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Is Playfulness a road to Trust and Performance?

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Master in Human Resources and Organizational Consulting

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PhD, Ana Luísa Junça Silva, Assistant Professor,
ISCTE Business School

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Departament of Human Resources and Organizational Behavior

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Resumo

Esta dissertação investigou o impacto de playfulness nos níveis de confiança e desempenho de equipas em contexto organizacional, explorando como a sua integração no local de trabalho influencia dinâmicas de grupo, em particular procurando entender se promove uma maior confiança entre colegas e melhora o desempenho. No contexto de mudanças tecnológicas e de cultura organizacional que atualmente afetam os locais de trabalho, numa economia baseada em conhecimento, onde a flexibilidade, criatividade e partilha de conhecimento são cruciais, a integração de playfulness no local trabalho pode ter uma abordagem estratégica que transcende a sua instrumentalidade. Procurou-se então preencher as lacunas encontradas na literatura, relativamente à perspectiva de playfulness como variável de equipa e os seus efeitos na confiança e desempenho das mesmas, explorando ainda o papel mediador da confiança neste relação.

Recorrendo a um desenho experimental envolvendo equipas de diversas organizações, os participantes foram expostos a diferentes estímulos, incluindo uma intervenção playfulness, antes de se dedicarem as tarefas competitivas. Os dados foram recolhidos antes e após esta competição para avaliar as relações entre as variáveis estudadas.

Os resultados sugerem que a playfulness ao nível da equipa influencia positivamente a confiança intra-equipa, o que, por sua vez, melhora o desempenho, com a confiança intra-equipa a atuar como mediadora nesta relação. Playfulness mostrou-se eficaz para promover segurança psicológica, incentivar uma comunicação aberta e fortalecer a colaboração, apoiando assim processos de criatividade e inovação. Dessa forma, playfulness pode ser considerada uma ferramenta estratégica que influencia tanto resultados organizacionais como processos estratégicos.

Palavras-chave: ludicidade, jogo, confiança intra-equipa, desempenho, construção de equipa

Códigos Revista de Literatura Económica (JEL):

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Abstract

This dissertation investigated the influence of playfulness on team trust and performance within organizational settings, exploring how integrating playfulness at work impacts team dynamics, focusing on whether playfulness fosters team trust and improves performance. In the context of changes in technology and organizational culture that impact today's organizational work settings, in a knowledge-driven economy where flexibility, creativity and knowledge-sharing are crucial, the integration of play and playfulness at work can be a strategic approach that transcends its instrumentality. Drawing from the literature on playfulness and team trust, this dissertation aimed to fill research gaps, particularly around the perspective of playfulness at the team-level and its effects on team trust and performance, further exploring the mediating role of team trust in this relationship.

Using an experimental design involving teams from diverse organizations, participants were exposed to different stimuli, including a playfulness team intervention, before engaging in competitive tasks. Data was collected before and after the team competition to assess the relationships between playfulness, team trust, and performance.

Findings suggest that playfulness at the team-level positively impacts team trust, which in turn enhances performance, with team trust acting as a mediator in this relationship. These results provide insights into the mechanisms through which playfulness enhances team dynamics and organizational outcomes, demonstrating that playfulness fosters psychological safety, encourages open communication, and strengthens collaboration within teams supporting also creativity and innovation processes. Therefore, playfulness can be address as a strategic tool influencing both organizational outcomes and strategical processes.

Keywords: play, playfulness, playfulness climate, team trust, team performance, team building

Journal of Economic Literature Codes (JEL):

    M12 Personnel Management • Executives; Executive Compensation

    M54 Labor Management

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Introduction

Research Relevance: Rise of the Knowledge Economy

Post-industrial, knowledge and information societies have witnessed the rise of the knowledge economy that led to jobs demanding from their employees more and more flexibility, creativity and knowledge sharing – it led organizations to become more and more reliant on their employees' creativity and flexibility capacities (Hunter et al., 2010; Shen, 2023; Yu et al., 2007) and on their participation on processes of knowledge exchange and transfer (Costa et al., 2018; Gockel et al., 2013; McGuire & Martin, 2023).

Recently, Play and Playfulness have been associated with individual and social creative functioning (Mainemelis & Ronson, 2006a) and, in the work context, it is an asset to foster creativity, flexibility, problem-solving (Glynn, 1994, Jacobs & Statler, 2006, Proyer & Ruch, 2011, Webster & Martocchio, 1992 and West, Hoff, & Carlsson, 2016 cited by Petelczyc et al., 2018; Glynn & Webster, 1992, Miller, 1973 and Starbuck & Webster, 1991 cited by Yu et al., 2007). Despite the literature fragmentation regarding a definition for play and playfulness there is some convergence regarding its core features: it is a process of cognitive recategorization of situations as play; it is process-oriented, described by a momentary focus and absorption on the behaviour or activity; it provides a sense of freedom and volition; implies an interactive involvement in seeking, finding and solving challenges; and it has an autotelic nature which means play is played for the sake of play itself (Petelczyc et al., 2018; Scharp et al., 2023). Play and Playfulness have been recognized as a platform and an effective mechanism for inducing an important organizational process: individual and group creativity, which can be defined as the generation of new ideas that may be potentially useful (Mainemelis & Ronson, 2006b; Shen, 2023). Moreover, creativity is strictly connected to innovation, which is critical for an organization to survive and stay ahead of the competition as creative and innovative ideas may solve business challenges and generate valuable products and services (Chen et al., 2021; Liu et al., 2023; Amabile, 1997 cited by Scharp et al., 2019; Scharp et al., 2019). Therefore, studying play and playfulness at work is relevant for today and future organizations due to its ability to influence and impact creativity and flexibility in the work context.

At the same time, as sharing knowledge involves risk, uncertainty and vulnerability towards teammates, it can be difficult when individuals are not motivated to share (Costa 2018; Jong 2016; Chen 2021). In this vein, diverse studies have shown that team Trust – or intrateam Trust, is a shared state at the team level that represents the Trust level that team members have in their fellow teammates (Costa et al., 2018; de Jong et al., 2016; Feitosa et al., 2020; Gockel et al., 2013; Morrissette & Kisamore, 2020) - plays a crucial role on suspending those conditions and setting an enviroment that

promotes psychological safety, confidence, tolerance, reduced hostility and competitiveness. It encourages team members to openly share information and knowledge, to accept influences from others, to collaborate and explore each member's contribution boosting communication and collaboration (Bulinska-Stangrecka & Bagieńska, 2019; Chen et al., 2021; Costa et al., 2018; de Jong et al., 2016; Gockel et al., 2013). According to De Jong's meta analysis on Trust and team Performance, team Trust was even more important (and mattered the most) when there was dependence on each other: when there was task interdependence, authority differentiation and skill differentiation (de Jong et al., 2016). Moreover, as it was considered a platform for effective communication and collaboration, supporting the systematic mechanisms and the personal effort needed to induce creativity, team Trust was also associated with innovation (Bulinska-Stangrecka & Bagieńska, 2019; Chen et al., 2021). Therefore, studying team Trust is relevant due to its ability to influence employees' participation in knowledge-sharing processes.

Research Relevance: Integration of Play and Playfulness at work

In contrast with more traditional ideas that work and play are two separate domains, it is becoming important to integrate play and playfulness at work, within teams and organizations, because changes in technology and work culture changed the panorama of 21st century organizations (Fischer & Walker, 2022; Gustafsson & Bhattacharya, 2023; McGuire & Martin, 2023; Petelczyc et al., 2018; Shen, 2023).

First, because changes in technology (with the emergence of flexible work arrangements, like remote work) limited the amount of face-to-face interaction with colleagues and the amount of time spent working together in the same space. Under these conditions, play and playfulness might be an important way to increase social connection, build Trust and rapport among team members, and assure knowledge and information sharing across the team – in turn, this likely enhances team effectiveness, being particularly valuable when teams are newly formed and their members are still figuring out how to interact with each other (Fischer & Walker, 2022; Gustafsson & Bhattacharya, 2023; Petelczyc et al., 2018).

Second, new technologies also led to a higher permeability of conceptual or physical boundaries between work and home and an increase in time spent at work (Hunter et al., 2010). So, as the time available for leisure activities has been decreasing, workers need to be compensated for that extra time, and play and playfulness can contribute avoiding premature burnout symptoms, reduce stress and lead to greater levels of well-being (Hunter et al., 2010; Petelczyc et al., 2018; Scharp et al., 2021; Shen, 2023).

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Third, there has been a shift in the organizational culture, as many employees now hold a different approach and expectations towards work, demonstrating a stronger preference for the integration of work, play and playfulness: for them, having time to play at work is becoming a necessary condition for their job satisfaction and encourages them to develop a sense of change self-efficacy being, therefore, crucial for motivation, talent retention (McGuire & Martin, 2023; Petelczyc et al., 2018; Shen, 2023), task and innovation performance (Z. Liu et al., 2024).

Research Gap Identification

Using Petelczyc's Play at Work Integrative Review as reference (Petelczyc et al., 2018) and the conceptualization of playful work design introduced afterwards by Bakker and Scharp (Bakker, Scharp, et al., 2020) we can identify four major research pathways for play and playfulness at work, that consider: play as a set of activities and behaviors that are carried out for the sake of fun (Caillois, 2001 cited by Scharp et al., 2023; Van Vleet & Feeney, 2015); play as personality trait being playfulness an individual characteristic in which play is a manifestation of individual differences (Barnett, 2007; R. T. Proyer, 2011, 2017); play not as a concrete set of observable activities and behaviours, but as a behavioural approach to perform any activity or to work design (Mainemelis & Ronson, 2006a; Scharp et al., 2023) ; play as an organizational feature suggesting that, as individuals differ in their playfulness, organizations also differ in how much they encourage and support playfulness and playful activities (Sørensen & Spoelstra, 2012). Despite this, play and playfulness at work are still considered neglected topics among organizational behavior studies (Mainemelis & Ronson, 2006a; Petelczyc et al., 2018; Shen, 2023) and even though research has already found a link between playfulness climate and performance, the mechanisms that drive this link are not yet clearly understood (Z. Liu et al., 2024; Petelczyc et al., 2018).

Despite evidence suggesting that play and playfulness can be framed as a proactive attitude attitude to create conditions with work activities (without changing the job itself) for optimal personal experience of work (Bakker et al., 2020; Bakker & van Woerkom, 2017) and that playfulness is similar to mood, one can consider it both a trait and a state (Kelley & Littman, 2001 cited by Yu et al., 2007). Further, literature has considered play and playfulness either as an activity or as a trait – which research studies can be organized by antecedents (with individual, task and organizational factors) and consequences of play (Petelczyc et al., 2018, p. 174). It stands out that *"research on play at work has focused primarily on the individual level of analysis"* (Petelczyc et al., 2018, p.186) and that *"little attention has been given to factors that moderate"* the main effects of play and playfulness at work (Petelczyc et al., 2018, p.180). Hence, this Dissertation aimed to extend the current literature that considers play and playfulness other than an activity or a trait (Bakker, Scharp, et al., 2020; Scharp et

al., 2023; Yu et al., 2007), addressing playfulness from a team-level perspective and focusing our attention on studying the relationship between playfulness and team Trust, further exploring Team Trust as a possible mediator between Playfulness and Team performance.

The focus on the relationship between playfulness and team Trust came from first-hand experience and observations in clowning and playfulness workshops: even though most of the workhops' participants only got to know each other on that day, they were sincerely concerned about others; they were counting on and helping out each other; they were cooperating and taking decisions considering each other's opinion; and they felt safe to explore and to express themselves. These intimately relate and mirror the Trust dimensions used to measure team Trust: propensity to Trust; Trust worthiness; cooperative behaviors and psychological safety (Costa & Anderson, 2011; Doosje et al., 1995). Additionally, these observations are in line with research results on the consequences of playfulness on Trust (e.g. Hunter et al., 2010), on creative climate (e.g. West et al., 2016), on bonding and social Interaction (e.g. Sørensen & Spoelstra, 2012) and Petelczyc suggested that play can *"enhance team effectiveness through the development of rapport, Trust, and solidarity"* (Petelczyc et al., 2018, p. 181) because not only play represents an opportunity for team members to bond, it also may lead team members to become enough comfortable with each other to share information and knowledge honestly and truthfully, even if sensitive (Petelczyc et al., 2018). Therefore, this Dissertation also aimed to expand the scarce literature that considers team Trust as the core variable of interest (de Jong et al., 2016; Tan & Lim, 2009) and to conduct an experimental study to bring more clarity to the link between team Trust and team performance (de Jong et al., 2016; Feitosa et al., 2020; Morrissette & Kisamore, 2020).

Research Goals and Structure

In summary, keeping in mind Petelczyc's remarks regarding the gaps in play at work literature – perceived mainly as an activity or as a trait; focused mainly on the individual level of analysis; scarce attention is given to moderators and mediators of its effects (Petelczyc et al., 2018) – research evidences of the relationship between play, playfulness and team Trust (Hunter et al., 2010; Petelczyc et al., 2018; Sørensen & Spoelstra, 2012; West et al., 2016); and considering the need to clarify the mechanisms that link playfulness and performance (de Jong et al., 2016; Feitosa et al., 2020; Z. Liu et al., 2024; Morrissette & Kisamore, 2020; Petelczyc et al., 2018), the main goal of the current Dissertation was to investigate if induced team-states of playfulness can contribute for the development of the level of Trust that team members have on their fellow teammates (team Trust) and if that, consequently, has an impact on team performance.

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In the first part of the current Dissertation you will find the review of the existing literature regarding play and playfulness at work: addressing the evolution of the integration of work and play, the different definitional attempts and research approaches, closing with the functions of play and its implications; followed by the review of the existing literature regarding team Trust: addressing the similarities and agreements regarding its definitions, exploring the different dimensions of Trust as a multidimensional construct, closing with how Trust affects teams and is itself affected by multi-level contextual factors.

In the second part you will find the research model adopted (and corresponding research hypothesis) that derives directly from the literature review and from the main research problem proposed, followed by the presentation of the methodology applied: describing the experimental study design – with the respective sample selection process – and enumerating the variables measures used to test the research hypothesis.

In the third part the results from the data collection will be analyzed and discussed on the light of the researched questions posed, followed by the extraction of conclusions from the research work developed, statement of research limitations that should be considered and suggestions for future research, taking into consideration the research conclusions and the limitations described before.

Literature Review

Play and Playfulness: Integration at work evolution

Historically, work and play were traditionally perceived as distinct and separate realms that should remain isolated from each other. Play was often regarded as a potential threat to business efficiency, productivity, and organizational control, with concerns that it might undermine workplace order (Hunter et al., 2010; Petelczyc et al., 2018; Sørensen & Spoelstra, 2012). Quotes attributed to Henry Ford, such as "when we are at work, we ought to be at work. When we are at play, we ought to be at play. There is no use trying to mix the two" (Ford, 2007, p. 65-66, cited by Sørensen & Spoelstra, 2012), and Theodore Roosevelt, who stated, "When you play, play hard; when you work, do not play at all" (Pine, 2012, p. 40, cited by Petelczyc et al., 2018), have historically reinforced this perspective.

However, with the rise of the knowledge economy, with the changes in technology and in the organizational culture, the organizational landscape changed completely leading organizations to become more and more reliant on their employees' creativity, flexibility and knowledge sharing (Costa et al., 2018; Fischer & Walker, 2022; Gockel et al., 2013; Hunter et al., 2010; McGuire & Martin, 2023; Petelczyc et al., 2018; Shen, 2023; Yu et al., 2007). Further, it has become more and more important to integrate play at work – due to the reduction of face-to-face interaction, the higher permeability of boundaries between work and home, and the change on employees expectation towards work that demonstrate a stronger preference for this integration – considering its positive impact regarding: social connection, Trust and knowledge sharing (Fischer & Walker, 2022; Gustafsson & Bhattacharya, 2023; Petelczyc et al., 2018); stress, burnout and well-being (Hunter et al., 2010; Petelczyc et al., 2018; Scharp et al., 2021; Shen, 2023); job satisfaction, motivation, talent retention, creativity, task and innovation performance (W. Liu et al., 2023b; Z. Liu et al., 2024; Mainemelis & Ronson, 2006a; McGuire & Martin, 2023; Petelczyc et al., 2018; Yu et al., 2007).

Since the Industrial Revolution, organizational culture has evolved significantly, altering its views on play. Recognizing that employees' instinct to engage in play cannot be eradicated (Roy, 1953, 1959, cited by Mainemelis & Ronson, 2006; Mainemelis & Ronson, 2006a), organizations have increasingly acknowledged the value of play. As previously mentioned, play has become a strategic asset for organizations (Bakker, Scharp, et al., 2020; Hunter et al., 2010; Mainemelis & Ronson, 2006; Petelczyc et al., 2018; Scharp et al., 2021, 2022; Sørensen & Spoelstra, 2012). Consequently, some organizations have integrated play into their core cultures and productive activities, leading to enhanced profitability, market attention, and industry leadership (Mainemelis & Ronson, 2006; Petelczyc et al., 2018).

Play and Playfulness: Definitional attempts and Research Pathways

Research on play and playfulness at work is fragmented and ambiguous, with the lacking of definitional convergence being considered one of the main obstacles for the literature progression, which leads to research findings to likely to vary, depending on how the studies are designed (Petelczyc et al., 2018; Van Vleet & Feeney, 2015). Morever, Petelczyc also stressed out the need for a measurement for play at work, which was eventually answered by the conceptualization of Playful Work Design (Petelczyc et al., 2018; Scharp et al., 2023). Overall, the literature considered that play has the following features: must be an enjoyable activity (Costea et al., 2005; Starbuck & Webster, 1991; Statler, Heracleous, & Jacobs, 2011 cited by Petelczyc et al., 2018); it is bounded in time and space to separate from serious activities (Caillois, 1958 and Huizinga, 1949 cited by Petelczyc et al., 2018); is voluntary and process-driven (Caillois, 1958; Dandridge, 1986; Huizinga, 1949; Linder et al., 2001 cited by Petelczyc et al., 2018); involves a social interaction (Costea et al., 2005; Huizinga, 1949; Linder et al., 2001; Sandelands, 2010; Statler et al., 2011 cited by Petelczyc et al., 2018); has rules embedded (Caillois, 1958; Huizinga, 1949; Linder et al., 2001 cited by Petelczyc et al., 2018); is totally absorbing (Huizinga, 1949 and Starbuck & Webster, 1991 cited by Petelczyc et al., 2018); makes employee experience positive affect (Dandridge, 1986; Statler, Heracleous, & Jacobs, 2011; Van Vleet & Feeney, 2015b cited by Petelczyc et al., 2018) and involves elements of imagination and make-believe (Linder et al., 2001; Mainemelis & Ronson, 2006; Sandelands, 2010 cited by Petelczyc et al., 2018).

In summary, the current literature delineates four primary research pathways for understanding play and playfulness in the workplace. The first pathway characterizes play as an activity pursued primarily for amusement and fun, approached with an enthusiastic and present-focused attitude, and marked by high interactivity (Van Vleet & Feeney, 2015 p. 632). This definition emphasizes three core features of play: (1) Purpose of amusement and fun: play is primarily driven by the pursuit of enjoyment and amusement. This intrinsic motivation differentiates play from other activities that may also be intrinsically motivated or interactive but are not primarily aimed at fun or amusement (Van Vleet & Feeney, 2015). Although play can serve additional purposes, such as skill development, Trust-building, or team morale enhancement, its defining characteristic remains its focus on enjoyment (Petelczyc et al., 2018); (2) Enthusiastic and immersive engagement: play involves an enthusiastic, in-the-moment approach, rendering it immersive and absorbing. This immersion allows individuals to momentarily distance themselves from stressors and responsibilities, fostering a sense of "flow" (Petelczyc et al., 2018; Van Vleet & Feeney, 2015); and, (3) High interaction: play is characterized by a high level of interaction, either with others or with the activity itself. This interactive nature distinguishes play from more passive forms of engagement, such as watching television or reading a book, which do not involve the same level of active participation (Van Vleet & Feeney, 2015). These

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elements collectively define play as a distinctive form of activity, integral to understanding its role and impact in organizational settings (Petelczyc et al., 2018; Van Vleet & Feeney, 2015).

Second, another research pathway views play as a personality trait, categorizing it as playfulness. This perspective conceptualizes playfulness as an individual characteristic that predisposes people to reframe or transform various situations and contexts to perceive them as entertaining, stimulating, and personally engaging (Barnett, 2007; Glynn & Webster, 1992, as cited by Petelczyc et al., 2018; Proyer, 2017). In this framework, playfulness is seen as a manifestation of individual differences (Barnett, 2007; Proyer, 2011, 2017). Barnett's research identified several clusters of traits associated with playful individuals: (1) Sociable, friendly, and outgoing: individuals who are gregarious; (2) Spontaneous, impulsive, and unpredictable: individuals who are uninhibited; (3) Funny and humorous: individuals who are comedic; (4) Active and energetic: individuals who are dynamic (Barnett, 2007). Subsequently, Proyer developed the OLIW model (Proyer, 2017), which provides a framework for studying adult playfulness as a trait. This model assesses playfulness across four dimensions: (1) Other-directed: playful individuals enjoy interacting with others and use playfulness to build connections and alleviate tensions; (2) Lighthearted: they adopt an easygoing approach to life, viewing it more as a playground than a battlefield; (3) Intellectual: they engage in playful exploration of ideas and problem-solving, preferring complexity over simplicity; And (4) whimsical: they find amusement in unusual situations and are adept at finding enjoyment in everyday life (Proyer, 2017). These dimensions offer a comprehensive understanding of how playfulness manifests as a trait, highlighting its role in shaping individuals' perceptions and interactions.

A third research pathway conceptualizes play not as a specific set of observable activities or behaviors, but as a behavioral approach to engaging in an activity. This perspective is informed by social information-processing theory (Salancik & Pfeffer, 1978, as cited by Petelczyc et al., 2018) and cognitive categorization theory (Rosch, 1975, as cited by Petelczyc et al., 2018). According to these theories, play is defined as a mode of structuring cognition and behavior towards an activity by framing and labeling it as play. This framing positively influences individuals' attitudes and motivations towards the activity (Mainemelis & Ronson, 2006; Petelczyc et al., 2018; Abramis, 1990; Csikszentmihalyi, 1981, as cited by Scharp et al., 2023). The synergy between this pathway and literature on proactive work behavior, particularly self-initiated work design, has led to the development of the concept of Playful Work Design (PWD). PWD is a two-dimensional construct that represents an individual's proactive approach to work activities, aimed at creating conditions that foster enjoyment and challenge. It involves re-designing work activities as either ludic play opportunities (designing for fun) or agonistic play opportunities (designing for competition) (Bakker, Scharp, et al., 2020; Scharp et al., 2023). It is important to distinguish PWD from Job Crafting. While Job Crafting involves actual changes to the job itself, including its demands and resources – e.g. modifying the type or nature of its tasks by changing

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them with a colleague; changing the communication processes and channels to avoid or get to know certain colleagues – PWD focuses on approaching the job in innovative ways to enhance personal experience without altering the job's fundamental structure – e.g. listening to music to make the task more fun and enjoyable; set time records for those tasks and compete with yourself – (Bakker, Hetland, et al., 2020; Bakker, Scharp, et al., 2020).

Finally, a research pathway examines play not at the individual level but as an organizational characteristic, positing that, just as individuals vary in their playfulness, organizations also differ in their support for and encouragement of play (Sørensen & Spoelstra, 2012). This perspective suggests that organizations can strategically leverage play to achieve various goals, such as fostering creativity, enhancing Trust and social relationships, and increasing motivation and performance (Petelczyc et al., 2018; Sørensen & Spoelstra, 2012; Statler et al., 2011; West et al., 2016).

This fragmentation may stem from the complexity of the phenomenon of play, which manifests in various forms and settings, leading to many workplace activities being categorized as play when they only partially exhibit the characteristics of play (Petelczyc et al., 2018). It is crucial to distinguish between workplace fun and play or playfulness at work, despite their similarities and overlapping features. Workplace fun is a multidimensional construct often examined as an organizational characteristic, referring to activities or tasks at work that possess a playful or humorous nature and provide individuals with pleasure, amusement, or enjoyment; this can include activities that are more passive forms of fun, such as watching TV or attending a corporate party (Fluegge, 2008, cited by Celestine & Yeo, 2021; Celestine & Yeo, 2021; Petelczyc et al., 2018). However, these activities are not considered play, as they lack the interactivity and deep engagement required for play. Therefore, workplace fun can be segmented into subsets, with play and playful organizations potentially representing a specific subset of workplace fun and fun organizations (Celestine & Yeo, 2021; Petelczyc et al., 2018).

Play and Playfulness: Agreements on Play

Despite the current fragmentation in the literature, several findings converge on the essential characteristics of play. These include the cognitive re-categorization of situations as play, a process-oriented nature characterized by momentary focus and absorption in the activity, a sense of freedom and volition, interactive engagement in seeking and solving challenges, and an autotelic quality, meaning play is engaged in for its own sake (Petelczyc et al., 2018; Scharp et al., 2023). Van Vleet and Feeney's (2015) definition of play emphasizes three of these core features: being process-oriented, highly interactive, and performed for the intrinsic enjoyment of the activity. According to Petelczyc et

al. (2018), this is the most accurate conceptualization of play in the workplace and is expected to guide future theoretical developments.

Celestine and Yeo (2021) further advanced the understanding of play at work by developing a conceptual framework that integrates different forms of play described in the literature. Their two-dimensional framework classifies play based on whether it serves as a diversion from work tasks (diversionary play) or is embedded within work tasks (work-embedded play), and whether it is self/peer-initiated or manager-initiated (Celestine & Yeo, 2021; Mainemelis & Ronson, 2006). This framework underscores that while play can serve as a diversion from work, occurring when employees are not directly engaged in their tasks, it also contributes to a broader social-relational climate in which work tasks are performed (Celestine & Yeo, 2021).

From this point onward, in the context of this dissertation, "play" will refer to activities or behaviors undertaken for the purpose of fun, characterized by high absorption and involvement (Celestine & Yeo, 2021; Van Vleet & Feeney, 2015). "Playfulness," on the other hand, will refer to the individual's behavioral approach and choice to transform an activity into one that is enjoyable, entertaining, and challenging, drawing from the literature on Playful Work Design, which arises from the synergy between playfulness and proactive work behavior (Bakker et al., 2020, p. 3).

Play and Playfulness: Drivers and Functions

Following Petelczyc's integrative review of the literature (Petelczyc et al., 2018), four main theoretical frameworks have been used to explain the concept of play in the workplace, though none has emerged as dominant. First, the stimulus-seeking theory (Berlyne, 1960, cited by Petelczyc et al., 2018) suggests that individuals regulate their levels of stimulation, aiming to maintain an optimal state that avoids both boredom and overstimulation (Starbuck & Webster, 1991; Ellis, 1973, cited by Petelczyc et al., 2018). According to this theory, low levels of stimulation are a key driver of play, as individuals seek to avoid boredom and monotony. Thus, when employees experience boredom, they may engage in play activities as a means to mitigate this sensation and generate stimulation in the workplace. Play serves as a self-regulation mechanism, helping individuals manage their levels of arousal by introducing novelty, engagement, and enjoyment, which counteracts the monotony associated with boredom. This behaviour aligns with the stimulus-seeking theory, suggesting that play is a natural response to low levels of stimulation, enabling employees to re-engage with their environment and tasks.

Second, the theory of flow (Csikszentmihalyi, 1975, cited by Petelczyc et al., 2018) posits that play activities are autotelic, meaning they are intrinsically motivating. Games, as a form of play, often present a challenge, require skill, offer a sense of control, and provide feedback, which can result in the unique experience of "flow," characterized by deep involvement and absorption in an activity. This

state of flow increases motivation, as it creates an effortless integration of learning and skill acquisition (Petelczyc et al., 2018). Thus, play activities may induce a state of flow, which can contribute to various positive work-related outcomes, including enhanced performance. The immersive and intrinsically motivating nature of play fosters deep engagement and focus, leading to a sense of effortless concentration. This flow state not only promotes enjoyment but also facilitates greater productivity and task accomplishment, highlighting the functional role of play in improving work performance.

Third, play is described as having a cathartic function, providing psychological and emotional relief from tension or stress (Butler, 2015; Ellis, 1973, cited by Petelczyc et al., 2018). This cathartic aspect of play benefits both individuals and organizations by allowing the expression and dissipation of negative emotions, while making socially acceptable the display of otherwise unwanted responses (Giddens, 1964, cited by Petelczyc et al., 2018). Thus, play serves a restorative function by aiding individuals in recovering from exposure to stressors, daily demands, or hassles (Hunter et al., 2010; Butler, 2015; DesCamp & Thomas, 1993, cited by Petelczyc et al., 2018; Sørensen & Spoelstra, 2012). Engaging in play allows employees to alleviate psychological and emotional tension, promoting mental and physical recovery from workplace stress. This recovery process supports overall well-being and resilience in managing daily work challenges.

Fourth, the social information-processing theory (Salancik & Pfeffer, 1978, cited by Petelczyc et al., 2018) and cognitive categorization theory (Rosch, 1975, cited by Petelczyc et al., 2018) emphasize the influence of labeling on individuals' attitudes toward tasks. The categorization of a task as "play" rather than "work" can enhance positive associations, effort, and attitudes toward that task (Webster & Martocchio, 1993, cited by Petelczyc et al., 2018). This suggests that framing a task as play can significantly enhance an individual's engagement and performance. By categorizing the task as play, individuals are more likely to experience positive emotions, increased motivation, and greater focus, which in turn improves their overall effectiveness and productivity.

