (1999). Thus, in following Schreiber, Nora, Stage, Barlow, and King (2006) – who stated that the χ^2 , RMSEA, and RSMR indices are most important when evaluating model fit and advocated for an overall approach for a fit evaluation that is less strict regarding the CFI and TLI cutoff points – we evaluate the seven-factor model as having an overall good fit.

The seven-factor model was compared with five alternative models (see Table 6): a six-factor model that combines CPO with IPO (model 4), a six-factor model that combines CPO with affective commitment (model 5), and a six-factor model that combines CPO and identification

(model 6). Additionally, we compared the seven-factor model with a three-factor model that combines all the psychological-ownership-related constructs (model 2) and with a four-factor model that collapses all IPO and CPO items into a single factor and all OAEs items together into another factor (model 3). Finally, we tested a one-factor model (model 1). All χ^2 difference tests showed that the seven-factor model fit significantly better than all the alternative models ($p < .001$).

Table 8 - Study 3: *Descriptive Statistics, Internal Consistency Reliabilities and Correlations*

Variable	<i>M</i>	<i>SD</i>	4	5	6	7	8	9	10	11	12	13
1. Age	35.2	10.3										
2. Gender ^a	.56	.50										
3. Work Experience	14.6	10.0										
4. Control	4.23	.86	(.72)									
5. Knowledge	4.14	.74	.09	(.90)								
6. Investment	4.09	.71	.16*	.53**	(.91)							
7. CPO ^b	4.06	.79	.22**	.41**	.42**	(.93)						
8. Turnover Intentions	1.72	.97	-.02	-.37**	-.37**	-.39**	(.95)					
9. Effectiveness	4.24	.71	.23**	.31**	.31**	.51**	-.47**	(.81)				
10. Championing	3.85	.88	-.04	.15*	.22**	.32**	-.33**	.35**	(.92)			
11. Team Identification	3.81	.79	.08	.35**	.49**	.44**	-.25**	.29**	.37**	(.74)		
12. Affective Commitment	3.69	.91	.04	.30**	.49**	.44**	-.44**	.30**	.39**	.49**	(.87)	
13. IPO ^c	3.31	.97	.10	.00	.06	.12	-.07	.21**	.33**	.21**	.19**	(.91)

Notes: N = 200; internal consistency reliabilities appear in parentheses along the diagonal; ^adummy coded: 1 = male, 0 = female;

^bCPO = collective psychological ownership; ^cIPO = individual psychological ownership; ** $p < .001$ * $p < .05$.

Table 9 - Study 3: CFA Models

	Model	χ^2	df	RMSEA	CFI	TLI	SRMR	χ^{2DIF}
1	1 Factor	2796.137	464	.159	.437	.398	.136	1983.039***
2	3 Factor (OAE, IPO, CPO), Identification, Commitment	2420.388	461	.146	.527	.491	.134	1607.290***
3	4 Factor (IPO, CPO), (OAE), Identification, Commitment	2189.102	458	.138	.582	.547	.191	1376.004***
4	6 Factor (IPO, CPO), Control, Knowledge, Investment, Identification, Commitment	1708.108	449	.118	.696	.664	.103	895.010***
5	6 Factor (Commitment, CPO), Control, Knowledge, Investment, Identification, IPO	1204.948	449	.092	.817	.798	.084	391.850***
6	6 Factor (Identification, CPO), Control, Knowledge, Investment, IPO, Commitment	960.692	449	.075	.876	.863	.084	147.59***
7	7 Factors	813.098	443	.065	.911	.900	.064	

Notes: df = degrees of freedom, $\chi^{2DIF} = \chi^2$ difference (tested in relation to the hypothesized seven-factor model) *** $p < .0001$

Structural equation model

As recommended by Anderson and Gerbing (1988), prior to testing our hypotheses, we examined the fit of the CFA to test the adequacy of the measurement model. The fit indices of the proposed model were acceptable: $\chi^2 = 770.081$, $p < .01$, $df = 114$, CFI = 0.92, TLI = 0.90, RMSEA = 0.07, and SRMR = 0.06.

Structural equation modeling using MPLUS 8.1 (Muthén & Muthén, 2017) was used to test our hypotheses. The fit indices of the proposed model were acceptable: $\chi^2 = 625.053$, $p < .01$, $df = 329$, CFI = 0.93, TLI = 0.91, RMSEA = 0.07, SRMR = 0.06. Table 7 presents the SEM results. As indicated in Table 7, intimate knowledge ($\beta = .26$, $p < .05$) and investment ($\beta = .28$, $p < .05$) were related to CPO, whereas control was not ($\beta = .17$, ns). Thus, Hypothesis 1b and Hypothesis 1c were supported, and H1a was not.

As predicted by Hypothesis 2, CPO related to team effectiveness evaluations ($\beta = .34$, $p < .001$). Hypothesis 3 proposed that CPO mediates the relationship between control (H3a), intimate knowledge (H3b), and investment (H3c) and team effectiveness evaluations. Hypothesis 3a was not supported because the indirect effects of control on the outcome variables were not significant. The indirect effect between intimate knowledge and team effectiveness evaluations, however, was mediated by CPO ($\beta = .09$, 95% CI .04, .18), thus providing support for Hypothesis 3b. The indirect effect between investment and team effectiveness evaluations was also mediated by CPO ($\beta = .09$, 95% CI .04, .19), thus providing support for Hypothesis 3c.

As predicted by Hypothesis 4, CPO related negatively to team turnover intentions ($\beta = -.37$, $p < .01$). Hypothesis 5 proposed that CPO would mediate the relationship between control (H5a), intimate knowledge (H5b), and investment (H5c) and team turnover intentions. Hypothesis 5a was not supported because the indirect effect of control on the outcome variable was not significant. Furthermore, the indirect effect between intimate knowledge and turnover intentions was also significant ($\beta = -.10$, 95% CI -.22, -.03),⁴ providing support for H5b. H5c was supported because the indirect effect between investment and team turnover intentions was mediated by CPO ($\beta = -.10$, 95% CI -.22, -.04).

⁴ The p-value and confidence interval (CI) for the results presented in Table 7 appear to be in conflict. In these cases, the CI is more informative because it takes into account possible nonsymmetry in the sampling distribution of the estimate (American Statistical Association, 2006).

Table 10 - *Study 3: Direct and indirect path coefficients of the hypothesized model*

Paths	β	SE	p	CI 95%	
				lower	upper
Control → CPO	.17	.10	.098		
Knowledge → CPO	.26	.10	.007		
Investment → CPO	.27	.11	.013		
CPO → Effectiveness Evaluations	.34	.09	.000		
CPO → Turnover Intentions	-.37	.13	.005		
CPO → Championing Intentions	.40	.12	.001		
Control → CPO → Effectiveness Evaluations	.06	.03	.098	.01	.12
Control → CPO → Turnover Intentions	-.06	.04	.148	-.15	-.01
Control → CPO → Championing Intentions	.06	.05	.139	.02	.16
Knowledge → CPO → Effectiveness Evaluations	.09	.04	.031	.04	.18
Knowledge → CPO → Turnover Intentions	-.10	.05	.067	-.22	-.03
Knowledge → CPO → Championing Intentions	.11	.05	.038	.04	.22
Investment → CPO → Effectiveness Evaluations	.09	.04	.035	.04	.19
Investment → CPO → Turnover Intentions	-.10	.05	.048	-.22	-.04
Investment → CPO → Championing Intentions	.11	.05	.039	.05	.23

Note: Indirect paths calculated with 10,000 bootstraps

As predicted by Hypothesis 6, CPO was related to championing intentions ($\beta = .40, p < .001$). Hypothesis 7 proposed that CPO would mediate the relationship between control (Hypothesis 7a), intimate knowledge (Hypothesis 7b), and investment (Hypothesis 7c) and championing intentions. Hypothesis 7a was not supported because the indirect effect of control on the outcome variable was not significant. However, the indirect effect of intimate knowledge on championing the teamwork output was significant ($\beta = .11, 95\% \text{ CI } .04, .22$). Hence, Hypothesis 8b was supported. Furthermore, the indirect effect of investment on championing was mediated by CPO ($\beta = .11, 95\% \text{ CI } .05, .23$), thus providing support for Hypothesis 8c.

Study 4: Predictive Validity of OAEs at the Team Level

Whereas in our first three studies, CPO was measured at the individual level (e.g., team member individual perspective on “We (my team members and I) have a collective sense that

this (TEAMWORK OUTPUT) is ours.”), in Study 4 we investigate CPO as an emergent state in order to explore the interrelationship between the OAEs and CPO at the team level.

Procedures and sample

Data were collected from the participants of the Global Management Challenge (GMC; www.worldgmc.com). In the challenge, teams ran a fictitious company and competed to attain the highest share price on a simulated stock exchange. The simulation took place over 5 weeks, with each week representing one fiscal quarter. Teams made weekly decisions about production, purchasing, personnel, marketing, and finance. Following each decision point, the share price and competitive ranking for each team were calculated, and a financial performance report was sent to each team. The OAEs were measured in Week 3 when the teams had already proposed and received feedback on three decisions. Thus, at this point, the team members had sufficient experience to evaluate collective investment in, knowledge of, and control over the team decisions and were likely to have formed a sense of “ours.” CPO was measured in Week 5. The 48 participating teams (203 individuals) consisted of company managers (59.6%), university students (35.5%), or both (4.9%). Teams had three to five members, the average team size was 4.4 persons ($SD = .79$), average participant age was 32.8 years ($SD = 10.3$), and 65% were male.

Measures - Time 1 (week 3 of the GMC)

OAEs: Control, intimate knowledge and investment. The OAEs were measured with an abbreviated version of the previously validated measure (Studies 1a and 1b), here using three items for each subscale. For this data collection, the wording,⁵ “TEAMWORK OUTPUT” was replaced by the specific work product of these teams during the GMC, that is, “DECISION.” The responses were on a 7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*. Cronbach’s alpha was .98 for investment, .88 for control, and .95 for intimate knowledge.

Measures - Time 2 (fifth and final week of the GMC)

Collective psychological ownership. CPO was measured using Pierce, Jussila and Li’s (2017) five-item scale, with responses on a 7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*. Cronbach’s alpha for the CPO scale was .99 ($M = 6.24$, $SD = 0.98$). The items included “We (my team members and I) have a collective sense that this decision is ours”.

