HOW PLAY FOSTERS CO-CREATION FOR DESIGN-LED INNOVATION

by

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DISSERTATION

Presented to the Swiss School of Business and Management Geneva

In Partial Fulfillment

Of the Requirements

For the Degree

DOCTOR OF BUSINESS ADMINISTRATION

SWISS SCHOOL OF BUSINESS AND MANAGEMENT GENEVA

MAY 2022

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Dedication

"From the solemn gloom of the temple, children run out to sit in the dust.
God watches them play and forgets the priest."

Rabindranath Tagore, Nobel Laureate.

This thesis is dedicated to my mother, Chitra, who let me play, daydream, and be myself. She unconditionally supported me in my journey. To my father, Gautam, who gifted me the growth mindset gene, and my first computer when I was fourteen. My younger sister, Archana, who showed me how to live life without fear and consciously act on my potential. My elder cousin brother, Naresh, and my mother's younger sister, Jyoti, who always support me passionately in my ventures. My soulmate, Priti, who let me do what I love and gives the required space for playful mental and spiritual development, above and beyond this thesis. My in-laws, Ramesh, Priya, and Jitin, who give me so much love and believe in me no matter what. To the ten thousand children from project 'Dream On, India!' who showed me how to dream big for a more sustainable future. And lastly and most importantly, to my dear son, Rihaan, who keeps my inner child alive and gives me purpose to live and make a difference, one day at a time.

Acknowledgements

I would like to sincerely acknowledge my mentor, Dr. Anna Provodnikova from Swiss School of Business and Management Geneva, for her guidance, encouragement, and support. I am also grateful to the ten clients, whose case studies have been discussed in this thesis, for giving me the opportunity to infuse play for effective co-creation and to build design-led innovation capacities for their teams across age groups, levels, and functions in their organizations. Also, a specific mention for Professor Manuel E. Sosa, who sealed my fate in human-centric design and innovation with his program on leading innovation by design at INSEAD Singapore in 2017. This was the time when the seeds of this thesis were sown.

ABSTRACT

HOW PLAY FOSTERS CO-CREATION

FOR DESIGN-LED INNOVATION

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To navigate the increasingly uncertain business environment, human-centric design and innovation is becoming a necessity. The ability to think creatively and come up with new solutions is needed to thrive in the future. This requires a shift of mindset from scalable efficiency of the industrial age to sustainable creativity of the digital age for corporate India. While change is hard, it need not be painful. What if there was a more intrinsically motivating and nourishing way to deal with change? This thesis explores the potential of play as a catalyst of co-creation for design-led innovation in organizations struggling to accelerate transformation. First, through the qualitative, interpretative research method, the practical implications of infusing play into work for serious organizational outcomes are discussed using four single case studies that cover empathy, vulnerability, divergent thinking, and creative agility – four integral skills for managers and leaders to rehumanize business, build creative confidence and accelerate change using the human-

centric design process. Second, through the cross-case content analysis, this paper quantitatively identifies key micro-behavioral patterns discovered in the co-creation of play-enabled, design-led innovative solutions from six case studies, that result in building design thinking mindsets. Lastly, the within-case and cross-case analysis are compiled and structured to build a conceptual model of skills, behaviors and mindsets resulting from play-infused co-creation, and key implications are provided for organizations struggling to shift mindset and accelerate innovation in the post-pandemic world.

Keywords: play, serious play, creativity, creative thinking, co-creation, design thinking, design, innovation, innovation management, transformation, leadership, psychology, empathy, vulnerability, divergent thinking, agility, organization development, organization culture, organization change, organization behavior, learning and development

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CHAPTER I:

INTRODUCTION

1.1. Introduction

Considering the increasing usage of exponential technologies, such as AI, robotics, augmented reality, among others, to augment and even replace humans in the workplace, it is now necessary to nurture creativity, interpersonal and adaptability – the only factors that differentiates humans from AI (Kosbie et al., 2017) and help us stay relevant in the future. The top 5 of 15 skills for 2025 are analytical thinking and innovation, active learning and learning strategies, complex problem-solving, critical thinking and analysis, creativity, originality and initiative (World Economic Forum, 2020). These skills are particularly relevant as we move from the era of Industry 4.0 to Industry 5.0, where machines work with humans to drive growth and innovation, especially in complex, global issues as infrastructure innovation, quality education, climate change, among others (Cf, 2015) for developing economies such as India (Cf, 2015; Nahavandi, 2019; Özdemir and Hekim, 2018). Hence, it is necessary to think differently and come up with new, creative solutions centered around humanity. Innovation is no more an option for organizations to stay relevant in the future.

To accelerate such complex transformation efforts in the recent past, companies such as P&G, Apple, Nike, Coca Cola, to say the least, have now put design at the center of their business (Westcott, 2014). Human-centric design has now proven to be a strategic driver of innovation (Bruce and Bessant, 2002), and therefore organizations must now turn their immediate focus to build a design thinking mindset (Dosi et al., 2018), within which building creative confidence and nurturing creativity becomes essential for sustaining innovation in the organization. With the increasingly uncertain business environment in the post-pandemic world, human-centric design and innovation

becomes even more relevant. The pandemic has now forced businesses of all sizes to accelerate their digital business transformation efforts. In addition to enabling business with technology, there is a need for leaders to drive innovation while being more empathetic, resilient, and agile, but also now have the added responsibility of building purpose-driven teams with well-being, sustainability, diversity, and inclusion ingrained into their DNA (Bryan, 2021).

The onus of execution of these design-led transformation efforts in organizations largely lies with the lower and mid management, which mainly comprises Millennials (born during 1981-1995, the largest working age group in the Indian market) and Generation Z (born during 1995-2012, now entering the workforce). However, the current organization culture, climate, and resources in India's corporate sector leave much to be desired by the growing young workforce. In terms of the future of work, the top three desired employee characteristics most critical to success of organizations for India's Millennials and Gen Z are creativity, flexibility/adaptability, technological savvy (Deloitte, 2021). While these organizations have now jumped on the digital bandwagon, their culture is still stuck in the industrial age and remains one of the biggest obstacles for transformation (Goran et al., 2017). Many large Indian organizations are not open and flexible, and neither do they promote autonomy – factors that are connected to creativity (Panini, 1988).

To generate and implement new and disruptive ideas, the young workforce are seeking safe, trusting and democratic culture and spaces to promote risk taking, build confidence and promote creative expression. It is therefore not surprising why India's young generation naturally gravitate towards startups and global technology services providers that have a flexible, free-spirited atmosphere (Pandit, 2018). In addition, generational differences (Marcinkus Murphy, 2012) between senior management

(primarily Gen X, born between 1961-1980) and lower to middle management (Millennials) need to be addressed immediately for better innovation outcomes.

1.2. Research Problem and Questions

Change is hard but corporate India needs a better way to empower employees with necessary creative mindsets and behaviors in order to drive design-led innovation in today's uncertain, post-pandemic business environment. What if we explored play as a way to make change less painful? Can play provide a more intrinsically motivating and nourishing way to deal with change? The hypothesis is that play can be catalyst for fostering co-creation in the organization. Hence, the problem statement is to demonstrate the potential of Play fosters co-creation for design-led innovation.

There are three phases of the human-centric design process for creative problem solving – Inspiration, Ideation, Implementation – that leads to innovation (Design Kit, I.D.E.O., 2016). In order to examine the potential of play to foster creativity across this process, research questions are aligned with skills and mindsets applied in this process.

Main research question/hypothesis: Play fosters co-creation for design-led innovation.

Sub-questions (indicated as RQ):

- How can play enhance the ability to creatively empathize and connect with each other? (RQ1)
- How can play improve divergent thinking for better co-creation outcomes? (RQ2)
- How can play improve creative agility in diverse teams? (RQ3)
- How can play help in sharing vulnerability and increase connectedness? (RQ4)

- What are the group dynamics enabled by play that faciliate in building a design thinking mindset? (RQ5)

1.3. Research Objectives

The objective of this research is to study play as a catalyst for fostering co-creativity in the organization. This is carried out by addressing the following sub-objectives:

- To provide a comprehensive review of play and creativity in the organizational context, with creativity as the organization imperative and play as the catalyst for creativity. Refer to the next section on "Literature Review" for details.
- To provide an in-depth analysis of behaviors, factors and processes related to creativity during the three phases of the human-centric design process – inspiration, ideation and implementation:
    - Empathy and connection (related to RQ1)
    - Creative vs logical thinking (related to RQ2)
    - Change in behaviors during emergent co-creation (related to RQ2)
    - Agility across generations – millennials and gen X (related to RQ3)
    - Connection, trust and vulnerability (related to RQ4)
    - Patterns of micro-behaviors during playful co-creation (related to RQ5)
    - Design thinking mindset contructs influenced during playful co-creation (related to RQ5)
- To provide a conceptual framework that identifies key skills, behaviors and mindsets enhanced as a result of using play to nurture co-creation across the different phases of the human-centric innovation process.

Since most organizations are struggling to develop the necessary behaviors and mindsets to enhance collaboration and foster creativity in teams, the implications of this research are specifically on the practical development of team creativity and broadly on the facilitation of design-led innovation for the organization.

1.4. Significance of the Study

Organizations need a better way to drive transformation and innovation in today's post-pandemic, VUCA (volatile, uncertain, complex, and ambiguous) business environment. There is a need for a catalyst that empowers people with new age mindsets and behaviors to embrace change, untap their inner child and find harmony in chaos.

This research is therefore not just relevant but also novel as it untaps the potential of "play" as a catalyst to foster co-creation for human-centric design and innovation in different organizational functions and contexts, such as customer experience, sales and marketing and digital leadership. Also, organizational leaders have the general misconception that Play is frivolous and cannot be used for serious innovation and transformative work. It is time to put this myth to rest.

Overall, this research will enable innovation and change management leaders in organizations, OD (organizational development) practitioners, innovation consultants to improve the creative, productive performance and drive change in organizations in a more enjoyable and intrinsically motivating way using Play as a catalyst.

CHAPTER II:

REVIEW OF LITERATURE

2.1. Theoretical Overview

Based on the context discussed earlier, this section reviews the literature available in 172 research papers, articles and books on the topics of creativity and play in the context of design-led innovation. The following themes were synthesized from the literature and discussed in the following pages.

Creativity – The Organization Imperative

- A Theoretical Overview on Creativity in Design Thinking
- Empathy and Vulnerability as antecedents of Creativity
- Psychological Safety for Creativity in Learning Organizations
- The Connection between Positive Affect, Creativity, and Well-being
- Creative Activity with Divergent Thinking
- Creative Performance through a Better Inner Work Life

Play – The Catalyst of Creativity

- A Theoretical Overview on Play
- Play at Work for Engagement and Creativity
- Play to Develop Divergent Thinking skills
- Affect and Flow Experienced in Play
- Social Play for Psychological Safety and Trust
- Mind-Wandering and Imaginative Play
- Playfulness, not just as a ‘Trait’ but a ‘State’
- Serious Play for Organizations
- Addressing the Myth about Play
- Organizational Studies on Play

2.2. A Theoretical Framework on Creativity in Design Thinking

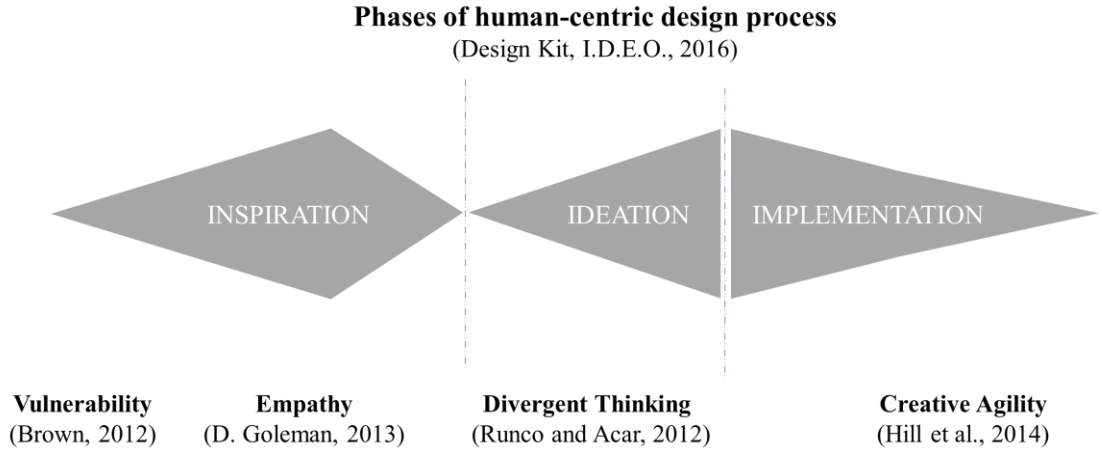

Figure 1. Phases of human-centric design process

There are three phases of the human-centric design process for creative problem solving – Inspiration, Ideation, Implementation, that is non-linear and iterative in nature (Design Kit, I.D.E.O., 2016) as depicted in figure 1. While organizations implement this human-centric design process, also called design thinking, in many different ways, the need for a design thinking mindset is essential for transformation and innovation. A study (Dosi et al., 2018) measured this mindset for self-awareness by scrutinizing 17 papers on design thinking for innovation. A final set of 19 mindset constructs and the validated questionnaire were developed that can be used as a tool to assess team members' attitudes in innovation teams.

Since creativity is key to the design thinking process as it leads to new solutions for business, it is essential to discuss the definition of creativity in the organization context. Creativity is the ability to come up with a novel idea or product that is appropriate for the situation at hand (Woodman et al., 1993).

Creativity can be analyzed through the lens of 4 Ps model of Creativity (Rhodes, 1961) – place, person, process and product. Since the focus of this research study is

primarily on understanding creative behaviors in the design thinking process, the process element is considered, that relates to behavioral factors such as modes of thinking – divergent thinking and convergent thinking (Guilford, 1957), engagement and behavior (Sternberg and Kaufman, 2018). To facilitate creative thinking in the iterative design thinking process, the creative process requires iteration of divergent and convergent thinking that are based on imaginative and critical thinking skills respectively. This set of iterative behaviors that allow participants to collaborate and explore the problem environment, untap new opportunities and generate new ideas and impactful solutions.

In terms of unit of analysis, creativity can be analyzed at the individual and group level, that ultimately lead to organizational creativity. As per the componential theory of creativity (Amabile, 1998), individual creativity is a function of expertise (domain or industry knowledge), creative thinking skills and motivation. These components can be influenced by managers through workplace conditions and practices. This component model of individual creativity shows the influence of intrinsic motivation in the task presentation and idea generation stages, domain skills influence the preparation and idea generation stages, and creative thinking skills such as divergent and convergent thinking skills influence idea generation and selection. Out of the three components, motivation is the component that is most influenced by the organization environment (Hennessey and Amabile, 1998a).

While creativity starts with the individual, creativity is often considered to be a co-creation process that emerges from collaboration (Sawyer and DeZutter, 2009). It requires managers to change the way they work in groups. In a study on group or collective creativity (Hill et al., 2014), organizational willingness is necessary but not sufficient for innovation to flourish. A team also needs three specific capabilities – creative agility, creative abrasion, and creative resolution. A classic example of

organizational creativity is Pixar Animation Studios. Ed Catmull, President of the company explains that innovation cannot be compelled or commanded, it can only emerge from the agile, experimentative nature of the co-creation process (Catmull and Wallace, 2014).

2.3. Empathy and Vulnerability as antecedents of Creativity

To come up with novel solutions, it is necessary to first empathize with the person we are solving the problem for, as creativity and empathy are positively related (Carlozzi et al., 1995). In the organizational context, this could be internal employees, external customers and even partners with whom managers need to collaborate with. Overcoming the natural tendency to see a problem from our point of view instead of the other can be challenging. Hence, this requires not just empathic ability but also creative imagination. In organizations, managers who effectively focus on others and take the effort to build social relationships are easy to spot and emerge as natural leaders irrespective of their title or rank (D. Goleman, 2013). In the design thinking process, methods such as role reversal, a more personal context of role play, ignite creative empathy (Yaniv, 2012) in order to deeply understand what the other is experiencing. Also in cases when employees do not meet expectations, leaders may express frustration or anger. This reaction creates fear and anxiety, which not only erodes loyalty and trust (Bartram and Casimir, 2007), but also creativity as it affects their cognitive control. In future, chances are that this employee will not take risks, thereby killing the culture of experimentation that is key to learning and innovation. Dealing with such situation with curiosity and compassion (Dirks and Ferrin, 2002) can increase the willingness to trust, that in turn improves the creative, productive performance of employees.

Another antecedent of creativity is vulnerability. Studies show that vulnerability is the birthplace of empathy and creativity (Brown, 2015, 2012). When managers are able

to be more open and vulnerable with their teams, a culture of risk-taking and innovation can be developed. Sharing vulnerability results in being more approachable and allows for better self-expression and creative collaboration, not just within teams but across the organization. Relational authenticity or the ability to disclose and share information self openly to relate to others is a key component of authentic leadership (Avolio and Gardner, 2005). Having honest conversations about themselves can allow leaders to rehumanize work. This is now even more relevant in the post-pandemic era where the notion that leaders need to be in charge and must know all the answers is being challenged (Edmondson and Chamorro-Premuzic, 2020). Leaders in India for long have been expected to wear the armor of perfection and always show a brave front. However perfectionism crushes creativity and is seen as detrimental to effective creative leadership (Brown, 2015).

2.4. Psychological Safety in Learning Organizations

To stay relevant in the new knowledge economy, organizations need to accept change as part of their routine and become learning organizations in which people continually develop creative confidence and capacities, and sharing and transferring knowledge across the organization is encouraged so that innovation and collaboration are nurtured and sustained for business growth (Senge, 1990). Having a shared vision of the current and future states leads to commitment on the organizations goals. Along with a sharing vision, systems thinking or understanding interdependencies and the bonds – visible and invisible bonds – is essential for knowledge sharing and co-creation of solutions. Lastly, successful change requires expertise, continuous development of skills and competencies for individuals and teams, as well as developing new mental models based on openness and cooperation for better innovation outcomes.

Satya Nadella, CEO of Microsoft believes that a learning organization is built on a growth mindset (Dweck, 2015) and understands that there is always going to be a gap between the espoused culture and lived experience (Nadella, 2018). In learning organizations, where the innovation process warrants creativity, collaboration, sharing and learning from participants within and across different teams in the organization, psychological safety plays an essential role in enabling creativity in the new knowledge economy (Edmondson, 2012). It reduces the anxiety and fear of being judged or negatively evaluated for taking risks while working in teams on activities such as suggesting and discussing new ideas, experimenting, asking hypothetical 'what-if' questions, and even creating solutions that may not work in the real world (Edmondson, 1999; Rogers, 1954). These actions are an essential part of the creative ideation process in learning organizations.

2.5. Connection between Affect, Creativity and Well-being

While creativity can be enhanced with social emotional mechanisms such as intrinsic motivation (Hennessey and Amabile, 1998a) and psychological safety (Bornemisza, 2013), positive affect enhances cognitive capacity, thereby facilitating creative problem solving (Isen et al., 1987).

Creativity is connected with personal properties such as flexibility, openness, autonomy, humor, playfulness, willingness to try things, elaboration of ideas, realistic self-assessment, and similar characteristics (Cropley, 1990). Such properties are highly favorable to maintenance of positive mental health. The strong positive influence of well-being on creativity has been shown by a recent meta-analysis (Acar et al., 2021). Interestingly, "creativity" is not just important but also the most distinctive, characteristic of "wellbeing" through approaches to creative idea generation in diverse disciplines (Corso and Gluth, 2017).

While research shows a drop in productivity and innovation, that is related to pro-C or professional creativity in the Four-C model's terms (Kaufman and Beghetto, 2009), recent studies on the COVID-19 pandemic have shown interesting insights related to less professional creativity that are not linked to innovation.

A recent study in Australia examined the role of artistic creative activities in navigating the pandemic. These activities included watching films or TV shows, cookery/baking, creating videos, drawing and painting, singing in online choir or from balconies of their homes, listening to music, musical activities for purposes of self-expression, group bonding, health promotion, spreading awareness about pandemic threats, emotion regulation, among other benefits supporting mental health and well-being (Kiernan et al., 2021). It was found that listening to music, singing, dancing and other arts and crafts activities were the most effective activity, while watching films or TV shows, even though the most frequent activity, was the eighteenth most effective at making people feel better.

Another study (Karwowski et al., 2021) showed the impact of pandemics with first-year University students on less professionalized creativity, primarily the so-called mini-c (primarily cognitive processes engaged in learning) or little-c (problem-solving and everyday creativity). The study started with stating that when thinking about coronavirus is activated, people might become focused and task-oriented yet less likely to engage in creative thinking, driven primarily by enjoyment and intrinsic motives. However this study saw that although the COVID-19 pandemic is devastating for health and economy and very likely for creative thinking, its impact on creative activity, especially when young people are on lockdown, seems to be somehow beneficial. It also suggests that creativity often serves as a strategy to relieve boredom.

Another recent study on crisis-creativity-well-being relationship (Tang et al., 2021) with employees across three countries with different cultures (China with "collectivistic culture", Germany and the United States – "individualistic culture") empirically proves the healing or coping effect of creativity in face of crisis. That is, no matter whether they are from more individualistic or collectivistic cultures, people benefit from the engagement in creativity in helping them achieve positive, flourishing experiences. This mediating effect is even stronger for those from less individualistic countries. Moreover, people from more collectivistic countries, in addition to their flourishing experiences, also feel more socially connected through the help of creative engagement and creative growth.

This mediating effect of creativity perhaps has implications for India that is primarily a collectivistic culture, since Ahuja et al. (2020) demonstrated that collectivism is positively associated with well-being. Voluntary, playful, creative activities that promote social and emotional well-being can be a revelation for organizations trying to engage employees during times of stress or deal with lack of challenging work, and perhaps one of COVID-19's important lessons on human motivation for organizational creativity.

In another study that examined affective well-being on creativity (Dackert, 2016), it was found that team member enthusiasm had a strong impact on team creativity. The study indicated that a work environment with high autonomy was good for creativity due to the motivation from team members and interest in the challenge of the work. It also showed that while gender diversity has a significant positive impact on contentment but has a negative influence on enthusiasm. Also age diversity has a negative influence and a significant relationship with enthusiasm – a factor that positively impacts perceived team creativity. This perhaps implies the need for psychological safety to build enthusiasm for

multigenerational workforce, but also has implications for organizations wanting to build a gender diverse workforce in the context of improving innovation outcomes.

2.6. Creative Activity with Divergent Thinking

Researchers have found that people report being happy and energized when they are involved in everyday creative activities in daily life, and that being in a positive mood goes hand in hand with creative thinking. Research suggests that creativity stems from a place of positivity for most people (Conner and Silvia, 2015; Cropley, 1990). Visa versa, everyday creativity can be a means of cultivating positive psychological functioning and can be a path to flourishing (Conner et al., 2018).

The stronger relation of creative activity or behavior to well-being than creative ideation (divergent thinking) has implications for organizations because engaging in creative activities benefits the organizations through enhancing innovation and effective problem-solving behaviors as well as the well-being of the organization's people (Acar et al., 2021).

A research (Davis, 2009) also found that a positive mood influences ideational tasks, whereas a negative mood could also help with the problem-solving activities that requires evaluation.

Divergent thinking is primarily a cognitive measure, while the measures of creative activity are more motivational and socio-emotional in nature. Many times divergent thinking tasks are used to measure creative potential (Runco and Acar, 2012). However research shows creative activities, which are more aligned with creative performance (Runco, 2007), have a stronger relation to well-being. A later study (Leckey, 2011) also found that engaging in creative arts activities that took place as social events may enhance mental health.

Since engaging in creative activities (socio-emotional measure that are not necessarily linked to business) may elevate positive mood, self-confidence and boost morale, organizations should perhaps consider having such creative activities as a starting point to improving innovation outcomes, and then use divergent thinking, that provides more opportunity for creativity, to think of diverse ideas for business.

2.7. Creative Performance through a Better "Inner Work Life"

A study (Amabile and Kramer, 2007) found that the central driver of creative, productive performance was the quality of a person's "inner work life". This was found to be a mix of Emotions, Motivations and Perceptions over the course of a workday.

In the context of knowledge work, people are more productive and creative when their inner work lives are positive. This happens when they are happy, intrinsically motivated by the work and have positive perceptions of the organization and colleagues. Moreover, in the positive states people are more committed to the work and more collegial towards those around them.

In search for triggers for inner work life, Amabile and Kramer developed the "progress principle". This states that those organizations that have facilitated progress for employees with meaningful work, even a small win or possible breakthrough regularly, i.e. provided the required support in terms of catalysts and nourishers, and reduced inhibitors and toxins, have seen creative, productive performance during that workday; defined as a "good day" as opposed to a "bad day" where there was lesser progress.