In summary, the literature indicates that individuals engage in play when they possess the traits or capacity to do so, when the environment signals that it is appropriate, and when play's autotelic nature helps protect or enhance their internal resources (Celestine & Yeo, 2021; Petelczyc et al., 2018; Scharp et al., 2023).

Play and Playfulness: Consequences and Outcomes

Despite the fragmentation of the literature, some studies have highlighted communalities regarding the consequences and outcomes of playfulness that, as organized by Petelczyc et al. (Petelczyc et al., 2018), can be addressed by three levels of analysis: individual, team and organization, assuming that research "has focused primarily on the individual level of analysis" (Petelczyc et al., 2018 p. 186).

At the individual level, play and playfulness have been associated with various outcomes that can be categorized into four main groups: affect and well-being, attitudinal, cognitive, and task-related outcomes. First, numerous studies have highlighted the emotional benefits of play and playfulness in the workplace, linking them to positive affect and well-being (Celestine & Yeo, 2021). Engaging in play has been shown to reduce stress, fatigue, and boredom (Chang et al., 2013; Hunter et al., 2010; Magnuson & Barnett, 2013; Sørensen & Spoelstra, 2012), protect employees from stressors, and prevent burnout symptoms (Bakker & van Wingerden, 2021; Hunter et al., 2010; Magnuson & Barnett, 2013; Proyer et al., 2021; Scharp et al., 2021). Additionally, play can be seen as a strategy for managing energy and resources, with the potential to re-energize employees through either resource-replenishment or resource-building mechanisms (Celestine & Yeo, 2021; Petelczyc et al., 2018).

Second, play and playfulness have been linked to improvements in work-related attitudes, including higher job satisfaction, innovative work behavior, and organizational commitment (Petelczyc et al., 2018; Sørensen & Spoelstra, 2012; Yu et al., 2007). They also enhance employees' intrinsic motivation and engagement by fostering flow experiences (Bakker & van Woerkom, 2017) and promoting the satisfaction of basic psychological needs (Bakker & van Woerkom, 2017; Scharp et al., 2022) within the framework of Self-Determination Theory (Deci & Ryan, 2000; Deci et al., 2017 cited by Scharp et al., 2022). Moreover, play contributes to individual resilience development through its unique coping mechanisms in stressful situations (Magnuson & Barnett, 2013).

Third, research has shown that play and playfulness in the workplace are associated with learning and mastery (Heimann & Roepstorff, 2018; Petelczyc et al., 2018; Proyer, 2011; Shen, 2023; Yu et al., 2007; Zhou et al., 2019), increased flexibility (Hunter et al., 2010; Proyer, 2011; Yu et al., 2007), and enhanced creativity (Heimann & Roepstorff, 2018; Liu et al., 2023; Mainemelis & Ronson, 2006; Proyer, 2011; West et al., 2016; Yu et al., 2007; Zhou et al., 2019). Play facilitates creativity-relevant processes, such as problem framing and divergent thinking, while also fostering the affective aspects of creativity through the creation of positive experiences and interactions (Mainemelis & Ronson, 2006; Petelczyc et al., 2018; Van Vleet & Feeney, 2015; West et al., 2016).

Lastly, play and playfulness can influence task-related outcomes, contributing to higher task performance – which is the evaluation of the employees' behaviors and results achieved in completing their jobs (Z. Liu et al., 2024). This is partly due to the recategorization power of framing work tasks as play, leading to increased task interest and engagement (Bakker, Hetland, et al., 2020; Bakker & van Woerkom, 2017; Heimann & Roepstorff, 2018; Petelczyc et al., 2018; Scharp et al., 2022, 2023; Yu et al., 2007). Play also improves learning and the transfer of training (Heimann & Roepstorff, 2018; Petelczyc et al., 2018; Proyer, 2011; Shen, 2023; Yu et al., 2007; Zhou et al., 2019). Thus, based on the empirical demonstrations decsribed above, the first research hypothesis:

H1 – Playfulness is positively correlated with Team Performance.

At the team level, play and playfulness in the workplace have primarily been linked to social bonding, Trust, and collaboration. By fostering positive interactions among team members and reducing hierarchical barriers, play has been associated with the strengthening of social bonds (Heimann & Roepstorff, 2018; Mainemelis & Ronson, 2006; Petelczyc et al., 2018; Shen, 2023; Sørensen & Spoelstra, 2012). It encourages openness, helping to develop rapport, solidarity, and psychological safety within teams. Research highlighted that play and playfulness build team cohesion and Trust, which is especially valuable in newly formed teams where members are still learning how to interact (Fischer & Walker, 2022; Gustafsson & Bhattacharya, 2023; Hunter et al., 2010; Petelczyc et al., 2018; Statler et al., 2011; West et al., 2016). Additionally, play fosters stronger collaborative relationships due to its interactional nature, promoting increased information exchange and enhancing relationship satisfaction, and it also contributes to the development of instrumental relationships among team members (Gustafsson & Bhattacharya, 2023; Mainemelis & Ronson, 2006; Petelczyc et al., 2018; Proyer et al., 2021; West et al., 2016). Furthermore, play and playfulness at the team level have been linked to more creative and innovative team climates, enhancing collective problem-solving and idea generation (Gustafsson & Bhattacharya, 2023; West et al., 2016; Yu et al., 2007). So, based on the described empirical studies, the second research hypothesis was defined as follows:

H2 – Playfulness is positively correlated with Team Trust.

Considering the organizational-level, play and playfulness at work have been used instrumentally to achieve organizational outcomes: it promotes organizational creativity via a sense of openness, flexibility and ability to deal with the unknown (Petelczyc et al., 2018; West et al., 2016); it promotes stronger organizational commitment and involvement via a friendly atmosphere (Petelczyc et al., 2018; Sørensen & Spoelstra, 2012; Statler et al., 2011); and, due to the shift in the organizational culture and employees expectations towards work, it is becoming instrumental for talent motivation, retention (McGuire & Martin, 2023; Petelczyc et al., 2018; Shen, 2023) and, therefore, for innovation and performance (Z. Liu et al., 2024).

In summary, the current literature emphasizes that play and playfulness in the workplace have several positive outcomes. These include fostering positive affect and enhancing employees' well-being, promoting stronger social bonding, Trust, and collaboration, and contributing to both individual and group creativity. Additionally, play and playfulness enhance learning and performance, improve employees' attitudes, increase involvement, and elevate overall engagement levels within the organization.

Team Trust: Evolution of Team Trust research

The evolution of the organizational landscape led organizations to become flatter and more reliant on teams, in an evolving work environment where teams are increasingly interdependent and team members need to work together in close collaboration, sharing and transferring knowledge to achieve goals – team Trust is the glue that holds the team together, being crucial for effective team functioning (Costa et al., 2018; de Jong et al., 2016; Feitosa et al., 2020; McGuire & Martin, 2023; Morrissette & Kisamore, 2020).

At first, models of team functioning have been focusing on team processes and team research gave more attention to Trust in leaders – vertical relationship – then to Trust in team members – horizontal relationships that are characterized by little or no power imbalance (Costa et al., 2018; de Jong et al., 2016; Morrissette & Kisamore, 2020). But recent research shifted its attention towards team emergent states – constructs that characterize properties of the team, are dynamic in nature and vary as function of the team context, inputs, processes and outcomes (Marks, Mathieu, & Zaccaro, 2001 cited by Costa et al., 2018) – with team Trust getting more attention and been recognized as an team emergent psychological state that arises from the dynamic interconnectedness between both the levels of interpersonal Trust between members and their collective perception of Trust as a team (Costa et al., 2018; de Jong et al., 2016; McGuire & Martin, 2023; Morrissette & Kisamore, 2020). It is important to clarify these two levels of Trust are distinct, because there is evidence that team members may share a certain level of collective team Trust and yet keep different levels of interpersonal Trust among each other (De Jong & Dirks, 2012 cited by Costa et al., 2018).

Team Trust: Construct definitions and dimensions

Trust is a multidimensional construct that operates at individual, team, and organizational levels, encompassing both interpersonal and collective dynamics. It can be understood as an interpersonal risk-taking behavior, wherein an individual suspends uncertainty by assuming that another's actions will be beneficial, or at least not harmful, thereby accepting vulnerability to actions beyond their control. The presence of risk is essential for Trust to emerge — without risk, Trust becomes unnecessary (Costa et al., 2018; Costa & Anderson, 2011; Feitosa et al., 2020; Fischer & Walker, 2022). Trust reflects a process in which A, the Trustor, places confidence in B, the Trustee, highlighting both individual and relational components that are contingent on the specific context and associated risks (Costa, 2003; Costa & Anderson, 2011). It is crucial to differentiate between Trust and disTrust: while both pertain to uncertainty about future actions, Trust emphasizes the anticipation of desirable actions, whereas distrust focuses on the likelihood of undesirable ones, leading to defensive or

preventive responses (Costa et al., 2018). For the purposes of this dissertation, only the concept of Trust will be explored.

Although a unified definition of Trust remains elusive, two prominent models have been widely considered in the context of teams or work groups. First, the models of Mayer et al. (1995, cited by Costa et al., 2018) and Rousseau et al. (1998, cited by Feitosa et al., 2020) propose that Trust is a psychological state reflecting the Trustor's willingness to accept vulnerability and risk, based on expectations and beliefs about the Trustee's perceived intentions, motives, and behaviors. These models connect the Trustor's propensity to Trust others with dimensions of the Trustee's perceived Trustworthiness—viewed as formative indicators of Trust. Additionally, Trust involves a behavioral decision to act on this Trust, manifesting in the Trustor's willingness to be vulnerable to others' actions, with these Trusting behaviors serving as reflective indicators and behavioral consequences of the psychological state of Trust (Mayer et al., 1995; Rousseau et al., 1998, cited by McGuire & Martin, 2023).

On the other hand, McAllister's (1995, cited by McGuire & Martin, 2023) work emphasizes the multidimensionality of Trust by exploring its cognitive and affective dimensions. Cognitive-based Trust is rooted in available knowledge and evidence of the Trustee's Trustworthiness, while affective-based Trust is founded on emotional investment, care, and the quality of the relationship between Trustor and Trustee (Costa et al., 2018; Feitosa et al., 2020; Fischer & Walker, 2022; McGuire & Martin, 2023). Both models assume that Trust is inherently dynamic and evolves through ongoing interactions and task interdependence. These interactions create feedback loops from the outcomes of Trusting behaviors, which in turn shape perceptions of Trustworthiness (Costa et al., 2018; Costa & Anderson, 2011).

To define team Trust, Feitosa et al. (2020) derive two primary components from existing models: positive expectations and willingness to be vulnerable. Positive expectations, which are cognitively driven, reflect an individual's anticipation that their teammates are competent, reliable, and capable of performing their tasks — this represents a rational form of Trust at the team level. In contrast, willingness to be vulnerable, which is affectively driven, involves emotional investment, concern, and Trust in teammates' motives or values — this constitutes a relational and identification-based form of Trust (Costa et al., 2018; Feitosa et al., 2020). Consequently, Feitosa et al. defines team Trust as "an emergent and dynamic shared state at the team level whereby team members believe in one another's competence and are willing to be vulnerable beyond task-related issues" (Feitosa et al., 2020, p. 480). This definition underscores team Trust as a collective psychological state, distinct from individual-level interpersonal Trust, which pertains to the relationships between pairs of team members (Costa et al., 2018; de Jong et al., 2016; Feitosa et al., 2020; Morrissette & Kisamore, 2020). According to Mayer's perspective on Trust (Mayer et al., 1995, cited by Costa & Anderson, 2011), team Trust can be
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conceptualized not only as an emergent and dynamic psychological state shared among team members but also as a manifestation of behaviours resulting from that state, such as cooperative or monitoring behaviours (Costa, 2003; Costa & Anderson, 2011; Morrissette & Kisamore, 2020). This understanding of team Trust will be applied in the context of this dissertation.

Team Trust: Influences of team characteristics and context

According to the literature, various team characteristics and contextual factors influence the significance and impact of team Trust on team performance and success. First, team Trust becomes particularly crucial in environments with high levels of interdependence, where close cooperation is essential for achieving team goals (Bulinska-Stangrecka & Bagieńska, 2019; Costa et al., 2018; de Jong et al., 2016).

Second, both team size and type affect the necessity for team Trust. Process loss theory (Steiner, 1972, cited by Morrissette & Kisamore, 2020) indicates that larger teams are more susceptible to process losses, such as communication and coordination breakdowns (Costa et al., 2018; Morrissette & Kisamore, 2020). Additionally, decision-making teams require higher levels of team Trust compared to production teams, due to their greater informational interdependence and relationship-oriented exchanges, whereas production teams are more task-oriented (Morrissette & Kisamore, 2020).

Third, the level of differentiation within a team impacts the need for team Trust. Higher differentiation increases the need for Trust: authority differentiation heightens vulnerability for members with less influence in decision-making, while skill differentiation necessitates reliance on each other's expertise to achieve team goals (de Jong et al., 2016).

Fourth, virtual teams, characterized by reduced communication richness and transparency, require more time to build Trust compared to non-virtual teams. They also need higher levels of team Trust to collaborate effectively (de Jong et al., 2016).

Finally, team Trust often begins as a fragile and evolving construct that takes time to develop into a stable and recognized shared state among team members (Costa et al., 2018; Feitosa et al., 2020). Beyond its role in initiating, establishing, and maintaining relationships, team Trust is especially critical in situations where there is a significant conflict between personal and collective interests. In such cases, team Trust helps individuals overcome the temptation to act selfishly and fosters cooperation. Thus, team Trust is more important when conflicts are pronounced and the potential for distrust is higher (Balliet & Lange, 2012).

Team Trust: Instruments for measurement

Given the relevance of team Trust outcomes for the functioning and success of teams, it is important to have reliable and valid instruments to measure Trust at the team level. While most Trust instruments focus on the individual and dyadic levels of analysis, there is a lack of instruments validated at the team or group work level and that consider the multidimensionality of this construct, exception made to the work developed by Costa & Anderson (Costa & Anderson, 2011; Feitosa et al., 2020). Considering the conceptualization of team Trust as an emergent and dynamic psychological shared team-state, plus the manifestation of behaviours that are consequence of that state, four component parts can be identified within this construct: propensity to Trust and perceived Trustworthiness as two distinct formative indicators, plus cooperative and monitoring behaviours as two other distinct reflective behaviours (Costa, 2003; Costa & Anderson, 2011; Morrissette & Kisamore, 2020). Regarding the formative indicators, propensity to Trust represents an individual expectancy and disposition towards others that they can be relied upon. It was viewed more as a stable disposition (close to a personality trait) but now it is more or less consensual as a situational trait because it is affected by both the team members and contextual factors; perceived worthiness represents the expectancy that others will behave accordingly, coming from the belief he/she: is doing good-faith efforts to behave, is honest in negotiations and does not take excessive opportunity if available. Regarding the reflexive indicators, cooperative behaviours represent the positive actions that reflect the willingness to be vulnerable to others, engaging in some form of cooperation, while monitoring behaviours reflect the extent to which team members feel the need control others' work, associated with lack of Trust, and which leads team members to direct their efforts to protect themselves instead of cooperating towards team's goals (Costa, 2003; Costa & Anderson, 2011).

 According to research, perceived Trustworthiness seems to be the strongest component of Trust, followed by the component of cooperative behaviours that both seem strongly correlated with team Trust. Propensity to Trust have shown to be low to moderately correlated and monitoring behaviours is the component that seems to explain the least amount of variance Trust within teams. All components seem to be positively related with team Trust, exception made to monitoring behaviours (Costa, 2003; Costa & Anderson, 2011).

Team Trust: Outcomes and its benefits

Trust is drawing more interest within research, being linked to positive outcomes at the employee, team and organizational levels. And as organizations are increasingly team-centered, the topic of team Trust is equally getting more relevant in order to understant how team functioning can be optimized (de Jong et al., 2016; Feitosa et al., 2020; Morrissette & Kisamore, 2020). According to the literature,

team Trust is essential for enabling team members to manage uncertainty and vulnerability with respect to their colleagues. It reduces the need for defensive behaviors and self-protection against potential harm from others. Team Trust fosters an environment where members are more willing to exchange resources and knowledge, accept influence from others, and engage in cooperative behaviors that advance the team's collective interests, rather than concentrating solely on personal goals.

Therefore, team trust sets an environment that promotes psychological safety, confidence, tolerance, reduced hostility and competitiveness where team members are willing to take risks and assume responsibilities with that team (Balliet & Lange, 2012; Bulinska-Stangrecka & Bagieńska, 2019; Chen et al., 2021; de Jong et al., 2016; Fischer & Walker, 2022); team Trust enhances team members' willingness to engage in cooperative behaviours and to be more compassionate towards others being considered a platform for effective collaboration (Bulinska-Stangrecka & Bagieńska, 2019; Chen et al., 2021; Costa et al., 2018; Costa & Anderson, 2011; de Jong et al., 2016; Morrissette & Kisamore, 2020); it develops a positive, collaborative and supportive team climate where team members feel free and safe to openly share information, ideas and consider each other contributions boosting team communication and knowledge sharing (Chen et al., 2021; Costa et al., 2018; de Jong et al., 2016; Gockel et al., 2013; McGuire & Martin, 2023), stimulating team learning (Costa et al., 2018; Gockel et al., 2013), triggering individual and collective creativity mechanisms that lead to innovation (Bulinska-Stangrecka & Bagieńska, 2019; Chen et al., 2021). Thus, based on the aforementioned findings, the following hypothesis was defined:

H3 – Team Trust is positively correlated with Team Performance.

Additionally, team Trust has been also associated to benefits at both the employee-level – like improved job satisfaction, task performance, higher organizational commitment and lower job stress levels – and at the organizational-level – like higher Trust in organizations, organizational effectiveness or stronger organizational citizenship behaviours display (Bulinska-Stangrecka & Bagieńska, 2019; Chen et al., 2021; Costa et al., 2018; Fischer & Walker, 2022; Gockel et al., 2013; McGuire & Martin, 2023; Morrissette & Kisamore, 2020; Tan & Lim, 2009). There is evidence suggesting a positive relationship between team Trust and team performance, with team Trust serving as a mediator in the relationship between various job characteristics or activities, such as play, and performance outcomes (Costa & Anderson, 2011; de Jong et al., 2016; McGuire & Martin, 2023; Morrissette & Kisamore, 2020; Tan & Lim, 2009). Therefore, as team Trust seems to be a mechanism through which different job characteristics enhance job outcomes, it is anticipated that team Trust will mediate the relationship between play and team performance.thus, the following hypothesis was defined (See Figure 1):

H4 – The relationship between Playfulness and Team Performance is mediated by Team Trust.

Conceptual Model & Research Hypothesis

Building on the observations of Petelczyc et al. (2018) regarding gaps in the literature on play at work—particularly its focus on individual-level analysis, limited exploration of moderators and mediators, and the need to elucidate the mechanisms linking playfulness, team Trust, and performance (de Jong et al., 2016; Feitosa et al., 2020; Morrissette & Kisamore, 2020)—this dissertation aimed to address these gaps. Specifically, the primary objective of this study was to investigate whether induced team states of playfulness could enhance team Trust levels and, subsequently, impact team performance.

Given that most studies exploring these concepts have been non-experimental or cross-sectional in nature (de Jong et al., 2016) and there is a paucity of research at the team level of analysis (Costa et al., 2018; Costa & Anderson, 2011), we opted to conduct an experimental study within organizations. In this study, employees were organized into teams of 4 to 8 individuals and tasked with completing a series of challenges to accumulate points in a competitive team environment, allowing us to measure and compare performance across teams. The team competition introduced a context of risk and interdependence, thereby creating an environment where Trust was essential and providing an opportunity to practice cooperative and Trusting behaviors (Costa et al., 2018; Depping et al., 2016; Feitosa et al., 2020; Fischer & Walker, 2022).

Teams were randomly assigned to one of three preparatory conditions prior to the competition: Path C, where teams participated in the competition without any pre-competition stimulus; Path T, where teams developed their Team Chart as preparation; and Path P, where teams were induced into a state of playfulness through playful group dynamics and games. Teams in Path C served as the control group, while teams in Paths T and P served as the experimental groups, representing Team Chart and Playfulness conditions, respectively. This setup allowed for the analysis of hypotheses H1, H2, and H4 from an experimental perspective. The research hypotheses are broken down and illustrated in the Research Model below (figure 1):

H1.1 – Playfulness is positively correlated with Team Performance.
H1.2 – Teams receiving the Playfulness stimulus (path P) record a higher performance.

H2.1 – Playfulness is positively correlated with Team Trust.
H2.2 – Teams receiving the Playfulness stimulus (path P) record higher increases in Team Trust.

H3 – Team Trust is positively correlated with Team Performance.
H4 – The relationship between Playfulness and Team Performance is mediated by Team Trust.

Figure 1 - Research Model
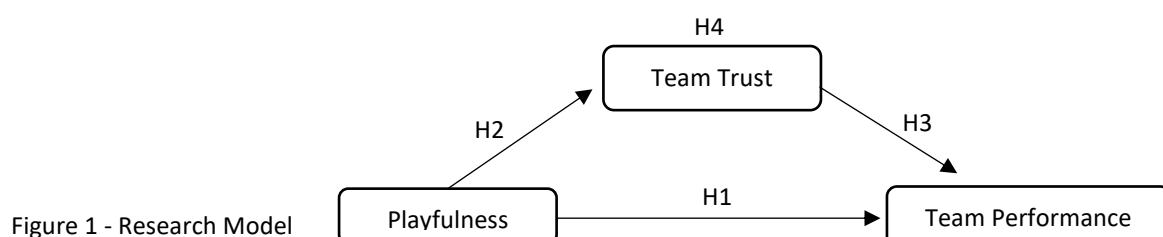
Methodology

Participants and Sample

In this study, the target population comprised teams from diverse organizations, along with their respective members. Overall, around 100 corporate and non-corporate organizations (located in the Lisbon and Évora areas) were invited to participate using a snowball sampling technique. Eligibility criteria for organizations included employing at least 18 employees, operating in either an office-based or hybrid work arrangement, and having offices located in the aforementioned regions. Additionally, they were required to allocate at least 12 employees for a 3-hour session on a mutually agreed day and location. As a result, micro-sized organizations (fewer than 10 employees, as per the European Union definition), fully remote organizations with virtual teams, and those unable to commit the necessary time and employee availability were excluded from participation.

Organizations that met these criteria and expressed interest in participating were offered the opportunity to engage in a team-building activity. This activity also included validated measures of team Trust, resilience, and burnout. Following the expression of interest, eligible employees from these organizations were invited to participate and were subsequently divided into teams of 4 to 8 members. To qualify for participation, employees were required to have been working for the organization for at least one month, be available to participate in the study in person, and hold a direct employment contract with the organization. Thus, individuals unable to attend in person, as well as those not directly employed by the organization (e.g., contractors, freelancers, unemployed individuals, or students), were excluded from the sample.

A total of 20 diverse organizations responded to our invitation (response rate = 20%), resulting in the participation of 68 teams and 408 employees in the study, with an average team size of 6 members. Of these, 380 participants provided valid responses, yielding a response rate of 93.1%. Among the 68 teams, the majority (79%) were from for-profit organizations representing various industries, including Manufacturing & Retail (32%), Publishing & Advertising (18%), and Tech & Telecom (16%), as well as other sectors such as Banking, Insurance, Holdings, and Social Enterprises (13%). The remaining 21% of teams were from non-profit organizations, including educational institutions, European institutions, and NGOs. The size of the participating organizations varied, with 15% employing fewer than 100 individuals, 51% employing between 100 and 1,000, 16% employing between 1,000 and 5,000, and 18% employing over 5,000 individuals (Annex A, Section 1).

Regarding the 380 valid respondents, the majority held at least a Bachelor's degree (71%), with only a small proportion having an education level lower than high school (3%). Additionally, less than half of the participants (43%) held leadership positions, most of whom (61%) led teams of fewer than six employees. The participants reported an average of 17.7 years of professional experience

(SD=10.70), with 13% having fewer than 5 years of experience and 42% reporting over 20 years of experience. In terms of organizational tenure, the sample showed an average of 8.8 years (SD=8.56), with 45% of participants having been with their current organization for less than 5 years, and only 14% having more than 20 years of tenure (Annex A, Section 2).

In terms of the distribution of participants across control and experimental groups, the sample comprised 27 teams randomly assigned to Path C (control group, 39.7%), 19 teams assigned to Path T (Team Charter experimental group, 27.9%), and 22 teams assigned to Path P (Playfulness experimental group, 32.4%) (Annex A, Section 3).

Experimental Research Study Procedure

The experimental study was conducted in person from November 2023 to April 2024, at participating organizations. Employees who accepted the invitation engaged in a Team Competition, where teams of 4 to 8 members were challenged to complete a series of tasks to earn points. The activity, along with data collection, was structured into four sequential steps: an initial survey (Time 1), team competition preparation, the team competition itself, and a final survey (Time 2). Each session required a minimum of 12 participants and lasted approximately three hours.

First, the participants were organized into teams of 4 to 8 members, with the teams' composition being set by their respective organization (70%) or, in case there were no requirements from the organization, being randomly defined by the researcher at the beginning of the experimental activity (30%). To ensure that each team was randomly assigned to one of three team competition preparation paths – Path C (control group), Path T (Team Charter group), or Path P (Playfulness group) – the preparation paths were written in folded papers, shuffled and, after drawing a card from a deck of cards, the teams with the higher cards would be first in taking out one of the folded papers. Participants first completed an initial survey (T1), which assessed their beliefs about themselves, their colleagues, and their workplace, establishing a baseline for each team's initial Trust level, regardless of whether team members worked together regularly (Annex B, Section 1). After completing the T1 survey, the Team Competition was introduced, and participants were briefed on the objectives, rules, and performance evaluation criteria for the tasks. They were informed of their right to withdraw from the experiment at any time. Additionally, participants were assured that all survey data would remain anonymous, confidential, and used exclusively for research purposes. During this phase, participants signed an informed consent form prior to completing the T1 survey, granting their consent to participate in the study.

In the second phase, teams proceeded with their assigned preparation activity based on their designated path. Teams in Path C (control group) were given 10 minutes of free time before starting the competition. Teams in Path T (Team Charter group) had 35 minutes to create a Team Charter — a

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formal agreement outlining (1) the team's general functioning and goals, (2) roles, responsibilities, and expectations, and (3) processes for communication, decision-making, and conflict resolution. This planning process, self-managed with written guidelines (Annex B, Section 2, Figure 4), has been linked to improved team effectiveness and performance (Fyhn, 2023; Fyhn et al., 2022; Mathieu & Rapp, 2009). Teams in Path P (Playfulness group) participated in a 35-minute Playfulness workshop, where the researcher facilitated playful group dynamics, energy-filled exercises, and collaborative games to foster a playful team state (Annex B, Section 2, Figure 5).

In the third phase, all teams entered the team competition, where they were tasked with completing three distinct activities in 40 minutes: the Marshmallow Challenge, Enigmatic Enigmas, and Be My Eyes (Annex B, Section 3). These tasks were based on the literature and were selected to create a context of risk and interdependence, encouraging Trust within the teams (Depping et al., 2016). The tasks also required teams to apply different types of intelligence and skills (Davis et al., 2011), adhered to the core features of play—fun, high engagement, and deep involvement (Celestine & Yeo, 2021; Van Vleet & Feeney, 2015)—and were designed to be simple, easy to understand, and easy to score as we had different working adults' profiles.

In the Marshmallow Challenge, teams built a self-sustaining structure using provided materials (spaghetti sticks, string, tape, scissors, marshmallows), with the goal of placing a full marshmallow on top. Teams that built a self-sustained structure of at least 55 cm tall received full points, and this task required spatial and bodily-kinesthetic intelligences (Davis et al., 2011). In the Enigmatic Enigmas task, teams chose and answered three brain teasers from a set of five; correct answers to all three granted full points, engaging on logical-mathematical and linguistic intelligences (Davis et al., 2011). Finally, in Be My Eyes challenge, team members navigated a blindfolded path guided by their teammates' voices, a task emphasizing Trust and communication, recorded on video. Completing this task according to the rules and with three different team members earned full points, requiring interpersonal, intrapersonal, and linguistic intelligences (Davis et al., 2011). Teams had 40 minutes to complete the tasks with full autonomy regarding their approach, and their performance was evaluated at the end of the time limit. Annex B, Section 3 includes the written instructions and scoring criteria used to assess and compare team performance.

Lastly, after the competition, participants completed a final survey (Time 2), reflecting the team competition experience. They rated their team's behaviors, attitudes, and working environment during the competition and indicated their agreement with statements about their teammates, team dynamics, and their levels of Trust during the competition (Annex B, Section 4). This allowed us to measure variations in team Trust levels post-experiment and assess the display of Trusting behaviors across different teams.

Variable Measures

There were two assessment points: the first occurred in step one (Time 1 survey), prior to the Team Competition, and the second in step four (Time 2 survey), following the Team Competition. In both instances, participants completed a survey, rating all statements using a 7-point Likert scale (1 = *Totally Disagree/Never*, 7 = *Totally Agree/Always*). The following instruments were employed to measure the variables of Playfulness, Team Trust, and Team Performance.