⁵ All items in the current study were translated and backtranslated from English to Portuguese by a bilingual OB researcher who was independent of the research team.

Results

We used MPLUS 8.1 (Muthén & Muthén, 2017) to test the discriminant validity of our measures. Team scores were calculated by aggregating individual item scores per team. Considering the number of free parameters in the model and the observations available, we used the partial disaggregation of the items approach recommended by Bagozzi and Heatherton (1994); this approach enables each dimension to be measured with two indicators, wherein each indicator is itself the average of multiple items. Following this approach, each OAE dimension was measured using two items computed as the average of, respectively, the odd items and the even items. Similarly, the CPO construct was measured by two items computed as the average of, respectively, the odd items and even items. Table 8 summarizes the mean scores, standard deviations, correlations, and within-group interrater agreement (*rwg(j)s*) for all variables in the current study.

Because the unit of the present analysis is the team, the scores for all the measures were calculated using the mean of the team members' responses and were aggregated to the team level for statistical analysis. The variables presented acceptable average values of within-group interrater agreement (*rwg(j)*; James, Demaree, & Wolf, 1993), based on a cutoff point of .70 (Cohen, Doveth, & Eick, 2001).

Table 11 - *Study 4: Descriptive Statistics and Correlations*

	Variable	<i>M</i>	<i>SD</i>	<i>rwg(j)</i>	1	2	3
1.	Control	5.88	.71	.88			
2.	Knowledge	6.04	.69	.91	.84**		
3.	Investment	5.57	.99	.83	.67**	.93**	
4.	CPO ^a	6.24	.98	.96	.37*	.55*	.43*

Notes: N = 48 teams; CPO^a = collective psychological ownership;

***p* < .001 **p* < .05.

Considering the effects of multicollinearity because of the high correlation between the OAE dimensions at the aggregated level, the variables that compose the OAEs (control, knowledge, and investment) were modeled as a second-order factor model. The second-order CFA indicates superior fit indices ($\chi^2 = 36.305$; *p* < .001; *df* = 16, RMSEA = .163; CFI = .950;

TLI = .912, SRMR = .086; Hu & Bentler, 1999) compared with the model with OAEs as the first-order variables ($\chi^2 = 76.140$; $p < .001$; $df = 19$, RMSEA = .250; CFI = .859; TLI = .792, SRMR = .143), presenting a significant chi square difference of 39,835 ($p < .001$). Additionally, control ($\beta = .69$, $p < .005$), knowledge ($\beta = 1.06$, $p < .001$) and investment ($\beta = .86$, $p < .001$) significantly relate to the second-order OAE construct that includes all three dimensions.

Structural equation model. We used MPLUS 8.1 (Muthén & Muthén, 2017) to test H8, which proposed that CPO would be predicted by control, intimate knowledge, and investment. The SEM model presented acceptable fit indices ($\chi^2 = 36.305$; $p < .001$; $df = 16$, RMSEA = .163; CFI = .950; TLI = .912, SRMR = .086) (Hu & Bentler, 1999). The SEM analysis shows that the OAE second-order factor has an impact on CPO ($\beta = .47$, $p < .001$). The results of Study 4 indicate that at the group level, the aggregated OAEs lead to CPO.

Discussion

In the current research, we investigated CPO in terms of both activating experiences and consequences. In Study 1, we developed and validated measures for the three OAEs that have been proposed as avenues for the emergence of CPO. In Studies 2, 3, and 4, we tested the relationship between these OAEs and CPO and examined the mediating role of CPO in the relationship between the OAEs and team turnover intentions, team effectiveness evaluations, and intentions to champion the shared work product. Consistent with psychological ownership theory (e.g., Pierce, Kostova & Dirks, 2001), all three proposed OAEs related to CPO (see Tables 4 and 5). That is, individual perceptions of shared experiences of control, intimate knowledge, and investment in a teamwork product predicted CPO, as proposed by Pierce and Jussila (2010). However, when all three antecedents were simultaneously considered, only the relationships between investment and CPO and between intimate knowledge and CPO remained significant.

Our results show that CPO is distinct from feelings toward the team, such as team identification, commitment and also from IPO (see Table 6). CPO, when measured from an individual perspective, predicted several important team workers' perceptions and intentions. Team members who felt CPO toward the teamwork product perceived their team as being effective and wanted to remain on the team. In addition, team member feelings of CPO predicted intentions to champion the teamwork product, a behavior specifically related to the work output

rather than to the team itself. CPO mediated the relationships between investment and turnover intentions, championing intentions, and perceived team effectiveness. CPO also mediated the relationship between intimate knowledge and both championing intentions and perceived team effectiveness. Thus, most mediation hypotheses were supported.

In Study 4, individual perceptions for each OAE item were aggregated at the team level to provide a collective score for each item. The items for the three OAEs were then combined into a single second-order factor because of the high correlations between the three OAEs at the collective level (e.g., a .93 correlation between knowledge and investment). The high correlations may have resulted from a process, as has been found for other affective-motivational constructs (Costa, Passos, & Bakker, 2014), whereby moving from an individual internal state – based on observable cues – to the awareness of a shared state may result in more general perceptions of how a group is functioning. This holistic perception of the OAEs, when combined into a single factor, predicted CPO.

It is important to note how CPO was measured in our studies. Because we aimed to study the origin of CPO and to identify the process mechanisms that form CPO, in Study 1, Study 2, and Study 3, we measured CPO from an individual perspective with a collective referent. That is, individual team members reported their perceptions of collective control, knowledge, and investment along with their perceptions of CPO. Having thus examined feelings of CPO at the individual level, where they originate, in Study 4 we assessed CPO as a shared emergent state at the collective level (Kozlowski & Klein, 2000) by aggregating individual scores on items that used a collective referent.

The present research has several strengths. The development of a measure for OAEs was theory driven and employed a rigorous process of scale development and empirical validation. Specifically, a literature review and expert input were used to generate items, and exploratory and confirmatory factor analyses were conducted on two different samples. The validated scale for the OAEs can assist in future research on CPO in different team contexts and with different work products. Additionally, to clarify the CPO antecedents and consequences, we used two-wave and three-wave lagged designs to account for the development of CPO across time and to reduce possible concerns regarding common method bias. The present research contributes to theory regarding team emergent states by addressing calls by Kozlowski and Klein (2000) for more precise theory regarding the steps leading to the emergence of specific phenomena. In

doing so, the current research strengthens the conceptual foundation for CPO by combining theories of self-extension (e.g., Belk, 1988) with the emergence literature to propose micro-processes that lead to CPO emergence. In particular, we detailed how feelings of ownership toward work products contribute to workers' sense of self-continuity, which can ease changes and transitions (Anderson, 1985, as cited in Belk, 1988). An important contribution of the current research lies in proposing how at the team level, self-extension into a shared work product would happen through the interactive dynamics between team members with each other and in relation to the team's task. In turn, these shared experiences are expected to be important in clarifying the alignment between the formal distribution of tasks and the actual fulfillment of team member roles (e.g., McGrath, Arrow, & Berdahl, 2000), resulting in team members acknowledging co-ownership of the work product. From a managerial perspective, the current research shows the importance of employees' feelings of ownership toward collectively developed intangible (e.g., a project idea developed by a team) or tangible products (e.g., the project implementation report written by all team members). Feeling that a product is "ours" increases intentions to promote and engage in extra-role behaviors on behalf of the team product and strengthens positive feelings toward the team and desires to remain a part of the team. Given these positive outcomes of CPO, organizations should create opportunities for all employees to exercise control over, familiarize themselves with and invest themselves in the products of collective work. However, organizations also need to make sure that employees interact in relation to shared products and are aware of the work-product-related experiences of fellow team members, in relation to both intangible and tangible work products. Only when team members feel that they all have experienced OAEs regarding a teamwork product will feelings of "me and mine" become feelings of "us and ours." Feedback training programs focused on encouraging team members to acknowledge and evaluate other team members' participation in decision making (control), familiarity with the task (intimate knowledge), and contributions to the collective product (investment) are one way in which feelings of CPO can be nurtured within teams. These training programs may be especially important to maintaining a deep connection to the teamwork product within teams that experience changes in membership.

At the team level, the three OAEs contributed to the formation of CPO when combined in a single, more holistic perception. Future research should continue to explore these constructs at the group level to more completely understand CPO as a shared feeling in teams. In addition,

although we have demonstrated that CPO has important effects not only on intentions toward the work product but also on individual evaluations of team effectiveness, all the data were self-reported. Future research should also investigate the effects of CPO on objective indicators of performance (such as client satisfaction or supervisor ratings).

Our studies have several limitations that should be addressed in future research. A puzzling result of our investigation is that when all three OAEs were simultaneously considered – and in contrast to previous studies on the development of job-based PO (Brown, Pierce, & Crossley, 2014) – the relationships between control and CPO were not significant. It seems possible that which one of the three OAEs leads to CPO depends on the nature of the collective work output and/or on idiosyncratic team characteristics and typologies (e.g., Sundstrom, De Meuse, & Futrell, 1990; Hollenbeck, Beersma, & Schouten, 2012), which can influence the control exercisable by team members. It is possible that the lower Cronbach's alpha values across the four studies for the control subscale (.63 - .72) could indicate that control is not as universally important to CPO over teamwork products, as the intimate knowledge and investment subscales. For example, a military action and negotiation team works in brief performance events in which control over the output is only shared among a subset of team members, depending on their specific role and status. Rather, the control subscale may influence CPO only in contexts where team member control over the work product is possible and can be expected. Future research might investigate how team types (e.g., according to skill differentiation, authority differentiation, and temporal stability) can influence the emergence of CPO (Hollenbeck, Beersma, & Schouten, 2012). Future research might also investigate the degree of effective control that the team exercises over a team product, in addition to the degree of sharedness of control among team members. Repeated measures of the OAE and of CPO should be collected in future research, in order to provide a stronger test of causality and to investigate the possible recursive nature of the relationship between them.

We contributed toward the examination of the nomological network of CPO, testing its antecedents and consequences and the discriminant validity from team identification, affective commitment, and IPO. In future research, the current work should be extended by testing against/within a nomological network of other team constructs, such as collective feelings of authentic pride (Tracy & Robbins, 2007), which may act both as an antecedent and consequence of CPO that recursively feeds the link between CPO and OAEs. Future research should also

focus on the impact of teamwork design on CPO. For instance, the lack of task identity (the extent to which the group does not contribute to a complete task from beginning to end) may create a disconnect between their collective efforts and the products created, which can lead to work alienation (Chiaburu, Thundiyil, & Wang, 2014).