The negative impact on creativity can perhaps be understood through its association with job stress during the pandemic, as higher levels of negative affect among workers has been seen by high-workload pressures (Carver and Scheier, 1994).

To theorize this influence of the pandemic, employees' "inner work-lives" may have suffered as they experienced stress and burnout (emotions) with feelings of lack of

social connectedness with colleagues (perceptions) and intrinsic (motivation) drivers. This perhaps led to drop in creativity in the workplace (Jenkins, 2021)and crisis in business innovation (Furstenthal et al., 2020).

2.8. A Theoretical Overview on Play

Early play theorists (Huizinga, 1955; Caillois, 1958; Vygotsky, 1976; Winnicott, 1971) described play as a natural path to creativity. Play can be an activity (Sicart, 2014), a behavior (Levy, 1978), a trait (Glynn and Webster, 1992), or even a state (Bateson et al., 2013) that is best understood only when it is experienced.

There are many different types of play (social play, imaginative play, creative play, pretend or role play, among others) (Brown, 2009; Smith and Pellegrini, 2008). It can be used in many different ways (as metaphors, playing an instrument, playing cricket, doing riskier activities like bungee jumping) (Sutton-Smith, 1997). It can take many diverse forms (humor, gossip, daydreaming, competition, etc); and it can also have different personalities (joker, explorer, artist, etc.) (Brown, 2009). The ambiguity of play (Sutton-Smith, 1997) is perhaps the most alluring characteristic to the intellectual.

It is an irony that play and work are generally seen as opposites, however the opposite of play is suggested as boredom (Brown, 2009). Play is probably the first thing we did when we were children, freely and almost meaninglessly. We are wired for play.

Brown (2009) explains that “we don’t need to play all the time to be happy, as in most cases play is a catalyst”, and “…the beneficial effects of just a little true play can spread through our lives, actually making us more productive and happier in everything we do.”

While the history of play can be traced back to the Stone Age when our ancestors used to circle and dance around a fire, telling stories and more, the relationship between play and creativity has been found in the fields of social science since the Industrial Age.

As research scholars and play practitioners continue to make play accessible and apply it to different contexts to retain our creative instinct, one thing is certain is that as humans we are built for play, and it is within play that we find our strength to adapt to changing environments and create the new.

2.9. Play at Work for Engagement and Creativity

Play is the cradle of organizational engagement and creativity (Mainemelis and Ronson, 2006). When managers play and behave playfully, it activates the "child's mind" (Kofman and Senge, 1993; Renesch and Chawla, 2006; Senge, 1990) and this helps develop and draw on an alternative way of thinking as leaders – a much-needed capability in today's uncertain business environment. Filled with awe and curiosity, this beginner's mindset can enable them to challenge status quo and better adapt to the need for constant change, creativity and innovation (Kark, 2011).

Play is now increasingly being acknowledged as an important factor in offices and organizations in the US, Europe and other developed markets. Fortune 500 companies are now attempting to incorporate play into business (Brown, 2009; Meyer, 2010). Global companies such as Google, Motorola, and Du Pont encourage employees to utilize 20% of their work time to play without constraints and come up with new disruptive ideas (Mainemelis and Altman, 2010). Also leading design and innovation company, IDEO believes play is integral to the design thinking approach and provides a playful work environment, in order to bring back child-like creativity (KELLEY, 2001) that was perhaps lost due to the unevolved education system from the industrial age.

Mainemelis and Ronson (2006) proposed that play as engagement affects creativity directly because it is internal to an individual's work tasks in relation to which creativity is conceptualized and assessed. They suggested that play as engagement facilitates the cognitive, affective, motivational, and skill dimensions of creativity. Play is

of paramount importance for creativity at work, and one of the ways play enhances creativity is through its contribution to cognitive processes. They proposed that play facilitates the following creativity-relevant cognitive processes: “problem framing, divergent thinking, mental transformations, practice with alternative solutions, and evaluative ability”.

2.10. Play to Develop Divergent Thinking skills

While individual characteristics such as creative self-efficacy influences creativity (Tierney and Farmer, 2002), creativity is a generative adaptive process. It requires practicing the skills of creating novelty. Play contributes to a long-lasting impact on creativity by practicing the main cognitive skills of creativity, that is divergent thinking, combinatorial flexibility and mental transformation abilities (Dansky, 1999).

While playing, people practice framing problems in new ways, exploring alternative solutions, and evaluating different possibilities. These abilities turn out to be useful even in those situations that are not playful in themselves, such as organization tasks. Hence when people play, not only do they facilitate their creative process in the task at hand, but they also develop divergent thinking skills (Mainemelis and Ronson, 2006).

2.11. Affect and Flow Experienced during Play

High levels of stress in the workplace is associated with decreased organizational creativity (Amabile et al., 2002). To address stress, a study suggests that creativity could be enhanced with tasks involving “mindless” work, such as low-stress playful activities in the workday (Elsbach and Hargadon, 2006). This is particularly relevant to addressing situations such as the pandemic-related job stress and increasing work pressures in the organization.

Mainemelis and Ronson (2006) integrated several studies and came up with four specific affective processes that influence the creative process; that has bearing on practitioners looking to stimulate creativity through play:

- Affective pleasure in challenge, or identifying the problem and the joy of seeking and achieving novel insights, thereby stimulating divergent thinking.
- Openness to affective states, or experiencing wide range of emotions, thereby facilitating managerial creativity. Also positive affect fosters divergent thinking and transformations, while mild negative affect in the form of tension can trigger problem-finding.
- Safe self-expression and emotional modulation of affect that allows the players to voluntarily decide to some degree the limits within which they will imagine or act. Negative emotions are not excluded or suppressed in play as they enhance psychological safety, as long they do not destroy the overall positive affective quality of the experience.
- Access to affect-laden thoughts, or concepts and images that contain emotional content that provides an associative bridge between cognitively remote concepts representing objects, persons, or events in memory.

Therefore, play fosters creativity because it allows both the positive and safe experience and expression of emotion.

Further findings in literature elaborate on the positive affect experienced in play. Play involves a positive affect that varies in its degree of intensity and complexity, from feeling relaxed to outburst of joy or from having fun to feeling an emotional relief. Probably the most positive affect related to play is that it offers a safe space for self-

expression and transformation of unpleasant, disturbing feelings such as guilt, loss, pain and even death (Winnicott, 1971).

Playful interactions also promote experiences of effortless flow (Csikszentmihalyi, 1990) and timelessness (Mainemelis, 2001) that immerse players in the task and contribute to positive affect and increased motivation. It is easy to draw parallels between play and flow, as being in a state where our skills are being adequately used for the challenging task. This creates a more aware, positive, engaging experience where ego falls away and a sense of serenity, clarity and focus is felt.

Therefore, play provides individuals with access to diverse material to work within idea generation by blending affect and cognition, the positive and the negative, and the true and the false; making play extremely valuable as a means to enhance divergent thinking as well as well-being in the increasingly stressful business environment.

2.12. Social Play for Psychological Safety and Trust

Social play (Locke, 1989) or diversionary play often dissolves hierarchical relationships and allows employees to express themselves more openly by freeing them of expected behaviors and designated roles of the workplace. By altering the nature of relationships and enabling people to relate personally to one another, play helps organizational members to feel comfortable with and trust one another. This kind of social play overrides mechanistic work relationships with organic personal relationships. This increase in psychological safety (Edmondson, 1999) can result in creativity stemming from freely experimenting and thinking divergently about ideas and processes.

While informal social play is not the only way to reduce cultural resistance and make people more willingly participate in creative behaviors, it is one of the most

common to create informal personal bonds in organizations and social life in general (Sandelands, 2003).

To summarize, play as diversion fosters a psychological and social-relational climate that is conducive to creativity. A key observation from the pandemic was that people took the opportunity to playfully explore their hobbies and pursued creative activities with each other as a way to deal with stress and even boredom (Karwowski et al., 2021). Organizations should consider taking cues from such fun, emotionally uplifting diversionary play activities and integrating them into the workplace as a precursor to work-related creative ideation, as an open, happy, psychological safe mind is needed before taking on divergent thinking for design-led innovation.

2.13. Mind-Wandering and Imaginative Play

As creativity now becomes an imperative for organizations to stay relevant, it also becomes important for researchers to explore the concepts of mind-wandering, daydreaming, and unfocusing in the workplace.

A recent finding now shows that people spend nearly half of their time with their minds wandering away from a task at hand, and this involves unpleasant, neutral or unpleasant mind-wandering that affects their mood and decreases productivity in the workplace (Killingsworth and Gilbert, 2010). The amount of mind-wandering depends on the activity they are doing. This suggests to optimize our emotional well-being, people should watch where their minds are as to what their bodies are doing.

However in the case of employees doing creative knowledge work, a certain amount of mind-wandering calms our mind and gives us the mental break needed to help us later focus on work related tasks such as creative incubation (Baird et al., 2012)..

According to recent research (Pillay, 2017), the act of unfocus enhances resilience, creativity, and decision making. Research has shed light on the power of focus

and its role as a hidden driver of success. Yet as helpful as focus can be, research also shows there is a downside to it: excessive focus exhausts the focus circuits in your brain. It can drain your energy, make you lose self-control, impair your decision-making, and make you less collaborative. The brain operates optimally when it toggles between focus and unfocus. During the period of unfocus, a brain circuit called the default mode network (DMN) activates old memories, goes back and forth between the past, present, and future, and recombines different ideas. Using this new and previously inaccessible data, one can imagine creative solutions or predict the future, and more. There are many simple and effective ways to activate this DMN circuit in the course of a day, such as positive constructive daydreaming, napping, and consciously thinking from another person's perspective.

In the context of play for design-led innovation, imagination is a natural input to the process of visualizing the future and creating the new across all stages. Imaginative Play is when a person uses their imagination to role play scenarios they have seen, experienced or would like to experience. It is a kind of open-ended, unstructured play, with no rules, goals, or result – except that people learn a lot along the way. This type of play is experienced in Serious Play activities (Kristiansen and Rasmussen, 2014; Statler et al., 2011) with organizations attempting to co-create a shared vision.

Also, where there are serious goals to be reached, there needs to meaning in play, and hence the concept of positive constructive daydreaming (PCD) becomes relevant. This concept, developed by American clinical psychologist Dr. Jerome L. Singer in 1955, can reinforce and enhance social skills, offer relief from boredom, provide opportunities for constructive planning, and provide an ongoing source of pleasure as it puts our brain into "alpha" state – calm, relaxed (McMillan et al., 2013). This particular daydreaming style also aligns with recent research on the adaptive and beneficial nature of mind-

wandering as opposed to the nature characterized by obsession, lack of attention and control on an ongoing task to be done (Mooneyham and Schooler, 2013).

2.14. Playfulness, not just as a 'Trait' but a 'State'

A recent study (Bornemisza, 2013) showed the link between psychological safety and creativity and between ambiguity tolerance and adult playfulness (seen as a personality trait, measured by SMAP or Short Measure for Adult Playfulness (Proyer, 2012), were the strongest. Having such a playful personality trait, that is typically found to be stable, is particularly relevant in the current business environment where employees are increasingly being expected to deal with ambiguity.

While playfulness may partially be a "personality trait" that may be worth of consideration during recruitment and selection of new employees, organizations need to find a way to encourage turning on "workplace playfulness" – a measure of playfulness as a "state" West (2015). This study by West also found that organizational play is thought to foster the building and maintenance of positive relationships. Thus, sanctioning fun and encouraging play may potentially be a manner by which to establish and maintain a climate of positive relationships with co-workers and supervisors. Later West went on to use contextual variables such as play-cues (West et al., 2016) and playful improvisation theater workshops (West et al., 2017) to show how play can improve the organization's creative climate and enhance team creativity respectively.

Also, turning on a playful state of mind may be accomplished just by being in the company of playful people. Siviy and Panksepp (1987) showed with a laboratory research study that less playful rats (due to environmental stressors) become more playful simply by being with other more playful rats. Similarly, humans might also become more playful simply by being in the company of playful creatures of any species (Gordon and Baldwin-Philippi, 2014).

“The moment you’re part of a group, the amygdala tunes in to who’s in that group and starts intensely tracking them. Because these people are valuable to you. They were strangers before, but they’re on your team now, and that changes the whole dynamic. It’s such a powerful switch—it’s a big top-down change, a total reconfiguration of the entire motivational and decision-making system” states Jay Van Bavel, social neuroscientist at New York University in an interview (Coyle, 2018). Such a behavioral shift can prove to be beneficial in creative ideation environments in order to encourage being playful or generating ideas in a group.

2.15. Serious Play for Organizations

As discussed, play has the potential to improve trust and psychological safety of teams, help people collaborate better and increase intrinsic motivation. When play is applied to achieve serious organizational goals, such as creativity, it is called “serious play”. There is a stream of recent research that have shown use cases of serious play. A few unique cases include the strategy development (Roos and Victor, 1999; Heracleous and Jacobs, 2011), innovation processes (Schrage, 1999), organization change (Beech et al., 2004), organizational development (Jacobs and Heracleous, 2006) and leadership development (Holliday et al., 2007).

In the organizational context, a paradox naturally arises, as play is a fun, intrinsically motivating activity being applied to something as serious as work. To deal with this ambiguity, scholars (Statler et al., 2011) reframed the concept of “serious play” as “a practice of paradox”. This practice accepts the paradoxical nature of play and engages in playful, autotelic processes to achieve serious organizational outcomes. Csikszentmihalyi (1990) describes an autotelic person as someone who is internally driven with a sense of intention and curiosity. In the play experience, it is a reinforcing property of the state of "flow" and the activity becomes its own reward.

Serious play interventions can use hybrid thinking (divergent and convergent) to solve specific real world organizational challenges as it has significant potential for cultivating workplace creativity, with its divergent and convergent components encouraging novelty and discovery of valuable solutions for the organization (Amabile et al., 2018; Oliver et al., 2013).

Therefore, in serious play lies an opportunity for innovation and change management consultants, OD (organizational development) practitioners, and play evangelists to improve the creative, productive performance and drive change in organizations in a more enjoyable and intrinsically motivating way.

2.16. Addressing the Myth about Play

Although play has shown to increase emergent collaboration and creativity in organizations, many organizational leaders believe play can be “annoyingly ambiguous, frustratingly frivolous, and suspiciously silly” (West, 2014). These leaders from the industrial age, mostly from generation X (born between the mid-1960s and the early-1980s), typically do not allow play to tamper their well-honed rational skills that they use to run their organizations. In order to address this shift in mindset, organizations need a "technology of foolishness’’ to deal with this over-reliance on “the technology of rationality” (March, 1976).

Along with the empirical support for the value of organizational play, West’s theoretical framework that is based on concepts of exploration and technologies of foolishness has the potential to convince serious organizational leaders to embrace the foolish intelligence of play.

Also, Kristiansen and Rasmussen (2014) draw on the work of Huizinga (1955) with his groundbreaking book, “Homo Ludens”, to come up with a conceptual framework for Serious Play. The method aims to harness and direct this underlying and natural

developmental potential into the corporate and start-up work environments. It gets people to lean forward, unlock tacit knowledge and break habitual thinking (Kristiansen and Rasmussen, 2014, p 39).

The Serious Play method also uses a set of well-known theories such as constructionism (Papert and Harel, 1991) and flow (Csikszentmihalyi, 1990).

These former LEGO employees also state that children's play can be, and often is, serious and intense. They argue that that most play is not frivolous and it generally has an underlying developmental function, even though its purpose is not explicitly stated (Kristiansen and Rasmussen, 2014, p 39).

The Serious Play ethos is not a radical break from LEGO as a children's toy, rather it could be seen as a focused application and development of a long-established corporate philosophy. The LEGO Group and the LEGO Foundation points out the value of play by stating "Free play is how children develop their imagination - the foundation for creativity … Playfulness asks WHAT IF and imagines how the ordinary becomes extraordinary, fantasy or fiction. Dreaming it is a first step towards doing it … Creativity is the ability to come up with ideas and things that are new, surprising and valuable … Systematic creativity is a particular form of creativity that combines logic and reasoning with playfulness and imagination." ("The LEGO Brand," n.d.)

This shows the link between play and creative ideation and highlights the potential of play to nurture organizational creativity for business benefit.

2.17. Organizational Studies on Play

In addition to the examples of Serious Play mentioned earlier, the following section provides a review of additional, unique organizational studies on play that analyze its usage and applications in different contexts.

Jacobs and Statler (2006) suggested that organizations can use playful building blocks (toys) to supplement rational strategic planning - an example of serious play as the technology of foolishness. They later also showed how the seriously playful process of constructing and interpreting of "embodied metaphors" has the potential to shift mindsets of strategists as well as improve engagement from the non-strategists in the crafting of strategy, while gaining a deeper understanding of organization, divisional and task identities(Heracleous and Jacobs, 2011). Pillay (2017) also notes that the higher the quality of the metaphor, the more it will activate the brain regions responsible for openness to experience.

A Finnish study (Nisula et al., 2015) that investigated three approaches to inducing organizational playfulness and found them to be useful facilitators of playfulness in organizational contexts. These three approaches conducted as workshops included improvisational theater-based training, sketching with pictures and serious play, which involves building prototypes with LEGO bricks.

Arnab et al. (2018) studied the influence of playful activities and games on a learning process involving co-creation, and noted that participants (undergraduate students) were able to obtain valuable knowledge of the creative and collaborative problem solving process while addressing real-world challenges in their communities.

A study (Parker and du Plooy, 2021) at a resource-constrained South African hospital that used a team-based intervention "Marshmallow challenge", developed by Peter Skillman, found psychological safety to be positively related with team performance and learning.

2.18. Summary and Gaps from the Literature Review

Through the literature review we can conclude that while different research scholars have written about play and some organizations have started realizing the

benefits of play in the workplace, play is still seen as something that is not serious and senior leaders don't seem to be convinced about the potential of play. This is due to the multi-faceted nature of play and lack of sufficient case studies in different organization contexts for design-led transformation and innovation.

Play can have different forms such as an activity, a trait, a behavior or even a state, but it can only be best understood when it is experienced. And that is why perhaps this multi-faceted nature of play becomes so difficult for the rational, conditioned brain from the industrial age to understand its unstructuredness and fluidity, and therefore leading to lack of relevance of play in the business context. What is intriguing and relevant in the organizational context is the recent work on "serious play" or (working playfully – researcher's term, retaining the focus on working with a playful state of mind) that allows us to explore play as a technology of foolishness to deal with this over-reliance on the technology of rationality.

In addition to the multi-faceted, paradoxical nature of play in the workplace, there is also the lack of case studies across different organization contexts like functions, levels, and industries, that make play difficult to penetrate the organization at scale.

The following are key gaps and questions that remain unanswered from the literature review. The research questions and sub-objectives mentioned in the earlier sections are structured to address these gaps in the research:

1. The few case studies on serious play available are in areas of strategy, organization and innovation processes (Statler et al., 2011). There is a lack of sufficient literature that focuses on play in the Design Thinking process for enhancing creativity for innovation in areas of digital leadership, culture change, customer experience, sales and marketing, product and service innovation, especially for the young Millennial workforce, both in the corporate as well as higher education sectors.

2. Also, while there are some specific papers on using play to enhance group creativity, there is little research on understanding behavioral aspects of working teams as well as actions need to be taken to address different personality types (introvert/extrovert) who may be resistant to sharing and generating ideas, especially pertaining to Millennials and Gen Z. Also there is a lack of literature to show how play activities can decode multi-generational differences and enhance creative agility and collaboration across the organization.

3. More recent literature on serious play centered around crafting strategy with embodied metaphors (Jacobs and Heracleous, 2006) using LEGO® but not on other multi-sensory material such as candy, spaghetti marshmallow, play-doh, among others that provide for enhanced flexible and sensory play experiences for different stages in the design thinking process.

4. Also unexamined is how specific types of play (constructive play, social play, narrative play and imaginative play) can shift individual and team's behaviors for better empathy building, cohesion, storytelling, insight development and idea generation. How should group and solitary activities be dispersed in the creativity process? Is there a timing, sequence, or process for better innovation outcomes?

5. There is research pointing to the need to take out the non-serious elements out of play and developing of "serious play" in the organizational context. As reviewed in the literature, since non-serious, creative activities provide the required positive affect/mood for us to open up our mind for serious creativity, there may be merit is examining the impact of these fun / diversionary play (creative activities) on work-related divergent thinking (idea generation)? And should they go hand-in hand as it helps us to turn on our "play state" or "child-like mindset"?

6. Can play can be a mediator (catalyst and nourisher) for creative, productive performance for individuals and teams as it provides a mix of emotions (positive and negative affect), intrinsic motivations, and perceptions characterised by psychological safety and trust? These are the ingredients of a quality "inner work life" (Amabile and Kramer, 2007). Examine the psychological factors provided through play can enhance organizational creativity.

7. How does conducting play-based Design Thinking workshops in the online environment with visual collaboration tools such as Mural.co compare with those in the offline environment? Compare key activities such as divergent thinking, empathy building and agile iteration in the offline and online platforms. What are the benefits and challenges?

8. Also there seems to be unresolved conflicting arguments about the value of mind-wandering and unfocusing for creativity in the organization. Pillay (2017) shows how the unfocused mind and a certain amount and style of daydreaming (McMillan et al., 2013) can lead to increasing strategic foresight and creativity, whereas Killingsworth and Gilbert (2010) discusses how mind-wandering leads to unhappiness and a drop in productivity in the workplace. These arguments are basically centered around visualization and imagination, that are underlying tenets of play. Since the workforce needs to exercise these creative muscles to adapt and thrive in the increasingly complex and competitive business environment, there is merit in examining the power of play-enabled visualization in the business context.

9. How creative activities / play reduce stress and improve well-being in WFH/online environment brought by the pandemic? Why is the motivation and passion with which people pursue their creative activities at home often only a dream for many

employing organizations? Perhaps play can teach us a lot about human motivation for organizational creativity.

10. Also, although the impact of divergent thinking is a cognitive measure of creativity and measure of creative activities are more motivational and socio-emotional in nature, there may be merit in evaluating the impact of using “creative activities” along with “divergent thinking” for enhanced “well-being”; thereby addressing two urgent imperatives (creativity and well-being) at the same time, particularly pertinent in the stressful pandemic environment.

This research paper will attempt to address questions 1-8. To maintain focus on fostering creativity, instead of well-being, through play, questions 9 and 10 have only been discussed through analysis of available data. With that said, the importance of play for well-being must not be undermined by organizations specially as they emerge out of the pandemic era.

CHAPTER III:

METHODOLOGY

3.1. Overview of the Research Problem

Whilst there is a need for organizations to nurture the skills and behaviors of the workforce to co-create better and come up with innovative solutions, especially in the post-pandemic era that is characterized by uncertainty and complexity, organizations struggle with accelerating their transformation efforts. The areas of concern are specifically related to building the necessary skills, behaviors and mindsets to navigate uncertainty and embrace change in order to make continuous improvement and experimentation a habit, more than a one-time transformation effort. This concern is more relevant for larger organizations built in the industrial age that have been operating with set organizational structures and hard-to-change operational capabilities, and struggling to remain relevant and competitive in the digital age.

Learning organizations that provide openness, autonomy, flexibility, psychological safety, connection and trust have seen better innovation outcomes. A safe, creative, non-judgemental environment has shown to be conducive to co-creation as it enables sharing of vulnerability, empathy, diversity of ideas and agility. Since many of these behaviors have been observed to emerge in playful environments, this research aims to address co-creation for organizations by examining the potential of play for serious organizational outcomes. Therefore, the research problem is to demonstrate the potential of Play fosters co-creation for design-led innovation.

3.2. Research Purpose and Questions

The main research purpose is the examine how Play fosters co-creation for design-led innovation. This research purpose is refeined and the following research questions (RQs) are addressed in this thesis.

- How can play enhance the ability to creatively empathize and connect with each other? (RQ1)
- How can play improve divergent thinking for better co-creation outcomes? (RQ2)
- How can play improve creative agility in diverse teams? (RQ3)
- How can play help in sharing vulnerability and increase connectedness? (RQ4)
- What are the group dynamics enabled by play that faciliate in building a design thinking mindset? (RQ5)

3.3. Definition and Operationalization of Theoretical Constructs

In order to address the research questions, the corresponding theoretical contructs were explored in the case studies. Organizations need to help employees enhance the following key skills, defined as theoretical constructs, used in human-centric design process:

- Empathy (D. Goleman, 2013) (RQ1) – Goleman's research shows that empathy is not a single attribute but has three components or stages of developed. It is discussed as the "empathy triad" where each of the following kinds of empathy are important for leadership effectivenes – cognitive empathy or the ability to understand the other person's perspective, emotional empathy or the ability to feel what the other person is feeling, and empathic concern or the ability for a person to sense what

action is required from you by the other person, also referred to as compassionate empathy – the highest stage of empathy development.