Playfulness: Before the Team Competition, playfulness was assessed at the individual level using two scales that capture different approaches to playfulness, either as a trait or as a behavioral approach to an activity. The *Short Measure of Adult Playfulness (SMAP)* (Proyer, 2012) is a 4-point scale with five items that measures adult playfulness as a personality construct; all items were used in this study (e.g., "I frequently do playful things in my daily life"). The *Playful Work Design Scale* (Scharp et al., 2023), originally a 5-point scale with 12 items, measures proactive cognitive-behavioral orientations toward work activities in two dimensions: designing fun and designing competition. For this study, 4 items per dimension were selected (based on the highest loadings of the original study, for a total of 8 items (e.g., "I look for ways to make my work more fun"; "I try to set time records in my work tasks").

Following the Team Competition, playfulness was measured at the team level using the *Organizational Playfulness Climate Questionnaire* (Karamfilov, 2018; Yu et al., 2007), originally a 5-point scale with 40 items, which evaluates eight factors contributing to the emergence of an Organizational Playfulness Climate: close cooperation and collaboration; supportive managers and relaxed interactions; shared leisure time; informality and humor; inflexibility, criticism, and competitiveness; individual leisure and free time; relaxation-conducive work environment; and independent work and casual dress code. Given the team experience was confined to the Team Competition and the manager's role was not specified, items were extracted from only two dimensions: close cooperation and collaboration (4 items; e.g., "My colleagues accept, approve, and are at ease with one another") and informality and humor (4 items; e.g., "People here have a good sense of humor"), resulting in a total of eight items.

Team Trust: To assess team Trust, we based our approach on the *Trust in Teams Scale* (Costa & Anderson, 2011), originally a 7-point scale comprising 21 items that measure Trust in teams across four dimensions: propensity to Trust, perceived Trustworthiness, cooperative behaviors, and monitoring behaviors. We applied the corresponding framework, which conceptualizes team Trust as both a shared psychological team-state, measured by formative indicators, and as a manifestation of

behaviors that result from this state, measured by reflexive indicators (Costa, 2011; Feitosa, 2020). For formative indicators, we extracted four items from the propensity to Trust dimension (e.g., "Most people in this team do not hesitate to help a person in need") and another four items from the perceived Trustworthiness dimension (e.g., "In this team, people will keep their word") of the *Trust in Teams Scale* (Costa & Anderson, 2011). Additionally, we included three items from the *Group Identification Measure* (Doosje et al., 1995) — originally a 7-point scale with four items measuring the individual's identification with the group (e.g., "I identify with the other members of this team") — as it is considered an affective-driven form of team Trust (Costa et al., 2018; Feitosa et al., 2020). For reflexive indicators, we extracted four items from the cooperative behaviors dimension (e.g., "In this team, we work in a climate of cooperation") of the *Trust in Teams Scale* (Costa & Anderson, 2011). Additionally, we extracted other four items from the *Team Psychological Safety Scale* (Edmondson, 1999) — originally a 7-point scale with seven items measuring the shared belief that the team is a safe space for taking risks (e.g., "It is safe to take a risk on this team") — as it reflects the environment fostered by team Trust (Bulinska-Stangrecka & Bagieńska, 2019; Chen et al., 2021; de Jong et al., 2016; Fischer & Walker, 2022).

Team Performance: To measure and compare team performance, the points awarded for task completion during the Team Competition were considered. Each task had a specific, measurable, achievable, realistic, and time-bounded (SMART) goal that teams could pursue. Each task awarded a maximum of 100 points, with an additional 20 bonus points for its fullest completion. Furthermore, teams that fully completed all task goals received an extra 50 bonus points, leading to a possible maximum of 410 points per team (Annex B, Section 3). Team performance was measured using the Team Total Score, as well as individual scores for each task: the Tower Score (from performance in the Marshmallow Challenge), the Enigmas Score (from performance in the Enigmatic Enigmas task), and the Blindfolded Path Score (from performance in the Be My Eyes task).

Control Variables: To validate if the sample characteristics can influence the experimental study scores, we introduced four control variables to assess how do these natural groups reacted to the experimental activity: two ordinal variables, one regarding the participants' level of education (from "less than high school" to "Masters or PhD") and another one regarding participants' leadership responsibilities (from "None" to "More than 15 employees"); two numerical variables, one regarding the participants' overall professional experience and another one regarding the participants' tenure at their current organization. It was not required for participants to disclose their age or gender to increase the feeling and perception of anonymity and confidentiality from the study participants.

Data Analysis Strategy

Firstly, to assure and validate the existence of possible bias from both the sample composition and the experimental path random allocation, ANOVA and multiple comparison tests were run to compare means – from playfulness and team trust indexes, measured before the team competition, and control variables – across experimental groups and across the natural sample groups, created by sample characteristics like education levels and leadership experience. Correlations were run against the ordinal control variables, professional experience and tenure, to validate how these variables influence playfulness and team trust indexes measured before the competition (Annex A and D).

Secondly, considering the variables measured after the team competition and possible bias found beforehand, ANOVA and multiple comparison tests were run to validate if the means – from the playfulness and team trust indexes, measured after the team competition, and the team performance indexes – differ according to education levels and leadership experience. Additional correlations were run against the ordinal control variables, professional experience and tenure, to validate how these variables influence playfulness and team trust indexes, measured after the competition, and how do they influence team performance indexes (Annex E).

Lastly, to find support for the defined research hypothesis, correlations were run to assess the nature of the relationships between playfulness, team trust and team performance indexes. To validate the impact of the experimental stimuli introduced, ANOVA and multiple comparison tests were used once more to assess means differences of these variables across experimental groups. The mediation effect was tested using Macro Process from the SPSS software.

Whenever was not possible to run an ANOVA test due to an assumption violation, like variance heterogeneity, we resorted to robust tests of equality of means like Welch and Brown-Forsythe plus the corresponding multiple comparison test Dunnett C.

Results Discussion and Analysis

Principal Components, Reliability Analysis and Normality Assumptions

To test the research hypotheses, a principal component analysis (PCA) was conducted to reduce the number of items under consideration. The theoretical definition of each variable and its respective dimensions guided the selection of items for aggregation to perform the PCA, with the criterion of Eigenvalues greater than 1 used to determine the number of factors to extract.

For playfulness, the PCA resulted in the identification of three dimensions: Playfulness Trait (Cronbach's α = 0.784), derived from the *Short Measure of Adult Playfulness* (SMAP; Proyer, 2012); Playfulness Behavior (Cronbach's α = 0.887), based on the *Playful Work Design Scale* (Scharp et al., 2023) — both of which were measured before the team competition from an individual perspective — and Playfulness Climate (Cronbach's α = 0.904), derived from the *Organizational Playfulness Climate Questionnaire* (Karamfilov, 2018; Yu et al., 2007), which was measured after the team competition from a team perspective (Annex C, Section C1).

For team Trust, PCA resulted in the identification of four dimensions: Formative Team Trust, which combines items from the *Trust in Teams Scale* (Costa & Anderson, 2011) and the *Group Identification Measure* (Doosje et al., 1995) — measured both before (Formative Team Trust Time 1, Cronbach's α = 0.909) and after the team competition (Formative Team Trust Time 2, Cronbach's α = 0.917); Reflexive Team Trust (Cronbach's α = 0.855), derived from the *Trust in Teams Scale* (Costa & Anderson, 2011) and the *Team Psychological Safety Scale* (Edmondson, 1999); and Formative Team Trust Impact, which reflects the difference between Initial Formative Team Trust (time 1) and Final Formative Team Trust (time 2) indexes (Annex C, Section C2).

For team performance, the analysis primarily focused on the Team Total Score. Comparisons were made to determine if there are significant differences in specific task scores relative to the Team Total Score.

Parametric tests were applied because the study variables were either continuous or ordinal, and the sample size for most variables was sufficiently large enough to assume, in accordance with the Central Limit Theorem, that they approximately followed a normal distribution. The exception was variables categorized by Education Level or Leadership Experience, where the sample size in certain groups was insufficient for this assumption (e.g., "Less than high school" N = 12; "More than 15 employees" N = 27). Normality tests revealed that only the variables Playfulness Climate, Final Formative Team Trust, and Reflexive Team Trust within the Leadership Experience group "More than 15 employees" did not follow a normal distribution (Sig < 0.05) (Annex C, Section C3).

Results Analysis – Before the Team Competition (Time 1)

Before the Team Competition, participants reported average scores ranging between 5 and 5.5 on a 7-point scale for Playfulness Trait, Playfulness Behavior, and Initial Formative Team Trust. This indicated that, on average, participants slightly agreed with statements suggesting they are playful, regularly approach work in a playful manner, and perceive a shared team-state of Trust among team members. The dispersion of these variables was similar; however, Playfulness Trait and Initial Formative Team Trust exhibited a few more extreme scores at the lower end of the scale (below 3), indicating that some participants slightly or strongly disagreed that they are playful and some participants slightly or strongly disagreed that there is a shared team-state of Trust among team members.

Table D1.1 - Playfulness and Team Trust measured before the team competition

Descriptive Statistics - Before Team Competition

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Playfulness Trait	380	1,67	7,00	5,3526	1,06223	1,128	-0,633	0,125	0,274	0,250
Playfulness Behavior	380	2,17	7,00	5,0044	1,03188	1,065	-0,343	0,125	-0,189	0,250
Initial Formative Team Trust	380	1,75	7,00	5,4849	0,97703	0,955	-0,751	0,125	0,624	0,250
Valid N (listwise)	380									

Comparisons across the three experimental paths (Control, Team Charter, and Playfulness) revealed no statistically significant differences (ANOVA: Playfulness Trait $F_{(2,377)} = 0.956$, Sig = 0.385; Playfulness Behavior $F_{(2,377)} = 0.194$, Sig = 0.824; Initial Formative Team Trust $F_{(2,377)} = 1.449$, Sig = 0.236) suggesting that random assignment to experimental paths does not introduce bias affecting the interpretation of post-competition variables. Thus, differences between teams across these experimental paths could be compared and analyzed (Annex D, Section D1).

When comparing scores across Educational Levels, the values for Playfulness Trait were consistently similar (ANOVA: Playfulness Trait $F_{(3,376)} = 0.381$, Sig = 0.767). For Playfulness Behavior and Initial Formative Team Trust, there was a slight difference between participants with less than a high school education and those with at least a higher degree. However, due to the low number of participants with less than a high school education, these differences were not statistically significant according to the ANOVA Table at an alpha level of 0.05 (ANOVA: Playfulness Behavior $F_{(3,376)} = 2.433$, Sig = 0.065; Initial Formative Team Trust $F_{(3,376)} = 1.996$, Sig = 0.114). In terms of Leadership Experience, values for Playfulness Trait and Initial Formative Team Trust were comparable across groups (ANOVA test: Playfulness Trait $F_{(4,375)} = 0.185$, Sig = 0.946; Initial Formative Team Trust $F_{(4,375)} = 1.216$, Sig = 0.303). For Playfulness Behavior, there was a notable difference between participants without a leadership role and those managing between 6 to 15 employees, with the

difference being significant at an alpha level of 0.1 (ANOVA: Playfulness Behavior $F_{(4,375)}$ = 3.354, Sig = 0.010, Bonferroni: None vs 6 to 15 employees Sig = 0.096). Specifically, participants without a leadership role reported lower Playfulness Behaviors (M = 4.9 on a 7-point scale) when compared to those managing teams of 6 to 15 employees (M = 5.3 on a 7-point scale) (Annex D, Section D2).

When comparing scores across levels of professional experience and organizational tenure, we observed a positive weak correlation with Playfulness Behavior (r = 0.200, Sig = 0.000 and r = 0.145, Sig = 0.005 respectively). This indicated that as employees gain more experience and spend more time within an organization, they tend to approach their work tasks in a slightly more playful manner. No significant correlations were found between these variables and Playfulness Trait (Sig = 0.137, Sig = 0.672 respectively) or Initial Formative Team Trust (Sig = 0.724, Sig = 0.832 respectively) (Annex D, Section D3).

Thus, in analyzing the results post-Team Competition (Time 2), it was essential to examine whether the pre-competition differences in Leadership Experience (e.g., having no leadership role versus managing a team of 6 to 15 employees) and the correlations with professional experience and organizational tenure persisted and influenced the post-competition measures for playfulness, team trust indexes, and team performance scores.

Results Analysis – After the Team Competition (Time 2)

After the team competition, at time 2, participants reported average scores between 6 and 6.2 (on a 7-point scale) for the variables Playfulness Climate, Final Formative Team Trust, and Reflexive Team Trust. This suggested that, on average, participants agreed that their teams exhibited a playful working environment, that there was a shared team-state of Trust among team members, and that they worked collaboratively in a safe environment. Despite similar dispersion among these variables, both Playfulness Climate and Final Formative Team Trust exhibited a few more extreme lower scores, below 4 on the scale, indicating some participants slightly disagreed that their teams were playful or that a shared team-state of trust existed.

Table E1.1 - Playfulness and Team Trust Measured after the Team Competition

Descriptive Statistics - After Team Competition

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Playfulness Climate	380	2,00	7,00	6,1955	0,80185	0,643	-1,331	0,125	2,395	0,250
Final Formative Team Trust	380	2,00	7,00	6,0181	0,85575	0,732	-1,143	0,125	1,673	0,250
Reflexive Team Trust	380	3,20	7,00	5,9847	0,85749	0,735	-0,749	0,125	-0,118	0,250
Formative Team Trust Impact	380	-1,88	4,13	0,5332	0,80047	0,641	0,810	0,125	1,909	0,250
Valid N (listwise)	380									

On average, there was a statistically significant increase of 0.53 points in the level of Formative Team Trust Indicators (paired samples t-test: $t(379) = -12.99$, Sig = 0.00), representing a 12% increase from initial levels, suggesting that participation in the experimental study enhanced perceptions of shared team-states of trust. Notably, teams that experienced the Team Charter and Playfulness interventions reported increases of 0.62 points (13.7%) and 0.59 points (13.6%), respectively, compared to a 0.43-point (9.6%) increase in the control group (Annex E, Section 1). However, these differences were not statistically significant, indicating that the experimental stimuli did not significantly affect Formative Team Trust (ANOVA: $F(2,372) = 2.040$, Sig 0.131) (Annex F, Section 2).

Comparing scores across Education Levels no statistically significant differences were found (ANOVA: Final Formative Team Trust $F(3,376) = 0.274$, Sig = 0.844; Reflexive Team Trust $F(3,376) = 0.388$, Sig = 0.762; Welch/Brown-Forsythe test: Playfulness Climate Sig ≥ 0.217; Formative Team Trust Impact Sig ≥ 0.059). Comparing scores across Leadership Experiences, no statistically significant differences were found (Independent-Samples Kruskal-Wallis Test: Playfulness Climate Sig = 0.897; Final Formative Team Trust Sig = 0.850; Reflexive Team Trust Sig = 0.397; Formative Team Trust Impact Sig = 0.070). Similarly, there were no significant correlations between Playfulness Climate (Sig = 0.454 and Sig = 0.111 respectively), Final Formative Team Trust (Sig = 0.790 and Sig = 0.150 respectively), Reflexive Team Trust (Sig = 0.766 and Sig = 0.590 respectively), or Formative Team Trust Impact (Sig = 0.474 and Sig = 0.200 respectively) and the levels of professional experience or organizational tenure. This suggested that pre-competition differences related to participants' Leadership Experience and pre-competition correlations with their professional experience and organizational tenure, did not persisted post-competition (Annex E, Section E1).

For the Team Competition, teams were tasked with achieving goals in three activities: Marshmallow Tower, Enigmatic Enigmas, and Blind Path. Each task had a maximum of 100 points, with additional bonus points for full completion, totaling a maximum of 410 points. The average team performance was 286 points (representing an average Total Score % of 70%) with the highest average score being achieved in the Marshmallow Tower task (100 points) and the lowest in the Blind Path task (87 points). The Blind Path task showed the least dispersion (SD=25), while both the Marshmallow Tower and Enigmatic Enigmastasks had higher dispersion (SD=31 and SD=33, respectively). Outliers were present in the bottom scores for the Marshmallow Tower and Blind Path tasks, with top results concentrated around the maximum levels for these tasks. These outliers were not removed to not compromise findings and conclusions robustness, due to small sample size.

Table E2.1 – Team Performance Scores at the Team Competition

Descriptive Statistics - Team Performance Score (Tasks and Total)

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Tower Score	380	2,50	120,00	99,782	30,628	938,097	-1,718	0,125	2,293	0,250
Enigmas Score	380	0,00	120,02	96,460	33,233	1104,414	-1,126	0,125	0,308	0,250
Blind Path Score	380	0,00	120,00	86,896	24,866	618,341	-0,993	0,125	1,565	0,250
Total Score %	380	37,0%	100,0%	0,699	0,143	205,714	-0,097	0,125	-0,072	0,250
Total Score Value	380	151,80	410,02	286,428	58,805	3458,058	-0,097	0,125	-0,072	0,250
Valid N (listwise)	380									

When comparing team performance across Education Levels (ANOVA: $F_{(3,376)}$ = 4.589, Sig = 0.004), participants with higher education levels tended to score better (scoring on average at least 287 points against the maximum of 278 points for those without one) however, this difference was only statistically significant between those holding a "Masters or PhD" (averaging 301 points) and those with "High school or equivalent" education (averaging 271 points) as the Bonferroni test between these groups demonstrate (Sig = 0.002). No significant differences in performance were observed across different Leadership Experiences (ANOVA: $F_{(4,375)}$ = 0.796, Sig = 0.529).

Comparing performance with professional experience and organizational tenure, a weak negative correlation was found with the Blind Path Score (r = -0.193, Sig = 0.000; r = -0.179, Sig = 0.000). This suggests that participants with more professional experience and tenure performed worse on the Blind Path task, which involved verbal communication and instructions while blindfolded. This result is intriguing given the task's nature and warrants future investigation (Annex E, Section E2).

In summary, participants perceived their teams as demonstrating a playful working environment during the Team Competition, with a notable increase in Formative Team Trust levels. Teams achieved approximately 70% of the maximum points, with varying success across tasks. Education Levels, professional experience, and organizational tenure influenced team performance scores, but did not affect Playfulness or Team Trust indexes measured post-competition.

Hypothesis Testing – Relationship between Playfulness & Performance

The primary objective of this dissertation was to explore whether induced team-states of playfulness could enhance team trust and, subsequently, influence team performance. To address this objective and test research hypothesis H1.1 (Playfulness is positively correlated with Team Performance), we examined the correlation between the three playfulness indexes (Trait, Behavior, and Climate) and the team performance scores (Total Score Value).

For the Playfulness indexes assessed from an individual perspective (as Trait and Behavior), measured before the Team Competition (at time 1), no evidence was found supporting a correlation with team performance (Trait: r = -0.035, Sig = 0.495; Behavior: r = 0.003, Sig = 0.953). This suggested that individual levels of playfulness and playful attitudes toward work tasks do not significantly influenced team performance. However, when measuring Playfulness from a team perspective (Playfulness Climate) after the Team Competition (at time 2), a weak positive correlation was found with team performance (r = 0.124, Sig = 0.016). This positive correlation was also observed with the individual task scores: the Marshmallow Tower task (r = 0.187, Sig = 0.000) and the Blind Path task (r = 0.145, Sig = 0.005). These results indicated that while individual playfulness did not influence team performance, a playful climate within the team may have had a slight positive effect on performance outcomes. Therefore, although Playfulness at the individual level did not directly influence team performance, a higher level of Playfulness within the team environment and interactions does have a weak but positive relationship with team performance. This supported hypothesis H1.1, suggesting that team states of Playfulness were positively correlated with Team Performance (Annex F, Section F1).

Regarding research hypothesis H1.2, which posits that teams receiving the Playfulness stimulus (path P) would have higher performance, the analysis showed: (1) Control teams had an average score of 267.5 points, (2) Team Charter teams had an average score of 307.9 points, (3) Playfulness teams had an average score of 291.6 points. Hence, Team Charter teams achieved the highest scores across all three tasks, with Playfulness teams performing better than the Control teams in the Enigmatic Enigmas and Blind Path tasks. The scores for the Marshmallow Tower task were nearly identical for Control and Playfulness teams. Both Welch and Brown-Forsythe test results indicated a significant difference between the Control teams' scores and those of both the Team Charter and Playfulness teams (Welch statistic (2, 231) = 20.708, Brown-Forsythe statistic (2, 329) = 16.185, Sig = 0.000; Dunnett C's Control and Team Charter 95% confidence interval (CI) = [-55.62; -25.20]; Dunnett C's Control and Playfulness 95% CI = [-41.19; -7.01]). However, there was no significant difference between the scores of the Team Charter and Playfulness teams at the 5% alpha level (Dunnett C's Team Charter and Playfulness 95% CI = [-2.41; 35.04]). This implied that while teams receiving any type of stimulus performed better than the Control teams, there was no evidence that the Playfulness stimulus led to better performance compared to the Team Charter stimulus (Annex F, Section F1).

In conclusion, Playfulness Climate within the team environment positively impacted team performance, supporting hypothesis H1.1. The effectiveness of the Playfulness stimulus compared to other types of interventions remained inconclusive, as hypothesis H1.2 did not find significant differences between the effects of the Playfulness and Team Charter stimuli. Therefore, the research hypothesis H1.2 was partially suppported because teams benefited from a team stimulus (like a team
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intervention) regarding their performance but a Playfulness stimulus did not have a stronger impact than any other team stimulus or team intervention.

Hypothesis Testing – Relationship between Playfulness & Team Trust

We examined the relationship between Playfulness and Team Trust by analyzing the correlations between three Playfulness indexes (Trait, Behavior, and Climate) and two Team Trust indexes (Formative Team Trust and Reflexive Team Trust). Formative Team Trust was assessed at two time-points: before (time 1) and after the Team Competition (time 2). This assessment yielded three distinct measures: Initial Formative Team Trust, Final Formative Team Trust, and Formative Team Trust Impact, the latter of which reflected the difference between the initial and final Formative Team Trust scores.

Considering Playfulness from an individual perspective (Trait and Behavior), there was evidence of a positive weak correlation with both Formative and Reflexive Team Trust. This correlation was weaker for Team Trust indexes measured before the Team Competition (Initial Formative Team Trust: $0.106 \leq r \leq 0.117$, $0.022 \leq Sig \leq 0.038$) and stronger for those measured after the competition (Final Formative Team Trust and Reflexive Team Trust: $0.163 \leq r \leq 0.176$ and $0.169 \leq r \leq 0.176$, Sig = 0.001). Despite these positive correlations, no evidence was found linking these individual Playfulness indexes to the positive impact on Formative Team Trust (Trait Sig = 0.553; Behavior Sig = 0.261) (Annex F, Section F2).

In contrast, when examining Playfulness from a team perspective (Playfulness Climate), we observed a stronger positive correlation with all Team Trust indexes. This correlation was weaker for indexes measured before the Team Competition (Initial Formative Team Trust: r = 0.442, Sig = 0.000) and stronger for those assessed after the competition (Final Formative Team Trust and Reflexive Team Trust: r = 0.659 and r = 0.638, Sig = 0.000). Additionally, unlike individual Playfulness, Playfulness Climate also showed a weak but positive correlation with the impact on Formative Team Trust levels (r = 0.165, Sig = 0.001) - (Annex F, Section F2).

Thus, Playfulness, whether considered from an individual or team-state perspective, was positively correlated with both Formative and Reflexive Team Trust levels. These correlations were strengthened following experiences characterized by risk and interdependence, such as the team competition. Additionally, Playfulness from a team perspective demonstrated a stronger relationship with Team Trust compared to Playfulness from an individual perspective. Consequently, the data provided support for Hypothesis H2.1, indicating that Playfulness, in both individual and team-state contexts, was positively correlated with Team Trust.

Regarding hypothesis H2.2, which posits that teams receiving the Playfulness stimulus (path P) exhibit greater increases in Team Trust, we compared the mean scores for the Team Trust indexes

measured after the Team Competition (time 2): Final Formative Team Trust, Reflexive Team Trust, and Formative Team Trust Impact. The average scores for both Final Formative Team Trust and Reflexive Team Trust were approximately 6 on a 7-point scale and were nearly identical across the research paths. ANOVA results confirmed that these scores were not statistically different (ANOVA: $F_{(2,377)}$ = 0.146, Sig = 0.864 and $F_{(2,377)}$ = 0.596, Sig = 0.552). Similarly, while teams receiving one of the experimental stimuli appeared to experience a greater increase in Formative Team Trust levels, these increases were not statistically significant when compared to the control teams (ANOVA: $F_{(2,377)}$ = 2.040, Sig = 0.131) (Annex F, Section F2).

Thus, the data did not support hypothesis H2.2, indicating that within the scope of this research, the increases in Team Trust levels were not significantly influenced by the type of stimulus received.

Hypothesis Testing – Relationship between Team Trust & Team Performance

Thirdly, we examined the relationship between Team Trust and Team Performance by testing the significance of the correlations between the various Team Trust indexes and the different Team Performance scores.

For the Team Trust index measured before the Team Competition (Initial Formative Team Trust), no significant correlations were found with any of the Team Competition task scores, including Total Score Value (r = 0.040, Sig = 0.431), Marshmallow Tower score (r = 0.006, Sig = 0.909), Enigmatic Enigmas score (r = -0.004, Sig = 0.944), or Blind Path score (r = 0.089, Sig = 0.085).

Conversely, for the Team Trust indexes measured after the Team Competition (Final Formative Team Trust, Reflexive Team Trust, and Formative Team Trust Impact), statistical evidence indicated weak positive correlations between Final Formative Team Trust (0.163 ≤ r ≤ 0.191, 0.001 ≤ Sig ≤ 0.000) and Reflexive Team Trust (0.174 ≤ r ≤ 0.196, 0.001 ≤ Sig ≤ 0.000) with all Team Competition task scores, with the exception of the Enigmatic Enigmas score (Final Formative Team Trust: r = -0.059, Sig = 0.254; Reflexive Team Trust: r = -0.042, Sig = 0.412). The Formative Trust Impact index showed a weak positive correlation with the Total Score Value and the Marshmallow Tower score (0.125 ≤ r ≤ 0.19, 0.015 ≤ Sig ≤ 0.000). No significant correlations were found between the Team Trust indexes and the Enigmatic Enigmas or the Blind Path task scores (r = -0.044, Sig = 0.389 and r = 0.060, Sig = 0.240) (Annex F, Section F3).

Thus, the experience of a shared team-state of trust and group identification during the Team Competition — characterized by cooperative behaviors, safe risk-taking, and a sense of security — demonstrated a positive relationship with Team Performance. Notably, this positive relationship emerged only when evaluating the participants' experience of Team Trust during the Team Competition, as assessed by the Team Trust indexes measured after the competition. No such

relationship was observed based on the participants' perceptions of Team Trust measured before the competition. Consequently, the evidence supported hypothesis H3, showing that Team Trust is positively correlated with Team Performance.

Hypothesis Testing – Team Trust Mediation Effect Analysis

Lastly, having analyzed the relationships between individual variables (Playfulness and Team Performance; Playfulness and Team Trust; Team Trust and Team Performance) and the potential impact of the introduced stimulus (by comparing if teams receiving the Playfulness stimulus achieved higher results), we revisited the primary objective of this research: to investigate whether team-states of Playfulness contribute to the development of Team Trust and, consequently, impact Team Performance. To address this, we aimed to test whether the relationship between Playfulness and Team Performance would be mediated by Team Trust (H4).

In this context, we defined Playfulness Climate as our independent variable (X) from a team perspective, as it was the only Playfulness index that has shown a statistically significant correlation with Team Performance. We considered "Total Score Value" as the dependent variable (Y) representing Team Performance. For Team Trust, we focused on the indexes measured after the Team Competition — Final Formative Team Trust, Reflexive Team Trust, and Formative Team Trust Impact — since these were the only ones to demonstrate a statistically significant correlation with Team Performance. We tested if any of these Team Trust indexes mediated the relationship between Playfulness Climate and Total Score Value. To test the mediation of the these indexes, we runned the Macro Process at SPSS software and considered the respective outputs as evidence of the existence or non-existence of the mediation effect, verifying if zero was part of the calculated confidence intervals as the main statistical element to assess it. Based on the following outputs and using the correspondent confidence intervals as the decisive factor, we can verify that (Annex F, Section F4):

For the Team Trust index "Final Formative Team Trust" there was not a statistically significant indirect effect of playfulness (X) on team performance (Y) via this team trust index (M) for a 0.05 alpha level – indirect effect of X on Y = 6.498, Boot 95% CI [-0.248, 14.212] – meaning that zero was part of the confidence interval. However, for a 0.1 alpha level, there was evidence of a full mediation effect, as the indirect effect became statistically significant (indirect effect of X on Y = 6.948, Boot 90% CI [1.007, 12.840]) and the direct effect remained not statistically significant (direct effect of X on Y = 2.116, Boot 90% CI [-6.055, 10.287]) which meant that the relationship between Playfulness and Team Performance was fully mediated by Final Formative Team Trust at a 0.1 alpha level;

For the Team Trust index "Reflexive Team Trust" there were evidences of a mediation effect as zero was out of the 95% confidence interval (indirect effect of X on Y = 7.540, Boot 95% CI [1.757,

13.940]) regarding the indirect effect of the independent variable (X, Playfulness) on the dependent variable (Y, Team Performance). Additionally, regarding the direct effect of Playfulness (X) on Team peformance (Y), the zero was part of the respective 95% confidence interval (direct effect of X on Y = 1.524, Boot 95% CI [-7.794, 11.023]) meaning that not only the mediation effect exists as it was a full mediation effect at a 0.05 alpha level;

For the Team Trust index "Formative Team Trust Impact", it seemed that there was not a mediation effect for a 0.05 alpha level as zero is part of 95% confidence interval regarding the indirect effect of Playfulness (X) on Team Performance (Y) - indirect effect of X on Y = 1.298, Boot 95% CI [-0.042, 2.871]. However, for a 0.1 alpha level, the indirect effect became statistically significant (indirect effect of X on Y = 1.298, Boot 90% CI [0.182, 2.580]) and the direct effect was also statistically significant (direct effect of X on Y = 7.767, Boot 90% CI [1.536, 13.997]) which meant that the relationship between Playfulness and Team Performance was partially mediated by Formative Team Trust Impact at a 0.1 alpha level.