Another interesting area for future research could build on the conceptualization of CPO as having both cognitive and affective aspects (Pierce & Jussila, 2010). It would be interesting to investigate if the different sources of team identification proposed by Henry, Arrow, and Carini (1999) – identification, interdependence and cohesion – lead to cognitive-based versus affect-based CPO, and to different kinds of outcomes. Furthermore, it is also important to study the possible negative aspects of CPO, such as envy, territoriality, selfishness and hostility toward other groups or even toward individuals within a team who are perceived as a threat to a valued collective product.

Future research should empirically examine the emergence of CPO over time. One intriguing possibility that merits examination is if CPO will develop in a recursive fashion, whereby OAEs influence CPO, which then would cause team members to increase their control, knowledge of and investment in the team output. Feelings toward the team might also result from CPO and develop in parallel, rather than just serving as a necessary condition, as we have assumed here.

Conclusions

Given the potential benefits of employee feelings of shared ownership in teamwork products, organizations and managers can benefit from better understanding the antecedents and consequences of CPO over and above feelings of individual ownership and attitudes toward the team itself. We hope that the current research has taken an important step forward by validating a scale for measuring key antecedents, testing a model that clarifies how feelings of CPO are formed among team members through OAEs and, in turn, how feelings of CPO positively impact the attitudes and intentions of team members toward the team and its collective work products.

Chapter III

“This is our idea!”: The impact of team membership change in Collective Psychological Ownership and team effectiveness outcomes

Abstract

In this chapter, it is proposed that an important reason why changes in group membership can be so consequential is through its effects on feelings of psychological ownership towards the teamwork product. In two studies we investigate the relation between team members' feelings of Collective Psychological Ownership (CPO) and team members' response to team membership change, both as an individual response and as a team emergent state. First, a scenario study was conducted to explore the mediating effect of CPO on the relationship between team membership change, in terms of adding a member and removing a member from the team, and team effectiveness outcomes. Second, an experimental study was conducted to explore the mediating effect of the Ownership Activating Experiences (OAE) on the relationship between team membership change, in terms of adding a member to the team, and the emergence of CPO.

Our findings show that team membership change by adding and removing a member has a detrimental impact on individual feelings of CPO. CPO also mediates the relationship between team membership change and team effectiveness outcomes. In the second study of this chapter, effects of adding a new team member are examined in more detail, using an experimental methodology for the first time to investigate CPO. Results show that, at the team level, team membership change by adding a new team member negatively impacts the OAE and consequently the emergence of CPO.

Keywords: Team membership change; Collective Psychological Ownership; Team effectiveness perceptions

Introduction

Feeling connected to the work we do is a natural response towards work outputs (Belk, 1988; Dittmar, 1992; James, 1980), including those we produce in teams, which are the most frequent structure to accomplish work outputs in organizations (Kozlowski & Bell, 2001). However, given that in organizations teams are rarely static entities with stable composition (Arrow & McGrath, 1995; Levine, Choi, & Moreland, 2003; Neale, Mannix, & Gruenfeld, 1998; Thomas-Hunt & Phillips, 2003), the feelings of ownership developed towards work products become a central and enduring focus of teamwork. In this chapter, we propose that an important reason why changes in group membership can be so consequential is through effects on feelings of psychological ownership towards the teamwork product (Pierce, Kostova, & Dirks, 2001, 2003; Pierce, O'Driscoll, & Coghlan, 2004; Van Dyne & Pierce, 2004).

In their seminal work, Pierce and Jussila (2010) defined Collective Psychological Ownership (CPO) as the collectively held sense that a target (or part of it) belongs to the group ("It is ours"). Whereas individual psychological ownership (IPO) refers to feelings of "mine", CPO specifically refers to feelings of "ours" and hence always has a collective agent (i.e., This is ours [versus mine]; This belongs to the group [versus to me]). Feelings of collective ownership can also be felt toward clients, work locations, and even colleagues. In this work, due to its relevance in teams that experience team membership change, we focus on feelings of CPO toward a specific type of target, namely a teamwork output.

Pierce and Jussila (2010) theorized that in order to develop CPO, team members have to share at least one of three important antecedents; acquiring intimate knowledge about the target, investing time and energy into the target, and exercising control over the target – the ownership activating experiences (OAE). Additionally, Pierce and Jussila (2010) refer that it is also important that the members of the group interact significantly to produce this work output, creating a sense of "us".

For a group of individuals to experience a referent shift from "I" to "us" and from "mine" to "ours" the group has to share experiences relating to the target. Indeed, interdependence is many times why teams are formed (Campion et al., 1993). In work teams, a collective functional interdependence and coordination are associated with the collective self construal that is formed (the "us") (Brewer and Gardner, 1996). Team members that do not participate in this

interdependence – by investing themselves into the target and influencing the building of it – are perceived as “outsiders” that do not work for the welfare of the group (Brewer and Gardner, 1996). So, an awareness of *sharedness* (that is, “we are one and it is ours”) differentiates collective psychological ownership from individual psychological ownership (Pierce & Jussila, 2010).

As CPO emerges from a combination of person-object, other person-object, and person-to-person interactions (Pierce, Kostova, & Dirks, 2001), anything that negatively affects these relationships can impact the emergence of feelings of CPO. It therefore becomes important to study CPO in the context of team membership change, where shared experiences relating to teamwork output might vary over time and among team members. Because they can affect the social relationships in a group and the involvement of standing members in the task (Levine et al., 2003), changes in team membership are expected to affect feelings of ownership within the group in important ways, and in turn impact team effectiveness. In the next section, we develop our arguments for the importance of CPO in the responses to changes in membership.

In two experimental studies, consequences of team membership change are investigated. In the first study, a scenario-based experiment was administered via an online questionnaire (n=117) to test whether CPO, measured from the individual perspective, mediates the effect of team membership change on team member effectiveness perceptions and team turnover intentions. We consider the effects of both removing a team member and of adding a team member on team effectiveness perceptions and team turnover intentions via feelings of CPO at the individual level. In the second study, in an experimental study with 50 teams, we study the OAE and CPO as an emergent state, and test the mediating effect of the OAE between adding a new team member and CPO.

Study 1: The indirect effect of CPO in the relationship between team membership change and effectiveness outcomes

The relationship between team membership change and CPO

Group membership change refers to the addition of newcomers to a group or the departure of one or more members from the group (Ziller, 1965). Given the frequency and pace of change in

organizations, including the formation, dissolution, and adjustment of both temporary and more stable teams, better understanding the effects of change in membership is critical (Arrow & McGrath, 1995; Harrison, Price, Gavin, & Florey, 2002). Membership change can have both negative and positive effects on group functioning and performance. On the one hand, changing team membership may be negative because it disrupts members' routines for interacting and accomplishing their tasks (Goodman & Leyden, 1991; Pisano, Bohmer, & Edmondson, 2001). On the other hand, changes in group membership may improve group functioning by increasing the diversity or appropriateness of the group's knowledge base to the task (Levine, Choi & Moreland, 2003; Kane, Argote, & Levine, 2005).

CPO can be defined as an individual perception that the work is "ours" and can also emerge as shared understanding in a team that the work product is "ours" (Giordano, Patient, Passos & Sguera, 2020). As a relatively new construct in the teams literature, it is important to clarify the possible levels and differentiate this new construct from other team constructs that may appear similar. Indeed, psychological ownership can be either personal or collective (mine versus ours) with respect to who owns a target. CPO can also be at the individual versus the group level with respect to who evaluates the levels of ownership ("I feel this is owned by..." versus "all of us feel this is owned by ..."). Thus, CPO can be either a collectively held perspective/understanding (e.g., Pierce, Jussila & Li, 2017) or an individual feeling. It is important to note also that individual psychological ownership (IPO) and CPO constructs are not fully conceptually isomorphic in that the latter cannot be considered as a level of the first because feelings of ours are not the same as shared feelings of mine.

For team members to develop feelings of CPO over the teamwork products ("the report/idea/campaign is ours"), individuals must recognize that others are also related to the work product, within a team context where members have a sense of "us" within the team (Giordano, Patient, Passos & Sguera, 2020; Pierce & Jussila, 2010; Henry, Arrow, & Carini, 1999). In the context of dynamic team membership change, the teamwork product can become especially important to establishing this sense of "us", insofar as it provides a continuing focus for team efforts and visible outcome of its collective efforts. The shared experiences of investment, control and intimate knowledge that are antecedents to CPO (Pierce & Jussila, 2010) also relate team members to one another and to the work they do (Pierce & Jussila, 2010; Pierce, Kostova, & Dirks, 2001). Team members' acquisition of shared knowledge regarding, investment in, and decisions

concerning teamwork products provide evidence of the teams' interdependence and mutual connection to the work products they produce. However, when team membership changes, as in the case of a new member that has not invested in the building of the teamwork product joining the team, the OAE are no longer shared (only) among the team members.

The shared relationship that team members have with a teamwork product can be one way in which team members perceive the differences among themselves to be less than the differences between them and individuals not on the team, such that their self-concept is derived, in part, from belonging to the group (Turner, et al., 1987). This sense of “us” held by individual team members creates a basis for the “self-extension” of the team to include work products within its collective identity as “ours.” Disruptions to the team composition, whether by adding or removing members, is expected to undermine the sense of “us”, and of “ours” toward teamwork products.

Removing a group member is expected to reduce the strength of “us” feelings, as the new “us” no longer includes somebody who was originally psychologically tied to and invested in the target that is regarded as “ours”. In addition, as targets of ownership become grounded psychologically, they become a part of the “extended self” (Belk, 1988; Dittmar, 1992). In this way, a target of ownership becomes a part of the group’s “extended sense of us”. Removing a team member will dilute a team’s sense of “us” as some of the original members are now outside of the team. Additionally, feelings of collective ownership – “ours” – will also be negatively impacted when one of the people who contributed to the target is now separate from and outside of the group.

H1a: Removing a team member will relate negatively to CPO of remaining team members.