- Divergent thinking (Runco and Acar, 2012) (RQ2) – Runco and Acar's research presents divergent thinking as a strong indicator of creative potential. Unlike convergent thinking, it leads to non-conventional ideas and potentially new and novel solutions. Popularly used in the design thinking process, divergent thinking helps in the generation of more originality and elaboration, but also greater fluency (speed and quantity of ideas) and flexibility (ideas that are truly different and distinct).
- Creative agility (Hill et al., 2014) (RQ3) – Hill's research coined this term to describe an organization's ability to test and refine ideas with rapid experiments, reflection and adjustment. Since the most innovative solutions for a complex problem typically takes time and effort, this capability allows organizations to constantly experiment and test ideas quickly with a discovery-driven learning approach.
- Vulnerability (Brown, 2012) (RQ4) – While vulnerability is usually seen as a weakness, Brene Brown's research describes it as a "birthplace of joy, belonging, creativity, authenticity and love". Her research shows how vulnerability is a measure of courage. Furthermore, recent research (Edmondson and Chamorro-Premuzic, 2020) also warrants vulnerability as a critical requirement for effective leadership in a world of extreme uncertainty where answers are not clear. In such an environment, leaders need to be more self-aware, tell the truth, ask for help, and engage others to co-create solutions with them.

While these 4 skills are key for the design-led innovation process, organizations need to help employees build a design thinking mindset, defined as 19 theoretical constructs, for effective co-creation of solutions. These design thinking (DT) mindset contructs (Dosi et al., 2018) are:

A. Tolerance for - Being comfortable with Ambiguity - Uncertainty

B. Embracing Risk.

C. Human centeredness.

D. Empathy / Empathic.

E. Mindfulness and awareness of process.

F. Holistic view/consider the problem as a whole.

G. Problem reframing.

H. Team working.

I. Multi- / inter- / cross- disciplinary collaboration.

J. Open to different perspectives/diversity.

K. Learning oriented.

L. Experimentation or learn from mistake or from failure.

M. Experiential intelligence / Bias toward action.

N. Critical Questioning ("beginners mind", curiosity).

O. Abductive thinking.

P. Envisioning new things.

Q. Creative confidence.

R. Desire to make a difference.

S. Optimism to have an impact.

For the single case studies, the 4 theoretical constructs – empathy, divergent thinking, creative agility and vulnerability – were operationalized by the examination and interpretation of the models and other artifacts created by the participants in each case study. For instance, in case A on the Enterprise IT solutions, in order to answer research question 1, the potential of play to enhance empathy was measured by examining the LEGO super duck models and empathy maps created as a result of play infused activities in the workshop.

For the multiple case studies, the 19 design thinking mindset constructs were operationalized by first identifying the co-creation behaviors patterns by direct observation as well as examination of participant behaviors observed in the repository of pictures and video clips, and then mapping them to the corresponding design thinking mindset constructs.

Further details on the case studies and research design are discussed in the following sections.

3.4. Research Design

Based on the research questions and the qualitative, behavioral nature of the topic on play and creativity, the **case study research method** (Stake, 1995) is adopted. In total 10 cases studies were selected to examine Play as a catalyst for co-creation and innovation in the corporate and higher education sectors.

In terms of depth of **single case studies (4)**, the embedded case study method is used instead of holistic, as the goal was to examine a sub-unit of each case to answer the related research question. Each intervention is a part of the overall context of related case study and was selected to examine the role of play in facilitating the creative process from the 4 Ps model of creativity (Rhodes, 1961) with skills such as empathy (D.

Goleman, 2013), vulnerability (Brown, 2012), divergent thinking (Runco and Acar, 2012), creative agility (Hill et al., 2014) that are required in the human-centric design process in order to meet the goals of the intervention. This process has three phases – Inspiration, Ideation, Implementation (Design Kit, I.D.E.O., 2016). The creative behaviors, factors and processes related to these skills, mentioned under the "Objectives" section, is observed, analyzed and interpreted in this research.

Aside within-case analysis from single case studies, cross-case analysis from **multiple case studies (6)** is conducted to understand patterns of behaviors and mindsets across case studies. This required consideration of separate case studies from different contexts but same purpose of intervention to examine patterns of behaviors during effective co-creation. The data analysis section further discusses the content analysis technique used on these cases.

It is important to highlight that these play-based interventions use proven approaches deployed by the academic and designer community and are designed for emergent collaboration and creativity.

The **interpretative case study design** (Stake, 1995) is used for within-case and cross-case analysis as the study is conducted by a well-trained researcher, also the facilitator of the workshops, who is capable of seeing and interpreting the complex social phenomenon from the perspectives of the embedded participants in the workshops and reconciling the diverse perspectives of these participants, without injecting his own personal biases or preconceptions into their inferences.

In case research, interpretation of findings depends on the observational and integrative ability of the researcher, lack of control may make it difficult to establish causality, and findings from a single case site may not be readily generalized to other

case sites. Generalizability was improved by replicating and comparing the analysis in other case sites using a multiple case design.

As mentioned, the researcher of this study was the instrument and facilitator of these workshops. The case studies selected, therefore, follow a facilitation format rather than an instructional format of delivery like those typically designed in the context of organizational development (OD). The workshops were conducted in the natural setting of the organization workplace and the context had both a business context as well as a creative learning context with play activities integrated into the business problem solving process.

These interventions involved the joint development of experiences, interpretation of metaphors and debriefing of outcomes by the members of the organizations, without any influence by the facilitator on participants' creative behaviors nor towards their creative output. There was however structure and specificity in tasks. A broad set of guidelines was provided to imbibe a safe, non-judgmental environment for playful, creative self-expression. Each of these interventions have been applied to different organizational contexts and the observed individual and team behaviors are consistent.

3.5. Sampling Technique and Participant Selection

Since the research design uses the case study research method in order to examine the role of play in enhancing creative processes and identifying behaviors of participants engaged in different phases of the design thinking process, non-probability sampling (Boddy, 2016) is used.

For the single case studies, purposive or judgemental sampling is used. As shown in table 1, each of the 4 cases are unique and deliberately selected in order to examine the related skill that is being enhanced as a result of using play as a catalyst (RQ 1 to 4). The

number and type of participants differing by generation and level for each case context are purposefully selected to explain the phenomena in depth, that is the role of play for each phase in the design thinking process. Both young managers (Millennials), senior management (Gen X) and a mix of both were examined. Millennials are born during 1981-1995, Gen X are born before 1981. The population does not matter in this case, rather the sample size or number of participants involved in each case suffice the exploration of the related research question.

Table 1. Single Case Study Summary

Case Context	**Purpose of Intervention**	**Participant Mix**
A: Enterprise IT Solutions – *Across multiple industries*	Improve sales pipeline for solutions provider by co-creating solutions with IT Heads (clients) undergoing digital transformation.	*Gen X* 65; Sales Heads of solution provider (25) and their clients – CIOs, CISOs, IT Heads (40).
B: Online Professional Network – *Within an organization function*	Transform enterprise account planning by building a growth mindset for enterprise sales teams.	*Millennials* 26; Account Executives (5), Operations (4) and Client Servicing (17).
C: Digital Consulting Services – *Across domains in a business*	Enhance go-to-market service offering and improve client servicing by building trust and collaboration across teams.	*Gen X (25%), Millennials (75%)* 12; CEO, COO, CHRO, Media Planning Team (6), Specialist Leads (3).
D: Financial Services – *Across businesses*	Break silos to improve connectedness in the leadership team and obtain buy-in for the Finnovate program.	*Gen X* 11; Business Heads (9), CHRO, CFO.

Similarly, for the multiple case studies, purposive or judgemental sampling is also used. As shown in table 2, each of the 6 cases are deliberately selected in order to find

patterns and understand group dynamics in co-creation behaviors of participants (RQ5) from play-based design thinking workshops in areas of learning and development, both in organizations and higher education. Since the onus of implementing innovation lies primarily on lower to middle management, multiple cases were deliberately selected where participants were managers and post graduate students (Gen Z and Millennials). Consider Gen Zs to be born after 1995 and Millennials born during 1981-1995. The population does not matter in this case due to the case study research design, however since we are identifying common behavior patterns, it was important to select a large enough sample size or number of participants (123) across the selected cases.

Table 2. Multiple Case Study Summary

Sector	**Case Context**	**Innovation Challenge**	**Participant Mix**
Corporate	C1: Conglomerate – Business leadership program on design thinking	Reimagine workspace of the future (India)	*Millennials* 28; Young managers from premier institutes in India; across multiple industries and organization functions, e.g. Infrastructure Management, Logistics, Supply Chain Management and Operations, Sales and Marketing, Finance & Strategy, HR
Corporate	C2: Management Training Association – training and development program on design thinking	Reimagine retail store of the future (Mumbai)	*Millennials* 17; Mid management; across member companies from different organization functions, e.g. Marketing, Business Operations, IT, Finance, HR

Sector	Case Context	Innovation Challenge	Participant Mix
Corporate	C3: Financial Services – Design thinking capability building for Innovation Champions	Reimagine the travel experience (Mumbai)	*Millennials* 25; Young managers; across business units, e.g. investment banking, corporate banking, private banking, asset management.
Start-up	CE: EdTech company – runs training services in product design and engineering	Reimagine workspace of the future (Hyderabad)	*Gen Z* 10; Undergraduates from different colleges, e.g. engineering, commerce, arts.
Higher Education	E1: Engineering college – workshop on design thinking	Reimagine workspace of the future (Hyderabad)	*Gen Z* 15; Undergraduate students from different areas of specialization, e.g. electronics and communication, mechanical, civil.
Higher Education	E2: Global business management institute – design thinking course, part of curriculum (2 workshops)	Reimagine transportation of the future (Mumbai)	*Millennials* 28; Postgraduate students specialization in digital marketing.

3.6. Data Collection and Instrumentation

In terms of **data collection for the interpretive research**, two techniques are used – direct observation and documentation. The direct observation technique is used where the researcher was a neutral observer and not involved in the behavioral phenomenon of interest. To corroborate these observations, primary data recorded and documented in video clips, pictures, written feedback and debriefs sessions from

stakeholders and workshop participants were used for the analysis and implications for organizations. The timeline of these workshops was between the year 2017 and 2019.

3.7. Data Analysis

The interpretive analysis (Stake, 1995) takes into account the interpretations of the creations, e.g. LEGO models, play doh and other play material, narrated by the participants as well as observing and interpreting behaviors observed and recorded by the researcher, similar to the research on the role of embodied metaphors for strategy development (Heracleous and Jacobs, 2011). Table 3 provides a summary of the two types of case analysis (within-case and cross-case) and alignment with research questions.

Table 3. Types of Case Analysis

Analytical moment	**Number of cases and type of interpretative analysis**	**Unit of analysis**	**Purpose and alignment with research questions**
Within-case analysis	Single cases (4) – qualitative, narrative, storytelling format	Individual and Team	Examine how play enhances vulnerability, empathy, divergent thinking and creative agility across the design thinking process (RQ1 – 4).
Cross-case analysis	Multiple cases (6) – quantitative, content analysis	Team	Identify and analyse cross-case behavioral patterns and impact on developing a design thinking mindset (RQ5).

For the **within-case analysis**, a rich, narrative storytelling format with emotionally expressive language was used to describe the context, content, communication, medium (play material) and actors (participants) involved in the workshops. This qualitative approach was conducted to understand key components of

the creative process such as empathy, vulnerability, divergent thinking, and creative agility enhanced through play and why actors behaved the way they did, by identifying influencing factors from the 4 single case studies.

Data analysis of 6 separate multiple cases studies for the interpretive research was conducted with the objective of getting a sense of the whole and establish units of significance that can accurately represent the behaviors and experiences of participants using **cross-case analysis**. The **content analysis technique** of coding was used to review and analyze the available repository of video clips, pictures and other artifacts from multiple case studies in order to identify behavioral patterns and understand the social phenomena. The artifacts served in recollecting the participants' experiences and were used in the holistic and methodical development of codes, concepts, categories and themes.

To understand the role of play in the co-creation process, the quantitative analysis brought rigor to the research and was essential to understand in depth how the individuals in creatively productive teams communicated and interacted with each other, as well as how these behaviors impacted their design thinking mindset. These behaviors are termed as "micro-behaviors" for this study.

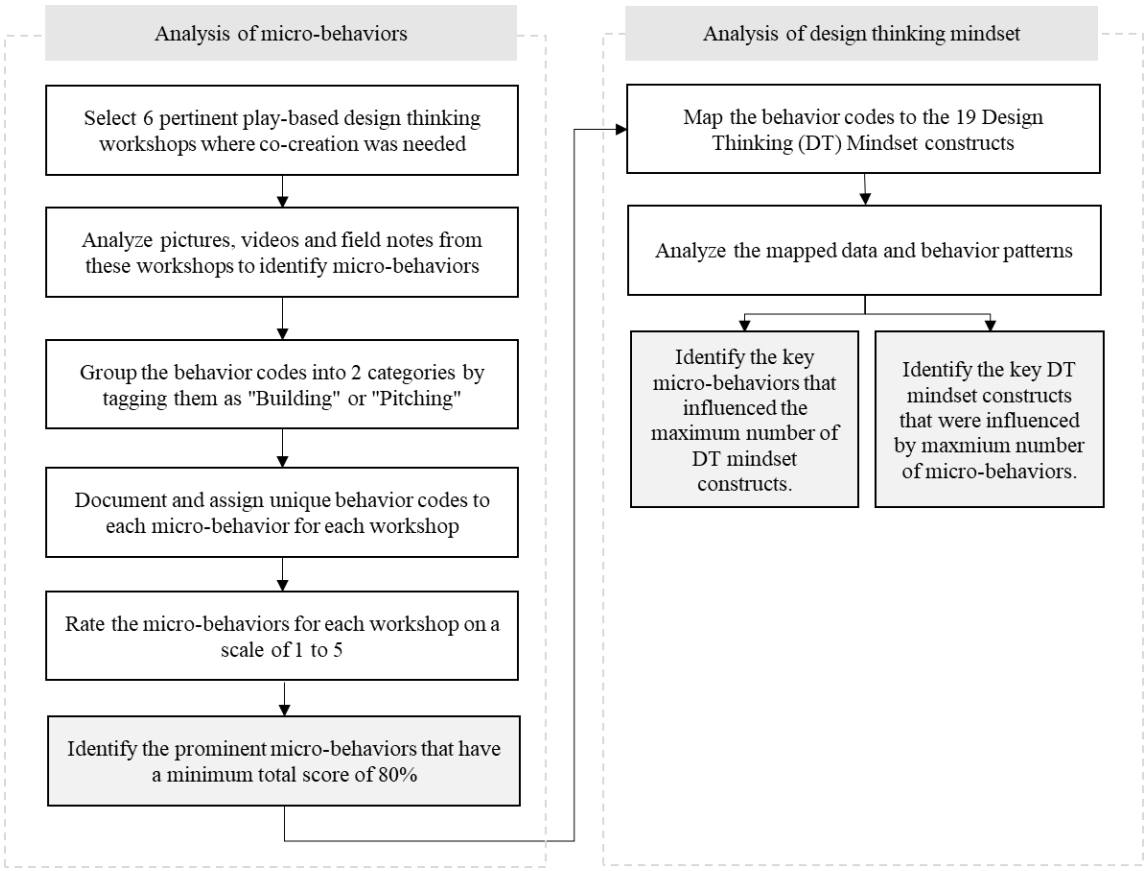

Figure 2 Content Analysis Process.

As depicted in figure 2, the first step in the content analysis process was to select 6 workshops related to the case studies mentioned earlier. While such a behavior analysis is inherently subjective in nature, the behaviors observed from the available content of pictures, videos and field notes were analyzed in an objective and systematic manner so that clear patterns can be quantified identified across these workshops. The next step was to document the common patterns of micro-behaviors by reviewing all the content available for each workshop in depth. A unique set of codes were then assigned to these behaviors and tagged as “building” and “pitching” behaviors that denoted the stage in which these behaviors were observed.

Following the assignment of behaviors codes, scores were given to each micro-behavior for every workshop. This was an estimation based on the frequency and intensity of the behavior observed across all members in the team. The scale of the scores was from 1 to 5. These scores indicated behaviors that strongly emerged across these workshops as a result of using play in the co-creation process.

Since our scope of research is in the context of design-led innovation, a mapping effort was conducted to map these micro-behaviors with the various design thinking mindset constructs in order to evaluate the impact of these play-enabled behaviors. Since the unit of analysis is the team that is engaged in the act of play and co-creation, a self-reported assessment on the different design thinking mindset constructs would not be appropriate as it would probably introduce self-bias. For a more accurate representation, the researcher reviewed the available content, such as videos, pictures and field notes and then identified the observed micro-behaviors to map to these constructs. The analysis of the mapping provided the top micro-behaviors and design mindset constructs resulting from these play-based innovation workshops.

3.8. Research Design Rigor

Considering the interpretive nature of the research, a set of criteria that can be used to judge the **rigor of interpretive research** are dependability, credibility, confirmability, and transferability (Lincoln and Guba, 1988).

The **dependability criteria** for rigor in interpretive research is met because the same or a similar phenomenon was observed at different times arrives at similar conclusions with the cross-case study analysis, wherein the same design thinking workshop structure was used for 6 difference cases at different points in time, spread across the years 2017 and 2019.

The **credibility criteria** for rigor in interpretive research is met with the demonstration of data triangulation across the literature review, documentation of models and artifacts discussed earlier, and clear notes on theoretical and methodological decisions, that can allow an independent audit of data collection and analysis if needed. In addition, there is additional evidence of the researcher's extended engagement in the field of design thinking, transformation, and innovation with organizations across different the corporate and education sectors in India.

The **confirmability criteria** for rigor in interpretive research is met because a set of the study's participants (client stakeholders) confirm with the play activities conducted and agree with the findings and analysis drawn in the research based on a review of the research paper.

The **transferability criteria** for rigor in interpretive research is met as the paper provided rich, detailed descriptions of the research context and thoroughly describe the play methods and tools, workshop flow and structures, organizational contexts (industry, function, generation), purpose of interventions, environmental conditions, assumptions, factors and patterns revealed from the qualitative and quantitative data. This can help readers independently assess whether and to what extent are the reported findings transferable to other organizational settings.

CHAPTER IV:

FINDINGS AND ANALYSIS

4.1. Introduction

The findings and analysis conducted in this thesis are discussed in two parts, for single case studies that discuss each of the four cases in depth with findings and analysis for each case, and for multiple case studies that discuss the cross-content analysis across six cases. This was conducted to answer the related research questions – RQ 1 to 4 with single case studies and answering RQ 5 with multiple case studies.

4.2. Findings and analysis from single case studies

To examine the potential of play in enhancing the skills used in the human-centric design process, case studies (4) related to interventions within the organization as well as with its partners and clients in different contexts were considered. Each case study description is structured to discuss the context and goals of the intervention conducted for the learning organization (Senge, 1990), followed by workshop flow and observations, and lastly the analysis and lessons learned.

4.3. Case study A: enterprise IT solutions

4.3.1. Context and goal of intervention

The Country Manager of a global technology infrastructure solutions provider was looking to untap new business opportunities from current and prospective clients – CIOs, CISOs, IT Heads. An offsite conference with the theme – Be a Digital First Leader – was organized to educate clients on trends as well as new products and services. The marketing team was asked to come up with new, engaging formats to engage the clients

at the conference. A 4-hour workshop was designed to playfully understand key challenges of the clients in order to improve the sales pipeline for the solutions provider, in addition to providing a platform for the IT leaders to network with their peers. Participants used LEGO® and other art and craft material to co-create a visual model of a digital-first leader and share organizational challenges during their digital transformation journeys. The Sales Heads of the solution provider (25) co-facilitated the workshop with their respective clients (40) during the workshop.

Play activities conducted: Super Duck, based on the open source methodology of LEGO® Serious Play® (referred to as LEGO® in the activity description) that was originally developed by Johan Roos and Bart Victor at IMD in Switzerland.

4.3.2. Activity flow and observations

The 4-hour workshop commenced with the creative daydreaming activity called Vision Boarding, resulting in a vision board of the dreams of the senior IT leaders (Gen X). They mindfully dreamt of themselves as a digital-first leader and sketched a picture of what they saw in their dream. They put up these vision cards on a large, common board with open visibility. This set the stage for realizing these dreams with understanding and addressing their challenges using the hands-on, duck building activities using LEGO® bricks. The solution provider (Sales Heads) were seated with their respective clients (IT leaders) so they could collaboratively build a digital-first leader. These activities were designed to rediscover, reflect and share themselves with each other in order to build their future-ready, digital-first leaders with their hands. Each participant was given a set of sticky notes, sketch pens and a bag of 8 LEGO® bricks.

To kick-off the LEGO® building session, participants built a duck with bricks and imagined themselves as the duck by portraying one super power or strength as a

senior leader. Sharing the characteristics of their ducks with each other on their table helped in building stronger connections between the Sales Heads and their clients. Proceeding to the Super Duck activity, the facilitator then posed the question, “So how does a duck survive in a jungle full of beasts?” The participants were then taken through three steps – “1. Empathize with the beasts; 2. Understand their challenges; 3. Become a Super Duck!”

This time the participants had to work as a team on their respective tables. They picked 2-3 beasts from a list provided to them. These beasts represented organizational stakeholders such as the business team, employees, partners and other internal and external customers. An indicative list of traits for each beast was provided: Lion - Power, fierceness, courage; Alligator - Deceptive, go-for-the-kill, shrewd; Elephant- Hard to move, lazy, big ship; Giraffe - Big picture view, elegant, snooty; Pig - Dirty, slow-witted, gullible; Monkey - Fickle-minded, uncertain, agile; Tiger - Confident, trustworthy, decisive. In order to empathize with the beasts, they created a Customer Persona by collectively deciding on the top 4-5 challenging traits of their key customers. Then they created an Empathy Map and collectively identified the jobs to be done, feelings, influences, pain points and goals of their beasts. They were given 15 min to discuss their points as a team and put up sticky notes on the empathy map drawn on a chart paper.

Once they completed the empathy map, they brought back their ducks to work on building a combined Super Duck. This was a symbolic representation of the collective superpowers of the IT leaders that were needed to address the top three challenges of their beasts. With team members now leaning in and with all hands on the table, they played with their ducks. They discussed as a team and reconfigured the ducks to build a new Super Duck that metaphorically represented a digital-first leader. The teams then

presented their Super Ducks with all participants in the workshop. A sample Super Duck is shown in figure 3.

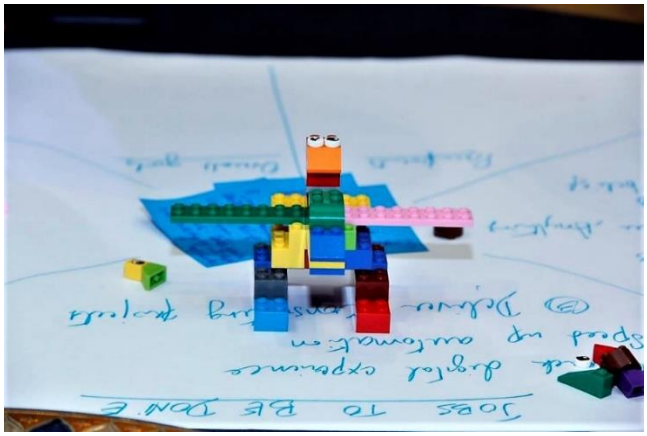

Figure 3. A Super Duck – embodied metaphor

4.3.3. Analysis and lessons learned

Research Question 1: How can play enhance the ability to creatively empathize and connect with each other?