Therefore, it meant that, at a 0.05 alpha level, the Team Trust index "Reflexive Team Trust" fully mediated the relationship between Playfulness Climate as the independent variable and Team performance as the dependent variable. Additionally, at a 0.1 alpha level, the relationship between Playfulness and Team Performance was fully mediated by the Team Trust index "Final Formative Team Trust" and, this same relationship, was also partially mediated by the Team Trust index "Formative Team Trust Impact". It represented enough support to hold the research hypothesis H4, both at 0.05 and 0.1 alpha levels, so yes, the relationship between Playfulness and Team Performance was mediated by Team Trust: namely, fully mediated by Reflexive Team Trust (alpha = 0.05), fully mediated by Final Formative Team Trust (alpha = 0.1) and partially mediated by Formative Team Trust Impact.

Conclusions and Recommendations

Research Conclusions

Investigate the concepts, benefits and implications of play and playfulness at work is a relevant in today's organizational context: due to the changes in technology that limited the amount of face-to-face interaction with colleagues and team members, play and playfulness might be an important instrument to increase social connection, build trust among teams and assure knowledge-sharing processes (Fischer & Walker, 2022; Gustafsson & Bhattacharya, 2023; Petelczyc et al., 2018); due to the higher permeability of the boundaries between work and home that increase the time spent working, play and playfulness can contribute avoiding premature burnout, reduce stress and generate higher levels of well-being being (Hunter et al., 2010; Petelczyc et al., 2018; Scharp et al., 2021; Shen, 2023); due to the organizational culture changes and employees' stronger preferences for the integration of play at work, play and playfulness are becoming both necessary and crucial for talent motivation, retention, task and innovation performance (McGuire & Martin, 2023; Petelczyc et al., 2018; Shen, 2023; Z. Liu et al., 2024).

Furthermore, with the rise of the knowledge economy, organizations become more and more dependent on their employees' creativity, flexibility and on their participation on processes of knowledge exchange and transfer (Costa et al., 2018; Gockel et al., 2013; Hunter et al., 2010; McGuire & Martin, 2023; Shen, 2023; Yu et al., 2007). The literature already demonstrates that play and playfulness at work have the ability to influence and impact both flexibility and creativity at the work context (Glynn, 1994, Jacobs & Statler, 2006, Proyer & Ruch, 2011, Webster & Martocchio, 1992 and West, Hoff, & Carlsson, 2016 cited by Petelczyc et al., 2018; Glynn & Webster, 1992, Miller, 1973 and Starbuck & Webster, 1991 cited by Yu et al., 2007), but sharing knowledge involves risk, uncertainty and vulnerability towards your teammates so, it can be dificult to share when individuals are not motivated to share (Costa 2018; Jong 2016; Chen 2021). In the light of this, play and playfulness can have a crucial role on suspending those conditions and contribute to set an environment that promotes psychological safety, confidence, tolerance, reduced hostility and competitiveness. These environmental settings can be assessed and represented by the concept of team trust, a shared state at the team level that encourages team members to openly share knowledge and information, to take risks and assume responsibilities with the team, engaging in cooperative behavior that boosts both communication and colaboration collaboration (Bulinska-Stangrecka & Bagieńska, 2019; Chen et al., 2021; Costa et al., 2018; de Jong et al., 2016; Feitosa et al., 2020; Gockel et al., 2013; Morrissette & Kisamore, 2020). Therefore, it is also relevant to investigate the concept of team trust, exploring its relationship with play and playfulness as these are able to influence employees' participation in knowledge-sharing processes.

As research on play and playfulness at work have been primarily focused on the individual level of analysis, the primary objective of the current investigation was to address play and playfulness from a team-level perspective, investigating wheter induced team states of playfulness could enhance team trust levels and, subsequently, impact team performance. Additionally, as there is little attention given to the factors that moderate and mediate the relationships between playfulness and their respective outcomes, we decided to further explore the layers of the relationship between these variables – playfulness, team trust, team performance – testing if team trust was a mediator between playfulness and team performance.

Considering the results discussion and analysis, we can conclude that, first, participation in the experimental study enhanced perceptions of shared team-states of trust across all teams, pointing to the same direction as the literature – introducing a context of risk and interdependence, like the team competition, creates an environment where trust is needed and it provides the oppportunity to employees practice cooperative and trusting behaviors (Costa et al., 2018; Depping et al., 2016; Feitosa et al., 2020; Fischer & Walker, 2022). In addition, the results suggest that it is possible to amplify the magnitude of the enhancement through stimuli like a team intervention, as teams experiencing the team charter and playfulness stimuli reported stronger directional perceptions (yet not statistically significant) than the control teams. Second, despite there were notables differences and influences on Playfulness Behavior – depending on the participants' leadership experience, professional experience and tenure – on average, participants perceived their teams as demonstrating a playful working environment during the team competition which suggests that lower levels of individual playfulness variables, like Playfulness Behavior, are not itself a barrier or a limitation to the development of playfulness at a team-level, like Playfulness Climate. This suggestion needs further investigation to be confirmed and it is included in the recommendations for future research. Lastly, team performance scores are straightforward concerning the following: education matters, as participants with a higher level of education tended to achieve better scores than those without.

Considering the research hypothesis testing conducted, and the level of support found for each one of them, we draw our main conclusions from two different perspectives:

From an instrumental perspective, focused on play and playfulness at work as a tool to achieve organizational goals, namely organizational performance through team performance, we can examine the following: 1) team states of playfulness were positively correlated with team performance even if, at the individual level, playfulness did not directly influenced team performance, 2) teams benefited from receiving a team stimulus, like a team interventation, attained a stronger team performance than the others, even if the playfulness stimulus did not prove to be stronger that any other team stimulus, 3) team trust indexes, after the competition, were positively correlated with team performance, even if these correlations were not found across all team competition tasks' scores and no correlation was

found between team trust indexes before the competition and team performance, 4) team trust levels increased after introducing a context of risk and interdependence like the team competition, 5) the team trust index Reflexive Team Trust fully mediates the relationship between the variables Playfulness Climate and Team Performance.

Infering from these, we can conclude that both playfulness and trust at the team level have a positive influence over team performance, teams benefit from receiving team stimuli like a playfulness stimulus and playfulness at the team level supports team members to face contexts of risk and interdependence, enabling them to engage in cooperative behaviors, to take risks with the team and collaborate with each other towards the team's objectives and goals – these behaviors are a manifestation that results from a shared psychological team-state of trust, which was measured under this investigation as Reflexive Team Trust. Hence, team-states of play and playfulness at work can have an instrumental role in achieving team performance.

From a conceptual perspective, focused on answering the main research question addressed by this investigation – is Playfulness a Road to Trust and Performance? – we can examine the following: 1) playfulness was positively correlated with team performance, but only at the team level, 2) playfulness was positively correlated with team trust, both at the individual and team-state level, but weakly correlated at the individual-level and strongly correlated at the team-state level, 3) the correlations found between playfulness indexes and team trust indexes were stronger for the indexes measured after the competition, 4) team trust was positively correlated with team performance, but only for the indexes measured after the team competition, 5) at a 0.05 alpha level, the relationship between Playfulness Climate and Team Performance is fully mediated by Reflexive Team Trust, while at a 0.1 alpha level this relationship is also fully mediated by Final Formative Team Trust and partially mediated by Formative Team Trust Impact.

Infering from these, as playfulness at the team level has a positive influence over both team trust and team performance, as team trust measured after the competition has a positive impact on team performance, and as there are evidences that team trust indexes measured after the competition mediate the relationship between Playfulness Climate and Team Performance, we can conclude that indeed induced team states of playfulness can enhance team trust levels and impact team performance. We can also conclude that the presence of a context of risk and interdependence strengthen these relationships plus their ability to influence each other and, as the mediation effect has found, we can deduce that playfulness is indeed one road that contributes for the development of the needed environment where team trust can blossom and, subsequently, impact team performance. Hence, playfulness can go beyond its instrumentality role to deliver performance, as induced team states of playfulness can enhance team trust levels that, subsequently, also impact team performance, in particular where there is a context of risk and interdependence.

Practical implications

The results and conclusions of the current research suggest that organizations should recognize the value of play and playfulness at the team level not only as an instrument to enhance team and organizational performance, but as a strategic tool to enhance team trust, improve knowledge-sharing and boost collaboration, providing support to both creativity and innovation processes. Hence, play and playfulness at work can drive both organizational outcomes and strategical processes.

Organizations that foster a playfulness climate among their teams – encouraging close cooperation and collaboration among team members and establishing a working atmosphere where informality and humor prevail – will set an environment promoting psychological safety, tolerance, reduced hostility and competitiveness where team members are encouraged to share information and knowledge, to take risks, to collaborate and explore each others' contribution reflecting a shared team-state of trust (e.g. Reflexive Team Trust) that boosts communication and collaboration.

In modern work environments, where remote work and hybrid models limit the amount of face-to-face interaction and the amount of time working together in the same space, organizations need to address its impact on social connection, trust and knowledge-sharing. Designing team interventions that reinforce the playfulness team climate, incorporating playful elements and creating a context of risk and interdepence (e.g. like a team competition), not only create more opportunities for team members interaction and trust development, but also provides the observed positive effects in team performance and it strengthens the team trust building compound effect of facing that context of risk and interdependence as a team.

It is relevant to emphasize that the magnitude of the impact of cultivating a playfulness team climate on both team trust development and team performance enhancement is larger when the team faces a context of risk and interdependence. Thus, to fully capture these benefits, organizations need to make sure their teams face a context of risk (e.g. assigning them clear goals and responsibilities, leveraging their reward systems or using gamification tools) and interdependence (e.g. providing them with all the job resources and communication tools to work as a team).

At last, this research provides evidences that individuals differences among teams, in terms of playfulness behavior or playfulness trait, are not themselves an obstacle or a limitation to the development of a playfulness climate among the team. It means that organizations should coordinate their efforts on developing team playfulness and design team interventions that focus on the team climate rather than focusing on individual behaviors alone. This may shape organizational approaches towards both team interventions and team trainings.

Research Limitations and recommendations

These conclusions, resulting from the current investigation, need to be examined and contextualized considering the study design and the following limitations that it entails due to the master thesis calendar, the organizations' willingness to participate and the correspondent employees' time availability.

First, opening the participation criteria to organizations from all industries, sectors or sizes lead these conclusions to be mostly generic, without capturing any possible specificities regarding industry, sector or organizational size that may challenge the learnings applicability across them. As these organizations had the possibility to either select the teams composition or have the teams randomly assorted, it was no longer possible 1) to assure that the team members within each team did not had to be already working in the same team or at least the same department 2) to run a pure longitudinal study with participants randomization; which not only weakens the strenght of the conclusions as well it limits our ability to understand if the evidences of a team trust increase would also hold if the study was conducted with mature teams.

Second, due to time constraints, it was not possible to measure the participants' playfulness and team trust levels over additional time periods, there was no manager's role at the team competition and the experimental stimuli introduced (the team charter session and the playfulness workshop) were compressed in 30 minutes. It means that we were not able to record possible building time effects on Playfulness and Team Trust (that go beyond the team intervention itself), that may be different depending on the stimuli considered, it could eventualy lead to different conclusions regarding the impact of the stimuli when comparing teams across the experimental paths and it did not allow us to consider the manager's impact on the playfulness climate emergence.

Therefore, for future research, we recommend the development of longitudinal studies, conducted mainly with mature teams and focused on organizational clusters by industry, sector or size. Additionally, it is important to allocate more time to the experimental groups stimuli, consider a bigger time frame between stimuli and measurement and account for the impact of team managers. Moreover, some of results found on the course of this investigation raise new questions that warrants further investigation: 1) having found a weak negative correlation between the Blind Path score and both professional experience and tenure, suggests that participants with more professional experience and tenure performed worse on this team competition task, which involved verbal communication and instructions while blindfolded – for example, future research could could explore the role of non-verbal communication in team dynamics, considering members' professional experience and tenure; 2) even though individual Playfulness may not affect directly team performance, it cannot be fully ignored because it may be a potential driver for Playfulness Climate

development as both Playfulness Trait and Playfulness Behavior are positively correlated with the variable Playfulness Climate (r = 0.163, Sig = 0.001 and r = 0.166, Sig = 0.001) – for future research, it would be interesting to understand and test the drivers that help teams build a stronger Playfulness Team Climate, considering both the individual perspective of Playfulness as a Trait and as a Behavior; 3) at 0.05 alpha level, we only found the index Reflexive Team Trust to mediate the relationship between Playfulness Climate and Team Performance, we needed to increase the alpha level to 0.1 in order to find evidences of mediation effect with additional team trust indexes – future research could replicate the current experimental study with a large sample size to assess if the conclusions would be the same and, due to the stronger validaty of Reflexive Team Trust as a mediation variable, would be useful to investigate how the different dimensions of team trust and interpersonal trust may have an effect and contribute for the development of Reflexive Team Trust.

In summary, as a final note, it is relevant and important to study play and playfulness at work because, at the team-level, it is capable of to influence teams' trust levels and, subsequently, impact teams' performance.

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Annexes

Annex A – Sample Characteristics – Section A1, A2 and A3

<u>Section A1</u>

Table A1.1

Participation Characteristics

	N
N.º Participants	408
N.º Teams	68
Average Team Size	6
Valid Respondants	380
Response Rate	93%

Table A1.2

Teams per Industry origin

Industry	N	%
Manufacturing & Retail	22	32%
Services Sector	27	40%
Non-profit	14	21%
Others	5	7%
Total	68	100%

Table A1.3

Teams per Industry origin detail

Industry	N	%
Manufacturing	12	18%
Retail	10	15%
Publishing & Advertising	12	18%
Tech, Software & Telecom	11	16%
Insurance & Banking	4	6%
Other Industries	5	7%
Non-profit & Education	14	21%
Total	68	100%

Table A1.4

Teams per Organization size

Organization Size	N	%
Less than 100	10	15%
100 - 1000	35	51%
1000 - 5000	11	16%
plus 5000	12	18%
Total	68	100%

<u>Section A2</u>

Table A2.1

Education Level

	N	%
Less than high school	12	3%
High school or equivalent	98	26%
Higher Degree	163	43%
Masters or PhD	107	28%
Total	380	100%

Table A2.2

Leadership Experience

	N	%
None	217	57%
Less than 3 employees	59	16%
3 to 5 employees	40	11%
6 to 15 employees	37	10%
More than 15 employees	27	7%
Total	380	100%

Table A2.3

Participants Professional Experience

Professional Experience	N	%
Less than 5 years	50	13%
5 to 10 years	68	18%
10 to 20 years	102	27%
More than 20 years	160	42%
Total	380	100%

Table A2.4

Participants Organizational Tenure

Tenure	N	%
Less than 5 years	171	45%
5 to 10 years	88	23%
10 to 20 years	69	18%
More than 20 years	52	14%
Total	380	100%

Section A3

Table A3.1

Teams Random Path Distribution

	Teams	Participants	Teams %	Participants %
Path C - Control	27	150	40%	39%
Path T - Team Charter	19	101	28%	27%
Path P - Playfulness	22	129	32%	34%
Total	68	380	100%	100%

Table A3.2

Distribution Among Research Path - Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Education Level	Based on Mean	1,321	2	377,0	0,268
	Based on Median	0,822	2	377,0	0,440
	Based on Median and with adjusted df	0,822	2	372,0	0,440
	Based on trimmed mean	1,181	2	377,0	0,308
Leader Experience	Based on Mean	1,094	2	377,0	0,336
	Based on Median	1,159	2	377,0	0,315
	Based on Median and with adjusted df	1,159	2	373,9	0,315
	Based on trimmed mean	1,149	2	377,0	0,318
Professional Experience	Based on Mean	0,117	2	377,0	0,889
	Based on Median	0,098	2	377,0	0,907
	Based on Median and with adjusted df	0,098	2	376,1	0,907
	Based on trimmed mean	0,104	2	377,0	0,901
Tenure	Based on Mean	0,876	2	377,0	0,417
	Based on Median	0,447	2	377,0	0,640
	Based on Median and with adjusted df	0,447	2	374,6	0,640
	Based on trimmed mean	0,842	2	377,0	0,432

Note. Assuming variables' normality based on the Central Limit Theorem (CLT) due to large enough sample size ($n > 30$ cases) - see Annex A - Section 3 - Table 3.1

Table A3.3

Distribution Among Research Path - ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Education Level	Between Groups	0,817	2	0,409	0,612	0,543
	Within Groups	251,590	377	0,667		
	Total	252,408	379			
Leader Experience	Between Groups	3,951	2	1,975	1,159	0,315
	Within Groups	642,776	377	1,705		
	Total	646,726	379			
Professional Experience	Between Groups	438,345	2	219,173	1,923	0,148
	Within Groups	42974,276	377	113,990		
	Total	43412,621	379			
Tenure	Between Groups	87,229	2	43,615	0,593	0,553
	Within Groups	27727,979	377	73,549		
	Total	27815,208	379			

Note. Assuming variables' normality based on the Central Limit Theorem (CLT) due to large enough sample size (n > 30 cases) - see Annex A - Section 3 - Table 3.1

Figure 2

Distribution Among Research Path - Sample Outlook
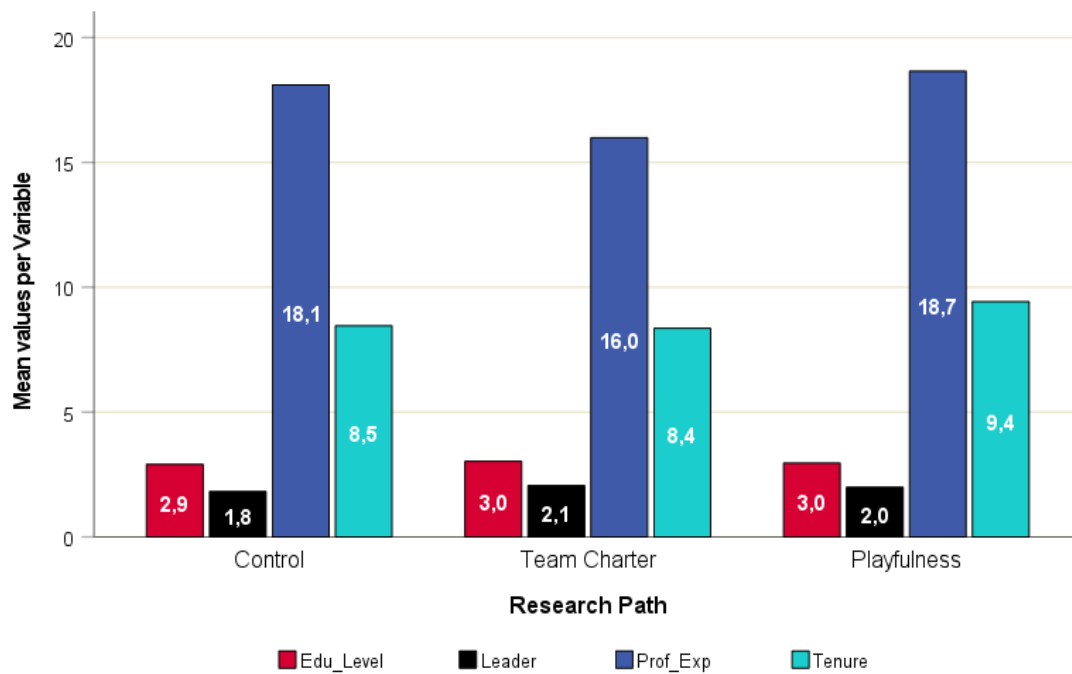
Annex B – Procedure – Sections B1, B2, B3 and B4

Figure 3

First page of the Initial Questionnaire (Qualitrics) – External Link below

. Welcome to the experimental study: "Is Playfulness a road to Trust and Performance?"

As part of a Master Dissertation of Human Resources at ISCTE, we intend to investigate if induced team-states of Playfulness can generate positive impact on the team members trust levels and, therefore, in its performance. We have challenged corporate and non-corporate organizations to participate on this study and your organizations is one of them, giving you the opportunity to participate or

Please note that responses to this questionnaire are completely anonymous and confidential, and only the overall results of the questionnaire will be shared with your organization. We expect this questionnaire to take between 9–12 minutes to complete.

Thanks for your participation!

I1. What's the code for your team?

C1	C2	C3	C4	T1	T2	P1	P2
○	○	○	○	○	○	○	○

I2. Participants Characteristics: Education level?

○ Less than high school   ○ Higher Degree

○ High school or equivalent   ○ Masters or PhD

I3. Below we ask you to create a unique code, which will allow us to analyze your responses:
(just one letter or digit/number for each of the five fields below. Read the examples)

First letter of your birthplace. Ex: L from Lisbon	
Last number of your birth year. Ex: 1982? So, 2	
First letter of your father's name. Ex: John? So, J	
First letter of your mother's name. Ex: Mary? So, M	
Last number of your cellphone. Ex: xxxxxxxx7, so 7	

External Link - Initial Questionnaire

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Section B2 – Team Dynamics

Figure 4

Team Charter Instructions

Figure 5

Playfulness Workshop

Section B3 – Team Competition

Figure 6

Team Competition Challenges and Grading

Figure 7

Team Competition Written Instructions (Document handed over)

iscte BUSINESS SCHOOL

"Leadership, Teamwork and Communication"

Welcome to the challenge "Leadership, Teamwork and Communication"!

In this challenge, each team has the goal of collecting as many points as possible.

To collect those points, your team can choose to complete between 3 series of tasks that will demand from you different sorts of intelligence and/or skills: ranging from visual-spatial to logical-mathematical intelligence, and also from interpersonal to intrapersonal intelligence.

From the following list you can select the series tasks to complete:

- **Series A – Marshmallow Tower:**
  - To build a tall free-standing structure with the resources available (spaghetti sticks, tape, string...etc) and place one whole marshmallow on the top;
  - Awards the team 100 points, plus 20 points if you reach the SKY!
  - *Detailed Instructions below.*

- **Series B – Enigmatic Enigmas:**
  - Answer correctly to Brain Teasers and Riddles: puzzling questions that pose a problem to be solved or to be guessed, challenging your problem-solving skills;
  - Awards the team 100 points, plus 20 points if you solve them all!
  - *Detailed Instructions below.*

- **Series C – Be my EYES:**
  - Trusting and communication exercise that requires a person to walk blindfolded a marked path, being guided by his/her teammates voices and eyes;
  - Awards the team 100 points, plus 20 points if every walker is different!
  - *Detailed Instructions below.*

30 mins

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You can collect a maximum of 100 points per Series and, whenever you complete a Series to its fullest, we give you another 20 bonus points!

What does it mean to complete a Series to the fullest?

It means to achieve all the milestones and to reach all the success factors described for each Series – check each detailed instructions (below) for better understanding.

Finally, if you are able to complete all the 3 Series to the fullest...

YOU ARE THE MASTER!!

And because of that, we award you an _extra 50 bonus points!_

Series Tasks	Main Goal	Fullest Completion	Points
Marshmallow Tower	Build a tall free-standing structure	Reach at least 55cm	100 points / 20 bonus points
Enigmatic Enigmas	Answer correctly to the Brain Teasers and Riddles	Answer correctly to 3 of the Enigmas	100 points / 20 bonus points
Be my EYES	Perform the correct blindfolded path walk	Perform it with 3 different team members	100 points / 20 bonus points
MASTER AWARD	Fully complete the 3 Series Tasks	At least 55cm, 3 correct Enigmas, 3 different walkers	50 bonus points

Above you have the Scoring Summary with all the points you can collect on this challenge. There is a maximum of 410 points to be collected.

Overall, you have _40 minutes for this challenge!_
  - 10 minutes to read carefully the detailed instructions, plan and prepare a strategy;
  - 30m to work as a team to complete the tasks!

You are free to use and manage the time as you want, you are free to organize the team as you want, you are free to define the strategies that you want!

Thank you and good luck!

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Series A – Marshmallow Tower

Your goal is to build a tall free-standing structure with the resources available (spaghetti sticks, tape, string..etc) and place one whole marshmallow on the top. This is a design exercise that will require from you collaboration, coordination, creative product development, prototyping and visual-spatial intelligence.

Resources : 25 sticks of spaghetti, 1 meter of string, 1 sticky tape, 1 scissor, and 5 marshmallows.

25 sticks	1 meter	1 unit	1 unit	5 units

- The structure is measured from the table-top surface (or from the floor) to the top of the marshmallow. That means the structure cannot be suspended from a higher structure, like a chair, ceiling or chandelier;
- The Entire Marshmallow must be on Top: The entire marshmallow needs to be on the top of the structure. Cutting or eating part of the marshmallow awards 0 points;

- Use as Much or as Little of the Kit: The team can use as many or as few of the 25 spaghetti sticks, as much or as little of the string or tape or any of the other marshmallows. The team can't use paper bag or paper sheets as part of their structure;
- Break up the Spaghetti, String or Tape at will: Teams are free to break the spaghetti, cut up the tape and string to create new structures.

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Once time is up, teams must stop building. The Towers will be assessed by the researcher (at the end of the challenge) based on the following criteria:
- The tower must be free-standing;
- The tower must support the weight of a single marshmallow;
- The marshmallow must be the highest point on the structure.

We know that, on average, teams solving this challenge build a 50cm tall tower so, to collect the maximum award of 100 points we require you to build a **tower above-average: 55cm.**

Attain 55cm and we award you 100 points!

Go over the 55cm and we will award you 20 bonus points for reaching up the SKY!

"And if we don't reach the 55cm? How many points do we get?"

In that case, you get points according to the centimeters (and respective height) reached:

Height (cm)	Points Awarded	Points per cm
0 - 10	10 (max)	1
10 - 25	30 (max)	1,20
25 - 45	75 (max)	1,67
45 - 55	100 (max)	1,82
+55	120	-

According to the scoring table above you realize that: as taller it is your structure, more points will you receive per each centimeter built. For example:

- If your structure has 7cm (between 0 – 10cm), each cm built awards 1 point:
  - So your team will receive 7 points for 7cm height;
- If your structure has 30cm (between 25 – 45cm), each cm built awards 1,67 points:
  - So your team will receive 30cm x 1,67 points in a total of 50,1 points;
- If the structure is 55,1 cm (above 55cm) your team receives the 100 plus 20 bonus points.

Good luck for your structures!

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Series B – Enigmatic Enigmas

Below we provide your team with 5 Enigmatic Brain Teasers and Riddles, that you can read for your amusement and that you can solve to collect points.

<u>You don't need to solve them all!!</u>

From these 5 Brain Teasers, you must choose and present your answer to a **maximum of 3 Enigmas** and **to 3 Enigmas only** – answer on the table of the white sheet provided!

Each right answer will award you 33,33 points (max: 100).
Get all the 3 Brain Teasers right and we will give you 20 bonus points (extra).

Once time is up, the researcher will come to collect your answers.
<u>Please don't write any answer, notes nor anything in this page.</u>

> **Enigmatic Enigma 1**

You are in a room that has three switches and a closed door. The switches control three light bulbs on the other side of the door. Once you open the door, you may never touch the switches again. How can you definitively tell which switch is connected to each of the light bulbs?

> **Enigmatic Enigma 2**

A man describes his daughters, saying, "They are all blonde, but two; all brunette but two; and all redheaded but two." How many daughters does he have?

> **Enigmatic Enigma 3**

Four cars come to a four-way stop, all coming from a different direction. They can't decide who got there first, so they all go forward at the same time. They do not crash into each other, but all four cars go. How is this possible?

> **Enigmatic Enigma 4**

You're escaping a labyrinth and there are three exits. Exit A leads to an inferno. Exit B leads to an assassin. Exit C leads to a lion that hasn't eaten in 9 months. Which exit do you pick?

> **Enigmatic Enigma 5**

First I am dried, then I am wet. The longer I swim, the more taste you get. What am I?

Good luck! I'm trusting on your honesty, integrity and fair play 😉

Series C – Be my EYES

On the floor you will find a marked path. To complete this task, **one person must walk blindfolded from the beginning of the path to the end of the path**, being guided by the voice of their teammate(s) that are their EYES.

The path has the form presented on the side, marked and tapped on the floor, with a hoop next to it where the blindfolded walkers must start their journey. It goes like this:

First, the walker <u>enters the hoop and is blindfolded</u> (step 1); then the walker <u>spins around him/herself 5 times</u>, counting out loud the rotations from 1 to 5 (step 2).

After step 2, the blindfolded walker must <u>leave the hoop and head for the beginning of the path on arrow A</u> (step 3) to, therefore, <u>cross the path from A to B and C</u>, finishing it as he/she crosses over C (step 4).
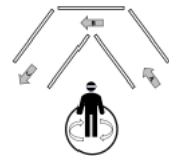
The full walk (from step 2 to 4) must be done blindfolded, only removing the blind after crossing over C; during the walk, the <u>path marks cannot be crossed or even touched</u> at any time, by anything, foot or hoop.