The theoretical intersection between collective identification theory and self-extension theory creates a rational for understanding the effect of adding a new team member and CPO. Self-extension theory proposes that a *person-object* bond and also a *person-object-others* bond play important roles in defining the possessive relationship, and when “others” come into play, they can alter and even undermine the relationship with the target of ownership (Belk, 1988; Dittmar, 1992). Changing group composition by adding a team member is expected to have a negative impact on CPO, for the following reasons. CPO emerges through three types of experiences (Pierce & Jussila, 2010), which will not have been shared by a new group member: first, the new member

will not have invested effort into the target; second, the new member will not have exercised control or influence over the target, and; third, the new member will lack intimate knowledge of the target. Agreement among team members that they have all contributed to a target creates strong feelings of CPO (Pierce & Jussila, 2010). This agreement among team members presupposes that the group has sufficient shared experiences, in terms of visible collaboration, for team member to self-define themselves as an “us” and create the person-object-others bond (Pierce & Jussila, 2010). A group with one or more new members will lack shared experiences vis-a-vis the target, which will tend to weaken the feelings of “us” and “ours”.

H1b: Adding a team member will relate negatively to CPO of original team members.

The relationship between CPO and team effectiveness outcomes

Kozlowski and Ilgen (2006) characterized effective teams by their focus on accomplishing team goals, demonstrated by team member efforts to contribute towards task requirements and make decisions to resolve task-driven problems (Kozlowski & Ilgen, 2006). Also, Arrow, McGrath and Berdahl (2000) note the importance to team viability of aligning the formal distribution of tasks (the “standing team”) and the actual contribution of team (the “acting team”), such that members that formally have a role in the team are actually participating and contributing to the team’s functions.

Hackman (1990) defines team effectiveness as the degree to which a team’s output meets productivity requirements in terms of quantity, quality, and timeliness (performance); the team experience improves its members’ ability to work as a team in the future (behavior), and the team experience contributes to team members’ satisfaction (attitude). Perceptions of team effectiveness and team turnover intentions are important aspects of team effectiveness that encompass, respectively, performance and affective/attitudinal dimensions. Team turnover intentions are a part of team effectiveness because they comprise an attitudinal response based on team member satisfaction – and one that may be critical in the context of team membership changes. Both perceptions of effectiveness and turnover intentions are important for teams because they relate to their success and viability.

Research on teams has highlighted the interdependency that must exist among team members regarding fulfilling their roles and responsibilities relating to organizationally relevant

tasks (e.g., Hackman, 1983). These connections depend on the interactions among team members and their use of shared knowledge, skills, and effort directed toward the task (Hackman, 1983). This shows the importance of not only how members relate to *one another*, but also how members relate to *the work they do*, that is, the specific tasks and the work products they produce (McGrath et al., 2000), along with how they view other team members' relation to the work. In particular, team members pay attention to the contribution of other individuals, an example of what McGrath et al. (2000) referred to as distinguishing the “standing” from the “acting team”.

Psychological ownership at the individual level (IPO) has been found to produce extra-role activity (Vandewalle, Van Dyne, & Kostova, 1995), to reinforce feelings of responsibility and influence over how the task gets done (Druskat & Kubzansky, 1995, cit. in Druskat & Pescosolido, 2002), and has been theorized to increase the amount of pride and identity invested in outcomes (Pierce et al., 2001; Wagner, Parker & Christiansen, 2003). Whereas IPO emerges through person-target interactions, CPO emerges from a combination of person-object, other person-object, and person-to-person interactions. Hence, the social interaction aspect of CPO will affect other aspects of the team. Indeed, in similarity to IPO, CPO has been empirically related to psychological empowerment, feelings of responsibility, affective commitment, job satisfaction and citizenship behaviors (Pierce et al., 2017). In addition, additional aspects of CPO are expected to lead to higher perceptions of effectiveness among team members. When CPO is high, there is close connection between the target and its group members, and between the target and the group reputation. For this reason, not only are group members themselves likely to engage in behaviors toward improving group internal functioning (Druskat & Pescosolido, 2002), but they are likely to expect such behaviors from other group members.

Additionally, when team members actively participate in the creation of a collective work product, they experience the interactions that lead to product creation and learn about the product itself. Through the exchanges of team members, they can coordinate cognitively with each other, integrating ideas and creating new knowledge (Cooke, 2015). Acquiring a better understanding of the knowledge of other team members in this way is important for evaluating both the fulfillment of formal roles and relationship between team members and the collective product (McGrath et al., 2000). Consequently, we propose that:

H2a: CPO has a positive relationship with team effectiveness perception.

We also propose that CPO will relate negatively to turnover intentions of group members. When levels of CPO are high, team members feel the team as a collective “us” which is an extension of themselves and warrants protecting. In contrast, if CPO is low (versus high) team members will not feel as responsible for the existence and proper functioning of the team and therefore will be less reluctant to break this collective entity, for example through leaving. Hence, Hypothesis 2b: CPO has a negative relationship with team turnover intentions.

The indirect effect team membership change on effectiveness outcomes through CPO

Dynamic perspectives of teamwork propose that an important distinction between teams and other groups is their focus on what they have to do together – their task and the work output they intend to produce (Arrow, McGrath & Berdahl, 2000). From the individual team member perspective, feelings of “us” toward a team and “ours” toward a collective product may come with implicit expectations of some proportionality in inputs and outputs (Adams, 1965). Members may think that if we are all truly part of a team (“us”) and if what we create (“ours”) depends strongly on all of us, this should be reflected in all contributing a minimum and all receiving credit accordingly.

Hence, this shared connection to the work done and the products produced may be an important feature of effective teams. In the context of team membership change, the connection of all team members with the task is broken, hence the possible positive aspects of CPO such as increased intentions to remain in the team, might be lost when the participation of “us” and distribution of “ours” violate the *sharedness* of the group and, consequently, reduce members’ self-identification. In groups with fluid membership, given the fragility of the team’s sense of “us”, the lack of a connection between all team members with the team product might negatively affect team member’s propensity to “run the extra mile”. Hence, we propose a mediation model in which CPO is the mechanism that explains a possible negative impact of team membership change on effectiveness outcomes.

H3a. CPO will mediate the negative relationship between removing/adding a team member and effectiveness perceptions.

H3b. CPO will mediate the positive relationship between removing/adding a team member's turnover intention.

Method

Data and Sample

In this study, the initial sample consisted of 158 individuals recruited through Amazon Mechanical Turk. Forty participants were excluded from the sample as they failed to recollect the contents of the scenario in a manipulation check (presented after the scenario) and/or failed to pass an attention check item presented among the scale items. Also, one additional participant was excluded for reporting no working experience. Thus, the final sample consisted of 56 females and 61 males, with mean age of 35.5 years ($SD = 11.7$) and mean working experience of 15.1 years ($SD = 10.7$).

A three-way experimental design was used, with team membership manipulated in the scenarios by adding a team member ($n = 41$), by removing a team member ($n = 38$) or maintaining the original team membership ($n = 38$). Participants were randomly assigned to one of these three conditions.

Procedures

Team membership manipulation. Participants were asked to take part in a study on team work. After participants had filled in demographic measures, they were presented with a baseline scenario. In the baseline scenario, participants were told they were part of a project team, with members from different departments of a pharmaceutical company, which had been tasked with creating a marketing campaign for a new food supplement. The baseline scenario explained that the team of five members had put great effort into creating the marketing campaign and was proud of it, and that their supervisors were also enthusiastic about it. Participants were also told that the team would have the opportunity to present the marketing campaign to management and receive credit for the idea.

The experimental manipulation consisted of assigning each participant to one of three conditions: 1) add a member to the team (Add), 2) remove a member from the team (Remove),

and 3) maintain original team membership (Control). Participants in the three conditions, respectively, were told that a week before the presentation of the marketing campaign to management, a member was added to the team (Add), a member was removed from the team (Remove), or the team kept the same members (Control).

Measures

Responses were on a 5-point Likert scale that ranged from 1 = strongly disagree to 5 = strongly agree. Depending on the condition, the measures referred to the new larger team, the new smaller team, or the team as originally constituted.

Collective psychological ownership. CPO was measured using 3 items from Pierce, Jussila, and Li's (2017) scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*, adapted to refer to a teamwork product. The items included "We feel that is teamwork output is ours".

Team effectiveness perception. Team effectiveness perception was measured with a 4-item scale adapted from Jung and Sosik's items (2002): "My team is effective"; "My team has a good performance"; "My team makes decisions of high quality"; and "My team is successful in taking decisions".

Team turnover intention. Team turnover intention was measured with three items from Rusbult and colleagues' measure (1988) adapted for the team context: "I seriously consider quitting this team"; "I think about transferring from this team to another"; and "I want to switch to another team".

Results

Measurement assessment. Means, standard deviations, Cronbach's alphas, and correlations among all the variables are shown in Table 1. The Cronbach's alphas, are provided in the diagonal of Table 12. Confirming the internal consistency of our measures, the Cronbach's alphas for all constructs ranged from .87 to .93 and are well above the .70 cutoff suggested by the literature.

Discriminant validity. A confirmatory factor analysis model was built with all the latent variables used in the study (three latent constructs and 10 measures in total) using MPLUS 8.1 (Muthen & Muthen, 2017). Results showed that the model fits the data well. The goodness-of-fit

statistics for the model were: $\chi^2(32) = 88.949$, $p = .00$, RMSEA = .12, CFI = .96, TLI = .94, and SRMR = .06.

Table 12 - *Study 1: Descriptive statistics, internal consistency reliabilities, and correlations*

	Variable	<i>M</i>	<i>SD</i>	4	5	6
1.	Age	35.1	11.71			
2.	Gender ^a	.52	.50			
3.	Work Experience	15.1	10.7			
4.	CPO	4.14	.67	(.91)		
5.	Intentions Quit	1.72	.62	-.31**	(.87)	
6.	Effectiveness Perceptions	4.15	.67	.46**	-.54**	(.93)

Notes: $N = 117$; internal consistency reliabilities appear in parentheses along the diagonal; ^adummy coded: 1 = male, 0 = female; ^bCPO = collective psychological ownership; ** $p < .001$ * $p < .05$.

As a further check of discriminant validity, we compared our measurement model with alternative CFA models. For example, we tested a model where the items of team effectiveness perceptions and team turnover intentions loaded on a single factor (i.e., for a total of two factors). The goodness-of fit statistics for the model were as follows: the $\chi^2(34) = 401.070$, $p = .00$, RMSEA = .30, CFI = .71, TLI = .62, and SRMR = .20.