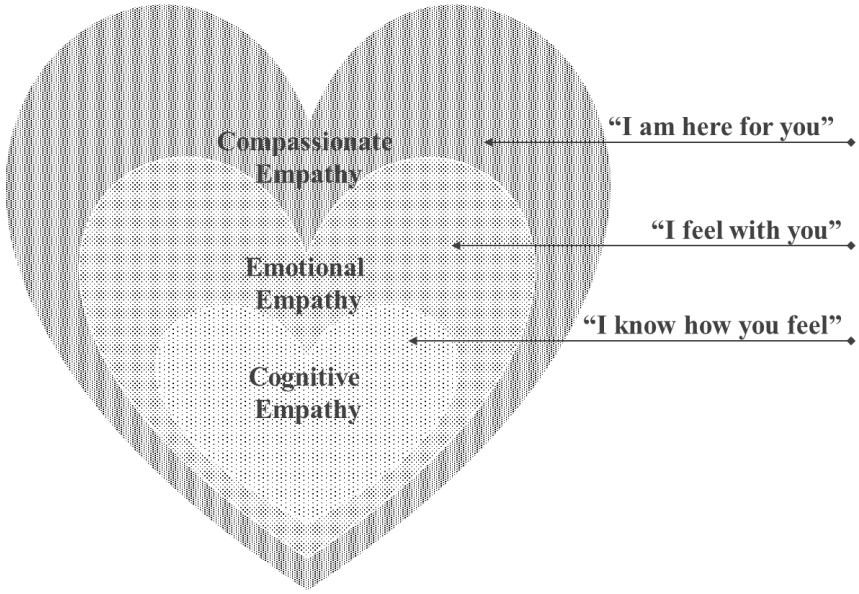

Figure 4. Building empathy in three stages

This play intervention used the “empathy triad” or three stages of empathy development (Goleman, 2013; D. Goleman, 2013) for the Sales Heads to deeply empathize with their IT clients, as depicted in figure 4. Initially when the IT leaders individually built their own ducks with their own super powers in them, the Sales Heads got to know how their clients felt (cognitive empathy). The Super Ducks created by the joint teams (Sales Heads and IT leaders) were metaphorical representations of themselves as a team, also called known as embodied metaphors (Jacobs and Heracleous, 2006). They built a model that would address the complex challenges of their organizational stakeholders. Each 3D model was the output of the empathy process. It was a unique experience with a story about their one-of-a-kind Super Duck that was characterized by a brand identity, personality, values, mission, fears and challenges. This approach helped them see the problems and come up with solutions collaboratively. They had transferred tacit knowledge into a visual artifact that could be easily shared and discussed easily. This joint development of the Super Duck helped the Sales Heads develop a deeper understanding of their clients’ problems as they articulated the strengths, fears and challenges of their IT clients (emotional empathy).

For instance, one the teams described their Super Duck by saying that “... underneath the surface it's [duck] paddling really hard”, indicating that IT was struggling to keep up with the pace of change in business requirements. Then continuing to demonstrate the duck’s capability to transform and proactively act on issues in an agile manner by explaining that “we used the elephant, alligator and lion as the challenges we want to overcome... and so when it senses danger it turns into a Velociraptor [species of fast, intelligent, aggressive dinosaur]... and then it launches its own little satellite which can go sense danger and then come back”.

With the help of the Empathy Map, one of the first artifacts in the design thinking process, the Sales Heads were able to understand not just the challenges and goals in depth but also the activities and feelings of the IT leaders. Working jointly with the clients helped in naturally and gradually positioning themselves as compassionate partners who wanted to help address their client's challenges. This level of empathic concern (compassionate empathy) helped to build stronger relationships and helped prioritize the product and service offerings to their clients that would later result in a better sales pipeline.

One of the broader messages that emerged from the playful interactions was that IT leaders were feeling disengaged from the rest of the business and treated like a support function. While on one hand they were expected to provide the technology infrastructure for running business operations and improving employee experience, they were now also expected to support innovation projects. They were now actively seeking alignment and a relationship of 'co-existence and partnership' with the business and their partners (solution providers) at large. They wanted to play a stronger role in business growth and saw themselves as strategic partners.

4.4. Case study B: online professional network

4.4.1. Context and goal of intervention

The Marketing Director of a global professional networking services company was looking to transform the Enterprise Account Planning process for the India team. She wanted to develop a growth mindset that would help in doubling the revenue for the business in the coming year. The challenge was to improve internal collaboration and co-create a shared purpose among the Enterprise Sales Teams comprising Account

Executives, Customer Service Managers and Cross-functional Partners in order to develop transformative Account Plans for the business.

Two workshops were set up with this team of 26 members –Warm-up and Deep-Dive. Each working pod was a team of 1 Account Executive, 2-3 Customer Service Managers and 1 Cross-functional Partner. The goal of the first 4-hour workshop was to introduce the value of a growth mindset to each working pod and let them experience the concept of neuroplasticity through rounds of solution building. Participants would apply the creative strategy of "breaking patterns" in order to think divergently for the subsequent creation of new account plans. The 6 pods played with candy to build a child-like mindset, thinking unbiasedly and collaborate to arrive at creative outcomes.

Play activities conducted: Trick or Treat, developed by Fridolin Beisert, ArtCenter College of Design, USA.

4.4.2. Activity flow and observations

The 26 team members (Millennials) were split into their 6 working pods to maintain the working relationship. The Trick or Treat Challenge involved four timed rounds of 2 minutes each. At the end of each round, each pod would be scored out of a maximum of 5 points for their creativity. They were asked to select a score-keeper for their teams. Each table had a small, transparent packet filled with 8 candies placed on a big chart paper. Each packet contained six assorted candies of different sizes and shapes, and each candy was wrapped in a different color. A sense of curiosity could be seen on the participants faces. They were all waiting to open the packet and wanted to know what was coming next. The Marketing Director and Sales Head chose to stand and watch the activity.

Round 1: Predictably Rational

The pods were invited to sort the contents of the packet into an order that makes sense to you. Suddenly, their curious smiles vanished and they seemed guarded. One of the participants asked, “So can we take out the candy from the packet?” Not expecting such a reaction, the facilitator rolled up his sleeves, took out his jacket and invited the suited managers to do the same. “I want you to loosen up a bit. What happens in Vegas stays in Vegas!”, he laughingly exclaimed, trying to lighten up the uptight mood. He assured them that this room was a safe, non-judgmental, creative environment. They were allowed to play with the contents and express themselves as they wished.

Some of the participants leaned in and hesitantly open the packet to explore the contents, while some began to discuss some strategies on how they could sort the chocolates. The analysis-paralysis situation was setting in. Checking the time, the facilitator reminded them of the one-minute time that was left, so that they could build some momentum. Hearing this, some of them leaned forward organizing the chocolates while others suggested how they should be organized. At the end of the second minute, the facilitator stopped the timer. He randomly picked teams to describe their creation in 30 seconds.

He went around the room patiently listening to each team and scored them on a scale of 1 to 5; 1 being the lowest and 5 being the highest. As expected, all the teams had sorted the contents either by size or shape or color, i.e. physical attributes. Each team had presented their creation passionately; however, no team had scored more than 2 out of 5. They wondered why. The facilitator then pulled up a slide to show them why he wasn’t surprised. It read “Round 1: Physical – size, shape, color, weight, etc.”

Round 2: Daring Hesitantly

The facilitator then quickly moved to round 2, again giving them the same brief – “Sort the contents in whatever way you want.” This time he tried to motivate them and

asked them to stretch their minds. As time passed by, the noise in the room increased. They were all leaning in, discussing, and playing with the chocolates. As the momentum built, a sense of psychological safety was setting in as the comfort levels of working together increased. They were starting to drop their armor of perfection and started playing like children.

Soon it was time to share their work. As the facilitator went around the room, they explained their creations using attributes such as price, value, and taste. Some had even started storifying their creations. As their explanations became more creative, their creations became more emotional. Clearly, they were now thinking with their hearts.

The facilitator pushed the teams to extend their stories on the spot, by prompting them with "what if…?" and "and then…?" questions. Their impromptu, theatrical renditions resulted in bursts of laughter and feelings of camaraderie. Once the stories were shared, the facilitator thanked them for sharing their expressions and pulled up a slide that read "Round 2: Emotional - price, value, design, taste, etc." The average score had increased to 3 out of 5.

Round 3: Embracing Chaos

The facilitator now invited them to completely let their guards down. "Sort these chocolates in any order you wish, but now think like a child. What would a young kid do in this situation?" He asked them to open up their minds to break their pattern of thinking and go for the not-so-obvious solutions, setting the buzzer for 2 minutes.

"See them as different parts and think about them metaphorically. Use your imagination without limits", he asked them to mindfully think of the various tools that had been provided to them. Taking cues from the brief given, they were now starting to stand up and move the candies around. The wrappers were coming off. They had finally

seen the contents and were now playing, touching, and tasting the chocolates. They had begun working shoulder to shoulder, fluidly providing inputs and building on-the-go.

Suddenly, cheers to breakthroughs could be heard. “This looks so messy but feels amazing!”, “We’ve created a piece of art”, “Picasso in the making, bro!” were some of the verbatim of the partcipants in the room. They were crackling with joy, making sounds like little kids in a playground. Clearly their play states had been activated while chaos was happily being embraced. As the facilitator walked around the room, he could see the participants expressing themselves freely. Thoughts became creations and creations quickly became short stories filled with emotions. He then stopped the timer and asked the teams to present their creations, “so who wants to go first?” Almost everyone in the room had their hands raised high up, while some were still not willing to stop working. He pleaded everyone to stop and share their creations.

Figure 5. Chocolate-driven co-creation

Three of the highest scoring creations were as follows:

- One team used the chocolates like crayons, drawing and building an emotional story about Romeo and Juliet. They had crushed a few pieces to build 3D models of mountains and castles from the medieval era, as shown in figure 5.
- Another team ate up all the chocolates and acted like cartoon characters inspired by the different characteristics of the chocolates.
- Another team wore the chocolate wrappers – making rings for their fingers and ears, tying them on their eye-glasses and making noise by rubbing the wrappers and stomping on them.

4.4.3. Analysis and lessons learned

Research Question 2: How can play improve divergent thinking for better co-creation outcomes?

The combined energy in the room was at an all-time high, yet quite blissful at the same time. After each team presented, they all cheered for each other. The scores were announced but they clearly did not matter anymore, and neither did their official roles. While scores had mattered in the beginning to trigger action, their importance diminished once a flow (Csikszentmihalyi, 1990) was established during the workshop. Their minds and bodies were so absorbed with the task at hand that they had lost track of time. All that mattered was their different perspectives, and how they had some together to create a coherent storytelling experience.

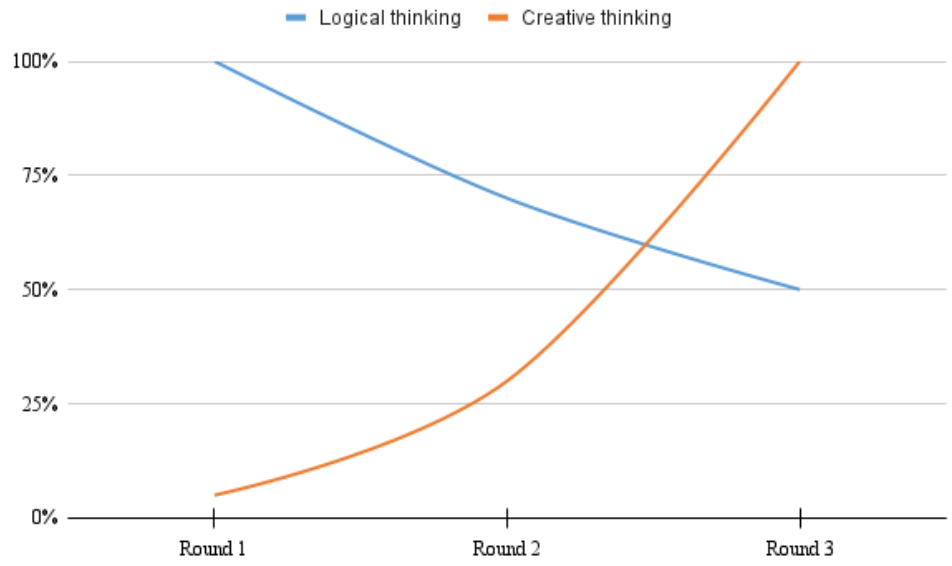

Figure 6. Logical versus Creative Thinking Chart

The pods had moved from largely fixed to a growth mindset. This was evident in the manner their narratives had shifted its nature in round 2 – from being logical (using the physical characteristics of chocolates) to being emotional over the three rounds of co-creation, without the brief being changed, as depicted in figure 6. Shifting to emotions helped open up their minds and generate new ideas.

A continuum of group's emergent co-creation behaviors was observed during the play activity, as depicted in table 1. Participants initially exhibited predictable rational behaviors, then shifted to daring to create hesitantly, and finally embracing chaos by the end of the activity.

While initial behaviors were guided by extrinsic motivation such as competition and scores, but gradually shifted to intrinsic motivation such as watching others' creations and listening to stories at end of every round. It was observed that just being present in the same room where play-driven creativity is being expressed can motivate people to think more creatively. Seeing others passionately share their ideas motivated

the pods to push their own creative thinking. Also watching others cohesively work together motivated pods to push for collaboration within their own teams. Observing such high energy cohesion and creativity ultimately enhanced the overall feeling that we are in a safe, sacred space where self-conscious emotions and imaginative ideas can be acted upon; an environment that encourages learning and growth. This was evident from the gradual increase in creative outcomes as the rounds progressed as shown in figure 7. This gradual shift in creative behaviors caused stories to emerge, showcasing divergent thinking skills that produced rounds of creative twists in their stories. This may have stemmed from diversity in their roles and backgrounds but also different ways of thinking. Each story emerged to be unique and inherently creative.

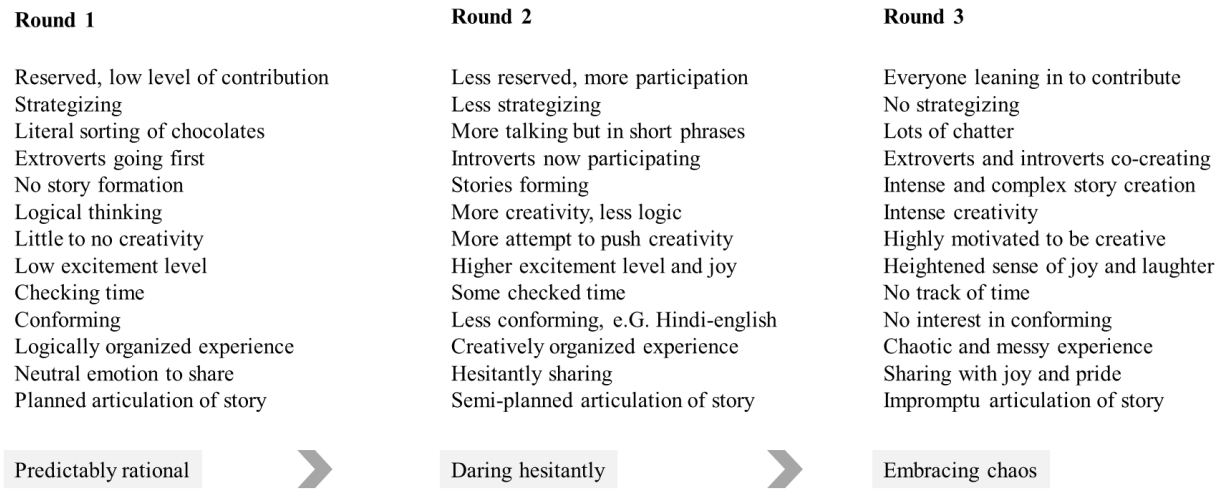

Figure 7. Continuum of group's emergent co-creation behaviors.

During the debrief session, they realized how, with each round, they had taken the initiative to push their group's creative thinking, built with the available resources within given constraints, and gradually improve storytelling over a short period of half an hour. As the feeling of fear transformed into that of belonging, there was an acceptance for mistakes. Failure was reframed as learning. They also discussed how fighting the

obviousness led to surprise – that felt inherently magical, thrilling, and emotional. They shared how a shift to a child-like mindset could accelerate creativity, which was interestingly a process to search for novelty and failure was part of it. The material played an important role in activating multiple senses for enhancing creative confidence. Using food items such as chocolates provide for multi-sensory stimulation by helping activate the taste buds and allowing participants to use them creatively due to it flexible nature. In round 3, they were being crushed, transformed into different shapes and metaphorically used to fit the storyline.

Initially there was an uptight feeling in the room, possibly because of the Marketing Director's presence. Perhaps if she had participated in the activity, the participants would have expressed themselves freely much earlier in the journey. Also they noted that it took time and energy to overcome the desire or need to conform to what is accepted normally. They had fought their fears of being judged, of trying the unknown, and of losing control. The facilitator's role, therefore, in continuously motivating the pods was crucial. They finally did share their vulnerability. More importantly each participant had given themselves the permission to first express themselves and then allow others to express in a non-judgmental manner. Also when the frequency of interactions increased, the facilitator had to occasionally manage the communication, giving introverts a chance to participate. It was important to make sure that no participant's feelings were hurt unintentionally due to the creative heat resulting from the excitement of brainstorming ideas. Building the ground rules for respectful exchange of ideas in establishing trust and psychological in the co-creation process.

After the debrief on lessons learned from the pattern-breaking creative strategy from the Trick or Treat activity, participants were now in a playful state characterized by positive affect. They were intrinsically motivated and eager to start the Deep-Dive

session to create new account plans, keeping in mind the insights gained from the previous customer empathy and insight generation session. Some of the reflective prompts provided to facilitate the generation of transformative account plans were – Can you challenge the brief provided by your clients? What creative approaches are you using to understand them better? What's something new you learned at your last customer meeting? What do you know about the client that even the client hasn't realized yet? What creative solutions can provide meaningful and competitive advantage to your client?

The act of co-creation with the clients to explore new solutions was also explored. The pods had moved from a sales mindset of 'always be closing' to 'always be co-creating'. Many new divergent, transformative options were discussed with the client to inspire innovation solutions, such as offer a massive solution, but also smaller versions of it; offer the massive solution as a menu; start small and close the big deal later; and offer additional value-added options. The following feedback was publically shared – a) "Annual account planning is a sales ritual, especially for Enterprise sales teams. In true spirit, we are not just about dreaming big but also having fun along the way!", stated the Marketing Director; b) "Never imagined good account Planning could be done in such an unorthodox way! Excited to create some kickass plans basis what we learnt!", stated an Account Executive.

4.5. Case study C: digital marketing and consulting services

4.5.1. Context and goal of intervention

The newly-hired CEO of a digital marketing and consulting agency wanted to conduct the annual planning session to discuss the business strategy and chart out the way

forward for the new fiscal year with the Media Planning Leads (3) and their senior team members (3), along with COO and CHRO. He arranged a 3-day off-site summit to have the Media Planning Leads to present their business (profits and product) plans and chart out a way forward.

Due to the growing demands from clients for an integrated digital offering, the agency had recently built the Specialist teams in domain areas of creative, technology and strategy consulting. While the revenue share of the media business was the largest at that point in time, the growth opportunity from specialized services was still untapped. The CEO had observed the siloed nature of working among the Media Planning and Specialist teams. He wanted to improve chemistry, common language and collaboration across the teams and invited the Specialist Leads to this off-site annual planning session. He had an inclusive style of leadership and wanted to make his team feel that he was approachable.

To facilitate the planning sessions across the 3 days, creative workshops were designed to infuse the presentation and planning activities with playfulness, with less of one-way presentations and more two-way interaction and discussion. The CEO wanted to build a sense of trust, openness, and autonomy. He wanted the teams to co-own the overall business strategy, decide on their own action plans, and collaborate for better business outcomes. The goal of the summit was to come up with 2-3 transformation programs along with action plans and success metrics, basis shared understanding of signals and inputs from the teams that would improve their integrated service offering as well as create a better client serving ethos.

Play activities conducted: Spaghetti Tower, developed by Peter Skillman, Director of Design for Outlook at Microsoft Corporation.

4.5.2. Activity flow and observations

Fully cognizant of the challenge regarding lack of trust and collaboration between the Media and Specialist teams, three teams were carefully created to account for diversity of specialization. Also, in order to observe the dynamics of co-creation in terms with generational differences, CEO, COO and CHRO were strategically placed in the team. The team composition was as follows – Team M had Millennials only (3 media planning, 1 specialist); Team Mx had 3 Millennials (2 media planning, 1 specialist) and 1 Gen X (CEO); Team Xm had 2 Millennials (1 media planning, 1 specialist) and 2 Gen X (COO, CHRO). The coding of Team M, Mx and Xm has been done for purposes of this research only.

Each team had to construct the tallest free-standing tower possible using the following materials – a packet of uncooked spaghetti sticks, 1 meter of masking tape, 1 meter of string, and 1 marshmallow. The marshmallow had to be placed on the top of the tower, the point from which the height would be measured. The challenge lasted for 18 minutes with 3 checkpoints, each after 6 minutes of time lapse. Figure 8 shows the tower height at the three checkpoints during the activity.

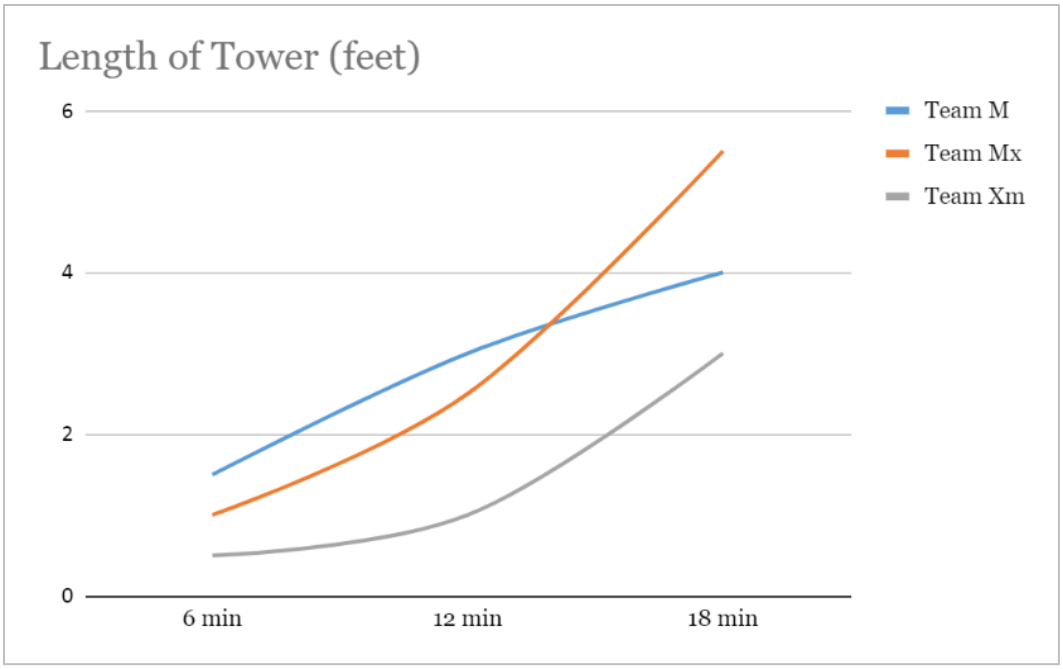

Figure 8. Tower Height Timeline.

6 Min Checkpoint: At the end of the 6th min, Team M's table looked messy with spaghetti sticks all over the table and some on the ground. They had ripped off the packet of spaghetti and started playing with the tape. Some were typing the spaghetti together with the string and some were using the masking tape to stick the spaghetti together. There was no planning. Movements seemed to be chaotic but more action than talk. Team Mx had explored the material and spent the first few minutes exploring a few options. They then decided to build two prototypes and later go with the tallest one. There was some action kicking in but some discomfort could be sensed on the faces of the Millennials in the team while the CEO (Gen X) made the key decisions. Team Xm, led by the COO, seemed to have selected the one strategy they would adopt and were discussing the approach on how they would construct the tower. The CHRO was seen to be assigning tasks and getting agreement on the go-forward plan. There was no action, only planning.

12 Min Checkpoint: By the 12th minute, the teams were all on their feet and this time they all had made progress. Each team had a tower up but their heights and structures were different. Team M had the tallest tower at about 3 feet. However, they were struggling to make it stand on its feet. The initial camaraderie was turning into anxiety. There seemed to be some power struggle; however, they were all beginning to talk more while building the tower. Over the last 6 minutes, Team Mx had decided to go with their second option. The Millennials in the team had started to open up more with Gen X (CEO) and they were now having more short and fast conversations, collaborating with each other more than earlier. They still however had the shortest tower in the room, about 1 foot, standing on its little feet. Team Xm still seemed to be quite professional and calculative while building the tower. The COO and CHRO (Gen X) still had full charge of the proceedings while the Millennials now seemed to be passively aggressive but not entirely expressive about their ideas. They had the second tallest tower with a solid foundation, almost as tall as that of Team M.

18 Min Checkpoint: At the end of 18 minute, the buzzer rang and the facilitator asked everyone to stop building and keep their hands away from the table. The room was in a chaotic mess but full of energy. It would be obvious to think that team Xm had the tallest tower since they collectively had more experiences and presumably the necessary skills. But Team Mx won! Figure 9 shows CEO standing on a round table, trying to stop a 5-feet spaghetti tower from toppling down.

Figure 9. Team Mx building a tower.

4.5.3. Analysis and lessons learned

Research Question 3: How can play improve creative agility in diverse teams (generation and specialization)?