If it happens, you must re-start from the beginning: within the hoop, no need for the rotations.

For each completed walk, we will award you **33,33 points** (maximum 100 points). Complete it 3 times with 3 different people and we give you an extra 20 bonus points.

The task completion must be fully recorded by a camera (from step 1 to 4), and it's your team responsibility to make sure the video fully allows us to validate the walk, meaning that:

- The feet must be clearly visible all the time;
- The person doing the blindfolded walk must be fully visible all the time;
- You must record it always facing the person forward (the cameraman/woman moves);
- It must be possible to check if the walk was correctly performed at any time.

So, summing up, you cannot:

- Cross or touch the path marks at any moment and at any point;
- Move the camera away from the person at any time;
- Only show a partial of the person doing the blindfolded walk;
- Record the person from another angle except facing it forward;
- You cannot change/move the path marks at any moment.

| YES! Feet and walker are fully visible. | NO! Feet are not visible | YES! Always facing forward. | NO! The walker is not facing forward. |

<u>Tips and Tricks:</u>

1) **Select beforehand who will guide the person blindfolded**, it can be more than one person if you prefer or it can be always the same voice guiding, if you prefer;
2) **Be extra careful with the video recording**, if we can't fully validate the whole walk, the points for that walk won't be accounted for.

Again, for each completed walk, we will award you **33,33 points** (maximum 100 points). Complete it 3 times with 3 different people and we give you an extra 20 bonus points.

If the video recording is not in good conditions, we may assign you some penalty points:

Minor faults	Ex: Feet aren't visible sometimes; or the walker is not fully visible for a moment…etc	Minus 5 points
Severe faults	Ex: Can't observe the feet several times; and/or recording from behind most of the times.	Minus 15 points
Can't validate…	Ex: can't assess at all if the walk was done correctly.	Minus 33,33 points

Once time is up, the researcher will come to collect your videos.
Be ready to send them all in one single e-mail/whatsapp.

I'm trusting on your honesty, integrity and fair play 😉

Good luck with your blindfolded walks!

Section B4 – Final Questionnaire

Figure 8

First page of the Final Questionnaire (Qualitrics) – External Link below

. Final Questionnaire: "Is Playfulness a road to Trust and Performance?"

After completing the "Leadership, Teamwork and Communication" challenge, we asked for your help to characterize your team in terms their behaviors/attitudes and the work environment they experienced as a team member,

Please note that responses to this questionnaire are completely anonymous and confidential, and only the overall results of the questionnaire will be shared with your organization. We expect this questionnaire to take between 8-12 minutes to complete.

Thanks for your participation!

F1. Below we ask you to create a unique code, which will allow us to analyze your responses:
(just one letter or digit/number for each of the five fields below. Read the examples)

First letter of your birthplace. Ex: L from Lisbon

Last number of your birth year. Ex: 1982? So, 2

First letter of your father's name. Ex: John? So, J

First letter of your mother's name. Ex: Mary? So, M

Last number of your cellphone. Ex: xxxxxxxx7, so 7

External Link - Final Questionnaire

Annex C – Principal Components Analysis – Section C1, C2 and C3

Section C1 – Playfulness Items

Tables C1.1 - PCA Playfulness Trait_1 - All items

Correlation Matrix

		Adult Playfulness_1	Adult Playfulness_2	Adult Playfulness_3	Adult Playfulness_4	Adult Playfulness_5
Correlation	Adult Playfulness_1	1,000	0,751	0,475	0,349	0,226
	Adult Playfulness_2	0,751	1,000	0,414	0,400	0,231
	Adult Playfulness_3	0,475	0,414	1,000	0,275	0,287
	Adult Playfulness_4	0,349	0,400	0,275	1,000	0,243
	Adult Playfulness_5	0,226	0,231	0,287	0,243	1,000

Communalities

	Initial	Extraction
Adult Playfulness_1	1,000	0,715
Adult Playfulness_2	1,000	0,709
Adult Playfulness_3	1,000	0,484
Adult Playfulness_4	1,000	0,381
Adult Playfulness_5	1,000	0,233

Extraction Method: Principal Component Analysis.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,716
Bartlett's Test of Sphericity	Approx. Chi-Square	532,148
	df	10
	Sig.	0,000

Tables C1.2 - PCA Playfulness Trait_2 - excluding item 4 and 5

Correlation Matrix

		Adult Playfulness_1	Adult Playfulness_2	Adult Playfulness_3
Correlation	Adult Playfulness_1	1,000	0,751	0,475
	Adult Playfulness_2	0,751	1,000	0,414
	Adult Playfulness_3	0,475	0,414	1,000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,631
Bartlett's Test of Sphericity	Approx. Chi-Square	413,274
	df	3
	Sig.	0,000

Communalities

	Initial	Extraction
Adult Playfulness_1	1,000	0,818
Adult Playfulness_2	1,000	0,776
Adult Playfulness_3	1,000	0,514

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Total	Initial Eigenvalues % of Variance	Cumulative %	Total	Extraction Sums of Squared Loadings % of Variance	Cumulative %
1	2,108	70,276	70,276	2,108	70,276	70,276
2	0,646	21,547	91,824			
3	0,245	8,176	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix

	Component 1
Adult Playfulness_1	0,904
Adult Playfulness_2	0,881
Adult Playfulness_3	0,717

Extraction Method: Principal Component
Analysis.
a. 1 components extracted.

Reliability Statistics and Analysis

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0,784	0,784	3

Reliability: Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Adult Playfulness_1	10,59	4,633	0,731	0,596	0,586
Adult Playfulness_2	10,79	4,681	0,678	0,568	0,644
Adult Playfulness_3	10,73	5,692	0,475	0,233	0,857

Tables C1.3 - PCA Playfulness Behavior_1 - All Items

Correlation Matrix

		PWD Fun_1	PWD Fun_2	PWD Fun_3	PWD Fun_4	PWD Competition_1	PWD Competition_2	PWD Competition_3	PWD Competition_4
Correlation	PWD_Fun_1	1,000	0,665	0,692	0,661	0,378	0,314	0,538	0,546
	PWD_Fun_2	0,665	1,000	0,561	0,505	0,285	0,269	0,346	0,393
	PWD_Fun_3	0,692	0,561	1,000	0,629	0,368	0,356	0,585	0,586
	PWD_Fun_4	0,661	0,505	0,629	1,000	0,438	0,297	0,578	0,545
	PWD_Competition_1	0,378	0,285	0,368	0,438	1,000	0,465	0,430	0,417
	PWD_Competition_2	0,314	0,269	0,356	0,297	0,465	1,000	0,360	0,389
	PWD_Competition_3	0,538	0,346	0,585	0,578	0,430	0,360	1,000	0,700
	PWD_Competition_4	0,546	0,393	0,586	0,545	0,417	0,389	0,700	1,000

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,882
Bartlett's Test of Sphericity	Approx. Chi-Square	1476,689
	df	28
	Sig.	0,000

Communalities

	Initial	Extraction
PWD_Fun_1	1,000	0,688
PWD_Fun_2	1,000	0,469
PWD_Fun_3	1,000	0,684
PWD_Fun_4	1,000	0,646
PWD_Competition_1	1,000	0,378
PWD_Competition_2	1,000	0,298
PWD_Competition_3	1,000	0,609
PWD_Competition_4	1,000	0,617

Extraction Method: Principal Component Analysis.

Tables C1.4 - PCA Playfulness Behavior_1 - excluding items 5 and 6

Correlation Matrix

		PWD Fun_1	PWD Fun_2	PWD Fun_3	PWD Fun_4	PWD Competition_3	PWD Competition_4
Correlation	PWD_Fun_1	1,000	0,665	0,692	0,661	0,538	0,546
	PWD_Fun_2	0,665	1,000	0,561	0,505	0,346	0,393
	PWD_Fun_3	0,692	0,561	1,000	0,629	0,585	0,586
	PWD_Fun_4	0,661	0,505	0,629	1,000	0,578	0,545
	PWD_Competition_3	0,538	0,346	0,585	0,578	1,000	0,700
	PWD_Competition_4	0,546	0,393	0,586	0,545	0,700	1,000

KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,866
Bartlett's Test of Sphericity	Approx. Chi-Square	1246,783
	df	15
	Sig.	0,000

Communalities

	Initial	Extraction
PWD_Fun_1	1,000	0,735
PWD_Fun_2	1,000	0,509
PWD_Fun_3	1,000	0,720
PWD_Fun_4	1,000	0,670
PWD_Competition_3	1,000	0,608
PWD_Competition_4	1,000	0,614

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,856	64,270	64,270	3,856	64,270	64,270
2	0,807	13,442	77,712			
3	0,429	7,144	84,856			
4	0,350	5,833	90,689			
5	0,290	4,829	95,518			
6	0,269	4,482	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix

	Component
	1
PWD_Fun_1	0,858
PWD_Fun_3	0,849
PWD_Fun_4	0,819
PWD_Competition_4	0,784
PWD_Competition_3	0,780
PWD_Fun_2	0,713

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Reliability Statistics and Analysis

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0,887	0,888	6

Reliability: Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PWD_Fun_1	24,85	26,017	0,783	0,648	0,853
PWD_Fun_2	24,85	27,605	0,600	0,471	0,885
PWD_Fun_3	25,14	26,430	0,765	0,590	0,857
PWD_Fun_4	25,07	27,171	0,724	0,537	0,863
PWD_Competition_3	25,11	27,921	0,668	0,567	0,872
PWD_Competition_4	25,11	28,186	0,678	0,551	0,871

Tables C1.5 - PCA Playfulness Climate_1 - All items

Correlation Matrix

		Org Playfulness Humor_1	Org Playfulness Humor_2	Org Playfulness Humor_3	Org Playfulness Humor_4	Org Playfulness Collaboration_1	Org Playfulness Collaboration_2	Org Playfulness Collaboration_3	Org Playfulness Collaboration_4
Correlation	Org Playfulness - Humor_1	1,000	0,603	0,464	0,578	0,492	0,653	0,549	0,538
	Org Playfulness - Humor_2	0,603	1,000	0,412	0,664	0,496	0,667	0,505	0,570
	Org Playfulness - Humor_3	0,464	0,412	1,000	0,408	0,394	0,402	0,482	0,434
	Org Playfulness - Humor_4	0,578	0,664	0,408	1,000	0,529	0,671	0,503	0,547
	Org Playfulness - Collaboration_1	0,492	0,496	0,394	0,529	1,000	0,567	0,562	0,583
	Org Playfulness - Collaboration_2	0,653	0,667	0,402	0,671	0,567	1,000	0,582	0,649
	Org Playfulness - Collaboration_3	0,549	0,505	0,482	0,503	0,562	0,582	1,000	0,585
	Org Playfulness - Collaboration_4	0,538	0,570	0,434	0,547	0,583	0,649	0,585	1,000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,926
Bartlett's Test of Sphericity	Approx. Chi-Square	1594,156
	df	28
	Sig.	0,000

Communalities

	Initial	Extraction
Org Playfulness - Humor_1	1,000	0,626
Org Playfulness - Humor_2	1,000	0,642
Org Playfulness - Humor_3	1,000	0,391
Org Playfulness - Humor_4	1,000	0,637
Org Playfulness - Collaboration_1	1,000	0,556
Org Playfulness - Collaboration_2	1,000	0,721
Org Playfulness - Collaboration_3	1,000	0,591
Org Playfulness - Collaboration_4	1,000	0,635

Extraction Method: Principal Component Analysis.

Tables C1.6 - PCA Playfulness Climate_2 - excluding item 3

Correlation Matrix

		Org Playfulness Humor_1	Org Playfulness Humor_2	Org Playfulness Humor_4	Org Playfulness Collaboration_1	Org Playfulness Collaboration_2	Org Playfulness Collaboration_3	Org Playfulness Collaboration_4
Correlation	Org Playfulness - Humor_1	1,000	0,603	0,578	0,492	0,653	0,549	0,538
	Org Playfulness - Humor_2	0,603	1,000	0,664	0,496	0,667	0,505	0,570
	Org Playfulness - Humor_4	0,578	0,664	1,000	0,529	0,671	0,503	0,547
	Org Playfulness - Collaboration_1	0,492	0,496	0,529	1,000	0,567	0,562	0,583
	Org Playfulness - Collaboration_2	0,653	0,667	0,671	0,567	1,000	0,582	0,649
	Org Playfulness - Collaboration_3	0,549	0,505	0,503	0,562	0,582	1,000	0,585
	Org Playfulness - Collaboration_4	0,538	0,570	0,547	0,583	0,649	0,585	1,000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,920
Bartlett's Test of Sphericity	Approx. Chi-Square	1453,898
	df	21
	Sig.	0,000

Communalities

	Initial	Extraction
Org Playfulness - Humor_1	1,000	0,625
Org Playfulness - Humor_2	1,000	0,655
Org Playfulness - Humor_4	1,000	0,650
Org Playfulness - Collaboration_1	1,000	0,564
Org Playfulness - Collaboration_2	1,000	0,744
Org Playfulness - Collaboration_3	1,000	0,582
Org Playfulness - Collaboration_4	1,000	0,641

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,462	63,743	63,743	4,462	63,743	63,743
2	0,635	9,075	72,818			
3	0,478	6,826	79,644			
4	0,419	5,982	85,626			
5	0,390	5,570	91,196			
6	0,330	4,714	95,910			
7	0,286	4,090	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix

	Component 1
Org Playfulness - Collaboration_2	0,863
Org Playfulness - Humor_2	0,809
Org Playfulness - Humor_4	0,807
Org Playfulness - Collaboration_4	0,801
Org Playfulness - Humor_1	0,790
Org Playfulness - Collaboration_3	0,763
Org Playfulness - Collaboration_1	0,751

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Reliability Statistics and Analysis

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0,904	0,905	7

Reliability: Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Org Playfulness - Humor_1	37,18	24,077	0,707	0,515	0,890
Org Playfulness - Humor_2	37,41	22,184	0,730	0,566	0,888
Org Playfulness - Humor_4	37,21	22,823	0,729	0,560	0,888
Org Playfulness - Collaboration_1	37,11	24,180	0,660	0,459	0,895
Org Playfulness - Collaboration_2	37,13	23,207	0,798	0,645	0,880
Org Playfulness - Collaboration_3	37,02	24,570	0,673	0,476	0,894
Org Playfulness - Collaboration_4	37,16	23,588	0,718	0,536	0,889

Tables C2.1 - PCA - Initial Formative Team Trust (TT)_1 - All items

Correlation Matrix

		Initial TT - Propensity_1	Initial TT - Propensity_2	Initial TT - Propensity_3	Initial TT - Propensity_4	Initial TT - Worthiness_1	Initial TT - Worthiness_2	Initial TT - Worthiness_3	Initial TT - Worthiness_4	Initial Group Identification_1	Initial Group Identification_2	Initial Group Identification_3
Correlation	Initial TT - Propensity_1	1,000	0,552	0,599	0,378	0,527	0,544	0,319	0,640	0,460	0,504	0,490
	Initial TT - Propensity_2	0,552	1,000	0,514	0,528	0,490	0,568	0,288	0,621	0,512	0,531	0,532
	Initial TT - Propensity_3	0,599	0,514	1,000	0,458	0,462	0,551	0,325	0,615	0,474	0,547	0,502
	Initial TT - Propensity_4	0,378	0,528	0,458	1,000	0,392	0,494	0,327	0,466	0,395	0,432	0,460
	Initial TT - Worthiness_1	0,527	0,490	0,462	0,392	1,000	0,512	0,256	0,635	0,423	0,561	0,496
	Initial TT - Worthiness_2	0,544	0,568	0,551	0,494	0,512	1,000	0,391	0,666	0,418	0,500	0,550
	Initial TT - Worthiness_3	0,319	0,288	0,325	0,327	0,256	0,391	1,000	0,356	0,044	0,232	0,211
	Initial TT - Worthiness_4	0,640	0,621	0,615	0,466	0,635	0,666	0,356	1,000	0,504	0,644	0,608
	Initial Group Identification_1	0,460	0,512	0,474	0,395	0,423	0,418	0,044	0,504	1,000	0,551	0,557
	Initial Group Identification_2	0,504	0,531	0,547	0,432	0,561	0,500	0,232	0,644	0,551	1,000	0,665
	Initial Group Identification_3	0,490	0,532	0,502	0,460	0,496	0,550	0,211	0,608	0,557	0,665	1,000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,936
Bartlett's Test of Sphericity	Approx. Chi-Square	2143,424
	df	55
	Sig.	0,000

Communalities

	Initial	Extrac
Initial TT - Propensity_1	1,000	0,57
Initial TT - Propensity_2	1,000	0,59
Initial TT - Propensity_3	1,000	0,57
Initial TT - Propensity_4	1,000	0,43
Initial TT - Worthiness_1	1,000	0,52
Initial TT - Worthiness_2	1,000	0,60
Initial TT - Worthiness_3	1,000	0,18
Initial TT - Worthiness_4	1,000	0,73
Initial Group Identification_1	1,000	0,45
Initial Group Identification_2	1,000	0,61
Initial Group Identification_3	1,000	0,59

Extraction Method: Principal Component Analysis.

Tables C2.2 - PCA - Initial Formative Team Trust (TT)_2 - excluding items 4, 7 and 9

Correlation Matrix

		Initial TT - Propensity_1	Initial TT - Propensity_2	Initial TT - Propensity_3	Initial TT - Worthiness_1	Initial TT - Worthiness_2	Initial TT - Worthiness_4	Initial Group Identification_2	Initial Group Identification_3
Correlation	Initial TT - Propensity_1	1,000	0,552	0,599	0,527	0,544	0,640	0,504	0,490
	Initial TT - Propensity_2	0,552	1,000	0,514	0,490	0,568	0,621	0,531	0,532
	Initial TT - Propensity_3	0,599	0,514	1,000	0,462	0,551	0,615	0,547	0,502
	Initial TT - Worthiness_1	0,527	0,490	0,462	1,000	0,512	0,635	0,561	0,496
	Initial TT - Worthiness_2	0,544	0,568	0,551	0,512	1,000	0,666	0,500	0,550
	Initial TT - Worthiness_4	0,640	0,621	0,615	0,635	0,666	1,000	0,644	0,608
	Initial Group Identification_2	0,504	0,531	0,547	0,561	0,500	0,644	1,000	0,665
	Initial Group Identification_3	0,490	0,532	0,502	0,496	0,550	0,608	0,665	1,000

PCA - Initial Formative Team Trust_2 - KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,926
Bartlett's Test of Sphericity	Approx. Chi-Square	1659,989
	df	28
	Sig.	0,000

Communalities

	Initial	Extraction
Initial TT - Propensity_1	1,000	0,600
Initial TT - Propensity_2	1,000	0,587
Initial TT - Propensity_3	1,000	0,582
Initial TT - Worthiness_1	1,000	0,555
Initial TT - Worthiness_2	1,000	0,610
Initial TT - Worthiness_4	1,000	0,759
Initial Group Identification_2	1,000	0,626
Initial Group Identification_3	1,000	0,597

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,916	61,446	61,446	4,916	61,446	61,446
2	0,629	7,857	69,303			
3	0,540	6,750	76,053			
4	0,509	6,368	82,421			
5	0,446	5,578	87,999			
6	0,383	4,782	92,782			
7	0,311	3,890	96,671			
8	0,266	3,329	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component 1
Initial TT - Worthiness_4	0,871
Initial Group Identification_2	0,791
Initial TT - Worthiness_2	0,781
Initial TT - Propensity_1	0,774
Initial Group Identification_3	0,773
Initial TT - Propensity_2	0,766
Initial TT - Propensity_3	0,763
Initial TT - Worthiness_1	0,745

Extraction Method: Principal Component
Analysis.
a. 1 components extracted.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0,909	0,910	8

Reliability: Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Initial TT - Propensity_1	38,19	48,104	0,698	0,514	0,898
Initial TT - Propensity_2	38,77	46,920	0,688	0,481	0,899
Initial TT - Propensity_3	38,76	47,262	0,683	0,493	0,899
Initial TT - Worthiness_1	38,48	47,912	0,661	0,466	0,901
Initial TT - Worthiness_2	38,52	47,327	0,706	0,524	0,897
Initial TT - Worthiness_4	38,35	46,233	0,816	0,673	0,888
Initial Group Identification_2	37,92	48,476	0,718	0,569	0,897
Initial Group Identification_3	38,16	46,830	0,693	0,530	0,899

Tables C2.3 - PCA - Final Formative Team Trust (TT)_1 - All items

Correlation Matrix

		Final TT - Propensity_1	Final TT - Propensity_2	Final TT - Propensity_3	Final TT - Propensity_4	Final TT - Worthiness_1	Final TT - Worthiness_2	Final TT - Worthiness_3	Final TT - Worthiness_4	Final Group Identification_1	Final Group Identification_2	Final Group Identification_3
Correlation	Final TT - Propensity_1	1,000	0,490	0,556	0,329	0,599	0,581	0,297	0,666	0,461	0,675	0,517
	Final TT - Propensity_2	0,490	1,000	0,495	0,347	0,588	0,557	0,361	0,638	0,438	0,536	0,489
	Final TT - Propensity_3	0,556	0,495	1,000	0,358	0,573	0,577	0,350	0,625	0,533	0,569	0,581
	Final TT - Propensity_4	0,329	0,347	0,358	1,000	0,295	0,390	0,105	0,349	0,315	0,306	0,269
	Final TT - Worthiness_1	0,599	0,588	0,573	0,295	1,000	0,554	0,382	0,702	0,467	0,652	0,578
	Final TT - Worthiness_2	0,581	0,557	0,577	0,390	0,554	1,000	0,363	0,680	0,439	0,577	0,464

Final TT - Worthiness_3	0,297	0,361	0,350	0,105	0,382	0,363	1,000	0,341	0,104	0,313	0,248
Final TT - Worthiness_4	0,666	0,638	0,625	0,349	0,702	0,680	0,341	1,000	0,509	0,707	0,638
Final Group Identification_1	0,461	0,438	0,533	0,315	0,467	0,439	0,104	0,509	1,000	0,547	0,632
Final Group Identification_2	0,675	0,536	0,569	0,306	0,652	0,577	0,313	0,707	0,547	1,000	0,615
Final Group Identification_3	0,517	0,489	0,581	0,269	0,578	0,464	0,248	0,638	0,632	0,615	1,000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,935
Bartlett's Test of Sphericity	Approx. Chi-Square	2268,096
	df	55
	Sig.	0,000

Communalities

	Initial	Extraction
Final TT - Propensity_1	1,000	0,611
Final TT - Propensity_2	1,000	0,551
Final TT - Propensity_3	1,000	0,609
Final TT - Propensity_4	1,000	0,227
Final TT - Worthiness_1	1,000	0,654
Final TT - Worthiness_2	1,000	0,601
Final TT - Worthiness_3	1,000	0,203
Final TT - Worthiness_4	1,000	0,760
Final Group Identification_1	1,000	0,470
Final Group Identification_2	1,000	0,683
Final Group Identification_3	1,000	0,584

Extraction Method: Principal Component Analysis.

Tables C2.4 - PCA - Final Formative Team Trust (TT)_2 - excluding items 4, 7 and 9

PCA - Final Formative Team Trust_2 - Correlation Matrix

		Final TT - Propensity_1	Final TT - Propensity_2	Final TT - Propensity_3	Final TT - Worthiness_1	Final TT - Worthiness_2	Final TT - Worthiness_4	Final Group Identification_2	Final Group Identification_3
Correlation	Final TT - Propensity_1	1,000	0,490	0,556	0,599	0,581	0,666	0,675	0,517
	Final TT - Propensity_2	0,490	1,000	0,495	0,588	0,557	0,638	0,536	0,489
	Final TT - Propensity_3	0,556	0,495	1,000	0,573	0,577	0,625	0,569	0,581
	Final TT - Worthiness_1	0,599	0,588	0,573	1,000	0,554	0,702	0,652	0,578
	Final TT - Worthiness_2	0,581	0,557	0,577	0,554	1,000	0,680	0,577	0,464
	Final TT - Worthiness_4	0,666	0,638	0,625	0,702	0,680	1,000	0,707	0,638
	Final Group Identification_2	0,675	0,536	0,569	0,652	0,577	0,707	1,000	0,615
	Final Group Identification_3	0,517	0,489	0,581	0,578	0,464	0,638	0,615	1,000

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,935
Bartlett's Test of Sphericity	Approx. Chi-Square	1848,132
	df	28
	Sig.	0,000

Communalities

	Initial	Extraction
Final TT - Propensity_1	1,000	0,633
Final TT - Propensity_2	1,000	0,554
Final TT - Propensity_3	1,000	0,600
Final TT - Worthiness_1	1,000	0,675
Final TT - Worthiness_2	1,000	0,606
Final TT - Worthiness_4	1,000	0,789
Final Group Identification_2	1,000	0,700
Final Group Identification_3	1,000	0,578

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,135	64,181	64,181	5,135	64,181	64,181
2	0,579	7,243	71,424			
3	0,529	6,613	78,037			
4	0,492	6,154	84,191			
5	0,378	4,730	88,921			
6	0,352	4,398	93,319			
7	0,295	3,692	97,010			
8	0,239	2,990	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component 1
Final TT - Worthiness_4	0,888
Final Group Identification_2	0,836
Final TT - Worthiness_1	0,822
Final TT - Propensity_1	0,796
Final TT - Worthiness_2	0,778
Final TT - Propensity_3	0,775
Final Group Identification_3	0,760
Final TT - Propensity_2	0,744

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0,917	0,920	8

Reliability: Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Final TT - Propensity_1	41,96	36,518	0,721	0,556	0,906
Final TT - Propensity_2	42,23	36,991	0,665	0,471	0,911
Final TT - Propensity_3	42,39	35,221	0,704	0,507	0,909
Final TT - Worthiness_1	42,11	36,674	0,755	0,585	0,904
Final TT - Worthiness_2	42,14	36,284	0,704	0,536	0,908
Final TT - Worthiness_4	41,96	35,919	0,840	0,712	0,897
Final Group Identification_2	41,83	37,152	0,773	0,624	0,903
Final Group Identification_3	42,39	35,721	0,683	0,506	0,910

Tables C2.5 - PCA - Reflexive Team Trust (TT)_1 - all items

PCA Reflexive Team Trust_1 - Correlation Matrix

		TT Coop Behaviors_1	TT Coop Behaviors_2	TT Coop Behaviors_3	TT Coop Behaviors_4	Team Psychological Safety_1	Team Psychological Safety_2	Team Psychological Safety_3	Team Psychological Safety_4
Correlation	TT Coop_Behaviors_1	1,000	0,674	0,006	0,526	0,254	0,347	0,569	0,563
	TT Coop_Behaviors_2	0,674	1,000	0,033	0,554	0,173	0,358	0,600	0,569
	TT Coop_Behaviors_3	0,006	0,033	1,000	0,051	0,149	0,004	0,049	0,002
	TT Coop_Behaviors_4	0,526	0,554	0,051	1,000	0,127	0,518	0,491	0,493
	Team Psychological Safety_1	0,254	0,173	0,149	0,127	1,000	0,073	0,105	0,257
	Team Psychological Safety_2	0,347	0,358	0,004	0,518	0,073	1,000	0,434	0,442
	Team Psychological Safety_3	0,569	0,600	0,049	0,491	0,105	0,434	1,000	0,535
	Team Psychological Safety_4	0,563	0,569	0,002	0,493	0,257	0,442	0,535	1,000

PCA Reflexive Team Trust_1 - KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,857
Bartlett's Test of Sphericity	Approx. Chi-Square	1015,353
	df	28
	Sig.	0,000

PCA Reflexive Team Trust_1 - Communalities

	Initial	Extraction
TT Coop_Behaviors_1	1,000	0,656
TT Coop_Behaviors_2	1,000	0,673
TT Coop_Behaviors_3	1,000	0,004
TT Coop_Behaviors_4	1,000	0,586
Team Psychological Safety_1	1,000	0,088
Team Psychological Safety_2	1,000	0,405
Team Psychological Safety_3	1,000	0,609
Team Psychological Safety_4	1,000	0,619

Extraction Method: Principal Component Analysis.

Tables C2.6 - PCA - Reflexive Team Trust (TT)_2 - excluding items 3 and 5

PCA Reflexive Team Trust_2 - Correlation Matrix

		TT Coop Behaviors_1	TT Coop Behaviors_2	TT Coop Behaviors_4	Team Psychological Safety_2	Team Psychological Safety_3	Team Psychological Safety_4
Correlation	TT Coop_Behaviors_1	1,000	0,674	0,526	0,347	0,569	0,563
	TT Coop_Behaviors_2	0,674	1,000	0,554	0,358	0,600	0,569
	TT Coop_Behaviors_4	0,526	0,554	1,000	0,518	0,491	0,493
	Team Psychological Safety_2	0,347	0,358	0,518	1,000	0,434	0,442
	Team Psychological Safety_3	0,569	0,600	0,491	0,434	1,000	0,535
	Team Psychological Safety_4	0,563	0,569	0,493	0,442	0,535	1,000

PCA Reflexive Team Trust_2 - KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,869
Bartlett's Test of Sphericity	Approx. Chi-Square	966,906
	df	15
	Sig.	0,000

PCA Reflexive Team Trust_2 - Communalities

	Initial	Extraction
TT Coop_Behaviors_1	1,000	0,649
TT Coop_Behaviors_2	1,000	0,678
TT Coop_Behaviors_4	1,000	0,596
Team Psychological Safety_2	1,000	0,417
Team Psychological Safety_3	1,000	0,622
Team Psychological Safety_4	1,000	0,611
Extraction Method: Principal Component Analysis.		