As can be seen from the goodness-of-fit statistics, our three-factor model fits the data better than the two-factor model ($\Delta \chi^2(2) = 312.121$, $p < .001$). Overall, the fit of our hypothesized model was better than the fit for all the alternative CFA models (i.e., a two-factor model, and a one-factor model), thus exhibiting satisfactory discriminant validity for our measures.

Hypotheses testing

We tested the hypotheses regarding the mediating effect of CPO between (1) team membership change and team effectiveness perception and (2) team membership change and turnover intentions following the procedure outlined by Preacher and colleagues (2007) and Hayes (2013). Table 13 shows the regressions results with unstandardized coefficients for the mediator (i.e., CPO) and the outcome models (i.e., team effectiveness perception and team turnover intentions).

Regarding the effect of team membership change, results indicate that adding one team member has a negative effect on our mediator CPO ($b = -.73, p < .001$), and also that removing one team member has a negative effect on CPO ($b = -.32, p < .05$), providing support for H1a and H1b.

It was proposed that CPO would relate positively to team effectiveness perceptions (H2a) and intentions to leave the team (H2b). Results indicate that CPO has a positive effect on team effectiveness perceptions (e.g., $b = .35, p < .001$; adding one member mediator model), and a negative impact on intentions to leave the team (e.g., $b = -.37, p < .05$; removing one team member mediator model), providing support for H2a and H2b.

We estimated the bootstrap confidence intervals (1.000 bootstrap resamples) for the indirect effect of team membership change (i.e., adding and removing a team member), on team effectiveness perceptions and team turnover intentions, through CPO (Table 13). We found an indirect effect on team effectiveness perceptions from both adding a new team member ($b = -.26, SE = .08, 95\% CI [-.43, -.10]$), and removing a team member ($b = -.15, SE = .07, 95\% CI [-.31, -.02]$). Thus, H3a was supported. An indirect effect was also found on team turnover intentions from both adding a new team member ($b = .24, SE = .09, 95\% CI [.08, .43]$), and from removing a team member ($b = .12, S.E = .06, 95\% CI [.03, .26]$), through CPO. Thus, H3b was supported.

Table 13 - *Study 1: Results of regression analysis*

Direct effects				Dependent variables					
				Team effectiveness perception			Turnover intentions		
	<i>b</i>	CPO <i>se</i>	<i>p</i>	<i>b</i>	<i>se</i>	<i>p</i>	<i>b</i>	<i>se</i>	<i>p</i>
Predictor									
Adding 1 member ^a	-.73	.13	.000	.09	.13	.489	-.18	.17	.305
CPO				.35	.09	.000	-.33	.12	.001
Predictor									
Removing 1 member ^b	-.32	.14	.018	.04	.10	.700	-.13	.14	.350
CPO				.45	.09	.000	-.37	.11	.001
Indirect effects through CPO				B	BootSE	Boot 95% CI	B	BootSE	Boot 95% CI
Adding 1 member				-.26	.08	[-.42, -.10]	.24	.09	[.08, .43]
Removing 1 member				-.15	.07	[-.31, -.03]	.12	.06	[.03, .26]

Note. IV= Independent variable; DV= dependent variable; CI=Confidence Interval; CPO = collective psychological ownership;

^a 1= Dummy coded: adding team member, 0= control condition ^b 1= Dummy coded: Remove team member, 0= control condition

Discussion – Study 1

Study 1 shows that team membership change can negatively impact feelings of CPO, which can in turn negatively impact team effectiveness outcomes, in terms of both team effectiveness perceptions and team turnover intentions. As hypothesized, CPO relates positively to team effectiveness perceptions and negatively to team turnover intentions.

Given that in Study 1, we found that CPO plays an important role in explaining team members' reaction to team membership change, with study 2 we aim to understand this mechanism in more detail. In Study 2, individuals were assigned to actual teams that participated in a team work activity, and were randomly assigned to either an experimental condition in which a team member was added or to a control condition in which no changes were made to the team membership. In Study 2, we examine in actual teams the mediating role of OAEs on the relationship between team membership change (in terms of adding a team member) and CPO.

Study 2: Team membership change and the shared emergent state of CPO

In our research, we propose CPO as an individual perception/affective reaction and also as a shared emergent state (e.g., Pierce, Jussila, & Li, 2017). So far, our rationale has focused on CPO and its activating experiences from the individual perspective with a collective referent, i.e., the extent to which individual team members feel that the collective work output belongs to all team members (“We [me and my teammates] feel the work output is ours”). In the context of work teams, CPO can also exist as an emergent phenomenon, resulting from dynamic interactions among individuals. Over the course of a visible and collaborative working relationship, the cognition, affect, behaviours and other characteristics can result in an emergent characteristic at the team level that is more than the sum of its individual attributes (Kozlowski & Klein, 2000; Kozlowski et al., 2013). Emergent states are a property of the team and include the attitudes, values, motivations, and cognitions of group members that develop over the life of the team and impact team outcomes, such as team effectiveness (Marks, Mathieu & Zaccaro, 2001). Team processes and emergent states capture the alignment (or misalignment) of team coordination efforts and the task demands (Marks, Mathieu, & Zaccaro, 2001).

Following the recommendations of Kozlowski and colleagues (2013) for a precise formulation of emergent multilevel phenomena, we aim to explore 1) micro process mechanisms that account for emergence; 2) parsimonious “rules” that drive team workers’ interactions and exchanges leading to CPO; 3) patterns of emergence; 4) a specific and important antecedent for emergence. We propose that, as a shared sense of “ours”, CPO will emerge in teams as a result of interactional dynamics and behavioral cues related to the OAE – team members’ investments, intimate knowledge, and control over the teamwork product. The interdependent interactions between team members that provide evidence regarding the investment in, control over, and intimate knowledge regarding the teamwork output are expected to result in CPO as an emergent, collective phenomenon. Given this proposition, we put forward that the collective perception of OAE is a process mechanism that accounts for CPO as a collective phenomenon.

Based on Ashforth, Harrison and Corley’s (2008) broad formulation of identification and on Henry, Arrow and Carini’s (1999) tripartite model of group identification, we propose the following as bases for CPO to manifest as an emergent state: 1) A clear collective identification with the group (clear team boundaries); and 2) interdependent interactions (habitual routines) between team members that demonstrate team members’ investment in, control over, and intimate knowledge regarding the teamwork product. Just as teams can be viewed on a continuum from very weak to very strong “us”, feelings of collective ownership can also span a broad conceptual range, from very weak to very strong “ours”. For an individual team member to recognize not only that he or she is psychologically tied to the target but also that others are, he or she must perceive that all team members have invested themselves into, are knowledgeable about, and have exercised control over the shared work product (Pierce & Jussila, 2010). The OAE function as experiences, or process mechanisms, of team members focus on the teamwork output and that are used to assess the collective ownership of a work output. Because team members base their judgments of CPO on similar cues, a shared understanding⁶ is expected to emerge. These shared cues are based on shared intimate knowledge, control and investment.

According to Rudmin and Berry (1987), the more information one knows about a target, the stronger the individual’s connection to that object. When team members actively participate

⁶ When assessing their collective ownership, it is assumed that team members will be influenced by these interactional dynamics and behavioral cues in a similar way hence its conceptualization reflects a composition process (Kozlowski & Klein, 2000).

in the creation of a collective work product, they experience and learn about the interactions that led to the creation of that product and learn about the product itself. Accordingly, sharing knowledge about a collective work product promotes feelings of similarity among team members and moves an object closer to the team's collective self. Thus, a team in which everyone is familiar with the details, the original purpose, and the history of the specific project tend to experience higher levels of CPO towards the collectively created product. Also, investment of collective efforts and energy is a behavioural cue that all team members are connected to the team target. When the investment is regarded as shared because all have contributed, CPO is more likely to emerge. Objects of co-creation, i.e., teamwork outputs, are included in this collective self-region, which is an extension of "we", as they are visibly manipulated, changed, and defined by the decisions of the team members. In teams, the greater the degree to which members perceive an object as being collectively controlled and influenced by all team members, the greater the degree to which the object becomes a part of the collective-self (Pierce & Jussila, 2010).

Taking into account the role of these OAE, we investigate an important antecedent that can shape the emergence of CPO: adding a new team member. As team member fluidity will impact the clarity of a team's boundaries and the quality of its relational dynamics (Levine, Choi, & Moreland, 2004), adding a new team member is expected to have a negative impact on the OAE, and in turn on CPO.

Hypothesis 4: The OAE, at the collective level, will mediate the negative relationship between adding a new team member and CPO at the collective level.

Method

Data and sample

In this study, a total of 235 individuals were recruited from a Portuguese online panel to participate in exchange for a 20 Euro gift card. The sample consisted of 64.7% women, with the average age was 36.3 year old ($SD = 10.1$), with 13.4 years of work experience ($SD = 10.2$). Participants were invited to participate in a in-person study on team creativity, and assigned randomly to one of two conditions: membership in a team where a new team member would enter during the team activity, or membership in a team where the team would maintain the original

membership during the team activity. Participants were organized in 50 teams, 19 teams in the experimental condition and 31 for the control condition⁷.

Procedure and materials

The team activity was carried out for one team at a time. Upon arrival, all participants were instructed to wear a badge with their team number and individual number for the duration of the experiment (referred to as a “team activity”). Participants were shown their work location and provided with the cover story for the team activity: their team was tasked with designing a new logo for a clothing company specialized in clothes for teenagers and young adults. Participants were informed that they would work as a team with the other participants present, and that the challenge had two parts. First, their team would have 15 minutes to create a logo with TANGRAM pieces that conveyed a) uniqueness; b) fun; and c) positive energy, the characteristics that the clothing company wanted to convey. Second, the team would have 10 minutes to write a paragraph explaining the logo they created. Participants were informed that the logos and explanatory paragraphs would be analyzed by the company marketing department and that the 10 designs that best captured the company’s image would be displayed on the company website and Facebook page. Following these instructions, participants were asked to read and sign the consent form. Participants were given 10 minutes before starting the main task to get to know each other and to come up with a team name, which was written by the experimenter on the same form that the team would write the explanatory paragraph.