While team Mx did better than the other two teams, all the teams exhibited feelings of pride and joy about their creations. They promptly shared their journeys and learnings at the debrief session. During the debrief session with the teams, Team Mx shared that they had decided to go for a new, third option in the 15th minute. From the manner in which the participants were proudly sharing their prototyping approach, the CEO (Gen X) seemed to have let his guard down and allowed the Millennials to take over in terms of building the tower, while they supported from the outer lines, providing inputs as needed. He let go of his status of seniority for the sake of rapid experimentation. This was essential to create a sense of psychological safety (Edmondson, 1999) and trust among each other.

Not only had Team Mx succeeded in building the tallest tower but also came up with a metaphorical explanation for the structure. They described the tower as an 'organization', where the base of the tower was the 'foundation defined by an innovative culture' and the marshmallow was the 'mission'. Till the last minute, Team Mx continued to increase the height of the tower by adding more spaghetti and using string effectively, indicating the presence of high creative agility (Hill et al., 2014) and flow (Csikszentmihalyi, 1990). They called these spaghetti extensions – 'supporting partners' of the organization that helped the tower grow tall. If more time and material were provided, they would probably have gone higher. They also discussed the importance of the 'connection' denoted by the strength of the strings that bonded the organization together with its partners.

Team M unfortunately could not make much progress. They were not able to go higher without a strong foundation. Their fear of losing what they had built prevented them from rebuilding their tower. They had also not settled their differences as evident from their disappointed faces. Team Xm were progressing well and reached the height they had planned earlier, however it still fell short of Team Mx's tower. Even if more time and material were provided, their tower would not have been able to accommodate the material due to its design constraints at the foundational level. It was too rigid to change and the COO, CHRO were holding the reigns until the end, not allowing the Millennials to implement their ideas. While a safe, creative environment for self-expression was established before the workshop began, the Millennials still felt conscious of their actions, which was also initially observed with Team Mx.

Figure 10 shows % time spent on strategizing and executing on the task at the three checkpoints. Team Mx had spent one-third of their time in the first 6 min to strategize and then quickly started experimenting by using given material, such as tape

and string, to make the tower stand. Their time spent on strategizing reduced significantly in the next two rounds. Team Xm spent 50% or more of their time in strategizing that involved thinking and discussing instead of experimenting. Also, Team M hardly spent any time strategizing in the beginning or even during the activity, and therefore they were unable to build too much higher after 12 min.

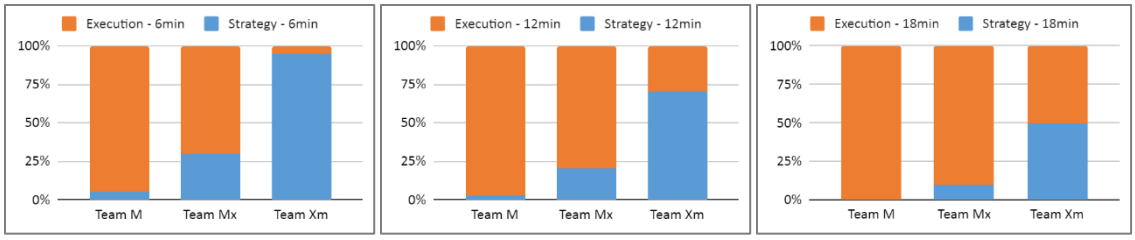

Figure 10. Strategy vs. Execution Charts for each Checkpoint.

Key takeaways discussed at the end of the session were that skills and experience are great to have in a team but having a strategy that is not agile does not help in unknown situations. When dealing with uncertainty, there is great value in having a bias towards action, i.e. iterating fast and often in order to succeed sooner. For the best outcomes, there needs be a sense of autonomy driven by psychological safety earlier on in the co-creation process. People in the team should feel connected and allow everyone to contribute for learn and act fast from failure. The silos between the teams were broken. This was evident from the interactions at the final Action Planning session that followed this session. The media planning team seemed to have broken the ice with the specialist leads, and the CEO had built a good rapport with the teams. The summit culminated with a discussion on next steps based on the compilation a detailed list of action items with owners and timelines under 3 transformation programs – Talent, Delivery and Growth – that would enhance the quality of client servicing and introduce new integrated service offerings for clients bringing together media, creative, technology and analytics services.

4.6. Case study D: financial services

4.6.1. Context and goal of intervention

The CEO of a global investment banking and financial services company launched a new strategic program called “Finnovate” to foster a culture of innovation across the various business divisions in the organization, such as investment banking, corporate banking, private banking, and asset management. Some of these businesses were launching new services in the marketplace but they worked in silos. There was an opportunity to share best practices and learn each other’s initiatives for business growth. This pan-India program would build innovation capacities for more than 400 employees in the Finance team and bring together people across the company on a common platform, starting with Mumbai as a pilot city. To be more inclusive in the execution of this program, he wanted his leadership team to understand the objectives of the Finnovate program and build a sense of ownership and camaraderie among each other and their teams.

Leadership Workshop: A 2-hour meeting in the form of an experiential workshop was setup to obtain final buy-in from the leadership team, i.e. 9 Business Heads (Gen X) from different businesses of the firm along with the CFO and CHRO, for the Finnovate program. The goal of the workshop was to kickstart the program by building trust and connectedness for better collaboration in order to set a tone of sharing and learning across business divisions and organizational functions. The senior leaders used play-based tools such as LEGO and other art and craft material to empathize and build meaningful connections with each other that would ensure program success.

Play activities conducted: What the Duck, Your Super Power, Environment Pond, based on the open source methodology of LEGO® Serious Play® (referred to as LEGO®

in the activity description) that was originally developed by Johan Roos and Bart Victor at IMD in Switzerland.

4.6.2. Activity flow and observations

This 2 hour leadership workshop was setup by the CEO for the 9 Business Heads, CHRO and CFO. They were seated in a spacious, U-shaped seating arrangement in the room. While the participants entered the room, they were asked to place their mobile phones in a beautifully-designed floral basket that carried a combination of freshly-plucked white and purple tulips.

The CEO welcomed everyone and quickly set the context for the workshop. While the participants patiently listened, some of them started curiously staring at the green LEGO set that was placed on a small table in front of the room. Once the CEO handed over the session to the facilitator, the mini-figures standing randomly on the LEGO set were introduced. The facilitator passionately introduced them one-by-one as his leadership team that came from diverse backgrounds – technology, design, organization behavior, marketing and sales with experience in investment banking and wealth management. It was essential to bring out this credibility immediately as the audience was experienced.

A small bag of LEGO bricks with sticky notes was handed over to each of the senior participants. They were asked not to open the bag until the brief was provided. The following rules were shared and written on a white board:

"Think with your hands. Listen with your eyes. Build with your hearts."

The facilitator drew the imaginary line around the room calling it the "Lakshmana Rekha" – in modern parlance, it is a line within which one could feel safe, creative and

freely express themselves without the fear of being judged by others. As per the plan, the CEO left the room at that point.

Round 1a: What the Duck

The bag placed in front of them had bricks of different shapes and colors that could be stuck to each other. Pointing to one of the bags, the facilitator raised his voice emphatically, “Build a duck in 2 mins using a maximum of 6 LEGO bricks!”

Within a few seconds, they all very obediently dived in and started playing with the bricks. Some were struggling to put pieces together but they somehow managed by the end of the second minute. The constraint of having to use only 6 bricks made them rethink the structure of their ducks.

The facilitator then went around the room asking “how did you feel?”

A word cloud of mixed emotions poured in – “like a child”, “fun”, “cool”, “thoughtful”, “nervous”, among others. Many of them even raised their ducks to show what they had built. Seeing them motivated to share their duck, the facilitators picked invited a couple of the participants to explain their ducks by pointing their finger on the part while explaining it. They giggled and explained the different parts of their ducks. The facilitator then thanked them for sharing their ducks and moved to the next round.

Round 1b: Your Super Power

“Now rebuild the duck with any number of bricks in 3 minutes. But this time put something about yourself in it metaphorically. Could be a superpower or anything special about yourself you’d like everyone to know! Then write your superpower on a sticky note.”, invited the facilitator.

Hearing this, the excitement in the room dropped. Clearly the senior leaders were hesitant to share their personal side with each other. Observing this reaction, the facilitator intervened and showed them an example – “If I asked my mother to share one

of my strengths, she'd proudly say - sense of humor… Give it a shot. You are you, and we'd all like to know the special you, not the one at work, but the one you secretly admire!"

Taking this cue, some of the participants leaned in cautiously and started to break and rebuild with their ducks, while others tweaked their ducks. This time there was more silence and a lot more intensity in action.

The facilitator stopped the buzzer after 3 minutes and asked them to voluntarily share their models. One of the Business Heads (BH1) raised her hand up enthusiastically and started describing her duck.

"Hello everyone, this thing, that doesn't look like a duck, is me", BH1 exclaimed. The room burst into a giggle. BH1 continued to describe her duck – "My duck is ambitious, with big dreams. The wings are yellow and vibrant because they want to fly as high as possible. The outer portion is white because it resembles perfection and integrity. Basically, she's really proud of her professional achievements." She smiled looking at the reaction of others in the room.

Then she pointed to two small bricks that was almost covered by the white bricks – "The red and green bricks are mixed feelings in my heart." She paused for a few seconds and rolled her eyes.

The facilitator encouraged her to complete her explanation. She continued with a somber tone – "My duck had my second child last month, and I feel horrible that I can't be with him. On one hand I love what I do, but then I also want to make sure I am being the best mother he can have. I don't know why I am saying all this. But I feel if I can't spend these moments with him, I will regret it."

There was pin drop silence in the room. This personal situation could not have been anticipated. The facilitator rushed towards her and offered her a hug. He thanked her for sharing her feelings and for confiding in everyone in the room.

In the interest of time, the facilitator tried picking up the mood and momentum of the workshop, and requested for the next volunteer to share his duck.

Figure 11. The National Duck – Embodied Metaphor.

"I will try to lighten up the mood a bit. I have to say my duck is made in India." – BH2 pointed out to the different colors of the bricks that he had meticulously selected, while explaining how it resembling the Indian flag as shown in figure 11. Some of the men were raising their eyebrows, until Sanjay explained, "You see, this national duck moved to India after working for 22 years in the UK… and it's made in India. I love my country but it hasn't been easy making friends. And therefore I had to borrow a couple of bricks from my friend here to complete my story."

Everyone in the room showered a round of applause. The facilitator then asked for the last volunteer, to which the CFO raised his hand and shared his duck saying, "I was

waiting for everyone to finish and just say – it's a different duck... ummm.. there's always surprises, that's a good thing…well, this is a sincere, disciplined duck." Then one of the participants exclaimed "ok so, please approve the budget". The CFO instantly reacted turning his head away in defense, "that's what I am saying - no limits, nothing.. you want to travel business class, do it.. enjoy!!" The group broke into laughter hearing this.

Seeing the people in the room open up and share their vulnerability, the facilitator took the opportunity to move to the last stage.

Round 2: Environment Pond

"Place your duck in one of the ponds on the table!", the facilitator invited them to a round center table that had a large-sized chart paper with 5 different ponds outlined in different colors – fresh water pond, shallow water pond, muddy water pond, splashing water pond and deep water pond. The ponds were metaphors for the current business environment, while their ducks now represented their business divisions.

Everyone was now on their feet contemplating around the table. Once the ducks were placed in the ponds, the facilitator invited the participants to share the reason why they put their duck in a particular pond.

The following verbatim are excerpts from their explanations:

"I feel the financial services industry is facing disruption and we need to cope up with the changes..." (from the muddy water duck)

"If we don't launch new services we will loose out on our competitiveness…" (from the splashing water duck)

"We need to keep looking at new ways to reach our customers on digital and social media platforms…" (from the fresh water pond)

“The more specialized and innovative we become in our profitable services, the more sustainable we will be...” (from the deep water pond)

The participants had shared their views and were ready to move to the last step of collaboration, which was to connect their ducks meaningfully.

“Now that your duck has a home, draw a line from your duck to another duck and think of one or two words to describe how you can make the connection work. What would be the nature of the relationship? Preferably write above the line. You have 20 min to complete this exercise in a round-robin style.”, the facilitator requested.

Following the guidance given, they started approaching each other and taking the time to get to know each other better. They moved around the table drawing lines and came up with keywords.

The following key words were written on the connecting lines:

“Explorer”, “Elegant”, “Aerodynamic”, “Curious”, “Focused”, “Structured”, “Generous”, “Stable”, “No nonsense”.

The ducks were now in a mesh, connected together with purpose as shown in figure 12.

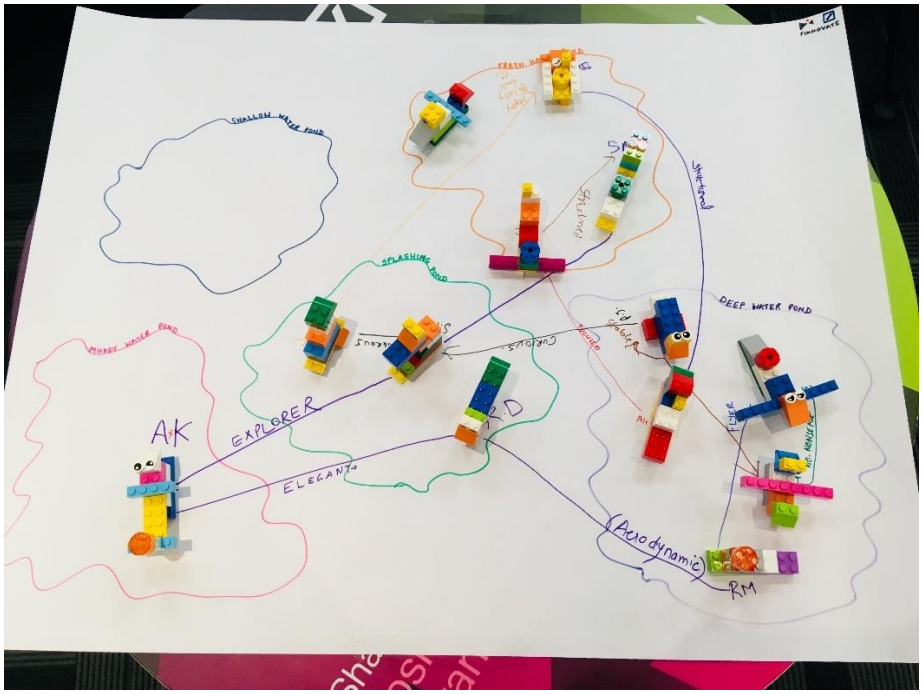

Figure 12. Systems Model of Connected Ducks.

Before leaving the session, the Business Heads were invited to define the spirit and opportunities for the Finnovate initiative on the "Finnovate Canvas" – 2 large chart papers with sticky notes were provided to the participants.

The following key thoughts on the "Finnovate Spirit" were noted on the canvas: "Good ideas which come to life", "Breaking silos", "Think as one" "Flexible way of thinking", "Building growth mindset, WHY aspect", "Eye Opener", "Future looking", "Be open", "Outside box thinking", "Fresh, reinfusing empathy", "High energy", "Think like entrepreneur".

The following key thoughts on the "Finnovate Opportunities" were noted on the canvas: "Mindset change", "Create opportunity", "Be practical, be patient, explore", "Organizational realignment", "Thinking big, e.g. front to back", "Experiment and fail", "Technology at the heart of the initiative".

4.6.3. Analysis and lessons learned

Research Question 4: How can play help in sharing vulnerability and increase connectedness?

During the briefing meeting with the CEO, the facilitator was asked if it would be possible not to use the word "play" during the workshop, implying play was frivolous and the workshop would not be seen in a serious context by the leadership team. It was reiterated that while the workshop had creative, fun activities, it was designed with purpose and the serious elements would be seamlessly integrated into the delivery format, implying that the tools and environment would be seriously playful by design.

From the get-go, the environment was meticulously designed for playfulness. Ensuring for flatness in hierarchy, building and self-reflection, the seating arrangement for U-shaped. The feeling of exquisiteness was provided with the beautiful basket of assorted tulips for collecting mobile phones. The mini figures were introduced to build curiosity and domain credibility. These play cues set a creative climate and explicitly signaled that play is allowed in this meeting.

During the “What the Duck” activity, the leaders were able to easily build their literal ducks. Giggling and feeling like a child instantly relaxed the environment and enhanced positive affect. This warmed up the leaders in order to transition to the embodied metaphor, that is the metaphorical form of the duck in “Your Super Duck” activity (Jacobs and Heracleous, 2006). When the participants imagined themselves as their ducks, they were able to think more objectively about themselves by attaining a third person view. This helped them express themselves and deal with their feelings by sharing them with others in the room.

Having an environment that was safe, trusting, playful and open helped these senior leaders share their feelings more freely and without judgement. From the

interactions, it seemed they probably never got the opportunity to talk about these nuances that were bothering them at the workplace. This was also probably the first time they had shared their deep-rooted personal issues with each other, and they were getting to know each other, outside their professional avatars.

The following is an analysis of three specific interactions:

- When one of the Business Heads (BH1) was nudged by the facilitator to elaborate on the duck's behaviors, she expressed a feeling of guilt for not being able to balance her personal and professional lives, using the example of her new born baby. Chances are that due to her status and role in the organization, she was probably putting up a brave front at work and never shared her feelings about being a mother with her peers or her team.
- Also, the fact that BH2 felt comfortable to clarify that “this duck is made in India”. This means that he was probably facing some friction due to his mixed identity of being UK-Indian and found the opportunity to justify playfully that he wants to be a team player and one was one of them. This may have been due to his accent or demeanor. Sometimes people in India may not be as forgiving to people who expatriates, specially who are from Indian origin.
- Also when it was the CFO's turn, he explained that the duck wished he could fly everyone in business class but he was bound by financial constraints. He was probably facing push back from some of the business heads regarding this policy of not allowing senior management fly in business class, so he took the opportunity to explain that he understood their concern and empathized with them.

As observed, thinking with their hands helped the business leaders feel comfortable about sharing their vulnerability. They had so courageously dropped their guard and honestly, jokingly, emotionally shared their feelings that probably bothered them subconsciously. Using the duck as an embodied metaphor (Jacobs and Heracleous, 2006) of themselves allowed them to share difficult situations and express their negative emotions in a safe manner. Their emotions were self-modulated and did not disturb the overall positive affective quality of the experience. In fact when these participants sent signals that it's okay to share your feelings, they became more approachable and in turn allowed others to be more honest with their concerns, as shown in figure 13. In line with by Brown (2012), vulnerability was seen as the source of joy, belonging, creativity and authenticity. These behaviors and signals improved connection, trust and empathy for each other, that subsequently facilitated collaboration.

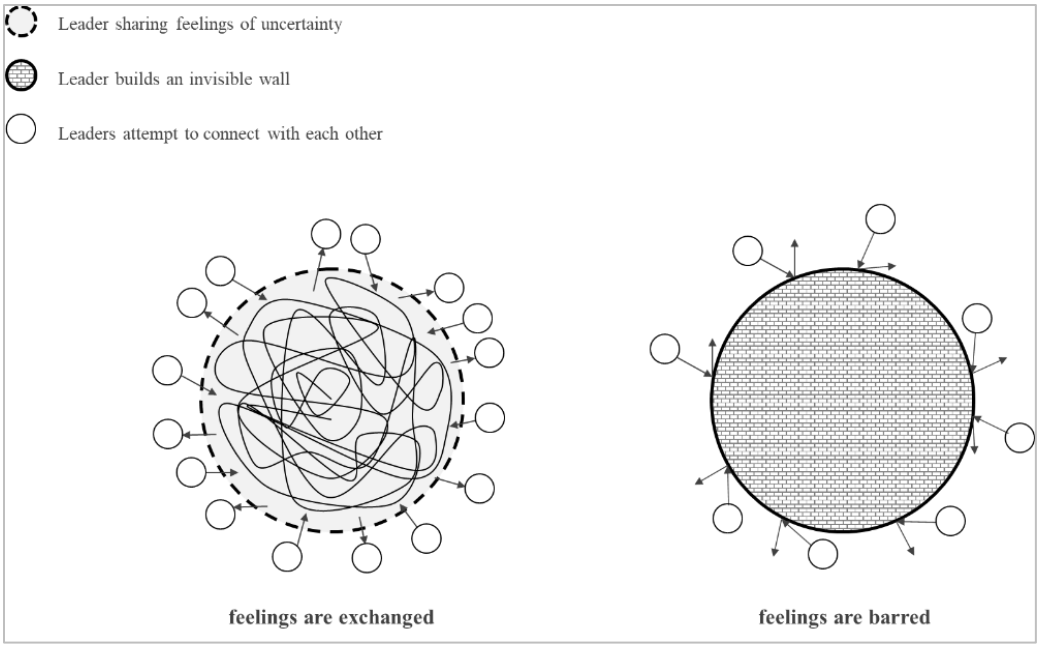

Figure 13. How Vulnerability builds Trust and Connectedness.

In the next step, by placing the ducks in their respective "Environment Ponds", the participants were able to transition from representing themselves to representing their business metaphorically with the duck. This shift in thinking from the personal ("I") to the business ("We") set up the playground for a larger, more serious discussion. Once the invisible walls of perfection were lifted, it was evident that the answers on how to break the silos lied in the room, within the system of connections. The keywords on the lines connecting the ducks provided a common, shared understanding of the nature of the relationships needed for innovation-driven business growth. From the open, playful discussions on the industry environment, business challenges and priorities, it became obvious that innovation was the way forward and now was the time to come together for the benefit of their own business division and the company as a whole.

While connecting their ducks (now metaphorically business divisions), the participants had opened up enough to stand on their feet, almost brushing their shoulders with each other to play with their ducks and explore how they were going to make the connections between them work. These verbal and physical behaviors indicate strong belonging signals and trust (Edmondson, 1999; Pentland and Heibeck, 2008) – ingredients necessary for effective implementation of the Finnovate program. By collectively sharing their views on the spirit of the program and opportunities that the program could open up, they collectively created a shared purpose for the program – that later became a part of the Finnovate manifesto.

4.7. Findings and analysis from multiple case studies

Six cases are deliberately selected to understand group dynamics in co-creation behaviors of participants (RQ5) from play-based design thinking workshops in areas of learning and development, both in organizations and higher education sectors. This was done to demonstrate the potential of play to untap co-creation behaviors during the process of learning and applying the human-centric process to complex organizational problems and reimagine the future for learning organizations (Renesch and Chawla, 2006; Senge, 1990). The participants from these 6 cases were managers and post graduate students (Gen Z and Millennials) as discussed in the section on "Sampling technique and participant selection". The following sections discuss the common activity structure and flow of these workshops and subsequently present an in-depth cross-case analysis with identification of micro-behaviors and mapping to design thinking mindsets required for co-creation.

4.8. Activity structure and flow

Each workshop was conducted over a 2-day period and had a standardized structure. It was designed to build design thinking capabilities for a group of participants by applying the human-centric design process on a specific innovation challenge. The structure of these workshops followed the design thinking process with teams conducting the necessary activities and producing deliverables related to the 5 stages of the EDIPT (Empathise, Define, Ideate, Prototype, Test) process defined by Stanford d.school (Hasso Plattner Institute of Design at Stanford, 2010; Von Thienen et al., 2018) as shown in figure 14.

For the purposes of this research study, the 3 phases of the human-centric design process (Design Kit, I.D.E.O., 2016) can be aligned to the EDIPT process. Consider the Inspiration phase to align with the Empathize and Define stages; Ideation phase with the Ideate stage; and Implementation phase with the Prototype and Test stages. Participants were introduced to related concepts in these stages and applied their knowledge to the case. Each stage was infused with play-based activities for greater engagement and collaboration.

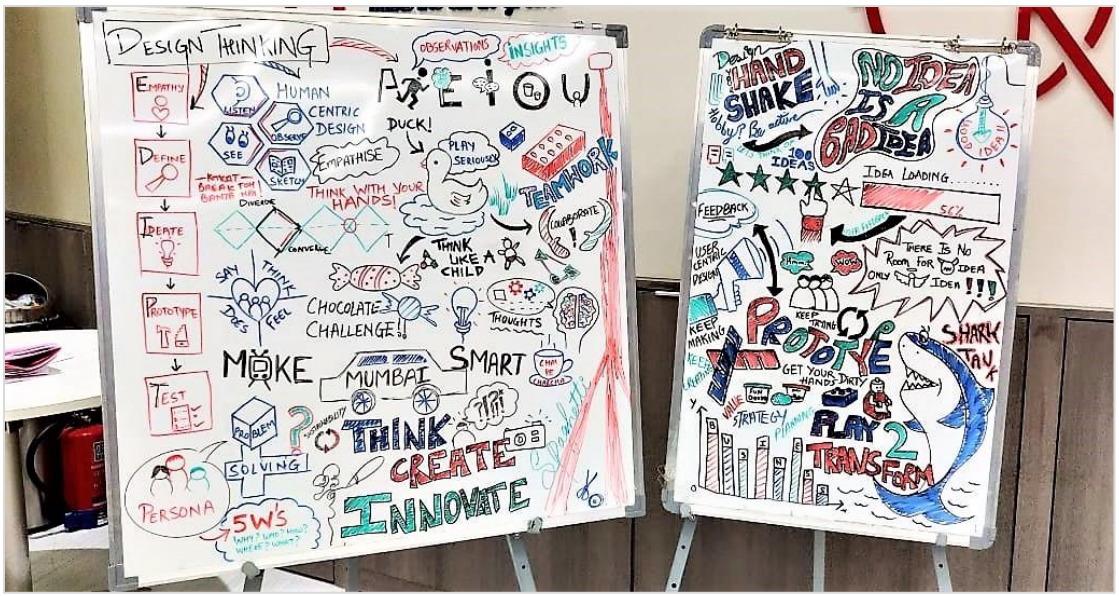

Figure 14. Visualization of Play-based Design Thinking Workshop.