Tables C2.7 - PCA - Reflexive Team Trust (TT)_3 - excluding items 3, 5 and 6

PCA Reflexive Team Trust_3 - Correlation Matrix

		TT Coop Behaviors_1	TT Coop Behaviors_2	TT Coop Behaviors_4	Team Psychological Safety_3	Team Psychological Safety_4
Correlation	TT Coop Behaviors_1	1,000	0,674	0,526	0,569	0,563
	TT Coop Behaviors_2	0,674	1,000	0,554	0,600	0,569
	TT Coop Behaviors_4	0,526	0,554	1,000	0,491	0,493
	Team Psychological Safety_3	0,569	0,600	0,491	1,000	0,535
	Team Psychological Safety_4	0,563	0,569	0,493	0,535	1,000

PCA Reflexive Team Trust_3 - KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,870
Bartlett's Test of Sphericity	Approx. Chi-Square	813,738
	df	10
	Sig.	0,000

PCA Reflexive Team Trust_3 - Communalities

	Initial	Extra
TT Coop_Behaviors_1	1,000	0,6
TT Coop_Behaviors_2	1,000	0,7
TT Coop_Behaviors_4	1,000	0,5
Team Psychological Safety_3	1,000	0,6
Team Psychological Safety_4	1,000	0,6
Extraction Method: Principal Component Analysis.		

PCA Reflexive Team Trust_3 - Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,235	64,692	64,692	3,235	64,692	64,692
2	0,527	10,535	75,227			
3	0,472	9,443	84,670			
4	0,444	8,884	93,554			
5	0,322	6,446	100,000			
Extraction Method: Principal Component Analysis.						

PCA Reflexive Team Trust_3 - Component Matrix[a]	
	Component
	1
TT Coop_Behaviors_2	0,851
TT Coop_Behaviors_1	0,834
Team Psychological Safety_3	0,794
Team Psychological Safety_4	0,784
TT Coop_Behaviors_4	0,755

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

PCA Reflexive Team Trust_3 - Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0,855	0,863	5

PCA Reflexive Team Trust_3 - Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
TT Coop_Behaviors_1	23,69	12,736	0,715	0,535	0,816
TT Coop_Behaviors_2	23,73	12,784	0,740	0,566	0,812
TT Coop_Behaviors_4	23,93	12,178	0,619	0,388	0,838
Team Psychological Safety_3	24,13	12,014	0,666	0,452	0,825
Team Psychological Safety_4	24,21	11,247	0,655	0,432	0,833

Tables C3.1 - Normality Tests - Performance Measures within sample groups

Test of Normality - Performance Measures & Education Level

Edu_Level		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Total Score Value	Less than high school	0,153	12	,200[*]	0,957	12	0,739
	High school or equivalent	0,078	98	0,155	0,959	98	0,004
	Higher Degree	0,117	163	0,000	0,961	163	0,000
	Masters or PhD	0,163	107	0,000	0,940	107	0,000
Enigmas Score	Less than high school	0,400	12	0,000	0,687	12	0,001
	High school or equivalent	0,367	98	0,000	0,728	98	0,000
	Higher Degree	0,371	163	0,000	0,712	163	0,000
	Masters or PhD	0,421	107	0,000	0,634	107	0,000
Blind Path Score	Less than high school	0,167	12	,200[*]	0,927	12	0,350
	High school or equivalent	0,096	98	0,026	0,938	98	0,000
	Higher Degree	0,171	163	0,000	0,886	163	0,000
	Masters or PhD	0,191	107	0,000	0,834	107	0,000
Tower Score	Less than high school	0,380	12	0,000	0,645	12	0,000
	High school or equivalent	0,290	98	0,000	0,725	98	0,000
	Higher Degree	0,316	163	0,000	0,705	163	0,000
	Masters or PhD	0,331	107	0,000	0,671	107	0,000

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Tests of Normality - Performance Measures & Leadership Experience

Leader		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Total Score Value	None	0,102	217	0,000	0,967	217	0,000
	Less than 3 employees	0,138	59	0,007	0,953	59	0,024
	3 to 5 employees	0,176	40	0,003	0,927	40	0,013
	6 to 15 employees	0,139	37	0,070	0,945	37	0,068
	More than 15 employees	0,141	27	0,180	0,960	27	0,371
Enigmas Score	None	0,363	217	0,000	0,718	217	0,000
	Less than 3 employees	0,371	59	0,000	0,710	59	0,000
	3 to 5 employees	0,472	40	0,000	0,553	40	0,000
	6 to 15 employees	0,393	37	0,000	0,685	37	0,000
	More than 15 employees	0,433	27	0,000	0,629	27	0,000
Blind Path Score	None	0,143	217	0,000	0,901	217	0,000
	Less than 3 employees	0,154	59	0,001	0,897	59	0,000
	3 to 5 employees	0,173	40	0,004	0,878	40	0,000
	6 to 15 employees	0,157	37	0,021	0,923	37	0,014

		Kolmogorov-Smirnov			Shapiro-Wilk		
	More than 15 employees	0,154	27	0,101	0,895	27	0,010
Tower Score	None	0,288	217	0,000	0,759	217	0,000
	Less than 3 employees	0,339	59	0,000	0,611	59	0,000
	3 to 5 employees	0,419	40	0,000	0,575	40	0,000
	6 to 15 employees	0,333	37	0,000	0,616	37	0,000
	More than 15 employees	0,319	27	0,000	0,652	27	0,000

a. Lilliefors Significance Correction

Tables C3.2 - Normality Tests - Playfulness Measures within sample groups

Tests of Normality - Playfulness Measures and Education Level

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Edu_Level		Statistic	df	Sig.	Statistic	df	Sig.
Playfulness Trait	Less than high school	0,165	12	,200*	0,909	12	0,208
	High school or equivalent	0,141	98	0,000	0,939	98	0,000
	Higher Degree	0,117	163	0,000	0,968	163	0,001
	Masters or PhD	0,154	107	0,000	0,936	107	0,000
Playfulness Behavior	Less than high school	0,106	12	,200*	0,961	12	0,804
	High school or equivalent	0,108	98	0,007	0,965	98	0,010
	Higher Degree	0,088	163	0,004	0,980	163	0,016
	Masters or PhD	0,079	107	0,095	0,989	107	0,498
Playfulness Climate	Less than high school	0,240	12	0,054	0,862	12	0,051
	High school or equivalent	0,152	98	0,000	0,888	98	0,000
	Higher Degree	0,168	163	0,000	0,840	163	0,000
	Masters or PhD	0,142	107	0,000	0,901	107	0,000

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Tests of Normality - Playfulness Measures & Leadership Experience

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Leader		Statistic	df	Sig.	Statistic	df	Sig.
Playfulness Trait	None	0,137	217	0,000	0,955	217	0,000
	Less than 3 employees	0,130	59	0,015	0,954	59	0,026
	3 to 5 employees	0,142	40	0,041	0,943	40	0,044
	6 to 15 employees	0,150	37	0,036	0,905	37	0,004
	More than 15 employees	0,123	27	,200*	0,942	27	0,135
Playfulness Behavior	None	0,082	217	0,001	0,987	217	0,040
	Less than 3 employees	0,085	59	,200*	0,966	59	0,097
	3 to 5 employees	0,106	40	,200*	0,966	40	0,273
	6 to 15 employees	0,122	37	0,184	0,966	37	0,316
	More than 15 employees	0,165	27	0,058	0,967	27	0,516
Playfulness Climate	None	0,159	217	0,000	0,869	217	0,000
	Less than 3 employees	0,162	59	0,001	0,857	59	0,000
	3 to 5 employees	0,166	40	0,007	0,871	40	0,000
	6 to 15 employees	0,170	37	0,009	0,899	37	0,003
	More than 15 employees	0,166	27	0,054	0,896	27	0,011

*. This is a lower bound of the true significance.

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Tables C3.3 - Normality Tests - Team Trust Measures within sample groups

Tests of Normality – Team Trust Measures & Education Level

Edu_Level		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Initial Formative Team Trust	Less than high school	0,138	12	,200*	0,943	12	0,535
	High school or equivalent	0,109	98	0,006	0,932	98	0,000
	Higher Degree	0,090	163	0,003	0,955	163	0,000
	Masters or PhD	0,066	107	,200*	0,972	107	0,021
Final Formative Team Trust	Less than high school	0,243	12	0,048	0,896	12	0,143
	High school or equivalent	0,149	98	0,000	0,888	98	0,000
	Higher Degree	0,130	163	0,000	0,895	163	0,000
	Masters or PhD	0,110	107	0,003	0,922	107	0,000
Reflexive Team Trust	Less than high school	0,167	12	,200*	0,927	12	0,347
	High school or equivalent	0,136	98	0,000	0,920	98	0,000
	Higher Degree	0,120	163	0,000	0,919	163	0,000
	Masters or PhD	0,142	107	0,000	0,914	107	0,000
Formative Team Trust Impact	Less than high school	0,150	12	,200*	0,961	12	0,803
	High school or equivalent	0,097	98	0,023	0,955	98	0,002
	Higher Degree	0,068	163	0,065	0,989	163	0,233
	Masters or PhD	0,135	107	0,000	0,921	107	0,000

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Tests of Normality – Team Trust Measures & Leadership Experience

Leader		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Initial Formative Team Trust	None	0,079	217	0,002	0,955	217	0,000
	Less than 3 employees	0,112	59	0,062	0,954	59	0,026
	3 to 5 employees	0,141	40	0,043	0,927	40	0,013
	6 to 15 employees	0,110	37	,200*	0,934	37	0,029
	More than 15 employees	0,187	27	0,017	0,927	27	0,059
Final Formative Team Trust	None	0,121	217	0,000	0,916	217	0,000
	Less than 3 employees	0,133	59	0,011	0,884	59	0,000
	3 to 5 employees	0,116	40	0,186	0,920	40	0,008
	6 to 15 employees	0,161	37	0,017	0,796	37	0,000
	More than 15 employees	0,145	27	0,154	0,910	27	0,023
Reflexive Team Trust	None	0,127	217	0,000	0,926	217	0,000
	Less than 3 employees	0,154	59	0,001	0,873	59	0,000
	3 to 5 employees	0,126	40	0,112	0,943	40	0,042
	6 to 15 employees	0,168	37	0,010	0,916	37	0,008
	More than 15 employees	0,204	27	0,005	0,877	27	0,004
Formative Team Trust Impact	None	0,095	217	0,000	0,947	217	0,000
	Less than 3 employees	0,120	59	0,034	0,955	59	0,029
	3 to 5 employees	0,172	40	0,004	0,920	40	0,008
	6 to 15 employees	0,111	37	,200*	0,978	37	0,670
	More than 15 employees	0,109	27	,200*	0,964	27	0,455

*. This is a lower bound of the true significance.

Annex D – Results Before the Team Competition – Section D1, D2 and D3

Section D1 – Playfulness and Team Trust measured before the Team Competition

Table D1.1 - Playfulness and Team Trust measured before the team competition

Descriptive Statistics - before team competition

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Playfulness Trait	380	1,67	7,00	5,3526	1,06223	1,128	-0,633	0,125	0,274	0,250
Playfulness Behavior	380	2,17	7,00	5,0044	1,03188	1,065	-0,343	0,125	-0,189	0,250
Initial Formative Team Trust	380	1,75	7,00	5,4849	0,97703	0,955	-0,751	0,125	0,624	0,250
Valid N (listwise)	380									

Figure 9

BoxPlot Playfulness and Team Trust - Before Team Competition
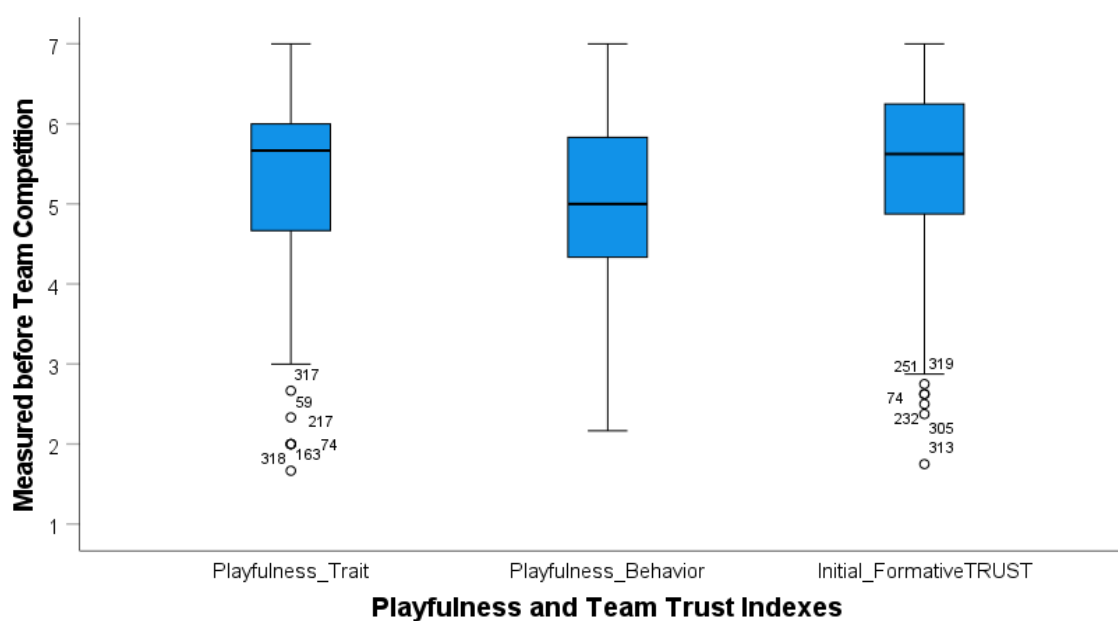
Tables D1.2 - Playfulness and Team Trust Measured before the Team Competition - Per Research Path

Descriptive Statistics - Before Team Competition (per Research Path)

Path_Code		N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
		Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Playfulness Trait	Control	150	2,00	7,00	5,4222	1,00533	1,011	-0,804	0,198	0,795	0,394
	Team Charter	101	1,67	7,00	5,2343	1,12501	1,266	-0,614	0,240	0,251	0,476
	Playfulness	129	2,00	7,00	5,3643	1,07645	1,159	-0,457	0,213	-0,150	0,423
Playfulness Behavior	Control	150	2,33	7,00	5,0033	1,01984	1,040	-0,405	0,198	-0,016	0,394
	Team Charter	101	2,17	7,00	4,9571	1,07772	1,161	-0,461	0,240	-0,101	0,476
	Playfulness	129	2,50	7,00	5,0426	1,01556	1,031	-0,155	0,213	-0,478	0,423
Initial Formative Team Trust	Control	150	2,75	7,00	5,5892	0,91195	0,832	-0,783	0,198	0,587	0,394
	Team Charter	101	2,50	7,00	5,4356	1,00041	1,001	-0,558	0,240	0,278	0,476
	Playfulness	129	1,75	7,00	5,4021	1,02709	1,055	-0,825	0,213	0,858	0,423
Valid N (listwise)	Control	150									
	Team Charter	101									
	Playfulness	129									

Tables D1.3 - Comparing Playfulness and Team Trust scores (before competition) across Research Path

Tests of Homogeneity of Variances - Before Team Competition - Comparing across Experimental Paths

		Levene Statistic	df1	df2	Sig.
Playfulness Trait	Based on Mean	1,739	2	377	0,177
	Based on Median	1,692	2	377	0,186
	Based on Median and with adjusted df	1,692	2	376,423	0,186
	Based on trimmed mean	1,749	2	377	0,175
Playfulness Behavior	Based on Mean	0,317	2	377	0,728
	Based on Median	0,276	2	377	0,759
	Based on Median and with adjusted df	0,276	2	375,889	0,759
	Based on trimmed mean	0,275	2	377	0,759
Initial Formative Team Trust	Based on Mean	1,072	2	377	0,343
	Based on Median	0,969	2	377	0,380
	Based on Median and with adjusted df	0,969	2	372,432	0,380
	Based on trimmed mean	1,056	2	377	0,349

ANOVA - Before Team Competition - Comparing across Experimental Paths

		Sum of Squares	df	Mean Square	F	Sig.
Playfulness Trait	Between Groups	2,158	2	1,079	0,956	0,385
	Within Groups	425,478	377	1,129		
	Total	427,636	379			
Playfulness Behavior	Between Groups	0,415	2	0,207	0,194	0,824
	Within Groups	403,133	377	1,069		
	Total	403,548	379			
Initial Formative Team Trust	Between Groups	2,760	2	1,380	1,449	0,236
	Within Groups	359,028	377	0,952		
	Total	361,788	379			

Section D2 – Compare Playfulness and Team Trust across Educational Levels and Leadership Experiences

Tables D2.1 - Comparing Playfulness and Team Trust scores (before competition) across Educational Levels

Tests of Homogeneity of Variances - Comparison between Education Levels

		Levene Statistic	df1	df2	Sig.
Playfulness Trait	Based on Mean	0,643	3	376	0,588
	Based on Median	0,455	3	376	0,714
	Based on Median and with adjusted df	0,455	3	331,727	0,714
	Based on trimmed mean	0,605	3	376	0,612
Playfulness Behavior	Based on Mean	1,843	3	376	0,139
	Based on Median	1,766	3	376	0,153
	Based on Median and with adjusted df	1,766	3	372,430	0,153
	Based on trimmed mean	1,825	3	376	0,142
Initial Formative Team Trust	Based on Mean	0,714	3	376	0,544
	Based on Median	0,685	3	376	0,562
	Based on Median and with adjusted df	0,685	3	361,675	0,562
	Based on trimmed mean	0,725	3	376	0,538

ANOVA - Comparison between Education Levels

		Sum of Squares	df	Mean Square	F	Sig.
Playfulness Trait	Between Groups	1,296	3	0,432	0,381	0,767
	Within Groups	426,341	376	1,134		
	Total	427,636	379			
Playfulness Behavior	Between Groups	7,686	3	2,562	2,433	0,065
	Within Groups	395,862	376	1,053		
	Total	403,548	379			
Initial Formative Team Trust	Between Groups	5,671	3	1,890	1,996	0,114
	Within Groups	356,117	376	0,947		
	Total	361,788	379			

Tables D2.2 - Comparing Playfulness and Team Trust scores (before competition) across Leadership Experiences

Tests of Homogeneity of Variances - Comparison between Leadership Experiences

		Levene Statistic	df1	df2	Sig.
Playfulness Trait	Based on Mean	0,537	4	375	0,709
	Based on Median	0,433	4	375	0,785
	Based on Median and with adjusted df	0,433	4	363,799	0,785
	Based on trimmed mean	0,542	4	375	0,705
Playfulness Behavior	Based on Mean	0,689	4	375	0,600
	Based on Median	0,669	4	375	0,614
	Based on Median and with adjusted df	0,669	4	360,989	0,614
	Based on trimmed mean	0,682	4	375	0,605
Initial Formative Team Trust	Based on Mean	1,377	4	375	0,241
	Based on Median	1,055	4	375	0,379
	Based on Median and with adjusted df	1,055	4	360,190	0,379
	Based on trimmed mean	1,282	4	375	0,277

ANOVA - Comparison between Leadership Experiences

		Sum of Squares	df	Mean Square	F	Sig.
Playfulness Trait	Between Groups	0,842	4	0,211	0,185	0,946
	Within Groups	426,794	375	1,138		
	Total	427,636	379			
Playfulness Behavior	Between Groups	13,938	4	3,484	3,354	0,010
	Within Groups	389,610	375	1,039		
	Total	403,548	379			
Initial Formative Team Trust	Between Groups	4,633	4	1,158	1,216	0,303
	Within Groups	357,155	375	0,952		
	Total	361,788	379			

Multiple Comparisons - Leadership Experiences

Dependent Variable				Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Playfulness Behavior	Scheffe	None	Less than 3 employees	-0,20396	0,14966	0,762	-0,6672	0,2593
			3 to 5 employees	-0,38497	0,17539	0,308	-0,9279	0,1580
			6 to 15 employees	-0,47179	0,18129	0,151	-1,0330	0,0894
			More than 15 employees	-0,47463	0,20801	0,269	-1,1185	0,1693
		Less than 3 employees	None	0,20396	0,14966	0,762	-0,2593	0,6672
			3 to 5 employees	-0,18100	0,20877	0,945	-0,8273	0,4653
			6 to 15 employees	-0,26783	0,21375	0,814	-0,9295	0,3939
			More than 15 employees	-0,27066	0,23683	0,860	-1,0038	0,4625
		3 to 5 employees	None	0,38497	0,17539	0,308	-0,1580	0,9279
			Less than 3 employees	0,18100	0,20877	0,945	-0,4653	0,8273
			6 to 15 employees	-0,08682	0,23250	0,998	-0,8065	0,6329
			More than 15 employees	-0,08966	0,25388	0,998	-0,8756	0,6963
		6 to 15 employees	None	0,47179	0,18129	0,151	-0,0894	1,0330
			Less than 3 employees	0,26783	0,21375	0,814	-0,3939	0,9295
			3 to 5 employees	0,08682	0,23250	0,998	-0,6329	0,8065
			More than 15 employees	-0,00284	0,25799	1,000	-0,8015	0,7958
		More than 15 employees	None	0,47463	0,20801	0,269	-0,1693	1,1185
			Less than 3 employees	0,27066	0,23683	0,860	-0,4625	1,0038
			3 to 5 employees	0,08966	0,25388	0,998	-0,6963	0,8756
			6 to 15 employees	0,00284	0,25799	1,000	-0,7958	0,8015
	Bonferroni	None	Less than 3 employees	-0,20396	0,14966	1,000	-0,6266	0,2186
			3 to 5 employees	-0,38497	0,17539	0,288	-0,8802	0,1103
			6 to 15 employees	-0,47179	0,18129	0,096	-0,9837	0,0401
			More than 15 employees	-0,47463	0,20801	0,231	-1,0620	0,1127
		Less than 3 employees	None	0,20396	0,14966	1,000	-0,2186	0,6266
			3 to 5 employees	-0,18100	0,20877	1,000	-0,7705	0,4085
			6 to 15 employees	-0,26783	0,21375	1,000	-0,8714	0,3358
			More than 15 employees	-0,27066	0,23683	1,000	-0,9394	0,3981
		3 to 5 employees	None	0,38497	0,17539	0,288	-0,1103	0,8802
			Less than 3 employees	0,18100	0,20877	1,000	-0,4085	0,7705
			6 to 15 employees	-0,08682	0,23250	1,000	-0,7433	0,5697
			More than 15 employees	-0,08966	0,25388	1,000	-0,8065	0,6272
		6 to 15 employees	None	0,47179	0,18129	0,096	-0,0401	0,9837
			Less than 3 employees	0,26783	0,21375	1,000	-0,3358	0,8714
			3 to 5 employees	0,08682	0,23250	1,000	-0,5697	0,7433
			More than 15 employees	-0,00284	0,25799	1,000	-0,7313	0,7257
		More than 15 employees	None	0,47463	0,20801	0,231	-0,1127	1,0620
			Less than 3 employees	0,27066	0,23683	1,000	-0,3981	0,9394
			3 to 5 employees	0,08966	0,25388	1,000	-0,6272	0,8065
			6 to 15 employees	0,00284	0,25799	1,000	-0,7257	0,7313
	Dunnett C	None	Less than 3 employees	-0,20396	0,16700		-0,6723	0,2644
			3 to 5 employees	-0,38497	0,16760		-0,8612	0,0913
			6 to 15 employees	-,47179*	0,16510		-0,9424	-0,0012
			More than 15 employees	-0,47463	0,19548		-1,0428	0,0936
		Less than 3 employees	None	0,20396	0,16700		-0,2644	0,6723
			3 to 5 employees	-0,18100	0,21584		-0,7935	0,4315
			6 to 15 employees	-0,26783	0,21390		-0,8759	0,3403
			More than 15 employees	-0,27066	0,23813		-0,9570	0,4157
		3 to 5 employees	None	0,38497	0,16760		-0,0913	0,8612
			Less than 3 employees	0,18100	0,21584		-0,4315	0,7935
			6 to 15 employees	-0,08682	0,21437		-0,7010	0,5274
			More than 15 employees	-0,08966	0,23855		-0,7815	0,6022

6 to 15 employees	None	,47179*	0,16510	0,0012	0,9424
	Less than 3 employees	0,26783	0,21390	-0,3403	0,8759
	3 to 5 employees	0,08682	0,21437	-0,5274	0,7010
	More than 15 employees	-0,00284	0,23680	-0,6908	0,6851
More than 15 employees	None	0,47463	0,19548	-0,0936	1,0428
	Less than 3 employees	0,27066	0,23813	-0,4157	0,9570
	3 to 5 employees	0,08966	0,23855	-0,6022	0,7815
	6 to 15 employees	0,00284	0,23680	-0,6851	0,6908

*. The mean difference is significant at the 0.05 level.

Section D3 – Playfulness and Team Trust against Professional Experience and Organizational Tenure

Tables D3.1 - Correlation of Playfulness and Team Trust Indexes (before the competition) against professional experience

Correlations - Professional Experience & Variables measured before Team Competition

		Professional Experience	Playfulness Trait	Playfulness Behavior	Initial Formative Team TRUST
Professional Experience	Pearson Correlation	1	-0,076	,200**	-0,018
	Sig. (2-tailed)		0,137	0,000	0,724
	N	380	380	380	380
Playfulness Trait	Pearson Correlation	-0,076	1	,401**	,117*
	Sig. (2-tailed)	0,137		0,000	0,022
	N	380	380	380	380
Playfulness Behavior	Pearson Correlation	,200**	,401**	1	,106*
	Sig. (2-tailed)	0,000	0,000		0,038
	N	380	380	380	380
Initial Formative Team Trust	Pearson Correlation	-0,018	,117*	,106*	1
	Sig. (2-tailed)	0,724	0,022	0,038	
	N	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Tables D3.2 - Correlation of Playfulness and Team Trust Indexes (before the competition) against organizational tenure

Correlations - Tenure & Variables measured before Team Competition

		Tenure	Playfulness Trait	Playfulness Behavior	Initial Formative Team TRUST
Tenure	Pearson Correlation	1	-0,022	,145**	0,011
	Sig. (2-tailed)		0,672	0,005	0,832
	N	380	380	380	380
Playfulness Trait	Pearson Correlation	-0,022	1	,401**	,117*
	Sig. (2-tailed)	0,672		0,000	0,022
	N	380	380	380	380
Playfulness Behavior	Pearson Correlation	,145**	,401**	1	,106*
	Sig. (2-tailed)	0,005	0,000		0,038
	N	380	380	380	380
Initial Formative Team Trust	Pearson Correlation	0,011	,117*	,106*	1
	Sig. (2-tailed)	0,832	0,022	0,038	
	N	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Annex E – Results After the Team Competition – Section E1 and E2

Section E1 – Playfulness and Team Trust measured after the Team Competition

Table E1.1 - Playfulness and Team Trust Measured after the Team Competition

Descriptive Statistics - After Team Competition

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Playfulness Climate	380	2,00	7,00	6,1955	0,80185	0,643	-1,331	0,125	2,395	0,250
Final Formative Team Trust	380	2,00	7,00	6,0181	0,85575	0,732	-1,143	0,125	1,673	0,250
Reflexive Team Trust	380	3,20	7,00	5,9847	0,85749	0,735	-0,749	0,125	-0,118	0,250
Formative Team Trust Impact	380	-1,88	4,13	0,5332	0,80047	0,641	0,810	0,125	1,909	0,250
Valid N (listwise)	380									

Figure 10

BoxPlot Playfulness and Team Trust - After Team Competition
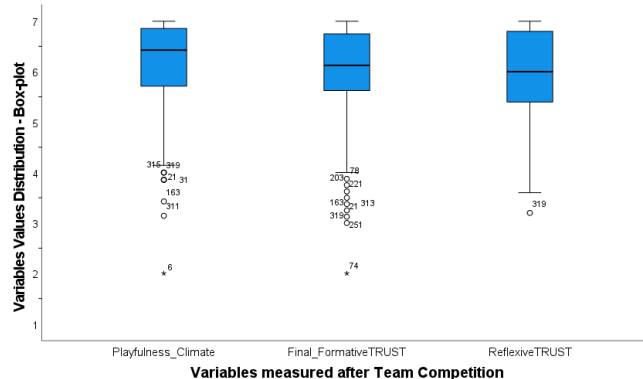
Figure 11

Impact on Formative Team Trust Levels after the Team Competition
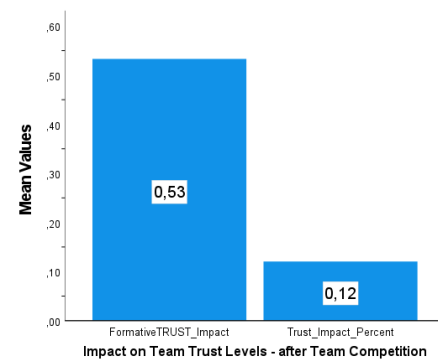
Figure 12

Impact on Formative Team Trust Levels after the Team Competition – Per Research Path
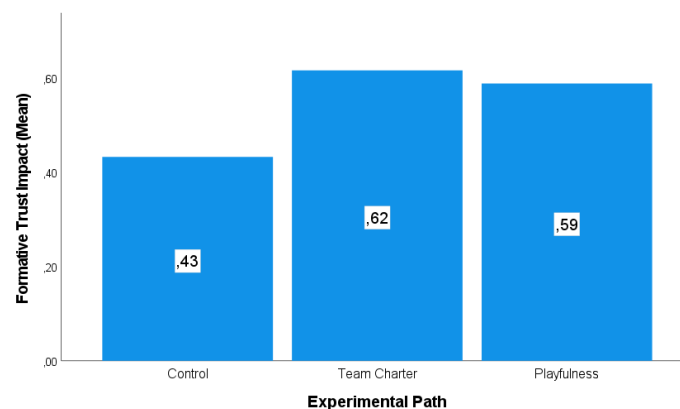
Tables E1.2 - Formative Team Trust Impact

Paired Samples Statistics - Formative Team Trust Impact

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Initial Formative Team Trust	5,4849	380	0,97703	0,05012
	Final Formative Team Trust	6,0181	380	0,85575	0,04390

Paired Samples Test - Formative Team Trust Impact

		Paired Differences							Significance	
					95% Confidence Interval of the Difference				One-Sided	Two-Sided
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	p	p
Pair 1	Initial Formative Team Trust - Final Formative Team Trust	-0,533	0,800	0,041	-0,614	-0,452	-12,99	379	0,00	0,00

Tables E1.3 - Comparing Playfulness and Team Trust scores (after competition) across Educational Levels

Tests of Homogeneity of Variances - Differences among Education Levels

		Levene Statistic	df1	df2	Sig.
Playfulness Climate	Based on Mean	2,721	3	376	0,044
	Based on Median	2,142	3	376	0,095
	Based on Median and with adjusted df	2,142	3	362,752	0,095
	Based on trimmed mean	2,511	3	376	0,058
Final Formative Team Trust	Based on Mean	0,513	3	376	0,673
	Based on Median	0,430	3	376	0,732
	Based on Median and with adjusted df	0,430	3	362,550	0,732
	Based on trimmed mean	0,450	3	376	0,717
Reflexive Team Trust	Based on Mean	0,611	3	376	0,608
	Based on Median	0,440	3	376	0,724
	Based on Median and with adjusted df	0,440	3	375,937	0,724
	Based on trimmed mean	0,482	3	376	0,695
Formative Team Trust Impact	Based on Mean	6,216	3	376	0,000
	Based on Median	5,542	3	376	0,001
	Based on Median and with adjusted df	5,542	3	330,219	0,001
	Based on trimmed mean	5,921	3	376	0,001

ANOVA - Differences among Education Levels

		Sum of Squares	df	Mean Square	F	Sig.
Playfulness Climate	Between Groups	2,750	3	0,917	1,431	0,233
	Within Groups	240,932	376	0,641		
	Total	243,682	379			

Final Formative Team Trust	Between Groups	0,605	3	0,202	0,274	0,844
	Within Groups	276,943	376	0,737		
	Total	277,547	379			
Reflexive Team Trust	Between Groups	0,859	3	0,286	0,388	0,762
	Within Groups	277,812	376	0,739		
	Total	278,671	379			
Formative Team Trust Impact	Between Groups	7,005	3	2,335	3,723	0,012
	Within Groups	235,841	376	0,627		
	Total	242,846	379			

Robust Tests of Equality of Means - Differences among Education Levels

		Statistic[a]	df1	df2	Sig.
Playfulness Climate	Welch	1,156	3	51,622	0,335
	Brown-Forsythe	1,503	3	122,406	0,217
Final Formative Team Trust	Welch	0,252	3	51,576	0,860
	Brown-Forsythe	0,288	3	106,926	0,834
Reflexive Team Trust	Welch	0,383	3	50,964	0,766
	Brown-Forsythe	0,382	3	93,531	0,766
Formative Team Trust Impact	Welch	2,649	3	48,833	0,059
	Brown-Forsythe	2,164	3	28,999	0,114

a. Asymptotically F distributed.