Team membership change manipulation: In the control condition, participants completed the tasks with no interruptions from the experimenter. Teams in the experimental condition were interrupted after they had worked for 10 minutes building the logo, and a new participant (a confederate, blind to the research aim and hypotheses) was added to the team with the justification that she had arrived late. Thus, the confederate was part of the team for the final 5 minutes of building the logo and for the 10 minutes that the team spent writing the explanatory paragraph to accompany the logo. Following instructions provided prior to the experiment, the

⁷ The imbalanced sample size between experimental and control group do not pose a problem as this was due to random causes: 1) after running the experiment for a period of time, the timing of entrance of the confederate was reconsidered and the experimental design refined (cf. pre-test) 2) no shows of participants (that had no prior knowledge of the condition they were in).

confederate behaved cordially and went along with the team's decisions, but was not proactive and did not challenge the team decisions. This ensured that the confederate had the same level of participation across teams in the manipulation condition.

Upon completion of the team activity, participants were directed to an adjacent room, assigned to individual computer booths, and asked to complete a questionnaire. Following completion of the questionnaire, participants were debriefed with regards to the aim of the experiment. In the experimental condition, the member added to the team was presented as a confederate of the study.

Pre-test

Initially, a previous version of this manipulation was tested. In that version of the manipulation, the confederate would enter after the logo was built, during the elaboration of the explanatory paragraph to accompany the logo. During the debriefings of the aim of the study and of the role of the confederate the experimenter often received the feedback that the person that joined the team in the second part of the task was not viewed as a member of the team, neither a creator of the LOGO as they entered during the second task (writing the explanatory paragraph). Having that feedback and considering that the relationship (or lack of it) of all team members with the actual target of ownership is essential to the emergence of CPO, the timing of entrance of the confederate was altered so that the member is added during the development of the logo.

Measures

OAE: Control, investment, and intimate knowledge were measured using the previously validated measure in chapter 2, four items in each subscale. Responses were on a 5-point Likert scale that ranged from 1 = *strongly disagree* to 5 = *strongly agree*. A sample item for Investment is "All of us invested great effort to create this LOGO", for Control "We all had some power over the development of the LOGO" and for Intimate knowledge "All of us are very familiar with the characteristics of this LOGO."

Collective psychological ownership: CPO was measured using 3 items from Pierce, Jussila and Li's (2017) scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*, adapted to include

the LOGO as the target of ownership. The items included “We (my team members and I) have a collective sense that this LOGO is ours”.

Aggregation procedures

In this study, we used a composition approach to aggregate the individual OAE, CPO, and team effectiveness perceptions to the team level (Chan, 1998; Costa, Graça, Marques-Quinteiro, Santos, Caetano, & Passos, 2013). We tested within group agreement using the *Rwg* index (James, Demaree & Wolf, 1984). The mean *Rwg* (*j*) values for team member Investment, Control and Knowledge, and CPO were, respectively, .86 (*SD* = .17), .89 (*SD* = .17), .93 (*SD* = .14) and .82 (*SD* = .21), suggesting that aggregation to the team level was justified. Table 14 provides the correlations, means and standard deviations for all variables. In accordance to the theoretical proposition presented earlier, teams experience of shared investment, control and intimate knowledge about the target (i.e., the logo) is positively and significantly related to CPO.

Table 14 - Study 2: Descriptive Statistics and Correlations

	Variable	<i>M</i>	<i>SD</i>	<i>Rwg(j)</i>	1	2	3	4
1.	Investment	4.02	.45	.84				
2.	Control	4.23	.40	.87	.66**			
3.	Knowledge	4.43	.43	.92	.57**	.58**		
4.	CPO ^a	4.28	.45	.83	.55**	.32**	.32*	

Notes. N = 50 teams; CPO^a = collective psychological ownership; ***p* < .001 **p* < .05.

Results

Model-fit. First, we report the measurement model. Second, we test the hypotheses using mediation, and sequential mediation analyses. As recommended by Anderson and Gerbing (1988), prior to testing our hypotheses, we examined the fit of the CFA to test the adequacy of the measurement model. Given that the variables of Investment, Control and Knowledge have moderate to high correlations with each other, we aggregated all OAE as a second-order factor, as in previous work (Giordano, Patient, Passos & Sguera, 2020). For the model with the OAE as a

second order factor, the fit indices of the proposed model were good: $\chi^2 = 119.293$, $p < .01$, $df = 86$, CFI = 0.94, TLI = 0.93, RMSEA = 0.09, and SRMR = 0.09.

To test our hypotheses, a mediation model was run using PROCESS, a computational tool to analyze “conditional process models” that are path analysis-based (Hayes, 2013). Hypothesis 4 proposed that adding a new team member would have a negative effect on CPO, and that this relationship would be explained by the indirect effect of the ownership activating experiences. The indirect effect of the OAE significantly explains the negative relationship between adding a new team member and CPO feelings towards the teamwork output ($b = -.17$ $SE = .08$; 95% CI: -.37 to -.05).

Table 15 - *Study 2: Results of the regression analysis*

Direct effects	Dependent variables					
	OAE ^b			CPO ^c		
	<i>b</i>	<i>se</i>	<i>p</i>	<i>b</i>	<i>se</i>	<i>p</i>
Predictor						
Adding 1 member ^a	-.24	.10	.02	.09	.13	.489
Predictor						
OAE ^b				.69	.16	.000
Adding 1 member ^a				.23	.12	.069
Indirect effects of OAE				B	BootSE	Boot 95% CI
Adding 1 member ^a				-.17	.08	[-.37, -.05]

Notes. CI=Confidence Interval; ^a 1= Dummy coded: adding team member, 0= control condition;

^bOAE = Ownership Activating Experiences; ^cCPO = collective psychological ownership.

Discussion – Study 2

For this study, we hypothesized that adding a new team member has a negative impact on the team’s shared perceptions of investment, control and knowledge and this global perception of the team’s OAE explains the negative effect of adding a new team member on CPO. Indeed, our results provide evidences that adding a new team member causes a negative impact on the OAE that in turn prevents the emergence of CPO.

Discussion

Consequences of team membership change have received surprisingly little research attention, given the prevalence of the phenomenon in organizations. This chapter contributes to nascent theory on team membership change by relating it to CPO, both directly and through the ownership activating experiences proposed by Pierce and Jussila (2010) and investigated empirically by Giordano and colleagues (2020). Our results show that adding or removing team members to/from an established team negatively affects CPO. Also, the relationship between adding a new team member in a team and CPO at the team level is mediated by the ownership activating experiences, in terms of the team's shared perception of collective investment in, control over, and intimate knowledge regarding the teamwork output.

In this chapter, we draw on self-extension and social identity theories to explain why the fact that *all* the members of the team share these ownership activating experiences is critical to the development of CPO. We propose that self-extension is the mean through which the self includes the object as part of “us” and as “ours” (Belk, 1988). Because newcomers to a team are not viewed – at least initially – as part “us” and will not have shared experiences with other team members relating to collective work outputs, feelings of collective ownership will be decreased within the “new” reconstituted team. Because new group members will not have interacted closely with other teams members, the sense of “us” will be weaker, and because experiences relating to the collective product will not have been shared or observed by others, so will the sense of “ours” towards products created by the team (Brewer and Kramer, 1986). Also, as group/outgroup boundaries (Tajfel, 1982) may be harder to ascertain in more fluid teams, team member sense of identity or attraction to the team based on similarity are also likely to decrease. When someone that was previously been working in the team, and contributing to a team output, is outside of the team, the team boundaries will be less clearly defined, reducing feelings of “ours”.

Our results regarding team membership change have practical implications. Organizations should be aware that changing team membership and, in particular, adding new team members can undermine the shared identity of and ownership feelings within a team. Therefore, efforts should be taken to provide opportunities for shared experiences with the new member in order to nurture and strengthen feelings of “us” within the group. In particular, organizations should

make sure that new members have the opportunity to invest in, control, and gain intimate knowledge regarding the target, in ways that are visible to exiting team members. Collaboration specifically relating to the target of collective ownership among the new team member and existing team members should be facilitated and made visible, in order to strengthen shared feelings towards the target. Since CPO is a collective, consensual aspect of the group it may also be important for existing members to remind a new member that there is an “us” with feelings of “ours” that the new member should recognize and can become a part of. When a team member departs the team, managers should acknowledge their contribution to the collective products and participation in the OAE, but also clarify and strengthen the boundaries of the newly constituted team.

This research has several strengths. In Study 1, our dependent variables included both a cognition regarding the team itself as well as turnover intentions. Two justifications attenuate possible methodological concerns with the use in the latter case of intentions rather than actual behavior. First, the theory of reasoned action (Ajzen & Fishbein, 1977) proposes that behaviors are strongly influenced by intentions to perform that behavior. Second, the intention to exit a team, even if not acted upon, can negatively affect investment and participation in the team. Nonetheless, future research should also investigate the effect of our team membership change, OAE, and CPO with additional dependent variables, including if possible actual behaviors versus predicted behaviors, and third party evaluations as well as self-evaluations.

The use of a scenario provided a controlled test of the hypotheses, allowing causation to be clearly shown. However, the lack of realism and immediacy in a scenario necessarily raises concerns regarding external validity. First, it is a challenge to create a scenario sufficiently realistic to evoke real feelings of team belonging and collective psychological ownership in participants. Although the scenario was designed to be detailed and realistic enough to get participants to project themselves into the situation, it is likely that this offered a fairly conservative test of the hypotheses (Fox & Staw, 1979). However, it is very likely that losing and gaining members of a team would be a situation familiar to participants, which Greenberg and Eskew (1993) have suggested increases the validity of participants’ responses. In addition, our participants had team working experience and were drawn from a variety of industries, which should increase the generalizability of the results to different organizational contexts.

Nonetheless, the hypotheses should be tested in real workplace situations in order for external validity to be established.

Study 2 is a sound test of the impact of changes in membership on team emergent states. As an experimental study specially created to specifically test the causality between adding a new member to a team, and the team's shared perceptions of the OAE and the mediating effect of the OAE between adding a new team member and CPO, this study also constitutes as an additional test to the predictive validity of the OAE measure, recently validated (Giordano, Patient, Passos & Sguera, 2020).