Teams needed to come up with a new, reimagined experience solution (space, product, service, platform, culture) that is ready for 2025 and beyond. The key characteristics of this new age experience solution included employee-centricity, tech-enablement and purpose-driven initiatives that takes into account UN's Sustainable Development Goals, with a focus on ESG (environmental, social, and corporate governance) and JEDI (justice, equity, diversity, inclusion) in the workplace.

While the continuum of co-creation behaviors during divergent thinking with the Trick or Treat challenge were discussed in case study B, this section discusses the behavioral patterns and related design thinking mindsets that enabled effective collaboration and innovation in a real-world innovation challenge to reimagine the future of the respective entity.

The Inspiration phase for these design thinking workshops used sticky notes, chart paper and lesser play material for building artifacts such as customer personas, empathy maps, idea canvas, among others need for the empathizing, problem definition, idea generation and selection. Once the selected ideas were clustered together to group and form concepts of experience solutions, the prototyping stage commenced with the Implementation phase.

Also since the Implementation phase – the last phase of the human-centric design process – in these workshops primarily used play material for the steps involving prototyping, testing and feedback from customers, it was selected for the cross-case analysis.

In this last phase, each team built 2 prototypes (experiences solutions) of a future workspace, share and take feedback from customers, and finally present one experience model using play material of their choice. The experience solutions were pitched to stakeholders and customer who participated in the workshops.

Unlike the Spaghetti challenge in case study C where agility behaviors were analyzed across different age groups, in this case study the participants were from the same age group. It is also important to highlight that the activities performed in the Ideation and Implementation phases go hand-in-hand with the ideate, prototype and testing steps overlapping based on the customer feedback or the discovery of new insights. The teams demonstrated creative agility with a mindset of experimentation,

going back and forth with ideas and creating prototypes (experience solutions) that covered many of the ideas discussed in the Ideation phase. The following cross-case analysis discusses these behaviors in detail.

Also unlike case study A and D where the LEGO bricks were used to create metaphorical models (embodied metaphors), this case study used LEGO bricks, minifigures and other related parts, play-doh, ice cream sticks and other play material to build literal models of the experience. This showcases the flexibility of the play tools for collective sensemaking and social reality construction that was necessary for teams to communicate their models effectively.

Play activities conducted: Build physical models of experience solutions of a future workspace using LEGO® bricks with minifigures and other related parts (400+), Play-doh, ice cream sticks, pipe cleaners, chart papers, sticky notes and sketch pens by applying Stanford d.school's design thinking process, founded in 2005 (Hasso Plattner Institute of Design at Stanford, 2010).

4.9. Overview of cross-case content analysis

To answer the Research Question 5 on "What are the group dynamics enabled by play that faciliate in building a design thinking mindset?", the analysis is conducted in two parts – analysis of group behavior dynamics, and analysis of design thinking mindset constructs. In addition, personality-resistance dynamics is analyzed in these teams to provide a framework for organizations looking to address the resistance to co-creation from different personality traits.

4.9.1. Analysis of group behavior dynamics

Figure 15. Teams building experience solutions with play material.

The following 15 micro-behaviors while building the solution were repeatedly observed (indicated with codes starting with B). Figure 15 shows some pictures from the workshops.

To identify the micro-behaviors that were prominent across all the workshops, a benchmark % score of 80% was taken. The % score for each micro-behavior across all workshops (% *Sn*) was calculated by taking the sum of all the scores for each micro-behavior (*Sn*) and dividing by the total number of workshops (*n*) multiplied by a maximum score of 5.

$$\% \, Sn = \frac{(\sum_{k=0}^{n} Sn)}{n \, x \, 5} x \, 100$$

As a result, 8 micro-behaviors (identified in italics below) met this benchmark.

B1. Leaning in to build or discuss

B2. Facing each other to discuss

B3. Self-initiated discussions in phrases or short sentences

B4. Use of multiple languages, e.g. English, hindi

B5. Mindfully drawing, labeling and building with play material

B6. Self-tinkering (build, reflect, modify) model iteratively

B7. Pointing or holding model in hand while explaining

B8. Incorporating feedback by quickly modifying model

B9. Asking questions without fear of judgement

B10. Adding to existing idea, sharing opinions and criticisms with candor and respect

B11. Listening attentively when someone is talking

B12. Appreciating ideas with fist bumps and claps

B13. Short bursts of laughter and periodic use of humor

B14. Some side conversations and then sharing with everyone

B15. Creating connections with other's models to build a cohesive story

Figure 16. Presentation of innovative experience solutions.

The following 17 micro-behaviors while pitching the solution to the senior management and customers were repeatedly observed (indicated with codes starting with P). Figure 16 shows some pictures from the workshops.

To identify the micro-behaviors that were prominent across all the workshops, a benchmark % score of 80% was taken. The % score for each micro-behavior across all workshops (% *Sn*) was calculated by taking the sum of all the scores for each micro-behavior (*Sn*) and dividing by the total number of workshops (*n*) multiplied by a maximum score of 5.

$$\% \, Sn = \frac{(\sum_{k=0}^{n} Sn)}{n \, x \, 5} x \, 100$$

As a result, 8 micro-behaviors (identified in italics below) met this benchmark.

P1. Points at the model while telling the story

P2. Everyone standing respectfully around the table

P3. One team member presents

P4. Demonstrates understanding of issues

P5. Reference to customer interviews

P6. Interpretation of insight

P7. Describing the experience solution in detail

P8. High energy, passionately presenting

P9. Other team members pitching in as needed

P10. Others are patiently, actively listening

P11. Demonstrates strategic foresight

P12. Other team members smiling and proud

P13. Understanding of customer's emotions and behaviors

P14. Applaud and joy at the end

P15. Accepting feedback from customer

P16. Answering questions or clarifying doubts non-defensively

P17. Live co-creation with the customer

4.9.2. Analysis of design thinking mindset constructs

To evaluate how these play-enabled, co-creation behaviors fostered a design thinking mindset for the participants, the design thinking mindset assessment with 19 constructs (Dosi et al., 2018) was used. For each micro-behavior, the corresponding DT

mindset constructs were mapped. The list of 19 design thinking mindset constructs are as follows:

A. Tolerance for - Being comfortable with Ambiguity - Uncertainty

B. Embracing Risk.

C. Human centeredness.

D. Empathy / Empathic.

E. Mindfulness and awareness of process.

F. Holistic view/consider the problem as a whole.

G. Problem reframing.

H. Team working.

I. Multi- / inter- / cross- disciplinary collaboration.

J. Open to different perspectives/diversity.

K. Learning oriented.

L. Experimentation or learn from mistake or from failure.

M. Experiential intelligence / Bias toward action.

N. Critical Questioning ("beginners mind", curiosity).

O. Abductive thinking.

P. Envisioning new things.

Q. Creative confidence.

R. Desire to make a difference.

S. Optimism to have an impact.

Since the scope of our research question entails understanding of behaviors required primarily for co-creation using play, only building micro-behaviors were considered for this analysis.

To identify the top building micro-behaviors that strongly influenced the design thinking (DT) mindset, the total number of design thinking mindset constructs mapped to each micro-behavior was calculated, as shown in figure 17.

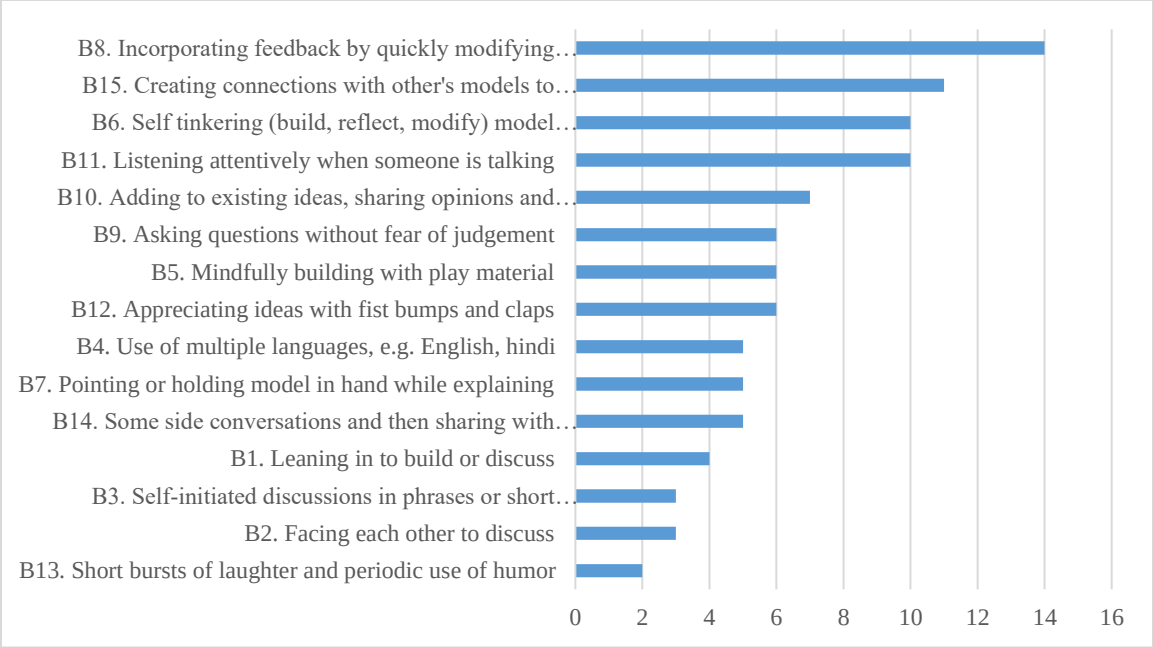

Figure 17. No. of DT mindset constructs by building behavior

The following are key insights from the analysis:

- Out of 19, a minimum of 2 and a maximum of 14 DT mindset constructs mapped to the building micro-behaviors
- Mean of DT mindset constructs influenced = 12 (approx.); Median of DT mindset constructs influenced = 6.
- Top 5 micro-behaviors showing a strong influence on the design thinking mindset were –
    - B8. Incorporating feedback by quickly modifying model

- B15. Creating connections with other's models to build a cohesive story
- B6. Self-tinkering (build, reflect, modify) model iteratively
- B11. Listening attentively when someone is talking
- B10. Adding to existing ideas, sharing opinions and criticisms with candor and respect

To identify the top DT mindset constructs that the behaviors strongly influenced, the total number of micro-behaviors mapped to each DT mindset construct was calculated, as shown in figure 18.

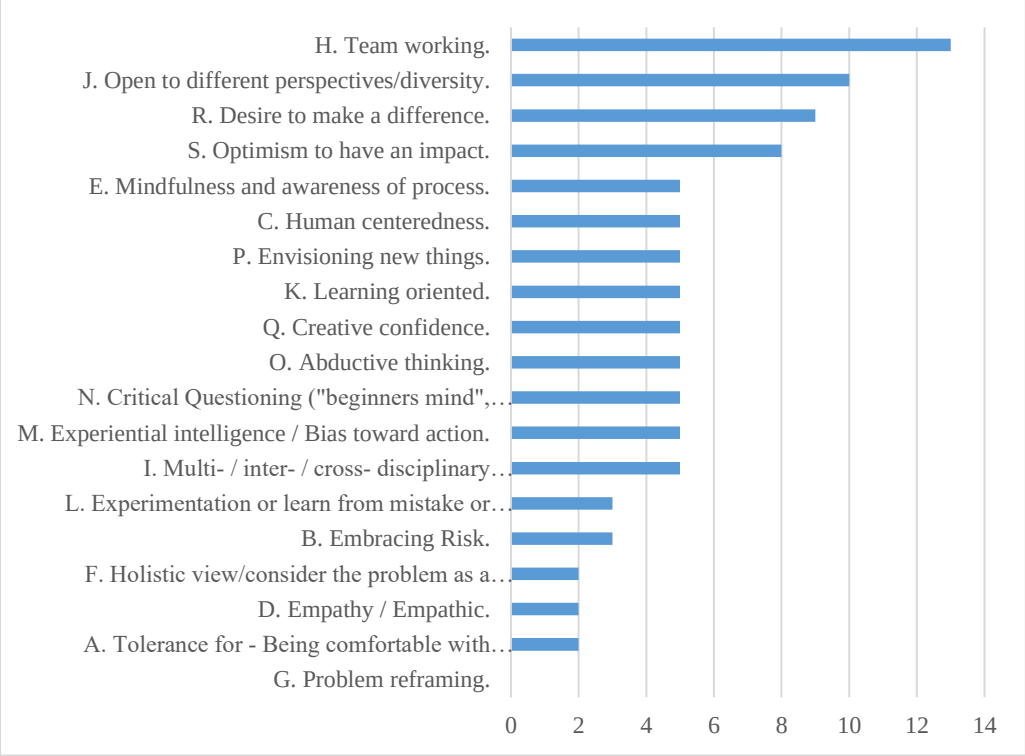

Figure 18. No. of building behaviors by DT mindset construct

The following are key insights from the analysis:

- Since the problem reframing effort was done before the Ideation phase, no building behaviors were found for the DT mindset construct - “G. Problem reframing”.
- Out of the remaining 14, a minimum of 2 and a maximum of 13 building micro-behaviors mapped to the DT mindset constructs.
- Mean of building micro-behaviors = 5 (approx.); Median of building micro-behaviors = 5.
- Top 4 DT mindset constructs that seem to have strongly influenced by building micro-behaviors were –
    - H. Team working.
    - J. Open to different perspectives/diversity.
    - R. Desire to make a difference.
    - S. Optimism to have an impact.

4.9.3. Personality-Resistance dynamics

While there was a heightened sense of psychological safety across all teams by the end of the session, psychological safety (Edmondson, 1999) was found to be unrelated to gregariousness (Edmondson, 2012) - a key personality facet found to be high for extroverts. Therefore the role of the facilitator was crucial in reducing resistance within teams to manage different personalities during the co-creation of new ideas. In order to address resistance in the ideation and implementation stages, the facilitator had to take some actions depending on the personality trait of the young managers.

Personality traits (Norman, 1963) are hard to change but resistance can be reduced. Extraversion, one of the 5 personality dimensions, is characterized by excitability, sociability, talkativeness, assertiveness, and high amounts of emotional expressiveness. The following analysis provides a framework, depicted in figure 19, that was developed from actions taken from this workshop to reduce resistance and sustain motivation in the idea generation and co-creation processes for the introvert/extrovert personality trait, and later improved for subsequent innovation workshops.

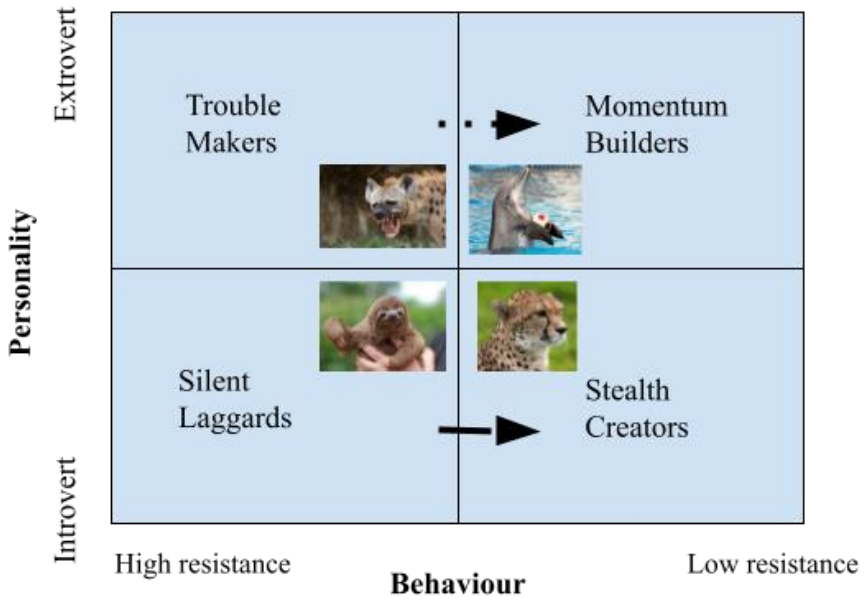

Figure 19. Personality-Resistance matrix

- Momentum Builders – Similar to dolphins, agile, collaborative, lead creators. Want to see and be a part of progress. Eager to contribute new ideas immediately. They feel proud of their creations and want to share their ideas with everyone. Actions to sustain motivation: Provide a creative environment with necessary tools to express themselves. Make them coordinators/gatekeepers so they can maintain the rules for brainstorming and co-creation. Recognize their contributions early.

- Trouble Makers – Similar to hyenas, aggressive, do not want to change and neither contribute new ideas. They find out ways to stop change, make noise and slow momentum. They like to play devil's advocate with no constructive criticism. Actions to reduce resistance: Put them into a well-facilitated, creative environment. Spread them out and put them into a diverse group from different backgrounds and thinking. Set brainstorming rules of divergent thinking. Let them build silently with their hands and share their creation/models with everyone. This builds ownership. These actions can transform them into Momentum Builders.
- Stealth Creators – Similar to leopards, silently contribute radical ideas but may not be able to explain or express themselves entirely. Their listening and empathy skills make them valuable. Actions to sustain motivation: Provide them into a well-facilitated, psychologically safe creative environment with a variety of tools. Let them build to express (visual storytelling) and use non-verbal tools for silent ideation such as sticky notes, sketching, LEGO, etc. that enable visual communication of ideas. Allow them to speak up and share their ideas. Recognize their contributions genuinely. Additional benefits observed in using play material like sticky notes and LEGO are that they can be a great equalizer in collaborative activities and act as mediators in challenging corporate hierarchies.
- Silent Laggards – Similar to sloths, introverts/shy/afraid to express/not sociable with high resistance. Actions to reduce resistance: Put them into a well-facilitated, psychologically safe creative environment. Incentivize active participation. Let them build to express. Use non-verbal tools for communication of ideas. Invite them to speak up and share their ideas without judgement. These actions can transform them into Stealth Creators.

4.10. Well-being – a by-product of creativity through play

As discussed in the case studies, a key mediator of play-infused creativity is positive affect. While examinng the potential of play for fostering creativity, it would be naïve to not consider the positive affect in the context of subjective well-being (Andrews and Withey, 2012), especially in the post-pandemic business environment that is stricken by stress and anxiety in the workplace. But first, it is essential to understand the correlation between innovation and good health and well-being before we analyze the impact of creative activities during the pandemic.

A country's research and development expenditure is seen as a main driver of innovation (Savrul and Incekara, 2015). While India ranks in world's top 10 largest economies in terms of global gross domestic product (GDP), according to the World Bank, India's Research and development expenditure was only 0.653% of GDP in 2018 (The World Bank Group, 2018). This is the lowest it has been in 20 years. It was only in 1996 that it was 0.639% of GDP. The highest it touched was 0.859% in 2008.

According to the India Innovation Report 2020 (NITI Aayog, 2020a), the innovation scores of India's states and union territories (UTs) show a positive correlation with the Gross State Domestic Product (GSDP). This means higher economic growth leads to more innovation and vice-versa. To analyze the relationship between well-being and innovation for these states and UTs, SDG 3 (Good Health and Well-being) data was extracted from the India SDG site (NITI Aayog, 2020b) and India Innovation Index data was extracted from the India Innovation Report.

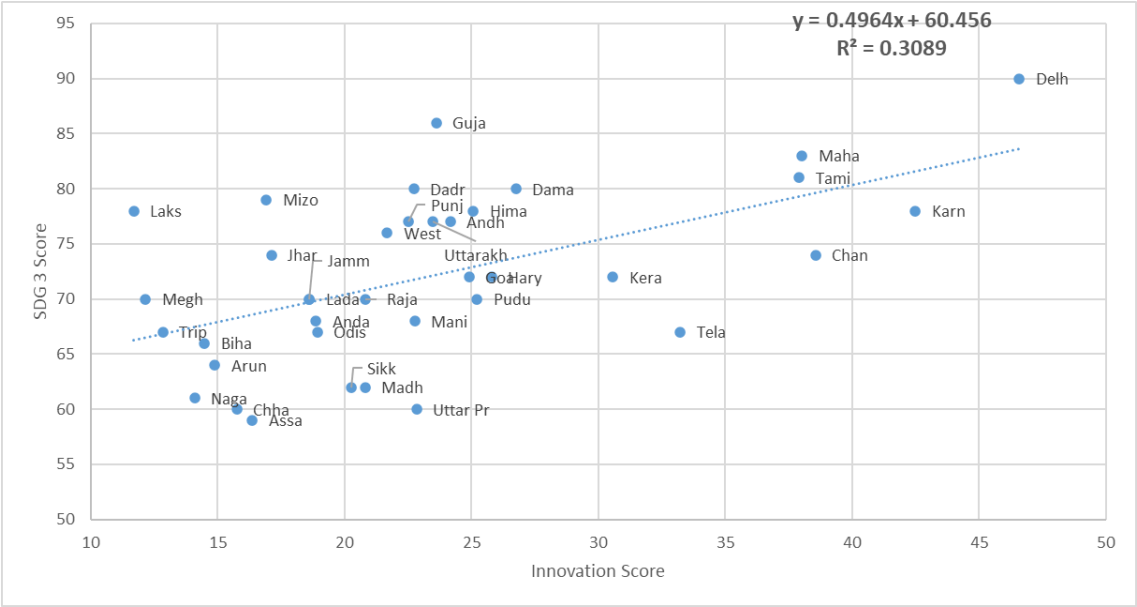

Figure 20. Correlation between SDG 3 (Good Health and Well-being) and Innovation

Figure 20 indicates a positive (and statistically significant) relationship between Innovation and Good Health and Well-Being (SDG3) at the India's state and union territory level.

These insights on well-being and innovation provide a clear direction for both government and organizations. If India wants to move up the Innovation chart, focusing on improving citizens' well-being along with research and development expenditure could perhaps be the solution. India ranked 139 out of 149 countries in the 2021 UN World Happiness Report ("World Happiness Report 2021," n.d.), that focuses on the effects of COVID-19 and how people all over the world have fared. Due to the pandemic, organizations now realize that it is essential to provide physical and mental well-being to employees. The strong positive relationship with innovation is now another reason for organizations to promote good health and wellbeing.

In terms of understanding the impact of play on well-being, recent studies in countries such as Australia, China, Germany and USA (Kiernan et al., 2021; Tang et al., 2021) have shown that people benefit from the engagement in creative activities in helping them achieve positive, flourishing experiences, irrespective of the type of culture – individualistic or collectivistic.

To examine these creative behaviors for India, Google Trends data was analyzed for the period 01/01/2020 to 01/01/2022. Since recent studies showed that arts and craft activities were highly pursued during the pandemic and considering the context of this research study where multi-sensory play material is used, the following keywords were used to monitor the trends – "play", "drawing", "recipe", "how to make". The figure 21 shows the interest over the selected period for these keywords. The keyword on "games" has been intentionally removed and will be discussed later.

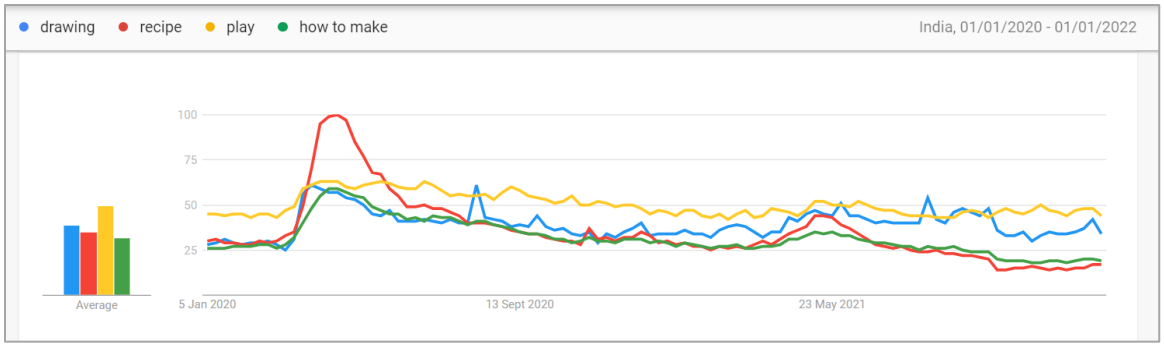

Figure 21 Trends Chart of Creative Activities during COVID-19 (excluding games)

The following observations and inferences can be made from the trends data:

1. During wave 1 (April-May 2020) and wave 2 (May-June 2021) of the pandemic in India, spikes of play and creative activity were observed.
2. Whenever there was a new wave, people confided to various creative activities and hobbies such as drawing, cooking and playing in general, however the largest spikes were seen in cooking, implying people were

looking for ways to use their hands to express themselves and adopted a back-to-basics mindset where food and drawing saw significant interest. This may have happened perhaps due to excessive screen-time or increased stress levels related to health or work.