Tables E1.4 - Comparing Playfulness and Team Trust scores (after competition) across Leadership Experiences

Hypothesis Test Summary - Comparison across Leadership Experiences

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of Playfulness Climate is the same across categories of Leader.	Independent-Samples Kruskal-Wallis Test	0,897	Retain the null hypothesis.
2	The distribution of Final Formative Team Trust is the same across categories of Leader.	Independent-Samples Kruskal-Wallis Test	0,850	Retain the null hypothesis.
3	The distribution of Reflexive Team Trust is the same across categories of Leader.	Independent-Samples Kruskal-Wallis Test	0,397	Retain the null hypothesis.
4	The distribution of Formative Team Trust Impact is the same across categories of Leader.	Independent-Samples Kruskal-Wallis Test	0,070	Retain the null hypothesis.

a. The significance level is ,050.
b. Asymptotic significance is displayed.

Tables E1.5 - Correlation of Playfulness and Team Trust Indexes (after the competition) against professional experience

Correlations - Professional Experience & Variables measured after the Team Competition

		Professional Experience	Playfulness Climate	Final Formative Team TRUST	Reflexive Team TRUST	Formative Team TRUST Impact
Professional Experience	Pearson Correlation	1	0,039	0,014	-0,015	0,037
	Sig. (2-tailed)		0,454	0,790	0,776	0,474
	N	380	380	380	380	380
Playfulness Climate	Pearson Correlation	0,039	1	,659**	,638**	,165**
	Sig. (2-tailed)	0,454		0,000	0,000	0,001
	N	380	380	380	380	380
Final Formative Team Trust	Pearson Correlation	0,014	,659**	1	,792**	,305**
	Sig. (2-tailed)	0,790	0,000		0,000	0,000
	N	380	380	380	380	380
Reflexive Team Trust	Pearson Correlation	-0,015	,638**	,792**	1	,209**
	Sig. (2-tailed)	0,776	0,000	0,000		0,000
	N	380	380	380	380	380
Formative Team Trust Impact	Pearson Correlation	0,037	,165**	,305**	,209**	1
	Sig. (2-tailed)	0,474	0,001	0,000	0,000	
	N	380	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

Tables E1.6 - Correlation of Playfulness and Team Trust Indexes (after the competition) against organizational tenure

Correlations - Tenure & Variables measured after the Team Competition

		Tenure	Playfulness Climate	Final Formative Team TRUST	Reflexive Team TRUST	Formative Team TRUST Impact
Tenure	Pearson Correlation	1	0,082	0,074	0,028	0,066
	Sig. (2-tailed)		0,111	0,150	0,590	0,200
	N	380	380	380	380	380
Playfulness Climate	Pearson Correlation	0,082	1	,659**	,638**	,165**
	Sig. (2-tailed)	0,111		0,000	0,000	0,001
	N	380	380	380	380	380
Final Formative Team Trust	Pearson Correlation	0,074	,659**	1	,792**	,305**
	Sig. (2-tailed)	0,150	0,000		0,000	0,000
	N	380	380	380	380	380
Reflexive Team Trust	Pearson Correlation	0,028	,638**	,792**	1	,209**
	Sig. (2-tailed)	0,590	0,000	0,000		0,000
	N	380	380	380	380	380
Formative Team Trust Impact	Pearson Correlation	0,066	,165**	,305**	,209**	1
	Sig. (2-tailed)	0,200	0,001	0,000	0,000	
	N	380	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

Tables E2.1 – Team Performance Scores at the Team Competition

Descriptive Statistics - Team Performance Score (Tasks and Total)

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Tower Score	380	2,50	120,00	99,782	30,628	938,097	-1,718	0,125	2,293	0,250
Enigmas Score	380	0,00	120,02	96,460	33,233	1104,414	-1,126	0,125	0,308	0,250
Blind Path Score	380	0,00	120,00	86,896	24,866	618,341	-0,993	0,125	1,565	0,250
Total Score %	380	37,0%	100,0%	0,699	0,143	205,714	-0,097	0,125	-0,072	0,250
Total Score Value	380	151,80	410,02	286,428	58,805	3458,058	-0,097	0,125	-0,072	0,250
Valid N (listwise)	380									

Figure 13

Boxplot - Performance Scores per Team Competition Task
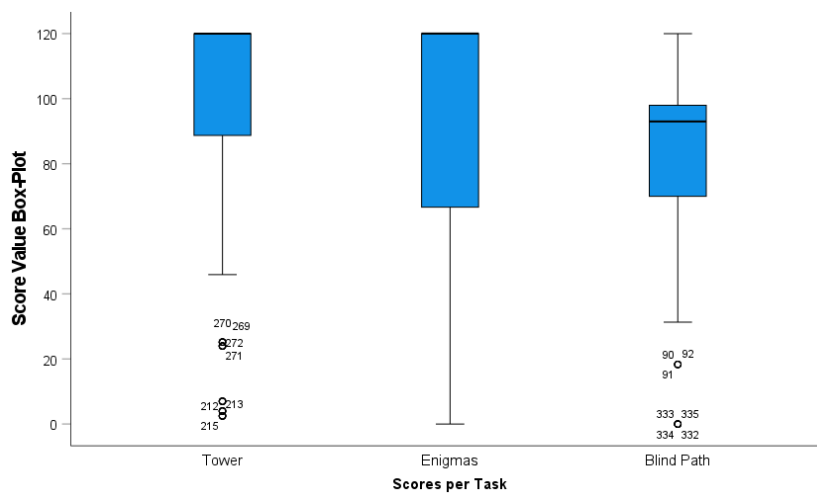
Figure 14

Average Total Score Value per Education Level
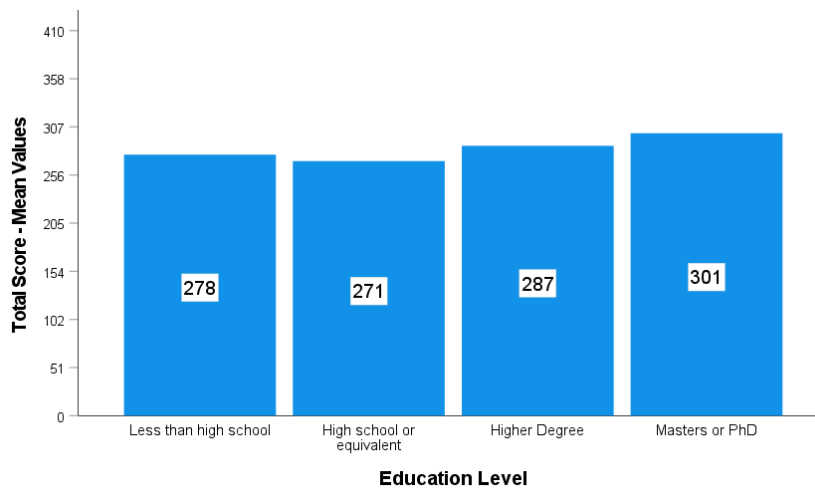
Tables E2.2 - Comparing Team Performance Total Scores across Educational Levels

Tests of Homogeneity of Variances - Comparison among Education Levels

		Levene Statistic	df1	df2	Sig.
Total Score Value	Based on Mean	1,245	3	376	0,293
	Based on Median	1,276	3	376	0,282
	Based on Median and with adjusted df	1,276	3	353,017	0,282
	Based on trimmed mean	1,297	3	376	0,275

ANOVA - Comparison among Education Levels

Total Score Value

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	46294,640	3	15431,547	4,589	0,004
Within Groups	1264309,463	376	3362,525		
Total	1310604,103	379			

Multiple Comparisons - Comparison among Education Levels

Dependent Variable:

(I) Edu_Level			Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Scheffe	Less than high school	High school or equivalent	6,980	17,735	0,984	-42,823	56,783
		Higher Degree	-9,396	17,345	0,961	-58,103	39,311
		Masters or PhD	-22,781	17,653	0,645	-72,354	26,793
	High school or equivalent	Less than high school	-6,980	17,735	0,984	-56,783	42,823
		Higher Degree	-16,376	7,412	0,183	-37,191	4,439
		Masters or PhD	-29,76057*	8,108	0,004	-52,529	-6,992
	Higher Degree	Less than high school	9,396	17,345	0,961	-39,311	58,103
		High school or equivalent	16,376	7,412	0,183	-4,439	37,191
		Masters or PhD	-13,385	7,215	0,330	-33,646	6,876
	Masters or PhD	Less than high school	22,781	17,653	0,645	-26,793	72,354
		High school or equivalent	29,76057*	8,108	0,004	6,992	52,529
		Higher Degree	13,385	7,215	0,330	-6,876	33,646
Bonferroni	Less than high school	High school or equivalent	6,980	17,735	1,000	-40,058	54,018
		Higher Degree	-9,396	17,345	1,000	-55,399	36,607
		Masters or PhD	-22,781	17,653	1,000	-69,602	24,041
	High school or equivalent	Less than high school	-6,980	17,735	1,000	-54,018	40,058
		Higher Degree	-16,376	7,412	0,167	-36,035	3,284
		Masters or PhD	-29,76057*	8,108	0,002	-51,265	-8,256
	Higher Degree	Less than high school	9,396	17,345	1,000	-36,607	55,399
		High school or equivalent	16,376	7,412	0,167	-3,284	36,035
		Masters or PhD	-13,385	7,215	0,386	-32,521	5,751
	Masters or PhD	Less than high school	22,781	17,653	1,000	-24,041	69,602
		High school or equivalent	29,76057*	8,108	0,002	8,256	51,265
		Higher Degree	13,385	7,215	0,386	-5,751	32,521

Dunnett C	Less than high school	High school or equivalent	6,980	20,431		-53,657	67,617
		Higher Degree	-9,396	19,771		-68,533	49,741
		Masters or PhD	-22,781	20,073		-82,604	37,042
	High school or equivalent	Less than high school	-6,980	20,431		-67,617	53,657
		Higher Degree	-16,376	7,843		-36,838	4,087
		Masters or PhD	-29,76057*	8,575		-52,163	-7,358
	Higher Degree	Less than high school	9,396	19,771		-49,741	68,533
		High school or equivalent	16,376	7,843		-4,087	36,838
		Masters or PhD	-13,385	6,855		-31,243	4,473
	Masters or PhD	Less than high school	22,781	20,073		-37,042	82,604
		High school or equivalent	29,76057*	8,575		7,358	52,163
		Higher Degree	13,385	6,855		-4,473	31,243

*. The mean difference is significant at the 0.05 level.

Tables E2.3 - Comparing Team Performance Total Scores across Leadership Experiences

Tests of Homogeneity of Variances - Comparing across Leadership Experiences

		Levene Statistic	df1	df2	Sig.
Total Score Value	Based on Mean	0,765	4	375	0,548
	Based on Median	0,928	4	375	0,447
	Based on Median and with adjusted df	0,928	4	370,622	0,447
	Based on trimmed mean	0,765	4	375	0,548

ANOVA - Comparing across Leadership Experiences

Total Score Value

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11030,334	4	2757,583	0,796	0,529
Within Groups	1299573,769	375	3465,530		
Total	1310604,103	379			

Tables E2.4 - Correlation of Team Performance Total Scores against professional experience

Correlations - Performance and Professional Experience

		Professional Experience	Tower Score	Enigmas Score	Blind Path Score	Total Score Value
Professional Experience	Pearson Correlation	1	-0,023	0,047	-,193**	-0,081
	Sig. (2-tailed)		0,651	0,362	0,000	0,115
	N	380	380	380	380	380
Tower Score	Pearson Correlation	-0,023	1	-,106*	,135**	,555**
	Sig. (2-tailed)	0,651		0,038	0,009	0,000
	N	380	380	380	380	380
Enigmas Score	Pearson Correlation	0,047	-,106*	1	0,089	,587**
	Sig. (2-tailed)	0,362	0,038		0,082	0,000
	N	380	380	380	380	380
Blind Path Score	Pearson Correlation	-,193**	,135**	0,089	1	,618**
	Sig. (2-tailed)	0,000	0,009	0,082		0,000
	N	380	380	380	380	380

| | | | | Enigmas | Blind Path | Total Score |
			Tower Score	Score	Score	Value
Total Score Value	Pearson Correlation	-0,081	,555**	,587**	,618**	1
	Sig. (2-tailed)	0,115	0,000	0,000	0,000	
	N	380	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Tables E2.5 - Correlation of Team Performance Total Scores against organizational tenure

Correlations - Performance and Organizational Tenure

		Tenure	Tower Score	Enigmas Score	Blind Path Score	Total Score Value
Tenure	Pearson Correlation	1	0,014	-0,017	-,179**	-0,087
	Sig. (2-tailed)		0,791	0,734	0,000	0,091
	N	380	380	380	380	380
Tower Score	Pearson Correlation	0,014	1	-,106*	,135**	,555**
	Sig. (2-tailed)	0,791		0,038	0,009	0,000
	N	380	380	380	380	380
Enigmas Score	Pearson Correlation	-0,017	-,106*	1	0,089	,587**
	Sig. (2-tailed)	0,734	0,038		0,082	0,000
	N	380	380	380	380	380
Blind Path Score	Pearson Correlation	-,179**	,135**	0,089	1	,618**
	Sig. (2-tailed)	0,000	0,009	0,082		0,000
	N	380	380	380	380	380
Total Score Value	Pearson Correlation	-0,087	,555**	,587**	,618**	1
	Sig. (2-tailed)	0,091	0,000	0,000	0,000	
	N	380	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Annex F – Hypothesis Analysis – Section F1, F2, F3 and F4

<u>Section F1 – Playfulness and Team Performance</u>

Tables F1.1 - Correlation between Playfulness Trait and Team Performance Scores

Correlations - Playfulness Trait & Performance

		Playfulness Trait	Total Score Value	Tower Score	Enigmas Score	Blind Path Score
Playfulness Trait	Pearson Correlation	1	-0,035	0,003	-,102[*]	0,012
	Sig. (2-tailed)		0,495	0,950	0,046	0,812
	N	380	380	380	380	380
Total Score Value	Pearson Correlation	-0,035	1	,555[**]	,587[**]	,618[**]
	Sig. (2-tailed)	0,495		0,000	0,000	0,000
	N	380	380	380	380	380
Tower Score	Pearson Correlation	0,003	,555[**]	1	-,106[*]	,135[**]
	Sig. (2-tailed)	0,950	0,000		0,038	0,009
	N	380	380	380	380	380
Enigmas Score	Pearson Correlation	-,102[*]	,587[**]	-,106[*]	1	0,089
	Sig. (2-tailed)	0,046	0,000	0,038		0,082
	N	380	380	380	380	380
Blind Path Score	Pearson Correlation	0,012	,618[**]	,135[**]	0,089	1
	Sig. (2-tailed)	0,812	0,000	0,009	0,082	
	N	380	380	380	380	380

[*]. Correlation is significant at the 0.05 level (2-tailed).
[**]. Correlation is significant at the 0.01 level (2-tailed).

Tables F1.2 - Correlation between Playfulness Behavior and Team Performance Scores

Correlations - Playfulness Behavior & Performance

		Playfulness Behavior	Total Score Value	Tower Score	Enigmas Score	Blind Path Score
Playfulness Behavior	Pearson Correlation	1	0,003	0,051	-0,037	-0,038
	Sig. (2-tailed)		0,953	0,323	0,471	0,462
	N	380	380	380	380	380
Total Score Value	Pearson Correlation	0,003	1	,555[**]	,587[**]	,618[**]
	Sig. (2-tailed)	0,953		0,000	0,000	0,000
	N	380	380	380	380	380
Tower Score	Pearson Correlation	0,051	,555[**]	1	-,106[*]	,135[**]
	Sig. (2-tailed)	0,323	0,000		0,038	0,009
	N	380	380	380	380	380
Enigmas Score	Pearson Correlation	-0,037	,587[**]	-,106[*]	1	0,089
	Sig. (2-tailed)	0,471	0,000	0,038		0,082
	N	380	380	380	380	380
Blind Path Score	Pearson Correlation	-0,038	,618[**]	,135[**]	0,089	1
	Sig. (2-tailed)	0,462	0,000	0,009	0,082	
	N	380	380	380	380	380

[**]. Correlation is significant at the 0.01 level (2-tailed).

[*]. Correlation is significant at the 0.05 level (2-tailed).

Tables F1.3 - Correlation between Playfulness Climate and Team Performance Scores

Correlations - Playfulness Climate & Performance

		Playfulness Climate	Total Score Value	Tower Score	Enigmas Score	Blind Path Score
Playfulness Climate	Pearson Correlation	1	,124*	,187**	-0,090	,145**
	Sig. (2-tailed)		0,016	0,000	0,078	0,005
	N	380	380	380	380	380
Total Score Value	Pearson Correlation	,124*	1	,555**	,587**	,618**
	Sig. (2-tailed)	0,016		0,000	0,000	0,000
	N	380	380	380	380	380
Tower Score	Pearson Correlation	,187**	,555**	1	-,106*	,135**
	Sig. (2-tailed)	0,000	0,000		0,038	0,009
	N	380	380	380	380	380
Enigmas Score	Pearson Correlation	-0,090	,587**	-,106*	1	0,089
	Sig. (2-tailed)	0,078	0,000	0,038		0,082
	N	380	380	380	380	380
Blind Path Score	Pearson Correlation	,145**	,618**	,135**	0,089	1
	Sig. (2-tailed)	0,005	0,000	0,009	0,082	
	N	380	380	380	380	380

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Tables F1.4 - Correlation within Playfulness Measures

Correlations

		Playfulness Trait	Playfulness Behavior	Playfulness Climate
Playfulness Trait	Pearson Correlation	1	,401**	,163**
	Sig. (2-tailed)		0,000	0,001
	N	380	380	380
Playfulness Behavior	Pearson Correlation	,401**	1	,166**
	Sig. (2-tailed)	0,000		0,001
	N	380	380	380
Playfulness Climate	Pearson Correlation	,163**	,166**	1
	Sig. (2-tailed)	0,001	0,001	
	N	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

Tables F1.5 - Team Performance Total Scores per Research Path and Team Competition Task

Descriptives - Performance Scores per Task and per Experimental Path

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
Tower Score	Control	150	98,103	30,774	2,513	93,138	103,068	4,00	120,00
	Team Charter	101	104,662	34,575	3,440	97,836	111,487	2,50	120,00
	Playfulness	129	97,914	26,753	2,355	93,254	102,575	24,00	120,00
	Total	380	99,782	30,628	1,571	96,693	102,872	2,50	120,00
Enigmas Score	Control	150	88,416	38,326	3,129	82,232	94,599	0,00	120,02
	Team Charter	101	106,570	23,590	2,347	101,913	111,226	61,68	120,02
	Playfulness	129	97,898	31,095	2,738	92,481	103,315	33,34	120,02
	Total	380	96,460	33,233	1,705	93,108	99,812	0,00	120,02
Blind Path Score	Control	150	80,986	24,887	2,032	76,971	85,002	18,33	120,00
	Team Charter	101	92,232	15,487	1,541	89,175	95,290	64,66	120,00
	Playfulness	129	89,591	29,186	2,570	84,506	94,675	0,00	120,00
	Total	380	86,896	24,866	1,276	84,388	89,405	0,00	120,00
Total Score Value	Control	150	267,505	48,064	3,924	259,751	275,260	179,64	338,30
	Team Charter	101	307,919	50,875	5,062	297,876	317,963	187,18	410,02
	Playfulness	129	291,605	68,679	6,047	279,640	303,570	151,80	410,02
	Total	380	286,428	58,805	3,017	280,497	292,360	151,80	410,02

Tables F1.6 - Comparing Team Performance Total Scores across Research Path

Tests of Homogeneity of Variances - Performance per Task and per Experimental Path

		Levene Statistic	df1	df2	Sig.
Tower Score	Based on Mean	0,002	2	377	0,998
	Based on Median	1,754	2	377	0,175
	Based on Median and with adjusted df	1,754	2	362,720	0,175
	Based on trimmed mean	0,293	2	377	0,746
Enigmas Score	Based on Mean	24,746	2	377	0,000
	Based on Median	9,606	2	377	0,000
	Based on Median and with adjusted df	9,606	2	335,983	0,000
	Based on trimmed mean	22,827	2	377	0,000
Blind Path Score	Based on Mean	13,812	2	377	0,000
	Based on Median	10,849	2	377	0,000
	Based on Median and with adjusted df	10,849	2	332,464	0,000
	Based on trimmed mean	13,046	2	377	0,000
Total Score Value	Based on Mean	8,482	2	377	0,000
	Based on Median	6,787	2	377	0,001
	Based on Median and with adjusted df	6,787	2	308,924	0,001
	Based on trimmed mean	8,433	2	377	0,000

ANOVA - Performance per Task and per Experimental Path

		Sum of Squares	df	Mean Square	F	Sig.
Tower Score	Between Groups	3277,62	2,00	1638,81	1,75	0,175
	Within Groups	352261,00	377,00	934,38		
	Total	355538,63	379,00			
Enigmas Score	Between Groups	20296,07	2,00	10148,04	9,61	0,000
	Within Groups	398276,74	377,00	1056,44		
	Total	418572,81	379,00			
Blind Path Score	Between Groups	9051,38	2,00	4525,69	7,57	0,001
	Within Groups	225300,04	377,00	597,61		
	Total	234351,43	379,00			
Total Score Value	Between Groups	103816,01	2,00	51908,00	16,22	0,000
	Within Groups	1206788,09	377,00	3201,03		
	Total	1310604,10	379,00			

Robust Tests of Equality of Means - Performance per Task and per Experimental Path

		Statistic[a]	df1	df2	Sig.
Tower Score	Welch	1,496	2	229,76	0,226
	Brown-Forsythe	1,704	2	317,51	0,184
Enigmas Score	Welch	10,946	2	250,86	0,000
	Brown-Forsythe	10,482	2	368,99	0,000
Blind Path Score	Welch	9,829	2	246,31	0,000
	Brown-Forsythe	8,128	2	332,80	0,000
Total Score Value	Welch	20,708	2	230,86	0,000
	Brown-Forsythe	16,185	2	328,95	0,000

a. Asymptotically F distributed.

Multiple Comparisons - Performance per Task and per Experimental Path

Dependent Variable				Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Total Score Value	Scheffe	Control	Team Charter	-40,41381*	7,28241	0,000	-58,3104	-22,5172
			Playfulness	-24,09948*	6,79370	0,002	-40,7950	-7,4039
		Team Charter	Control	40,41381*	7,28241	0,000	22,5172	58,3104
			Playfulness	16,31432	7,51715	0,096	-2,1591	34,7878
		Playfulness	Control	24,09948*	6,79370	0,002	7,4039	40,7950
			Team Charter	-16,31432	7,51715	0,096	-34,7878	2,1591
	Bonferroni	Control	Team Charter	-40,41381*	7,28241	0,000	-57,9259	-22,9017
			Playfulness	-24,09948*	6,79370	0,001	-40,4364	-7,7626
		Team Charter	Control	40,41381*	7,28241	0,000	22,9017	57,9259
			Playfulness	16,31432	7,51715	0,092	-1,7623	34,3909
		Playfulness	Control	24,09948*	6,79370	0,001	7,7626	40,4364
			Team Charter	-16,31432	7,51715	0,092	-34,3909	1,7623
	Dunnett C	Control	Team Charter	-40,41381*	6,40528		-55,6245	-25,2032
			Playfulness	-24,09948*	7,20868		-41,1850	-7,0140
		Team Charter	Control	40,41381*	6,40528		25,2032	55,6245
			Playfulness	16,31432	7,88610		-2,4113	35,0400
		Playfulness	Control	24,09948*	7,20868		7,0140	41,1850
			Team Charter	-16,31432	7,88610		-35,0400	2,4113
Enigmas Score	Scheffe	Control	Team Charter	-18,15390*	4,18362	0,000	-28,4352	-7,8726
			Playfulness	-9,48254	3,90286	0,053	-19,0738	0,1088
		Team Charter	Control	18,15390*	4,18362	0,000	7,8726	28,4352
			Playfulness	8,67137	4,31847	0,135	-1,9413	19,2840
		Playfulness	Control	9,48254	3,90286	0,053	-0,1088	19,0738
			Team Charter	-8,67137	4,31847	0,135	-19,2840	1,9413

		(I)	(J)	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
	Bonferroni	Control	Team Charter	-18,15390*	4,18362	0,000	-28,2143	-8,0935
			Playfulness	-9,48254*	3,90286	0,047	-18,8678	-0,0973
		Team Charter	Control	18,15390*	4,18362	0,000	8,0935	28,2143
			Playfulness	8,67137	4,31847	0,136	-1,7133	19,0560
		Playfulness	Control	9,48254*	3,90286	0,047	0,0973	18,8678
			Team Charter	-8,67137	4,31847	0,136	-19,0560	1,7133
	Dunnett C	Control	Team Charter	-18,15390*	3,91180		-27,4311	-8,8767
			Playfulness	-9,48254	4,15789		-19,3329	0,3678
		Team Charter	Control	18,15390*	3,91180		8,8767	27,4311
			Playfulness	8,67137*	3,60629		0,1079	17,2349
		Playfulness	Control	9,48254	4,15789		-0,3678	19,3329
			Team Charter	-8,67137*	3,60629		-17,2349	-0,1079
Blind Path Score	Scheffe	Control	Team Charter	-11,24601*	3,14659	0,002	-18,9788	-3,5132
			Playfulness	-8,60423*	2,93543	0,014	-15,8181	-1,3904
		Team Charter	Control	11,24601*	3,14659	0,002	3,5132	18,9788
			Playfulness	2,64178	3,24802	0,719	-5,3402	10,6238
		Playfulness	Control	8,60423*	2,93543	0,014	1,3904	15,8181
			Team Charter	-2,64178	3,24802	0,719	-10,6238	5,3402
	Bonferroni	Control	Team Charter	-11,24601*	3,14659	0,001	-18,8127	-3,6794
			Playfulness	-8,60423*	2,93543	0,011	-15,6631	-1,5454
		Team Charter	Control	11,24601*	3,14659	0,001	3,6794	18,8127
			Playfulness	2,64178	3,24802	1,000	-5,1688	10,4523
		Playfulness	Control	8,60423*	2,93543	0,011	1,5454	15,6631
			Team Charter	-2,64178	3,24802	1,000	-10,4523	5,1688
	Dunnett C	Control	Team Charter	-11,24601*	2,55027		-17,2944	-5,1976
			Playfulness	-8,60423*	3,27599		-16,3676	-0,8408
		Team Charter	Control	11,24601*	2,55027		5,1976	17,2944
			Playfulness	2,64178	2,99632		-4,4696	9,7531
		Playfulness	Control	8,60423*	3,27599		0,8408	16,3676
			Team Charter	-2,64178	2,99632		-9,7531	4,4696
Tower Score	Scheffe	Control	Team Charter	-6,55845	3,93452	0,251	-16,2276	3,1107
			Playfulness	0,18884	3,67048	0,999	-8,8314	9,2091
		Team Charter	Control	6,55845	3,93452	0,251	-3,1107	16,2276
			Playfulness	6,74729	4,06135	0,253	-3,2335	16,7281
		Playfulness	Control	-0,18884	3,67048	0,999	-9,2091	8,8314
			Team Charter	-6,74729	4,06135	0,253	-16,7281	3,2335
	Bonferroni	Control	Team Charter	-6,55845	3,93452	0,289	-16,0198	2,9029
			Playfulness	0,18884	3,67048	1,000	-8,6376	9,0153
		Team Charter	Control	6,55845	3,93452	0,289	-2,9029	16,0198
			Playfulness	6,74729	4,06135	0,292	-3,0191	16,5137
		Playfulness	Control	-0,18884	3,67048	1,000	-9,0153	8,6376
			Team Charter	-6,74729	4,06135	0,292	-16,5137	3,0191
	Dunnett C	Control	Team Charter	-6,55845	4,26020		-16,6765	3,5596
			Playfulness	0,18884	3,44409		-7,9709	8,3486
		Team Charter	Control	6,55845	4,26020		-3,5596	16,6765
			Playfulness	6,74729	4,16938		-3,1617	16,6563
		Playfulness	Control	-0,18884	3,44409		-8,3486	7,9709
			Team Charter	-6,74729	4,16938		-16,6563	3,1617

*. The mean difference is significant at the 0.05 level.