However, our laboratory study (Study 2) is subject to a number of limitations that suggest directions for future research. First, the use of an experimental design poses questions about the external validity of our findings. We have made an effort to create a cover story and design that was realistic and a task that was convincing and engaging. Participants were invited to part take in a team activity in a business school that is known for their work with corporations, having had a challenge that included proposing a new logo for a company was received as realistic (as reported by participations during the final debriefing). Nevertheless, it may be possible that the artificial environment of a lab study and the brief period of time participants interacted as a team (10 minutes to choose a team name, and 25 for the logo activity), did not capture fully essential elements of teamwork and psychological ownership. Thus, field research is necessary for the generalizability of our results. Additionally, although an important test of causality, we examine team membership dichotomously as a researcher induced membership change at a specific point in time (Dineed & Noe, 2003). As stated decades ago by Ziller, Behringer and Jansen (1961) and also Arrow and McGrath (1995), future research should aim to study team membership change in natural settings, looking at both at magnitude, direction and frequency of change.

Other interesting venues for future research merit attention. Unstable team membership can create barriers to effective team functioning due to loss of individual knowledge, shared mental models, low individual commitment to group and lack of cohesion (Bushe & Chu, 2011) that need further empirical investigation. Additionally, feelings of territoriality have already been empirically related to CPO (Pierce et al., 2017). This is an important construct that possibly has a central role in understanding the negative consequences of team membership change in CPO.

Conclusion

This research shows that having team members who feel like owners – collectively – can be beneficial. The psychology of collective possession should be of theoretical interest to team and other organizational behavior scholars, and of practical interest to managers focused on improving team performance. There is a need for further theory development and empirical research on psychological ownership, and in particular on its collective manifestation in teams. This paper is among the first to empirically examine the OAE, CPO, and the first to relate these to a salient and pervasive aspect of workplace teams: changes in membership. Pierce and Jussila (2010) have emphasized the need for qualitative, longitudinal research to study how CPO waxes and wanes in groups. We echo this call, but also note the need for further experimental investigations that can clearly establish the antecedents and consequences of collective ownership feelings. Experimental research can provide a strong first test of a phenomenon that has been observed in the workplace, and present opportunities for researchers to test whether an effect can be generated at all (Fox and Staw, 1979). We hope that this paper provides a preliminary, important step in that direction.

Chapter IV

Overall Discussion

Overall Discussion

This doctoral thesis started from an initial idea: that we tend to feel as owners of what we create and that this feeling can have important consequences in work settings. Classic literature on the subject of ownership shows that, for centuries, thinkers from different fields including psychology, anthropology, and political philosophy have long referred to the products of work as a natural source of ownership. It is not an exaggeration to say that our world is built around possessions. As human beings, we learn to locate ourselves and move within boundaries and connect to people and objects. These structure our lives to such an extent that feelings of ownership towards our country, home and friends, for example, may be also seen as a consequence of socialization (Rudmin, 1991).

In recent decades, research on the effects of formal (actual) ownership has made important advances. For instance, the ownership effect has demonstrated that people perceive the objects they own as more attractive and hence are more likely to defend and protect these objects (Beggan, 1992) and that people evaluate an object more highly when it belongs to them (Kahneman, Knetsch, & Thaler, 1990). In the organizational context, the importance of feelings of ownership has long been known in business media as a way to motivate employees (e.g., Bullock, 2014).

Almost twenty years ago, Pierce and colleagues (2001) introduced the term psychological ownership (PO), defined as feelings of personal ownership toward organizational targets (e.g., jobs, organization, projects) that workers feel without the formal assertion of ownership. The authors connected psychological ownership to the phenomenon of self-extension, proposing that PO feelings emerge within individuals when they recognize a target as part of their extended selves (Belk, 1988; Pierce, Kostova, & Dirks, 2001). According to Pierce and colleagues, self-extension will occur when individuals navigate through one or more specific experiences relating to the target of ownership: having exercised control over the target, invested the self into the target, or developed intimate knowledge regarding the target (Pierce & Jussila, 2010; Pierce, Kostova, & Dirks, 2003). The authors also explain that the importance of these specific experiences is rooted in innate human needs for efficacy, for a sense of place, and for self-identity (Beaglehole, 1932; Porteous, 1976; Furby, 1978).

In the workplace, numerous targets can fulfill these needs (Pierce, Kostova, & Dirks, 2001). Organizations themselves can address employees needs for a place – a territory, or a “home” – in which to settle (Porteous, 1976). Empirical work has related PO to a number of positive outcomes, including pride (Pierce, Kostova, & Dirks, 2001; Wagner, Parker, & Christiansen, 2003), but also to less positive ones, such as territoriality (Brown & Zhu, 2016). However, almost all research on PO has primarily focused on ownership as an individual phenomenon (“This is MINE”); that is, on individual psychological ownership (IPO).

Research on Collective Psychological Ownership (CPO) (“This is OURS”) was spurred by Pierce and Jussila’s (2010) work, introducing the construct. They proposed that the same experiences would contribute to the emergence of CPO as was the case for individual PO; namely exercising control over the target, coming to know the target intimately, and investing the self into the target (Pierce & Jussila, 2010; Pierce, Kostova, & Dirks, 2002). However, CPO was proposed to emerge from a combination of person-object, other person-object, and person-to-person interactions. That is, in order to develop feelings of CPO towards a target, individual group members additionally have to perceive that all of the group members have interacted with the target of ownership, and also significantly with each other in relation to the target of ownership. In addition, the emergence of CPO requires that the group has a sense of “us”, so that a sense of “ours” can be developed, both at the individual level and collective level. Thus, the collective agency necessary for CPO is the main reason that IPO and CPO constructs are not fully conceptually isomorphic in that the latter cannot be considered as simply a higher level of the former.

Although teams are increasingly prevalent in organizations and important to their effective functioning, most empirical research on PO has focused on IPO. However, the important role that feelings of psychological ownership towards teamwork products (Pierce & Jussila, 2010) can play in team functioning and performance, is the reason that this research responds to calls to study CPO, how it emerges in team/groups, and its consequences. It is to the following questions that this thesis – at the intersection of theories of ownership, as applied to organizations, and as situated in teams – seeks to contribute: What are the antecedents of CPO? What are the mechanisms by which it manifests as an emergent state? What are the consequences of CPO for team effectiveness, and for behaviors toward the target of ownership?

In all of the studies in this thesis, we have specifically focused on the teamwork product as a relevant target of feelings of ownership. Rather than investigating possessive feelings towards jobs, teams, or organizations, early work on ownership and possessiveness inspired us to investigate people's connections to the fruits of their labour, in this case to the fruits of their collective labour. The importance of studying CPO feelings toward what teams produce is highlighted by the fact that the creation of work products is a distinctive feature of work teams and perhaps the most visible result of employees investing themselves in organizations. Guided by the questions above we focus our contributions in three main areas: 1) Key antecedents of CPO of work products; 2) Consequences of CPO of work products and 3) Emergence of CPO of work products in teams. Finally, we also investigate an important aspect of teams that may hinder the emergence of CPO: changes in team membership.

This doctoral thesis contributes to nascent research on CPO, by investigating its nomological network, by testing its antecedents and consequences, and also testing the discriminant validity from team identification, affective commitment, and IPO. Additionally, we contribute to the literature on team membership fluidity with our studies on the impact of team membership change on CPO. In the following section, we review our main findings and contributions to the literature and also note important methodological limitations and propose specific future research to address these. Following this, we identify practical implications of this work and propose several new directions for future research relating to CPO. We end this chapter by highlighting several trends that increase the importance of CPO in today's workplaces, and make it all the more important for scholars to better understand this construct.

Antecedents of CPO

In order to study team workers' feelings of CPO toward team products we first investigated key antecedents proposed in the literature. Like IPO, CPO is proposed to emerge through one or more of three specific experiences relating to the target of ownership (Pierce & Jussila, 2010; Pierce, Kostova, & Dirks, 2003). These have variously been denoted by different authors as "paths", "routes", "key experiences" or "relevant experiences" (Nerdinger & Martins, 2016). We use the term Ownership Activating Experiences (OAE) to draw attention to the different status of these experiences in relation to other antecedents of psychological ownership

and to emphasize the fact that without these experiences psychological ownership will not emerge (Pierce & Jussila, 2010; Dirks, Cummings & Pierce, 1996; Van Dyne & Pierce, 2004). In addition, the term ownership activating experiences highlights key aspects of the construct, namely that these are experiences (versus other types of possible paths), and that they are specifically related to emergence of ownership feelings. Additionally, this thesis explores team membership change as an important additional antecedent and contextual factor that can affect CPO, both directly and through the OAE.

Hence, within this doctoral project, we first explore the dimensionality of the ownership activating experiences: control, investment, and knowledge. Although it had been theorized that CPO feelings depend on the degree to which each member of the group believes all members of the group have traveled down one or more of the three ownership activating experiences, this remained to be empirically validated. The first step toward doing so involved rigorously developing and validating measures for the proposed OAE.

In Study 1 of Chapter 2, a 30 item-pool was elaborated and evaluated by a panel of experts. The items that, according to the experts, clearly described control, investment, and intimate knowledge were used in two subsequent studies, and subjected to both Exploratory Factor Analysis and Confirmatory Factor Analysis. The final measure with 12 items (4 per dimension) was then used to establish discriminant validity from several related constructs, including team identification, affective commitment, and IPO. In the subsequent individual-level studies of Chapter 2 (Studies 2 and 3), the scales exhibited acceptable reliabilities between 63 and 91.

With validated scales for the OAE, we could begin to study their effect on CPO. In our studies and consistent with theory (e.g., Pierce et al., 2001), all three OAE correlated with CPO. However, when all three OAE were simultaneously considered, the relationship between investment and CPO and between intimate knowledge and CPO both remained significant, but the relationship between control and CPO did not.

In two further studies, in Chapters 2 and 3 we investigated the OAE at the team level both in stable teams and in teams that have experienced team membership change (addition of a new team member). In Chapter 2, Study 4, we investigated the effects of the OAEs on CPO as an emergent state in a sample of 48 teams competing in a multiwave simulation. Interestingly and unlike at the individual level, when aggregated to the team level, the OAE formed a global

overall construct, rather than three distinct dimensions. This global construct related to CPO, also aggregated to the team level. In Chapter 3, we explored the impact on the OAE of adding a new team member to an existing team and the consequent impact on CPO. Our results show that adding a new team member negatively impacted OAE (as an overall team level construct), which in turn prevent the emergence of CPO (at the team level).