3. The sudden spike in cooking activities (‘how to make’, ‘recipe’) continued for a month during wave 1 and then simmered down, while activities such as ‘drawing’ and ‘play’ did not drop significantly, in fact continued to hold through the period.
4. A closer look at the data shows that ‘drawing’ and ‘recipe’ are highly correlated.
5. Even more prominent were the trends on ‘games’ during the two waves of the pandemic, as depicted in figure 22. A closer look at the data also reveals that a steep spike in ‘games’ appear immediately after the ‘recipe’ simmered down. Perhaps people were choosing to play online games because of boredom or stress.

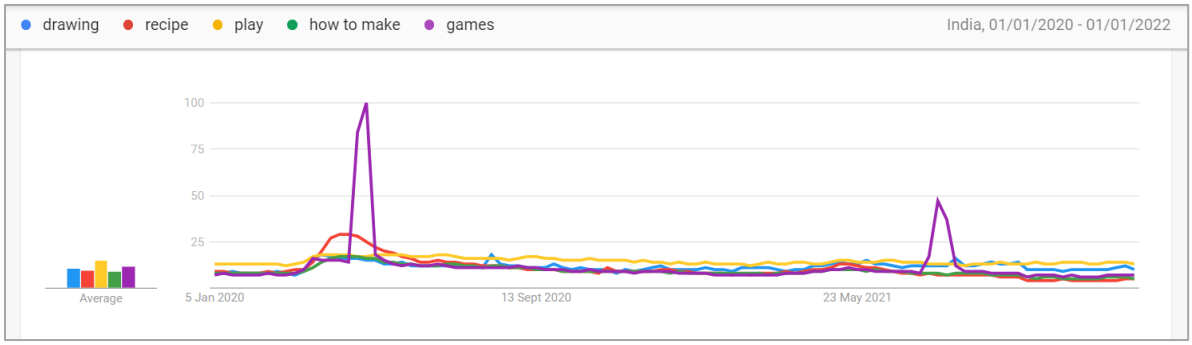

Figure 22. Trends Chart of Creative Activities during COVID-19 (including games)

To summarize, the mediating effect of creative play activities to deal with periods of uncertainty such during crisis or stress should not be undermined. Perhaps

organizations looking to foster creativity, not just for innovation, but also better well-being of their employees should consider integrating play into work. Since well-being is now fast becoming a key selection criteria for employees (Deloitte, 2021), especially for Gen Z and Millennials, this might be a good opportunity for organizations to accelerate play in the organization to kill two birds (innovation and well-being) with one arrow (play).

CHAPTER V:
DISCUSSION

5.1. Discussion Overview

This research study examined the role of play in fostering co-creation through the analysis of 10 case studies.

The first part of the research study – within-case case analysis of 4 case studies across different organizational contexts – examined the role of play in facilitating the creative process to answer the following research questions:

- How can play enhance the ability to creatively empathize and connect with each other? (RQ1)
- How can play improve divergent thinking for better co-creation outcomes? (RQ2)
- How can play improve creative agility in diverse teams? (RQ3)
- How can play help in sharing vulnerability and increase connectedness? (RQ4)

The second part of the research study – cross-case case analysis of 6 case studies with similar organizational contexts – examined the patterns of micro-behaviors of groups during the co-creation process in order to answer the research question:

- What are the group dynamics enabled by play that faciliate in building a design thinking mindset? (RQ5)

Considering the results and findings from the research study that meticulously analyzed the potential of play, the following sections discusses the analysis from these two parts of the research study.

5.2. Discussion of Within-Case Analysis

While humans are built for play (Brown, 2009), as adults only some are playful by trait. This paper built the case to situationally turn on playfulness as a state rather than as a trait during each phase of the design thinking process, so that employees can willingly shift to a beginner's mindset. As observed in the case studies, this mindset is necessary to activate creative problem solving behaviors and create a flow at work, due to its influence on psychological factors such as intrinsic motivation and psychological safety. Also while the innate creative nature of play is well-understood, what is more intriguing and valuable in the organizational context is its natural ability to foster individual and group creativity when a conducive environment and appropriate tools for individual self-expression and collaborative creation are provided. As evident from the case studies, fostering creativity with play creates the realization that the "answers are in the system" (Kristiansen et al., 2009) of employees and customers that they need to allow for expression without judgement. Creating a "magic circle" (Huizinga, 1955) was essential where participants could feel safe to express themselves was essential for a playful state of mind. When employees are allowed to express freely and voice their opinion, a sense of trust and belonging is created.

The interventions intentionally followed the entangled play continuum of free play ("paidia") and rule play ("ludus") (Caillois, 2001) for workshop delivery, hence allowing participants to simultaneously experience fun and seriousness at the same time. By applying this "paradox of intentionality" (Statler et al., 2011) that naturally emerges in serious play, participants experienced this play continuum in fostering creativity across the phases of the design thinking process. As explored in case study C, this paradox provided for divergent thinking simultaneously with convergent thinking, resulting in different levels of creative agility – a key organizational capability for discovery-driven

learning (Hill et al., 2014) in the ideation and implementation phases respectively across levels in the organization. In case study B, divergent thinking was facilitated using multi-sensory, flexible play material such as candy that helped participants generate new and diverse ideas (Runco and Acar, 2012) filled with emotionally-creative storytelling. In case A and D, participants were able to creatively empathize (Yaniv, 2012), connect with each other and co-create a shared understanding by playing with bricks. Senior-level participants put their guard down and shared their vulnerability using embodied metaphors (Jacobs and Heracleous, 2006), thereby building stronger connections with a systems thinking approach. This hands-on, physical interaction was central to structuring their own thoughts, interpretations and actions.

In each purposeful play experience, the state of flow (Csikszentmihalyi, 1990) was experienced where participating in creative play activities became its own reward, and extrinsic motivation factors such as scores and time constraints did not matter once participants immersed themselves into the activity mindfully. These creative interventions aided in infusing play into the design thinking process and situationally turning on playfulness as a state in individuals and teams with heightened sense of imagination and co-creation. In addition, since engaging in non-work related creative activities elevates positive affect, intrinsic motivation, trust and psychological safety (Amabile et al., 2005; Edmondson, 1999, p. 199; Vosburg and Kaufmann, 1999) for emergent co-creation, organizations should perhaps consider conducting such activities as a starting point for challenges that are directly linked to business innovation. This provides for a more holistic nourishing and rewarding transformative experience, as observed in cases A, B, C and D.

Table 4 below summarizes the play activities with key skills and factors discussed in the findings. The detailed description of each play activity was provided while

discussing the case studies. Also, while the play activities were originally developed by the mentioned academicians and designers, they were customized to meet the intervention goals of the cases.

Table 4. Play activities.

Play Activities	**Duck and Pond (case A and D)**	**Trick or Treat (case B)**	**Spaghetti Tower (case C)**
Play material and characteristics	LEGO® - Connect and build; flexible but not moldable; visually appealing, playful colors	Chocolates - Similar to clay; moldable; can be crushed; sticky; activates taste and smell senses; visual appeal	Spaghetti - Brittle; rigid Marshmallow - Looks lightweight but can topple a spaghetti tower; activates taste and smell senses
Developed by	Johan Roos and Bart Victor at IMD in Switzerland	Fridolin Beisert, ArtCenter College of Design, CA, USA	Peter Skillman, Director of Design for Outlook at Microsoft Corporation, USA
Design Thinking Phase (Design Kit, I.D.E.O., 2016)	Inspiration	Ideation	Implementation
Skills explored	Empathy (D. Goleman, 2013), Vulnerability (Brown, 2012)	Divergent thinking (Runco and Acar, 2012)	Creative agility (Hill et al., 2014)
Unit of analysis	Individual, Team	Team	Team
Type of play enabled (Brown, 2009; Sennett, 2008)	Constructive, Exploratory, Social, Narrative, Role play	Cognitive, Constructive, Imaginative, Sensory, Competitive, Pretend play	Cognitive, Constructive, Competitive
Key factors or mediators of co-creation	Affect – positive and negative; Psychological Safety (Edmondson,	Intrinsic Motivation, Affect, Psychological Safety, Flow	Psychological Safety, Intrinsic Motivation, Flow (Csikszentmihalyi,

Play Activities	Duck and Pond (case A and D)	Trick or Treat (case B)	Spaghetti Tower (case C)
	1999; Vosburg and Kaufmann, 1999)	(Amabile et al., 2005; Csikszentmihalyi, 1990; Vosburg and Kaufmann, 1999)	1990; Edmondson, 1999; Hennessey and Amabile, 1998b)
Creative processes applied (Russ and American Psychological Association, 2014; Vygotsky, 1976)	Broad associations, perspective taking, empathy building, narrative development, integration of affect, emotional expression	Divergent thinking, broad associations, perspective taking, narrative development, emotional expression, convergent thinking	Cognitive flexibility, risk taking, experimentation, convergent thinking

5.3. Discussion of Cross-Case Analysis

In order to navigate uncertainty and innovate in the post-pandemic era, organizations now need to enable effective communication and collaboration with a strong sense of trust, connection and belonging.

Too much importance is generally placed on the content rather than on the manner of communication and interaction between the team members (Pentland and Heibeck, 2008; Woolley et al., 2010; Pentland, 2012). Similar to findings from Pentland's research on the science of building great teams, this study also produced similar findings – how the team members of high performing teams communicated were much more important than what they communicated, characterized by energy, creativity, engagement, exploration and shared commitment.

Buzz was seen as more important than content of communication. On observing the behaviors of teams in this playful, co-creation format revealed the presence of a buzz, or patterns of small yet frequent gestures, body language, vocal tones, self and collective

tinkering and drawing, among other signals and patterns of communication and interactions, that seem to be relevant for the team's creative, productive performance in the collaborative building process.

The teams that engaged in playful co-creation moved at high speed, with information flowing through the entire group, experimenting with models and improving the solution in real time, instead of spending too much time on strategizing the building process. They paid keen interest to signals of safety that connected them. They shared accurate information in groups by sharing vulnerability and openly telling the truth. This kind of discussion filled with candor and respect helped in producing not just the most innovative solutions but also helped in showing and telling stories in an impromptu manner.

The patterns of micro-behaviors observed across the cases are also in line with the five factors of performance of highly successful teams as found in Pentland's studies (Coyle, 2018):

1. Everyone in the group talks and listens in roughly equal measure, keeping contributions short.

2. Members maintain high levels of eye contact, and their conversations and gestures are energetic.

3. Members communicate directly with one another, not just with the team leader.

4. Members carry on back-channel or side conversations within the team.

5. Members periodically break, go exploring outside the team, and bring information back to share with the others.

This study not just aligns but also builds upon Pentland's studies by identifying many observable and measurable micro-behaviors that are required for co-creation by teams engaged in innovation.

The presence of collective intelligence (Woolley et al., 2010) is evident from the innovative solutions created by these teams that used play as a catalyst for co-creation. Play enabled not just ignited creativity but also a high productive performance as a result of these micro-behaviors.

Also, basis the literature review along with the within-case (4 cases) and cross-case analysis (6 cases) from this research study, the four social psychological mechanisms mediating the relationship between playful behaviors and creativity are:

- psychological safety (Edmondson, 1999)
- intrinsic motivation (Hennessey and Amabile, 1998a) and
- positive affect (Amabile et al., 2005)
- flow (Csikszentmihalyi, 1990)

This showed that the patterns of interactions and behaviors of co-creation observed in the workshops signaled a high sense of belonging, trust and connectedness.

This is in line with studies on high performing teams and psychological safety in teams (Edmondson, 1999, 2012; Katzenbach and Smith, 2015; Pentland and Heibeck, 2008). These patterns show that these groups were no longer operating as employees from different backgrounds but now as teams with high commitment and purpose towards building and presenting their experience solutions for a future workspace. Their skin was in the game and high levels of empathy towards the customers was demonstrated in the way they showcased their work. These teams had used the play material creatively. Each solution was a visual story told and waiting to be experienced. They felt mutually accountable for the outcomes of the session. The short bursts of joy through the session and applaud at the end were an indication that positive affect had played a role in developing creative solutions. A high sense of synergy had developed

enabled by psychological safety and trust within these teams during the two-day workshops.

All building micro-behaviors aligned with the design thinking mindset constructs, showing how behaviors induced by play strongly enhanced the various contructs of the design mindset for the participants across the case studies. The top design thinking mindset contructs identified in the analysis section show the catalytic nature of play in enhancing collaboration, leveraging diversity and inducing desire and optimism for the co-creation of novel, impactful outcomes in the design thinking process.

To summarize the analysis of micro-behaviors and social psychological mechanisms, this study examined play as a mediator (catalyst and nourisher) for creative, productive performance for individuals and teams as it provides a mix of emotions (positive affect), intrinsic motivation, and perceptions characterized by psychological safety and trust, that are the ingredients of a quality “inner work life” (Amabile and Kramer, 2007).

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1. Summary and Conceptual Model

This chapter summarizes the thesis with a conceptual model for fostering co-creation through play that can be used by organizations looking to accelerate design-led innovation. It also provides key implications for these organizations with actionable points and benefits of infusing play into the workplace.

The Iceberg Model of Organization Play Culture depicted in figure 23 is a new conceptual model based on the adaption of the Iceberg Theory of Culture (Hall, 1989). It synthesizes the discussion on within-case and cross-case analysis, showing the role of play as a catalyst for enhancing much-needed skills and behaviors, along with mindsets required to thrive in the post-pandemic world.

As described by T. Hall in the Iceberg Theory of Culture, the culture of an organization is like an iceberg found in the polar oceans. While the surface culture represents behaviors and skills that are observable, the deeper culture represents the mindsets that are implicit and non-observable. When play in infused into serious work, this model shows its potential to enhance key skills, trigger behaviors and shift to human-centric design mindsets that eventually form the foundation of a strong organization's culture. In the post-pandemic world, organization leaders can use this model to build a culture that allows sharing of vulnerability, encourages empathy, enhances divergent thinking and ingrains creative agility into the DNA of the organization. It provides specific micro-behaviors that influence the required mindsets needed to accelerate transformation and innovation in the workplace.

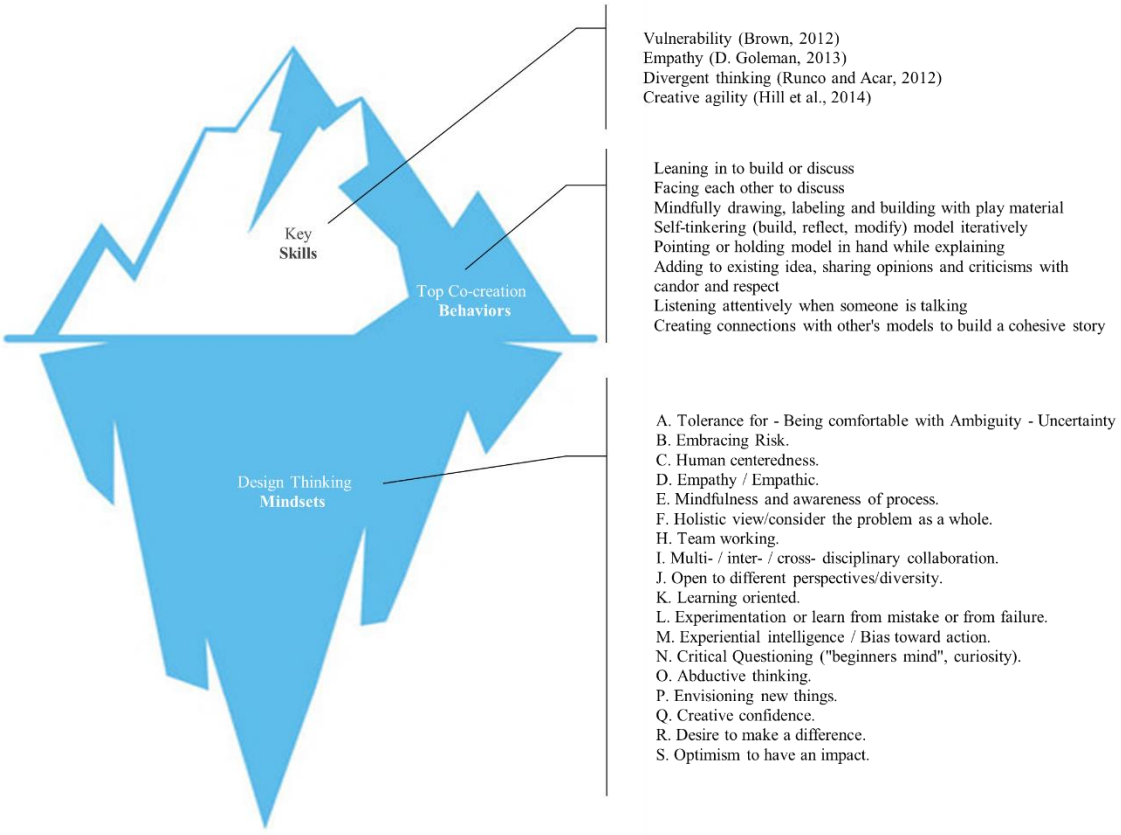

Figure 23. Iceberg Model of Organization Play Culture

6.2. Key implications for organizations

Any large-scale organization transformation is a complex, painful process. The process of unearthing past systems and processes and questioning the status quo can disturb existing business operations and even adversely impact growth, if not carefully implemented. As businesses accelerate their digital transformation and innovation efforts in the post-pandemic environment where new initiatives such as ESG (environmental, social, and corporate governance) and JEDI (justice, equity, diversity, inclusion) are fast becoming crucial for business existence, it is now becoming clear that to be more digital, we must be more human. Leaders and managers need to connect more with not just their customers but also their employees, starting with themselves, their inner selves by

sharing their vulnerability in order to better empathize with others. Their beliefs, values and systems that they partook in and created to a large extent get revisited, which can become an extremely uncomfortable experience. And therefore, most leaders choose to ignore the people side of transformation and simply enforce the digital way as the new way of work without rewiring the way their teams think, feel and act in the age of uncertainty. As discussed in this research study, infusing play provides a better way, a more intrinsically motivating and nourishing way to accelerate transformation and innovation by being more human-centric, trigger co-creation behaviors and develop innovation mindsets built on vulnerability, empathy, psychological safety, and trust. The following key implications discuss how organizations can integrate play into the workplace and benefit from using its underlying principles and mechanics.

6.2.1. Integrating different types of play in design thinking

Organizations should consider integrating play into work or looks for ways to turn on a playful state of mind situationally. While applying the human-centric design thinking process to drive transformation and innovation in organizations, it is important to manage how we think and feel. The right behaviors can build adoption and ownership of change. Activating play behaviors has the potential to build a sense of connection, allow everyone to participate more willingly and articulate tacit knowledge in individuals and teams in order to collaboratively solve complex problems.

Selecting the type of play along with appropriate material is essential for improving the underlying key human-centric components of the creative problem solving process – empathy, vulnerability, divergent thinking, agility. Using toolkits such as LEGO, play-doh and converstation starter cards enable “exploratory play” and “role play” in the Inspiration phase of the design thinking process, allowing managers to

enhance the empathize process for a better, more deeper understanding of their customers. Such types of play help become more open-minded and curious while exploring the painpoints of customers. Managers listen better and use their instincts to untap opportunities and form insights to fuel brainstorming.

In the Ideation phase, using a disruptive, child-like mindset is key to thinking divergently, resulting in the generation of a greater fluency (speed and quantity of ideas) and flexibility (ideas that are truly different and distinct). Using “imaginative play” and “competitive play” can result in the collaborative generation of a variety of unique solutions with visual storytelling.

Once the ideas are screened and concepts are created, “constructive play” can be used to create prototypes. Not just with LEGO material but with scrap or moldbale material, such as play-doh and other art and craft material, can be used to build solutions for walking customers through the experience and getting rapid feedback to improve the solution. Build your prototypes quickly, share them immediately, and keep on learning.

Because prototypes are meant only to convey an idea, not to be perfect, managers can quickly move through a variety of agile iterations. Using play material provides an incredibly effective way to make ideas tangible, to learn through making and tinkering, and to quickly get key feedback from the people they are designing for.

6.2.2. Creating a magic circle to play seriously

For playfulness to trigger, the right conditions or atmospherics need to be present. Setting up a safe, creative environment, also known as a “magic circle” (Huizinga, 1955), where playful behaviors can be triggered. This helps in dissolving fear, doubt and lack of confidence that employees may carry into an organizational transformation program.

The “magic circle” provides a playful environment including play materials such as toys, art and craft material, such as LEGO, candy, play-doh, spaghetti. They have flexible and multi-sensory characteristics that can encourage the necessary behaviors needed for better co-creative outcomes. The resultant outcomes from engaging in such as a safe, playful environment are a higher sense of purpose, trust, stronger sense of belonging, positive mood, and empowerment.

To sustain a culture of innovation, organizations should consider creating such circles of play that are time-bound, such as through play-based workshop interventions, or those are space-bound, such as dedicated open, play spaces at the workplace that allow managers to brainstorm, collaborate and experiment with new ideas in a safe, creative environment.

6.2.3. Sharing vulnerability for empathic concern through play

Leaders who have high self-awareness tend to connect better with their employees and are more effective in driving excellence in the organization (Goleman, 2013). Their ability to empathize with others greatly increases when they are more aware of their thoughts and actions. When leaders consciously display vulnerability, by asking for feedback or admitting to mistakes, it allows managers to feel more comfortable being open and honest about their concerns common questions, mistakes, and roadblocks (Brown, 2015). It creates a real connection between them which helps in faster problem solving and co-creation.

Sharing vulnerability is about sending a clear signal that weaknesses and uncertainties exist in the real business world, and it is acceptable to ask for help. When such a model of behaviour and empathic concern (Goleman, 2013) becomes a model in

the organization then managers can set their insecurities aside, stop playing the status game and start connecting and trusting each other.

Play can help leaders become more self-aware of their thoughts and actions, allowing them to reflect and regulate emotions as needed. It helps share our deepest fears openly without the fear of embarrassment. In a workplace that does not allow for play, self-expression crumbles and curiosity disappears. When managers are told to keep their emotions aside at work, under the context of being professional, they lose their ability to think creatively. By the very virtue of being human, we are emotional and playful. By sharing their vulnerability, they can create a culture of empathy and belonging, that in turns helps in strengthening connections and developing a collective sense of ownership for better innovation outcomes.

6.2.4. Finding purpose by playing with insights

The design thinking process starts with confusion-driven discovery and ends with clarity of solution as depicted by the Design Squiggle (D. Newman, 2002). Play provides a fun and engaging way to embrace the chaos and develops self-improvement as a habit during the innovation journey.

Beneath uncertainty in the Inspiration phase lies the potentiality or “what-if”, which when uncovered, ultimately leads to novelty in the Ideation phase. This initial stage of Inspiration is to find purpose through empathy and exploration. Defining purpose helps create focus and engagement on a shared goal. Once the problem or question is framed based on insight then ideas spiral out easily and flow can be achieved in ideation and implementation. The deeper are the customer insights, the stronger is the purpose, and the more creative are the ideas. The act of observing and listening without judgement leads to creation with an open mind.

Without going through the Inspiration phase or empathizing deeply with the customer, creative ideation enabled by imaginative play is meaningless, almost frivolous. Empathy (Goleman et al., 2001) gives the challenge meaning. This also gives time for the right atmospherics or social emotional conditions such as psychological safety, trust, intrinsic motivation, positive affect and cohesion in the team to be created (Amabile et al., 2005; Bornemisza, 2013; Gordon and Baldwin-Philippi, 2014; Hennessey and Amabile, 1998b). Once play triggers the atmospherics, flow in creativity can be experienced (Csikszentmihalyi, 1990).