Tables F2.1 - Correlations between Playfulness Trait and Team Trust Indexes

Correlations - Playfulness Trait & Team Trust

		Playfulness Trait	Initial Formative Team Trust	Final Formative Team Trust	Reflexive Team Trust	Formative Team Trust Impact	Team Trust Impact Percent
Playfulness Trait	Pearson Correlation	1	,117[*]	,163[**]	,169[**]	0,031	0,021
	Sig. (2-tailed)		0,022	0,001	0,001	0,553	0,687
	N	380	380	380	380	380	380
Initial Formative Team Trust	Pearson Correlation	,117[*]	1	,626[**]	,523[**]	-,552[**]	-,622[**]
	Sig. (2-tailed)	0,022		0,000	0,000	0,000	0,000
	N	380	380	380	380	380	380
Final Formative Team Trust	Pearson Correlation	,163[**]	,626[**]	1	,792[**]	,305[**]	,168[**]
	Sig. (2-tailed)	0,001	0,000		0,000	0,000	0,001
	N	380	380	380	380	380	380
Reflexive Team Trust	Pearson Correlation	,169[**]	,523[**]	,792[**]	1	,209[**]	0,083
	Sig. (2-tailed)	0,001	0,000	0,000		0,000	0,108
	N	380	380	380	380	380	380
Formative Team Trust Impact	Pearson Correlation	0,031	-,552[**]	,305[**]	,209[**]	1	,939[**]
	Sig. (2-tailed)	0,553	0,000	0,000	0,000		0,000
	N	380	380	380	380	380	380
Team Trust Impact Percent	Pearson Correlation	0,021	-,622[**]	,168[**]	0,083	,939[**]	1
	Sig. (2-tailed)	0,687	0,000	0,001	0,108	0,000	
	N	380	380	380	380	380	380

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Tables F2.2 - Correlations between Playfulness Behavior and Team Trust Indexes

Correlations - Playfulness Behavior & Team Trust

		Playfulness Behavior	Initial Formative Team Trust	Final Formative Team Trust	Reflexive Team Trust	Formative Team Trust Impact	Team Trust Impact Percent
Playfulness Behavior	Pearson Correlation	1	,106[*]	,176[**]	,176[**]	0,058	0,058
	Sig. (2-tailed)		0,038	0,001	0,001	0,261	0,260
	N	380	380	380	380	380	380
Initial Formative Team Trust	Pearson Correlation	,106[*]	1	,626[**]	,523[**]	-,552[**]	-,622[**]
	Sig. (2-tailed)	0,038		0,000	0,000	0,000	0,000
	N	380	380	380	380	380	380
Final Formative Team Trust	Pearson Correlation	,176[**]	,626[**]	1	,792[**]	,305[**]	,168[**]
	Sig. (2-tailed)	0,001	0,000		0,000	0,000	0,001
	N	380	380	380	380	380	380
Reflexive Team Trust	Pearson Correlation	,176[**]	,523[**]	,792[**]	1	,209[**]	0,083
	Sig. (2-tailed)	0,001	0,000	0,000		0,000	0,108
	N	380	380	380	380	380	380

Formative Team Trust Impact	Pearson Correlation	0,058	-,552**	,305**	,209**	1	,939**
	Sig. (2-tailed)	0,261	0,000	0,000	0,000		0,000
	N	380	380	380	380	380	380
Team Trust Impact Percent	Pearson Correlation	0,058	-,622**	,168**	0,083	,939**	1
	Sig. (2-tailed)	0,260	0,000	0,001	0,108	0,000	
	N	380	380	380	380	380	380

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Tables F2.3 - Correlations between Playfulness Climate and Team Trust Indexes

Correlations - Playfulness Climate & Team Trust

		Playfulness Climate	Initial Formative Team Trust	Final Formative Team Trust	Reflexive Team Trust	Formative Team Trust Impact	Team Trust Impact Percent
Playfulness Climate	Pearson Correlation	1	,442**	,659**	,638**	,165**	0,095
	Sig. (2-tailed)		0,000	0,000	0,000	0,001	0,064
	N	380	380	380	380	380	380
Initial Formative Team Trust	Pearson Correlation	,442**	1	,626**	,523**	-,552**	-,622**
	Sig. (2-tailed)	0,000		0,000	0,000	0,000	0,000
	N	380	380	380	380	380	380
Final Formative Team Trust	Pearson Correlation	,659**	,626**	1	,792**	,305**	,168**
	Sig. (2-tailed)	0,000	0,000		0,000	0,000	0,001
	N	380	380	380	380	380	380
Reflexive Team Trust	Pearson Correlation	,638**	,523**	,792**	1	,209**	0,083
	Sig. (2-tailed)	0,000	0,000	0,000		0,000	0,108
	N	380	380	380	380	380	380
Formative Team Trust Impact	Pearson Correlation	,165**	-,552**	,305**	,209**	1	,939**
	Sig. (2-tailed)	0,001	0,000	0,000	0,000		0,000
	N	380	380	380	380	380	380
Team Trust Impact Percent	Pearson Correlation	0,095	-,622**	,168**	0,083	,939**	1
	Sig. (2-tailed)	0,064	0,000	0,001	0,108	0,000	
	N	380	380	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

Tables F2.4 - Team Trust Indexes Scores per Research Path

Descriptives - Team Trust Scores (after Team Competition) per Experimental Path

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Final Formative Team Trust	Control	150	6,021	0,839	0,069	5,885	6,156	2,00	7,00
	Team Charter	101	6,051	0,925	0,092	5,868	6,233	3,13	7,00
	Playfulness	129	5,989	0,823	0,072	5,846	6,133	3,00	7,00
	Total	380	6,018	0,856	0,044	5,932	6,104	2,00	7,00

		N	Mean	Std. Dev	Std. Error	Lower	Upper	Min	Max
Reflexive Team Trust	Control	150	5,932	0,851	0,069	5,795	6,069	3,80	7,00
	Team Charter	101	6,051	0,892	0,089	5,875	6,228	3,60	7,00
	Playfulness	129	5,994	0,840	0,074	5,847	6,140	3,20	7,00
	Total	380	5,985	0,857	0,044	5,898	6,071	3,20	7,00
Formative Team Trust Impact	Control	150	0,432	0,813	0,066	0,300	0,563	-1,50	4,13
	Team Charter	101	0,615	0,848	0,084	0,448	0,783	-1,88	3,88
	Playfulness	129	0,587	0,738	0,065	0,459	0,716	-1,00	3,13
	Total	380	0,533	0,800	0,041	0,452	0,614	-1,88	4,13
Team Trust Impact Percent	Control	150	0,096	0,204	0,017	0,063	0,129	-0,27	1,43
	Team Charter	101	0,137	0,223	0,022	0,093	0,181	-0,30	1,55
	Playfulness	129	0,136	0,205	0,018	0,100	0,172	-0,17	1,32
	Total	380	0,120	0,210	0,011	0,099	0,142	-0,30	1,55

Tables F2.5 - Comparing Team Trust Indexes Scores across Research Path

Tests of Homogeneity of Variances - Team Trust Scores (after Team Competition) per Experimental Path

		Levene Statistic	df1	df2	Sig.
Final Formative Team Trust	Based on Mean	0,963	2	377	0,383
	Based on Median	0,791	2	377	0,454
	Based on Median and with adjusted df	0,791	2	374,980	0,454
	Based on trimmed mean	0,799	2	377	0,451
Reflexive Team Trust	Based on Mean	0,512	2	377	0,600
	Based on Median	0,284	2	377	0,753
	Based on Median and with adjusted df	0,284	2	371,905	0,753
	Based on trimmed mean	0,370	2	377	0,691
Formative Team Trust Impact	Based on Mean	0,532	2	377	0,588
	Based on Median	0,598	2	377	0,550
	Based on Median and with adjusted df	0,598	2	370,366	0,550
	Based on trimmed mean	0,562	2	377	0,570
Team Trust Impact Percent	Based on Mean	0,204	2	377	0,816
	Based on Median	0,307	2	377	0,736
	Based on Median and with adjusted df	0,307	2	376,486	0,736
	Based on trimmed mean	0,282	2	377	0,754

ANOVA - Team Trust Scores (after Team Competition) per Experimental Path

		Sum of Squares	df	Mean Square	F	Sig.
Final Formative Team Trust	Between Groups	0,215	2	0,108	0,146	0,864
	Within Groups	277,332	377	0,736		
	Total	277,547	379			
Reflexive Team Trust	Between Groups	0,878	2	0,439	0,596	0,552
	Within Groups	277,794	377	0,737		
	Total	278,671	379			
Formative Team Trust Impact	Between Groups	2,600	2	1,300	2,040	0,131
	Within Groups	240,246	377	0,637		
	Total	242,846	379			
Team Trust Impact Percent	Between Groups	0,147	2	0,074	1,677	0,188
	Within Groups	16,575	377	0,044		
	Total	16,722	379			

Section F3 – Team Trust and Team Performance

Tables F3.1 - Correlation between Team Trust Indexes and Team Performance Scores - Total Scores

Correlations - Performance & Team Trust

		Total Score Value	Initial Formative Team Trust	Final Formative Team Trust	Reflexive Team Trust	Formative Team Trust Impact	Team Trust Impact Percent
Total Score Value	Pearson Correlation	1	0,040	,163**	,174**	,125*	0,096
	Sig. (2-tailed)		0,431	0,001	0,001	0,015	0,061
	N	380	380	380	380	380	380
Initial Formative Team Trust	Pearson Correlation	0,040	1	,626**	,523**	-,552**	-,622**
	Sig. (2-tailed)	0,431		0,000	0,000	0,000	0,000
	N	380	380	380	380	380	380
Final Formative Team Trust	Pearson Correlation	,163**	,626**	1	,792**	,305**	,168**
	Sig. (2-tailed)	0,001	0,000		0,000	0,000	0,001
	N	380	380	380	380	380	380
Reflexive Team Trust	Pearson Correlation	,174**	,523**	,792**	1	,209**	0,083
	Sig. (2-tailed)	0,001	0,000	0,000		0,000	0,108
	N	380	380	380	380	380	380
Formative Team Trust Impact	Pearson Correlation	,125*	-,552**	,305**	,209**	1	,939**
	Sig. (2-tailed)	0,015	0,000	0,000	0,000		0,000
	N	380	380	380	380	380	380
Team Trust Impact Percent	Pearson Correlation	0,096	-,622**	,168**	0,083	,939**	1
	Sig. (2-tailed)	0,061	0,000	0,001	0,108	0,000	
	N	380	380	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Tables F3.2 - Correlation between Team Trust Indexes and Team Performance Scores - Tower Scores

Correlations - Performance & Team Trust

		Tower Score	Initial Formative Team Trust	Final Formative Team Trust	Reflexive Team Trust	Formative Team Trust Impact	Team Trust Impact Percent
Tower Score	Pearson Correlation	1	0,006	,183**	,177**	,188**	,152**
	Sig. (2-tailed)		0,909	0,000	0,001	0,000	0,003
	N	380	380	380	380	380	380
Initial Formative Team Trust	Pearson Correlation	0,006	1	,626**	,523**	-,552**	-,622**
	Sig. (2-tailed)	0,909		0,000	0,000	0,000	0,000
	N	380	380	380	380	380	380
Final Formative Team Trust	Pearson Correlation	,183**	,626**	1	,792**	,305**	,168**
	Sig. (2-tailed)	0,000	0,000		0,000	0,000	0,001
	N	380	380	380	380	380	380
Reflexive Team Trust	Pearson Correlation	,177**	,523**	,792**	1	,209**	0,083
	Sig. (2-tailed)	0,001	0,000	0,000		0,000	0,108
	N	380	380	380	380	380	380

Formative Team Trust Impact	Pearson Correlation	,188**	-,552**	,305**	,209**	1	,939**
	Sig. (2-tailed)	0,000	0,000	0,000	0,000		0,000
	N	380	380	380	380	380	380
Team Trust Impact Percent	Pearson Correlation	,152**	-,622**	,168**	0,083	,939**	1
	Sig. (2-tailed)	0,003	0,000	0,001	0,108	0,000	
	N	380	380	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

Tables F3.3 - Correlation between Team Trust Indexes and Team Performance Scores - Enigmas Scores

Correlations - Performance & Team Trust

		Enigmas Score	Initial Formative Team Trust	Final Formative Team Trust	Reflexive Team Trust	Formative Team Trust Impact	Team Trust Impact Percent
Enigmas Score	Pearson Correlation	1	-0,004	-0,059	-0,042	-0,058	-0,044
	Sig. (2-tailed)		0,944	0,254	0,412	0,257	0,389
	N	380	380	380	380	380	380
Initial Formative Team Trust	Pearson Correlation	-0,004	1	,626**	,523**	-,552**	-,622**
	Sig. (2-tailed)	0,944		0,000	0,000	0,000	0,000
	N	380	380	380	380	380	380
Final Formative Team Trust	Pearson Correlation	-0,059	,626**	1	,792**	,305**	,168**
	Sig. (2-tailed)	0,254	0,000		0,000	0,000	0,001
	N	380	380	380	380	380	380
Reflexive Team Trust	Pearson Correlation	-0,042	,523**	,792**	1	,209**	0,083
	Sig. (2-tailed)	0,412	0,000	0,000		0,000	0,108
	N	380	380	380	380	380	380
Formative Team Trust Impact	Pearson Correlation	-0,058	-,552**	,305**	,209**	1	,939**
	Sig. (2-tailed)	0,257	0,000	0,000	0,000		0,000
	N	380	380	380	380	380	380
Team Trust Impact Percent	Pearson Correlation	-0,044	-,622**	,168**	0,083	,939**	1
	Sig. (2-tailed)	0,389	0,000	0,001	0,108	0,000	
	N	380	380	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

Tables F3.4 - Correlation between Team Trust Indexes and Team Performance Scores - Blind Path Scores

Correlations - Performance & Team Trust

		Blind Path Score	Initial Formative Team Trust	Final Formative Team Trust	Reflexive Team Trust	Formative Team Trust Impact	Team Trust Impact Percent
Blind Path Score	Pearson Correlation	1	0,089	,191**	,196**	0,097	0,060
	Sig. (2-tailed)		0,085	0,000	0,000	0,060	0,240
	N	380	380	380	380	380	380

Initial Formative Team Trust	Pearson Correlation	0,089	1	,626[**]	,523[**]	-,552[**]	-,622[**]
	Sig. (2-tailed)	0,085		0,000	0,000	0,000	0,000
	N	380	380	380	380	380	380
Final Formative Team Trust	Pearson Correlation	,191[**]	,626[**]	1	,792[**]	,305[**]	,168[**]
	Sig. (2-tailed)	0,000	0,000		0,000	0,000	0,001
	N	380	380	380	380	380	380
Reflexive Team Trust	Pearson Correlation	,196[**]	,523[**]	,792[**]	1	,209[**]	0,083
	Sig. (2-tailed)	0,000	0,000	0,000		0,000	0,108
	N	380	380	380	380	380	380
Formative Team Trust Impact	Pearson Correlation	0,097	-,552[**]	,305[**]	,209[**]	1	,939[**]
	Sig. (2-tailed)	0,060	0,000	0,000	0,000		0,000
	N	380	380	380	380	380	380
Team Trust Impact Percent	Pearson Correlation	0,060	-,622[**]	,168[**]	0,083	,939[**]	1
	Sig. (2-tailed)	0,240	0,000	0,001	0,108	0,000	
	N	380	380	380	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

Section F4 – Team Trust Mediation Effect

Tables F4.1 - Macro process SPSS - Mediation Effect between Playfulness and Team Performance - Final Formative Team Trust – 95% Confidence Interval

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.        www.afhayes.com
     Documentation available in Hayes (2022). www.guilford.com/p/hayes3
**************************************************************************
Model  : 4
    Y  : Scores
    X  : PlayClim
    M  : F_FormTT
Sample
Size: 380
**************************************************************************
OUTCOME VARIABLE:
 F_FormTT
Model Summary
         R         R-sq        MSE          F         df1         df2          p
      ,659        ,435        ,415    290,640       1,000     378,000        ,000
Model
            coeff         se          t          p        LLCI        ULCI
constant    1,659        ,258      6,434       ,000       1,152       2,166
PlayClim     ,704        ,041     17,048       ,000        ,622        ,785

Standardized coefficients
            coeff
PlayClim     ,659

**************************************************************************
OUTCOME VARIABLE:
 Scores
Model Summary
         R         R-sq        MSE          F         df1         df2          p
      ,164        ,027   3382,711      5,221       2,000     377,000        ,006
Model
            coeff         se          t          p        LLCI        ULCI
constant  213,889     24,517      8,724       ,000     165,683     262,096
PlayClim    2,116      4,955       ,427       ,670      -7,627      11,860
F_FormTT    9,875      4,643      2,127       ,034        ,745      19,005

Standardized coefficients
            coeff
PlayClim     ,029
F_FormTT     ,144

Test(s) of X by M interaction:
         F         df1         df2          p
      ,825       1,000     376,000        ,364
************************* TOTAL EFFECT MODEL *************************
OUTCOME VARIABLE:
 Scores

Model Summary
         R         R-sq        MSE          F         df1         df2          p
      ,124        ,015   3414,240      5,864       1,000     378,000        ,016
```

```
Model
              coeff         se          t          p        LLCI        ULCI
constant    230,270     23,383      9,848       ,000     184,292     276,248
PlayClim      9,064      3,743      2,422       ,016       1,704      16,424

Standardized coefficients
              coeff
PlayClim       ,124

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************
Total effect of X on Y
     Effect         se          t          p        LLCI        ULCI        c_cs
      9,064      3,743      2,422       ,016       1,704      16,424        ,124

Direct effect of X on Y
     Effect         se          t          p        LLCI        ULCI       c'_cs
      2,116      4,955       ,427       ,670      -7,627      11,860        ,029

Indirect effect(s) of X on Y:
              Effect     BootSE    BootLLCI    BootULCI
F_FormTT       6,948      3,626       -,248      14,212

Completely standardized indirect effect(s) of X on Y:
              Effect     BootSE    BootLLCI    BootULCI
F_FormTT       ,095       ,049       -,004        ,190
********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

WARNING: Variables names longer than eight characters can produce incorrect
output
when some variables in the data file have the same first eight characters.
Shorter
variable names are recommended. By using this output, you are accepting all
risk
and consequences of interpreting or reporting results that may be incorrect.

------ END MATRIX -----
```

Tables F4.2 - Macro process SPSS - Mediation Effect between Playfulness and Team Performance - Final Formative Team Trust – 90% Confidence Interval

```
 Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.        www.afhayes.com
     Documentation available in Hayes (2022). www.guilford.com/p/hayes3
 *************************************************************************
 Model  : 4
    Y  : Scores
    X  : PlayClim
    M  : F_FormTT
 Sample
 Size: 380
 *************************************************************************
 OUTCOME VARIABLE:
  F_FormTT
 Model Summary
```

```
            R          R-sq         MSE          F          df1         df2          p
         ,659         ,435         ,415      290,640       1,000     378,000         ,000
Model
               coeff          se           t           p         LLCI         ULCI
constant       1,659        ,258       6,434        ,000        1,234       2,084
PlayClim        ,704        ,041      17,048        ,000         ,636        ,772
***************************************************************************
OUTCOME VARIABLE:
 Score_To

Model Summary
            R          R-sq         MSE          F          df1         df2          p
         ,164         ,027     3382,711       5,221       2,000     377,000         ,006
Model
               coeff          se           t           p         LLCI         ULCI
constant     213,889      24,517       8,724        ,000      173,464     254,315
PlayClim       2,116       4,955        ,427        ,670       -6,055      10,287
F_FormTT       9,875       4,643       2,127        ,034        2,219      17,531

Test(s) of X by M interaction:
           F         df1         df2          p
        ,825       1,000     376,000         ,364
************************** TOTAL EFFECT MODEL ***************************
OUTCOME VARIABLE:
 Score_To

Model Summary
            R          R-sq         MSE          F          df1         df2          p
         ,124         ,015     3414,240       5,864       1,000     378,000         ,016

Model
               coeff          se           t           p         LLCI         ULCI
constant     230,270      23,383       9,848        ,000      191,713     268,827
PlayClim       9,064       3,743       2,422        ,016        2,892      15,236
************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
      Effect          se           t           p         LLCI         ULCI
       9,064       3,743       2,422        ,016        2,892      15,236

Direct effect of X on Y
      Effect          se           t           p         LLCI         ULCI
       2,116       4,955        ,427        ,670       -6,055      10,287

Indirect effect(s) of X on Y:
               Effect      BootSE    BootLLCI    BootULCI
F_FormTT        6,948       3,609       1,007      12,840

********************** ANALYSIS NOTES AND ERRORS ***********************

Level of confidence for all confidence intervals in output:
  90,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

WARNING: Variables names longer than eight characters can produce incorrect
output
```

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when some variables in the data file have the same first eight characters. Shorter
variable names are recommended. By using this output, you are accepting all risk
and consequences of interpreting or reporting results that may be incorrect.

------ END MATRIX -----

Tables F4.3 - Macro process SPSS - Mediation Effect between Playfulness and Team Performance - Reflexive Team Trust – 95% Confidence Interval

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3
*************************************************************************
Model  : 4
    Y  : Scores
    X  : PlayClim
    M  : ReflexTT
Sample
Size:  380
*************************************************************************
OUTCOME VARIABLE:
 ReflexTT
Model Summary
         R       R-sq        MSE           F         df1         df2           p
      ,638       ,407       ,437     259,891       1,000     378,000        ,000
Model
            coeff        se          t          p        LLCI        ULCI
constant    1,756       ,265      6,638       ,000       1,236       2,276
PlayClim     ,683       ,042     16,121       ,000        ,599        ,766

Standardized coefficients
            coeff
PlayClim     ,638

*************************************************************************
OUTCOME VARIABLE:
 Scores

Model Summary
         R       R-sq        MSE           F         df1         df2           p
      ,175       ,031   3369,850       5,960       2,000     377,000        ,003

Model
            coeff        se          t          p        LLCI        ULCI
constant  210,875    24,548      8,590       ,000     162,608     259,143
PlayClim    1,524     4,831       ,316       ,753      -7,974      11,023
ReflexTT   11,046     4,517      2,445       ,015       2,164      19,929

Standardized coefficients
            coeff
PlayClim     ,021
ReflexTT     ,161

Test(s) of X by M interaction:
         F        df1        df2           p
      ,911      1,000     376,000        ,341
************************* TOTAL EFFECT MODEL *************************
OUTCOME VARIABLE:
```

Scores
Model Summary
```
          R       R-sq        MSE          F        df1        df2          p
       ,124       ,015   3414,240      5,864      1,000    378,000       ,016
```
Model
```
            coeff         se          t          p       LLCI       ULCI
constant   230,270     23,383      9,848       ,000    184,292    276,248
PlayClim     9,064      3,743      2,422       ,016      1,704     16,424
```

Standardized coefficients
```
            coeff
PlayClim     ,124
```
************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************
Total effect of X on Y
```
     Effect         se          t          p       LLCI       ULCI       c_cs
      9,064      3,743      2,422       ,016      1,704     16,424       ,124
```
Direct effect of X on Y
```
     Effect         se          t          p       LLCI       ULCI      c'_cs
      1,524      4,831       ,316       ,753     -7,974     11,023       ,021
```

Indirect effect(s) of X on Y:
```
            Effect     BootSE    BootLLCI   BootULCI
ReflexTT     7,540      3,108      1,757     13,940
```

Completely standardized indirect effect(s) of X on Y:
```
            Effect     BootSE    BootLLCI   BootULCI
ReflexTT      ,103       ,041       ,025       ,189
```
********************* ANALYSIS NOTES AND ERRORS *********************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

WARNING: Variables names longer than eight characters can produce incorrect
output
when some variables in the data file have the same first eight characters.
Shorter
variable names are recommended. By using this output, you are accepting all
risk
and consequences of interpreting or reporting results that may be incorrect.

------ END MATRIX -----

Tables F4.4 - Macro process SPSS - Mediation Effect between Playfulness and Team Performance - Formative Team Trust Impact - 95% Confidence Interval

Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.0 *****************

          Written by Andrew F. Hayes, Ph.D.   www.afhayes.com
     Documentation available in Hayes (2022). www.guilford.com/p/hayes3
****

Model : 4
    Y : Scores
    X : PlayClim
    M : Impact_TT
Sample

```
Size:  380
*************************************************************************
OUTCOME VARIABLE:
 Impact_TT
Model Summary
          R       R-sq       MSE          F         df1         df2           p
       ,165       ,027       ,625     10,618       1,000     378,000        ,001
Model
              coeff        se          t          p        LLCI        ULCI
constant     -,489       ,316     -1,546       ,123      -1,111        ,133
PlayClim      ,165       ,051      3,259       ,001        ,065        ,265
Standardized coefficients
              coeff
PlayClim      ,165
*************************************************************************
OUTCOME VARIABLE:
 Scores
Model Summary
          R       R-sq       MSE          F         df1         df2           p
       ,163       ,026   3384,541      5,116       2,000     377,000        ,006
Model
              coeff        se          t          p        LLCI        ULCI
constant    234,117    23,355     10,024       ,000     188,194     280,039
PlayClim      7,767     3,779      2,055       ,041        ,336      15,197
Impact_TT     7,865     3,785      2,078       ,038        ,422      15,308
Standardized coefficients
              coeff
Playfuln      ,106
Impact_TT     ,107

Test(s) of X by M interaction:
          F        df1        df2          p
       ,173      1,000    376,000       ,678
*************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Scores
Model Summary
          R       R-sq       MSE          F         df1         df2           p
       ,124       ,015   3414,240      5,864       1,000     378,000        ,016
Model
              coeff        se          t          p        LLCI        ULCI
constant    230,270    23,383      9,848       ,000     184,292     276,248
PlayClim      9,064     3,743      2,422       ,016       1,704      16,424

Standardized coefficients
              coeff
PlayClim      ,124
************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************
Total effect of X on Y
     Effect        se          t          p        LLCI        ULCI        c_cs
      9,064     3,743      2,422       ,016       1,704      16,424        ,124
Direct effect of X on Y
     Effect        se          t          p        LLCI        ULCI       c'_cs
      7,767     3,779      2,055       ,041        ,336      15,197        ,106
```

```
Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Impact_TT    1,298      ,747      -,042      2,871

Completely standardized indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Impact_TT     ,018      ,010      -,001       ,039
*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

WARNING: Variables names longer than eight characters can produce incorrect
output
when some variables in the data file have the same first eight characters.
Shorter
variable names are recommended. By using this output, you are accepting all risk
and consequences of interpreting or reporting results that may be incorrect.


------ END MATRIX -----
```

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