As noted above, a puzzling result in Chapter 2 was that the control OAE did not have an impact on CPO in either Study 2 or Study 3, both of which examined CPO feelings at the individual level. This consistent result across studies may indicate a limitation of our empirical research: that the nature of the teams to which participating individuals belonged and of the teamwork products that were targets of ownership were not controlled for in our data collections and analyses. The lack of results for the control OAE may indicate that the relative importance of each OAE, in terms of its effects on CPO, may depend on the nature of the collective work output and/or on idiosyncratic team characteristics and typologies (e.g., Sundstrom, De Meuse, & Futrell, 1990; Hollenbeck, Beersma, & Schouten, 2012). Accordingly, a possible next step would be to further test the OAE scale in different team contexts, and in relation to specific teamwork products.

Also, the lower Cronbach's alpha values across studies for the control subscale (.63 - .72) may indicate that control is not as universally important as the other OAE when it comes to CPO relating to teamwork products. In particular, there may be contexts in which most team members are expected to exercise relatively little if any control, and therefore where the effects of control on CPO may be reduced or absent. Accordingly, future research should examine effects of the degree of control that is expected in different types of teams and also how the control exercised is shared among team members, or not. Additionally, studies with repeated measures of the OAE and of CPO should be collected in future research, to provide a stronger test of causality and additionally to investigate the possibly recursive nature of the relationship between them.

Consequences of CPO

What are the consequences of being a part of a team where members feel that something they create is "ours"? Understanding the effect of CPO on team outcomes was one of the main goals of this research project. An important contribution of this research, as presented in Chapter 2, lies in showing that team member feelings of CPO relate to team effectiveness in two

important regards. First, team members who feel CPO toward a teamwork product tend to perceive their team as more effective. Second, team members who feel CPO toward a teamwork product, versus not, are more likely to want to stay working in the team. In addition, we tested the effect of CPO on a specific attitude toward the collective work product, and found that CPO feelings relate positively to intentions to champion the teamwork product, in terms of being willing to exert extraordinary effort on behalf of an idea or product (Shane, 1994). CPO also mediated the relationships between two of the three OAE (investment, and intimate knowledge) and turnover intentions, championing intentions, and perceived team effectiveness, measured from the individual team-member perspective.

Moreover, in Chapter 3, we investigate the relation between team members' feelings of CPO and team members' response to team membership change, both as an individual response and as a team emergent state. The scenario study showed that experiencing team membership change, in terms of adding a member and removing a member from the team, impacts team effectiveness outcomes through CPO.

However, the effects of CPO as an emergent state on team effectiveness were not studied in the work. Indeed, although we have demonstrated that CPO has important effects not only on intentions toward the work product but also on individual evaluations of team effectiveness in multiple studies, we have not addressed in this work the impact of CPO on actual team level outcomes. Thus, another necessary area that further attention in future research is the study of the impact of feelings of CPO at the team level. For example, building on the different sources of team identification proposed by Henry, Arrow, and Carini (1999) – social identity, interdependence and cohesion – future research could investigate which lead to more cognitive-based versus more affect-based CPO, and in turn the consequent effect of CPO on different kinds of outcomes. It is possible that studying affect-based versus cognitive-based CPO can shed light into the development of CPO and its effects across time. We speculate that affect based versus cognitive-based CPO will have stronger and longer lasting effects on team effectiveness outcomes. Understanding these specific effects can deepen our understanding regarding what actions can be taken by team managers and team members to instill CPO in their teams.

Additionally, all the data were self-reported. Although it seems reasonable to evaluate OAE and CPO as perceptions, this may not be the best way to measure effects on behaviors, in the case of intentions to remain in the team and to champion the teamwork product. In spite of

theoretical arguments and empirical studies suggesting that behaviors are strongly influenced by intentions to perform that behavior (Ajzen & Fishbein, 1977), future research should still investigate the effect of CPO on additional dependent variables. These should include actual behaviors, versus simply intended behaviors. In addition, future research on CPO should include as outcomes third party evaluations and objective indicators of performance, such as client satisfaction or supervisor ratings.

Emergence of CPO in teams

With this work we strengthened the conceptual foundation for the emergence of CPO in teams by combining theories of self-extension (e.g., Belk, 1988) with the literature on emergent states in teams. In particular, we proposed a process whereby, at the team level, interactive dynamics between team members and in relation to the team task can prompt self-extension into a shared work product. Following Pierce and Jussila's proposition, we proposed that actions, and the use of verbal and non-verbal communication that reflect team members' investment, shared control and intimate knowledge, should generate a connection between team members and the teamwork output, giving form to feelings of CPO. Thus, we have proposed the OAE as an important gauge of these interactive dynamics, which result in team members acknowledging co-ownership of the work product.

As a starting point of this research, we study CPO and collect data at a lower level to explore a construct at a higher level (Chen & Kanfer, 2006; Costa, Passos, & Bakker, 2014). Whereas in our first three studies of Chapter 2 and in the first study of Chapter 3, CPO was measured at the individual level (e.g., team member individual perspective on "We (my team members and I) have a collective sense that this (TEAMWORK OUTPUT) is ours."), in Study 4 (Chapter 2) we investigate CPO as an emergent state in order to explore the interrelationship between the OAEs and CPO at the team level. Additionally, to explore the bottom-up process whereby individual characteristics and dynamic social interactions result in a higher level property of CPO, we investigate how OAE perceptions, when aggregated to the team level, can influence collective CPO, measured as individual perceptions aggregated to the team level (Kozlowski & Klein, 2000). In this research we propose the OAE as the individual aspects and dynamic social interactions that the group must share through experiences that relate to the target (Kozlowski et al., 2013).

Consistent with theoretical propositions, we found evidence in two studies (Study 4 from Chapter 2 and Study 2 from Chapter 3) that at the group level the three OAEs – control, investment, and knowledge – combined in a single overarching factor predicting CPO, in contrast to the three separate constructs leading to CPO, as had been the case at the individual level. In these two studies, individual perceptions for each OAE item were aggregated at the team level to provide a collective score for each item. The items for the three OAEs were then combined into a single second-order factor because of the high correlations between the three OAEs at the collective level (e.g., a .93 correlation between knowledge and investment). The high correlations may have resulted from a process, as has been found for other affective-motivational constructs (Costa, Passos & Bakker, 2014), whereby moving from an individual internal state – based on observable cues – to the awareness of a shared state may result in more general perceptions of how a group is functioning.

Indeed, these studies provide evidence of the role of the OAEs on CPO as an emergent state and with that we answer to calls from Kozlowski, Chao, Grand, Braun and Kuljanin (2013) and from Mathieu and Luciano (2019) for more detailed theory regarding specific team emergent states. Nonetheless this may not completely capture CPO as a phenomenon at the team level and therefore future research should also explore these constructs at the group level of analysis to more completely understand CPO as a shared feeling in teams. For example, CPO could be measured as a shared emergent state at the collective level (Belk, 1988; Kozlowski & Klein, 2000) through a holistic measure following group discussion (Bar-Tal, 1990; Chan, 1998). Furthermore, other mechanisms are worth exploring in understanding CPO as an emergent state. Namely, the development of team identification is essential to understand how a group of individuals actually experiences a referent shift from “I” to “us” and from “mine” to “ours”.

As in any research, there are also limitations that should be acknowledged. The number of teams in our studies was small ($n=48$ and $n=50$) and the teams involved in these studies were interacting in a somewhat artificial environment: a management challenge and an experimental study, in both of which the teams were formed for the purpose of the studies. Although this enhanced control over extraneous factors and ensured that participants responded to a consistent situation, the external validity of our conclusions may be undermined by the lack of realism of either situation. Future research should explore these constructs using larger samples of teams and through field studies, in order to more completely understand CPO as a shared feeling in

actual teams. Replication of our results with bigger samples would strengthen our conclusions. In addition, field studies would allow further consideration of important aspects that may influence the emergence of CPO as a “team shared-sense” toward specific team products. For example: to how many different teams do individual team members belong? How long were team members involved in the project? Do team members work together on other projects or share a history of working together? Additionally, observational studies designed to study the display of behaviors and verbal cues signaling both the OAE and the resulting CPO should be investigated in real teams to better understand the process by which self-extension occurs, and the relationship that team members create with the products they create, over time.

Concluding remarks

In 1975, Harold Leavitt predicted that teams would soon become the basic unit for work in organizations. That day has come indeed, and today teams are an inescapable reality of the organizational world. Given the importance of teams in the current and future organizational landscape, better understanding how to foster motivation in team members is paramount (West, 2017). However, the drive to economic efficiency in a global and digital marketplace has changed the nature of work and, consequently, of teamwork (Schaubroeck & Yu, 2017). As technical complexity prompts companies to fashion fast and efficient responses to the competitive environment, teams are becoming more and more dynamic and temporary, quickly formed to respond to emergent issues and to create fast solutions. In addition, external circumstances (such as the COVID-19 epidemic that, at the time of writing, has resulted in many teams being unable to work together face-to-face, for extended periods) may create barriers to employee interaction, and make it more difficult to experience the sense of “us” and “ours” that girder feelings of shared ownership over work outcomes, that this work has shown to be important to team effectiveness.

At the time of completing this thesis, as we work collectively to fight and contain pandemic outbreaks, it is easy to imagine that virtual teams could become even more common. The digital age and the *gig economy* have also spurred the greater use of virtual teams (Larson & DeChurch, 2020), at the same time as a new generation of young workers enters the workforce;

one that values meaningful work and personal accomplishment while still feeling meaningfully connected to a group in a healthy work environment (Kuron, Lyons, Schweitzer, & Ng, 2015). These workplace trends may pose challenges to teams' development of feelings of us. In this thesis, we present CPO as one way in which team can reactivate this connection. As organizational scholars, we can explore the potential of psychological ownership as a source of meaning in the workplace, and in turn as a source of employee motivation. By better understanding how and why workers feel connected to the work they do and to the people they collaborate with, we can increase our understanding of the phenomena and its positive impact.

Yet in the midst of these exciting workplace changes, as scholars of human behavior we know that our needs and motivations remain the same. We all still strive to connect and identify with each other and with the groups to which we belong. Michael West (2017) in his reflections on the future of teams referred to efforts to foster interconnectedness as the cornerstone to motivate compassion and collaboration in teamwork in a more and more virtual and diverse workplace:

If we are to fulfill our promise as researchers in advancing understanding of teamwork and collaboration in an interconnected world, it is important that we draw on theory and research to design interventions that help to promote effectiveness and innovation in the context of team diversity. (West, 2017, p. 591).

It is our hope that the present work will reinforce this call, by highlighting the powerful consequences of viewing work as “Ours” and valuing what unites us, instead of what pulls us apart.

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