6.2.5. Creating the cognitive rhythm of hybrid thinking

The entanglement of free play and rule play (Caillois, 2001) is native to design processes – divergent and convergent thinking respectively. This hybrid thinking is seen as "serious play" (Oliver et al., 2013), that harmonizes these thinking processes. The ability to think divergently of wild ideas with a child-like mindset, preferring quantity over quality, in the ideation stage is akin to free play, while the ability to converge to solutions by critically analyzing the ideas by identifying the benefits to customers and evaluating the feasibility and viability of implementation is akin to rule play. The entangled nature of free and rule play can be observed in the agile iteration of models whilst incorporating feedback from internal teams, customers, and other stakeholders.

In playing with flexible toys with metaphorical capabilities, such as LEGO, the shifting from divergent to convergent thinking is so entangled and spontaneous that to the player, it goes unnoticed. It is only to an observer this phenomenon can be witnessed. This cognitive rhythm of imagination and critical thinking can also be found in what Mihaly called "flow" (Csikszentmihalyi, 1990). When this rhythm becomes effortless,

timelessness (Mainemelis, 2001) is experienced. This causes the tragic fall of ego and the emergent rise of clarity and creative focus during the act of child-like yet serious play.

6.2.6. Building stories with functional and emotional experiences

Due to an over-emphasis of gaining analytical skills by the industrial-age education system, that is subsequently carried over by the corporate sector, function has traditionally been preferred over form. However, in order for brands and businesses to thrive in a consumer-driven world, consumers are demanding more from products. They want not just better functionality but also better form with better design, usability and talkability. Consumers want to buy products and services from brands that are authentic and relatable. This comes from the need to share stories with friends and the world at large.

In order to create customer delight, there is now a focus on strong storytelling emerging at the intersection of functional and emotional experiences. Today all organizations are in the business of co-creating stories with customers and enabling behavior-led, technology-enabled experiences in moments that matter to their customers.

Play has the ability to shift thinking from the logical to the creative, and in this process enable the emergence of emotional stories that are innate to the creative process. When there is a shift from thinking about business as a provider of products, services and offerings to an enabler of expressions, feelings and moods for our customers, stories naturally emerge. In the new experience, resulting from the amalgamation of functional and emotional experiences, lies not just customer delight but also profitability for the business.

6.2.7. Shape-shifting from the individual to the collective

To drive changes across the organization, leaders need to shift shapes to drive change in the organization. There are 3 essential roles to be played – (technology) enabler, (business) orchestrator, and (culture) builder.

Digital transformation means business transformation using new and emerging technologies, keeping people at the center of the transformation. Leaders need to be enablers of digital tools and technologies in areas of customer experience and business operations but also new business models.

Implementing digital technology is however the relatively easier part; the hard part is shifting people to think about what they were doing earlier with a play-infused design thinking mindset. Along with enabling the right technologies for innovation and growth, leaders need to drive transformation with a systems approach coupled with human-centricity. That means leaders now need to build bridges between silos and be better "orchestrators" of the business. They need to set a clear path and purpose for every integration effort between departments, business units and ecosystem partners because true transformation starts with bringing people together from inside and outside the organization.

Often that means, leaders need to be playfully shape-shifting in the organization. They need to first prepare themselves internally in order to translate themselves into a language that can be understood, sometimes speaking the language of technology, sometimes business, and sometimes but critically the language of the people driving change in the organization. This can be done by letting them feel in control and considering their socio-cultural backgrounds as well as cognitive ability. This can lead to building a culture of effective co-creation in the organization.

Play provides the shape-shifting capability for culture building can allow leaders to get into conversations and pull their experience into a language that can be heard or understood. This kind of approach shifts thinking from the individual to the collective and inspires empathy and imagination. It brings everyone in the room help think with the leader.

6.2.8. Thinking systems to build a learning organization

Like-minded managers generally work well together to get the job done, but crumble when faced with today's wicked problems. Today, there is a need to collaborate with peers of diverse demographics, personalities, and values but more importantly with peers with different ways of thinking, also known as cognitive diversity.

In an effective learning organization (Renesch and Chawla, 2006), employees should feel encouraged to connect and collaborate better for business growth. The need for improve systems thinking or interconnectedness through feelings of belonging and trust is essential for knowledge sharing and co-creation of solutions.

To enhance co-creation, organizations should help employees practice looking for the relationships at play, as a regular practice. When managers have access and can playfully work with people across the boundaries of their cubical, they can leverage the interconnectedness in the "system", and hence collaborative problem-solving and innovation emerges more fluidly. Reducing physical barriers tends to increase frequency of interactions that can make people feel closer, safer, and more connected. Open, playful creative spaces increase collisions, thereby increasing cohesion and building a sense of connectedness. Play also has the potential to build new mental models of openness, listening to diverse opinions, sharing, cooperation and candid feedback for better creative outcomes. Since creating more diversity means creating more moments of discomfort,

serious play can be used in instances where we are consciously trying to understand what the person is saying, because their ways of thinking, their understanding, their cultural background, their ways of operating in the world is different from the other person.

Leveraging cognitive diversity through play provides different thoughts and ideas essential for generating novel, innovative solutions to complex problems, especially during the ideation phase. However, the generation of different perspectives may become a problem with teams that need to execute work and meet tough deadlines (Corritore et al., 2020). Leaders should know when and how to leverage divergence and convergence in the process of solving complex problems.

6.2.9. Triggering micro-behaviors for co-creation

This research discussed case studies in which the play-infused workshops triggered behaviors for effective co-creation. They were conducted with teams that had no leaders. Play helped these teams self-organize, be more vulnerable, connect and empathize better, become emergently creative, embrace the unknown with confidence, thrive on diversity, be more agile, and engage in a co-creative dialogue within a safe, creative environment. These teams that showed these interpersonal behaviors and co-created solutions worked as a complex adaptive system (Buckley, 2017). During the exploration of behaviors of self-organizing, creative, productive teams, various instances of interpersonal phenomena characterized by energy, cohesion, creativity, exploration, as well as shared risk and commitment were observed. Interestingly these instances are also found in nature and other acts of play.

Agile and cooperative behavior underpins the activities of social creatures such as starlings, ants and bees. This emerges from a sense of shared purpose and commitment. To improve group dynamics for better co-creation among humans, inspiration can be

gained from such social creatures from the discipline of ethology that deals with the scientific and objective study of animal behavior especially under natural conditions (Hansell and Hansell, 2005). The following behaviors are observed in these self-organizing, social creatures:

- Honeybees share olfactory (smell-based) information with each other in a waggle dance while building a beehive (Grüter and Farina, 2009). Contrary to popular belief, there is no centralizing control played by the Queen Bee, other than generating larvae for reproduction.
- Ants have similar characteristics. They do not just use smell but also touch, body language and sound as a means of communication (Jackson and Ratnieks, 2006). They collide and smell each other with the use of pheromones as chemical signals of belonging to the same colony. They also leave pheromone trails to communicate the path to food for other colony members. This is reinforced by follower ants returning with the food back to the colony.
- To manage predation risk, starlings fly together in large flocks making a mesmerizing, cloud-like formation called "murmuration" – a flow unmatched like any other in the skies. This is attained by signals sent between the birds in the flock. Each bird is known to communicate with a fixed number of six to seven birds in their proximity (King and Sumpter, 2012). In India, the most common starling birds are called Brahminy Starlings.

This group dynamics and collective intelligence observed in animals and birds results in cohesion and high performance of the task they set to accomplish together. Similarly, organizations can improve the performance of their employees engaged in play-infused co-creation tasks by inducing micro-behaviors that draw on the collective

knowledge and opinions of the teams. It improves not just what we communicate by thinking with our hands but also how we communicate as evident from the study of micro-behaviors in this research study.

To summarize, play has the potential to provide for better team collaboration and creativity that is not just fun and engaging, but also intrinsically motivating and nourishing with empathy, vulnerability, divergent thinking and creative agility at the core of co-creation. It helps to put our guards down, ask for help, receive feedback with an open mind, give feedback constructively with candor, and builds a mindset of continuous improvement; thereby resulting in a greater ability to adapt with change and create new and novel solutions for sustainable competitive advantage.

6.3. Limitations and Recommendations for Future Research

In terms of limitations and future research, this thesis focuses on the potential of play to facilitate one key concept in each of the three phases of the human-centric design process. This means that there are opportunities for empirical research in other skills such as convergent thinking during concept building or integrating customer feedback into the solution. Also, while the paper demonstrates the cross-contextual impact of play across and within functions and businesses, each play intervention was meticulously customized by the facilitator with the client in order to meet specific organizational objectives. Identifying the best practices of this process of co-creating play-based interventions could be another area of research.

In addition, controlled experiments that measure the impact of infusing play on socio-psychological factors such as psychological safety and trust, positive affect, intrinsic motivation and flow related to group's creativity. Also a controlled experiment on the Trick or Treat challenge that identifies group dynamics and creative outcomes for teams that were shown instructional cues such as functional and emotional cues prior to them sorting the candies in each round of divergent thinking. It would be interesting to know if this results in greater storytelling and more creative solutions. Also, pre-workshop and post-workshop surveys can be conducted before the creative play activities mentioned in the single case studies in order to compare the change in socio-psychological factors.

Also a longitudinal study that uses the experience sampling methodology with a sociometric tool developed by Pentland could be conducted to observe and capture new forms of collaboration of highly successfully groups engaged in playful co-creation. This could provide further accuracy of speech patterns and body movements, thereby providing greater insights into co-creation behaviours enabled by play.

Another area of research could be the impact of infusing play into serious organization tasks in the design-led innovation process for individual and team's well-being. Lastly, organizational leaders should note that play is being positioned as a catalyst to the design-led innovation process, and therefore measuring the returns of play in terms of enhancing necessary skills, behaviors and mindsets to accelerate change and manage growing business uncertainty would be more advisable, rather than assessing its monetary benefits in the short term.

6.4. Conclusion

This thesis set out to examine the potential of play to foster co-creation for design-led innovation in the organization. It first established the need for corporate India to find a better way to empower employees with necessary skills, behaviors and mindsets in order to drive design-led innovation in today's uncertain, post-pandemic business environment.

The literature review provided a comprehensive review of literature available on play and creativity in the organizational context in two parts – creativity as the organization imperative and play as the catalyst for creativity. From the literature review, various gaps and unanswered questions were discovered based on which five research questions were defined. Four of these five questions entailed understanding the role of play in enhacing skills used in the human-centric design process – empathy (D. Goleman, 2013), vulnerability (Brown, 2012), divergent thinking (Runco and Acar, 2012) and creative agility (Hill et al., 2014). The last research question entailed understanding how play enhanced group dynamics, specifically behaviorial patterns that facilitate in building a design thinking mindset for teams.

These research questions were thoroughly investigated and answered with the within-case analysis of four single case studies using the qualitative, interpretive analysis method and cross-case analysis of six case studies using the quantitative content analysis technique.

The results and analysis for these two parts were discussed in depth. The single case studies examined the potential of play in enhancing key skills in the three phases of design thinking, while revealing various social emotional mediators such as intrinsic motivation (Hennessey and Amabile, 1998a) and psychological safety (Edmondson, 1999), positive affect (Amabile et al., 2005) and flow (Csikszentmihalyi, 1990) that enhance cognitive capacity, that in turn improve creative problem solving capability (Isen et al., 1987). The results from the cross-case analysis of micro-behavior patterns showed alignment with research on the presence of collective intelligence by highly successful groups (Pentland and Heibeck, 2008; Woolley et al., 2010), placing more importance on how the team members of high performing teams communicated than what they communicated. The research builds on Pentland's study by discussing top emergent micro-behaviors that are relevant for co-creation and maps all co-creation behaviors to design thining mindsets. These behavioral patterns of creatively productive teams enabled by play were characterized by a renewed sense of energy, creativity, engagement, exploration and shared commitment.

Finally, a conceptual model was developed that provides an understanding of the potential of play for design-led innovation by putting together key skills, behaviors and mindsets enhanced by play at work. In addition, key implications and benefits for organizations with recommendations for future research were discussed.

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APPENDIX A

WORKINGS OF CROSS-CONTENT DATA ANALYSIS

Building behaviors (B1 to B15) for 6 cases (C1, C2, C3, CE, E1, E2):

What were the micro-behaviors observed due to infusing play to implement new experience solutions?

(READ SIDEWAYS)

30	87%	87%	73%	57%	90%	90%	90%	57%	47%	87%	83%	60%	73%	67%	87%	
Total Score	**26**	**26**	**22**	**17**	**27**	**27**	**27**	**17**	**14**	**26**	**25**	**18**	**22**	**20**	**26**	
Behavior Code	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	
Behavior Description (play-enabled)	leaning in to build or discuss	facing each other to discuss	self-initiated discussions in phrases or short sentences	use of multiple languages, e.g. English, Hindi	mindfully drawing, labeling and building with play material	self tinkering (build, reflect, modify) model iteratively	pointing or holding model in hand while explaining	incorporating feedback by quickly modifying model	asking questions without fear of judgement	adding to existing ideas, sharing opinions and criticisms with candor and respect	listening attentively when someone is talking	appreciating ideas with fist bumps and claps	short bursts of laughter and periodic use of humor	some side conversations and then sharing with everyone	creating connections with other's models to build a cohesive story	
C1	4	4	4	1	4	5	5	3	2	5	4	3	5	3	5	
C2	4	3	4	4	5	4	4	3	2	4	5	3	3	3	4	
C3	4	5	4	2	5	5	5	3	3	5	5	3	5	3	5	
CE	4	4	3	4	5	5	4	3	2	3	4	2	2	3	4	
E1	**5**	5	3	1	4	4	5	3	2	5	4	3	3	4	4	
E2 (2)	5	5	4	5	4	4	4	2	3	4	3	4	4	4	4	
80% of max score (30) =	24															

Pitching behaviors (P1 to P17) for 6 cases (C1, C2, C3, CE, E1, E2):

97%	100%	90%	70%	70%	70%	93%	77%	57%	97%	83%	90%	67%	100%	73%	73%	63%
29	**30**	**27**	**21**	**21**	**21**	**28**	**23**	**17**	**29**	**25**	**27**	**20**	**30**	**22**	**22**	**19**
P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17
points at the model while telling the story	everyone standing respectfully around the table	one team member presents	demonstrates understanding of issues	reference to customer interviews	interpretation of insight	describing the experience solution in detail	high energy, passionately presenting	other team members pitching in as needed	others are patiently, actively listening	demonstrates strategic foresight	other team members smiling and proud	understanding of customer's emotions and behaviors	applaud and joy at the end	accepting feedback from customer	answering questions or clarifying doubts non-defensively	live co-creation with the customer
5	5	4	3	3	5	5	5	3	5	5	4	4	5	4	4	4
5	5	5	3	2	4	5	3	3	5	4	5	3	5	3	4	2
5	5	5	4	4	2	5	4	2	5	4	5	4	5	4	4	4
5	5	5	4	4	3	4	3	3	5	4	4	3	5	4	3	3
5	5	4	3	4	3	4	4	3	5	4	5	3	5	4	3	3
4	5	4	4	4	4	5	4	3	4	4	4	3	5	3	4	3

Mapping of Building behaviors to 19 Design Thinking Mindset Constructs:

Behavior Code	Behavior Description (play-enabled)	Behavior	A. Tolerance for - Being comfortable with Ambiguity - Uncertainty	B. Embracing Risk.	C. Human centeredness.	D. Empathy / Empathic.	E. Mindfulness and awareness of process.	F. Holistic view/consider the problem as a whole.	G. Problem reframing.	H. Team working.	I. Multi- / inter- / cross-disciplinary collaboration.	J. Open to different perspectives/diversity.	K. Learning oriented.	L. Experimentation or learn from mistake or from failure.	M. Experiential intelligence / Bias toward action.	N. Critical Questioning ("beginners mind", curiosity).	O. Abductive thinking.	P. Envisioning new things.	Q. Creative confidence.	R. Desire to make a difference.	S. Optimism to have an impact.	Number of DT mindset constructs
B1	Leaning in to build or discuss	B1. Leaning in to build or discuss								H. Team working.		J. Open to different perspectives/diversity.								R. Desire t	S. Optimism	4
B2	Facing each other to discuss	B2. Facing each other to discuss								H. Team working.		J. Open to different perspectives/diversity.									S. Optimism	3
B3	Self-initiated discussions in phrases or short sentences	B3. Self-initiated discussions in phrases or short sentences								H. Team working.						N. Critical Qu	O. Abductive thinking.					3
B4	Use of multiple languages, e.g. English, hindi	B4. Use of multiple languages, e.g. English, hindi								H. Team w	I. Multi- / inte	J. Open to different perspectives/diversity.				N. Critical Qu	O. Abductive thinking.					5
B5	Mindfully building with play material	B5. Mindfully building with play material			C. Human	D. Empath	E. Mindfulness and awareness of process.								M. Experiential intelligence / Bias to			P. Envisioni	Q. Creative confidence.			6
B6	Self-tinkering (build, reflect, modify) model iteratively	B6. Self-tinkering (build, reflect, modify) model iteratively	A. Tolerance	B. Embracing Risk.			E. Mindfu	F. Holistic view/consider the problem as a whole.						L. Experime	M. Experiential intelligen	O. Abduct	P. Envisioi	Q. Creative c	R. Desire to make a diff			10
B7	Pointing or holding model in hand while explaining	B7. Pointing or holding model in hand while explaining					E. Mindfulness and awareness of			H. Team working.					M. Experiential intelligen	O. Abductive thinking.				R. Desire to make a diff		5
B8	Incorporating feedback by quickly modifying model	B8. Incorporating feedback by quickly modifying model	A. Tolerance for - Being	C. Human centeredne	E. Mindfulness and awareness of					H. Team w	I. Multi- / inte	J. Open to c	K. Learnin	L. Experime	M. Experiential intelligen	O. Abduct	P. Envisioi	Q. Creative c	R. Desire t	S. Optimism		14
B9	Asking questions without fear of judgement	B9. Asking questions without fear of judgement		B. Embracing Risk.						H. Team working.		J. Open to c	K. Learning oriented.			N. Critical Questioning ("beginners mind", curios				R. Desire to make a diff		6
B10	Adding to existing ideas, sharing opinions and criticisms with candor and respect	B10. Adding to existing ideas, sharing opinions and criticisms with candor and respect		B. Embracing Risk.						H. Team w	I. Multi- / inte	J. Open to different perspectives/diversity.							Q. Creative c	R. Desire t	S. Optimism	7
B11	Listening attentively when someone is talking	B11. Listening attentively when someone is talking			C. Human	D. Empath	E. Mindfulness and awareness of			H. Team working.		J. Open to c	K. Learnin	L. Experimentation or l	N. Critical Questioning (	P. Envisioning new things.				S. Optimism		10
B12	Appreciating ideas with fist bumps and claps	B12. Appreciating ideas with fist bumps and claps			C. Human centeredness.					H. Team w	I. Multi- / inte	J. Open to different perspectives/diversity.								R. Desire t	S. Optimism	6
B13	Short bursts of laughter and periodic use of humor	B13. Short bursts of laughter and periodic use of humor								H. Team working.											S. Optimism	2
B14	Some side conversations and then sharing with everyone	B14. Some side conversations and then sharing with everyone								H. Team working.		J. Open to c	K. Learning oriented.			N. Critical Questioning ("beginners mind", curios				R. Desire to make a diff		5
B15	Creating connections with other's models to build a cohesive story	B15. Creating connections with other's models to build a cohesive story			C. Human centeredness.			F. Holistic view/consi		H. Team w	I. Multi- / inte	J. Open to c	K. Learning oriented.		M. Experiential intelligence / Bias to		P. Envisioi	Q. Creative c	R. Desire t	S. Optimism		11

Top Building behaviors that influenced Design Thinking mindset:

Which behaviors (building) strongly influenced the DT mindset?	
Row Labels	**Sum of Number of DT mindset constructs**
B8. Incorporating feedback by quickly modifying model	14
B15. Creating connections with other's models to build a cohesive story	11
B6. Self tinkering (build, reflect, modify) model iteratively	10
B11. Listening attentively when someone is talking	10
B10. Adding to existing ideas, sharing opinions and criticisms with candor and respect	7
B5. Mindfully building with play material	6
B12. Appreciating ideas with fist bumps and claps	6
B9. Asking questions without fear of judgement	6
B14. Some side conversations and then sharing with everyone	5
B7. Pointing or holding model in hand while explaining	5
B4. Use of multiple languages, e.g. English, hindi	5
B1. Leaning in to build or discuss	4
B3. Self-initiated discussions in phrases or short sentences	3
B2. Facing each other to discuss	3
B13. Short bursts of laughter and periodic use of humor	2
Grand Total	**97**
mean	12.13
median	6

Top Design Thinking Mindset constructs that the building behaviors strongly influenced:

Which mindset constructs could the behaviors have strongly influenced?		
DT Mindset construct (C. Dosi et al)	**DT phase**	**Building behaviors**
G. Problem reframing.	Inspiration	0
A. Tolerance for - Being comfortable with Ambiguity - Uncertainty	Implementation	2
D. Empathy / Empathic.	Inspiration	2
F. Holistic view/consider the problem as a whole.	Inspiration	2
B. Embracing Risk.	Implementation	3
L. Experimentation or learn from mistake or from failure.	Implementation	3
I. Multi- / inter- / cross- disciplinary collaboration.	Ideation	5
M. Experiential intelligence / Bias toward action.	Implementation	5
N. Critical Questioning ("beginners mind", curiosity).	Inspiration	5
O. Abductive thinking.	Inspiration	5
Q. Creative confidence.	Ideation	5
K. Learning oriented.	Ideation	5
P. Envisioning new things.	Ideation	5
C. Human centeredness.	Inspiration	5
E. Mindfulness and awareness of process.	Inspiration	5
S. Optimism to have an impact.	Ideation	8
R. Desire to make a difference.	Ideation	9
J. Open to different perspectives/diversity.	Ideation	10
H. Team working.	Ideation	13
Takeaways	mean	5.11
	median	**5**

Mapping for behaviors to socio-psychological factors or mediators of play-infused co-creation:

Behavior Code	**Behavior Description (play-enabled)**	Psychological safety	Intrinsic Motivation	Positive Affect
B1	leaning in to build or discuss	Psychological safety	Intrinsic Motivation	Positive Affect
B2	facing each other to discuss	Psychological safety	Intrinsic Motivation	Positive Affect
B3	self-initiated discussions in phrases or short sentences	Psychological safety	Intrinsic Motivation	Positive Affect
B4	use of multiple languages, e.g. English, Hindi	Psychological safety	Intrinsic Motivation	Positive Affect
B5	mindfully building with play material		Intrinsic Motivation	Positive Affect
B6	self tinkering (build, reflect, modify) model iteratively	Psychological safety	Intrinsic Motivation	Positive Affect
B7	pointing or holding model in hand while explaining		Intrinsic Motivation	Positive Affect
B8	incorporating feedback by quickly modifying model	Psychological safety	Intrinsic Motivation	Positive Affect
B9	asking questions without fear of judgement	Psychological safety	Intrinsic Motivation	Positive Affect
B10	adding to existing ideas, sharing opinions and criticisms with candor and respect	Psychological safety	Intrinsic Motivation	Positive Affect
B11	listening attentively when someone is talking	Psychological safety	Intrinsic Motivation	Positive Affect
B12	appreciating ideas with fist bumps and claps	Psychological safety	Intrinsic Motivation	Positive Affect
B13	short bursts of laughter and periodic use of humor		Intrinsic Motivation	Positive Affect
B14	some side conversations and then sharing with everyone	Psychological safety	Intrinsic Motivation	Positive Affect
B15	creating connections with other's models to build a cohesive story	Psychological safety	Intrinsic Motivation	Positive Affect
P1	points at the model while telling the story		Intrinsic Motivation	Positive Affect
P2	everyone standing respectfully around the table	Psychological safety	Intrinsic Motivation	Positive Affect
P3	one team member presents		Intrinsic Motivation	Positive Affect
P4	demonstrates understanding of issues		Intrinsic Motivation	Positive Affect
P5	reference to customer interviews		Intrinsic Motivation	Positive Affect
P6	interpretation of insight		Intrinsic Motivation	Positive Affect
P7	describing the experience solution in detail		Intrinsic Motivation	Positive Affect
P8	high energy, passionately presenting	Psychological safety	Intrinsic Motivation	Positive Affect
P9	other team members pitching in as needed	Psychological safety	Intrinsic Motivation	Positive Affect
P10	others are patiently, actively listening		Intrinsic Motivation	Positive Affect
P11	demonstrates strategic foresight		Intrinsic Motivation	Positive Affect
P12	other team members smiling and proud	Psychological safety		Positive Affect
P13	understanding of customer's emotions and behaviors		Intrinsic Motivation	Positive Affect
P14	applaud and joy at the end	Psychological safety		Positive Affect
P15	accepting feedback from customer	Psychological safety		Positive Affect
P16	answering questions or claryfying doubts non-defensively	Psychological safety	Intrinsic Motivation	Positive Affect
P17	live co-creation with the customer	Psychological safety		Positive Affect