Facilitating Multi-Perspective-Taking in Adults: A Field Study

by

Mari Georgiadis
A.B. Economics
Harvard University, 2011

Submitted to the Integrated Design & Management Program
in partial fulfillment of the requirements for the degree of

Master of Science in Engineering and Management
at the Massachusetts Institute of Technology

June 2023

Authored by: Mari Georgiadis
Integrated Design and Management
May 25, 2023

Certified by: Wanda Orlikowski
Alfred P. Sloan Professor of Management
Professor, Information Technologies and Work and Organization Studies
Thesis Supervisor

Accepted by: Tony Hu
Director, Integrated Design & Management Program

this page was intentionally left blank

Facilitating Multi-Perspective-Taking in Adults: A Field Study

by

Mari Georgiadis

Submitted to the Integrated Design & Management Program on May 25, 2023
in partial fulfillment of the requirements for the degree of
Master of Science in Engineering and Management

ABSTRACT

Interpersonal collaboration is critical to solving complex problems and constitutes one of the most challenging aspects of effective teamwork. A significant amount of tension that leads to unproductive divisions can be traced back to either-or thinking fallacy. This research explores what it takes to effectively facilitate multi-perspective-taking in adults in order to address this challenge. The results of the field study make a number of contributions: (i) they highlight the complexity and opportunity involved in facilitating multi-perspective-taking in adults; (ii) they offer structured guidelines for how to approach such a training; and (iii) they exhibit initial evidence that reinforces the possibility and value of expanding the multi-perspective-taking capacity of adults.

Thesis supervisor: Wanda Orlikowski
Title: Alfred P. Sloan Professor of Management
        Professor, Information Technologies and Work and Organization Studies

Acknowledgments

Thank you Wanda for your kindness and support. Thank you Aithan for your wisdom and joy. Thank you Erica for your affirmation and generosity. Thank you Antony for reminding me to enjoy the pursuit. Thank you Andreas for keeping it real. Thank you Margo and Pete for reminding me I am loved. Thank you to all those who listened and wished me luck.

this page was intentionally left blank

Table of Contents

I. Introduction

It is often said that one of the most difficult things about solving complex problems is collaborating with the people required to find a path forward. Whether driven by task or relationship conflict, the difficulty is detrimental to a group's efficacy (De Dreu & Weingart, 2003) and frequently exacerbated by poor communication (Kahane, 2004). Even with communication improvements, tendencies towards fixed mindset can trigger competitive fears, elevate egocentric views of context, and maintain impasse (Dweck, 2006). Lack of self-awareness[1] of this mental rigidity compounded by limited access to the mental flexibility to create space for and embrace discrepant perspectives perpetuate this state (Argyris, 2008).[2]

Difficulty in creating space for discrepant perspectives can be linked to the deeply internalized 'single solution' type of problem solving that has been reinforced through rational, dualistic thinking[3] in western[4] philosophy across thousands of years. When adults trained in this type of problem solving confront a tension, they are most naturally oriented to approach it using 'either/or thinking.' Either/or thinking interprets a situation as consisting of binary or discrete and opposing choices, often creating a false dichotomy or false dilemma that suggests only one option or perspective can be the solution (American Psychological Association, 2015). Either/or thinking feels comfortable because it implies with certainty that there is a single 'correct' answer to be found if one considers the challenge sufficiently. Unchecked, this tends to dovetail with egocentricity and mental rigidity as a protective mechanism against the

---

[1] Misreading location on or unwillingness to step down rungs on the ladder of inference frequently underpin miscommunication. The ladder of inference refers to the vicious cycle that starts from observable facts to our, sometimes unaware choice, to experience the facts selectively based on belief and prior experience, choose an interpretation on top of this experience, apply current assumptions sometimes without considerations, draw conclusions, develop updated beliefs, and then take actions or make choices that seem 'right' because of the newly internalized beliefs and reality (Argyris, 1990; Senge, 2006).

[2] An interesting complement to access to mental flexibility is access to creative thinking, and research has shown that creativity in adults declines extremely rapidly, beginning from middle school. The most famous study on this subject was conducted over three decades where a cohort of over 250,000 adults were intermittently tested for creativity using the Torrance Tests of Creative Thinking. The results showed that, in general, individual ability to produce ideas continuously decreased after fifth grade (Kim, 2011).

[3] Dualistic thinking is frequently associated with Descartes, known for his theory of 'substance dualism,' which claims that matter and mind are two wholly separate substances and perpetuates this notion of competing or separate solutions (Descartes, 2008). Additional classical scholars who popularized rational 'single solution' type problem solving include Aristotle and Newton.

[4] References to western or eastern philosophy throughout this paper refer to dominant geographical ideologies - "the East refers to the geographical areas traditionally influenced by ancient Chinese civilization, while the West refers to those areas traditionally influenced by ancient Greek civilization" (Li, 2018, p. 35).

discomfort of becoming 'wrong' if a different choice is later deemed to be more appropriate. Either/or thinking can be helpful for situations in which definitive answers are desired, for example, proving theorems, testing scientific discoveries, or disallowing killing. However, most challenges encountered by adults are complex, non-binary problems that include varied human perspectives.[5] In this context, either/or thinking tends to lead people towards close-mindedness, negative judgment, and, in the extreme, polarization that pits individuals in dangerous opposition (Wu, Hauert, Kremen, Zhao, 2022).

Importantly, an alternative type of thinking that has also been present for thousands of years is based on the representation and meaning of the yin-yang[6] symbol from Taoist philosophy.[7] The symbol demonstrates a paradigm in which opposite forces coexist as interrelated complements, whose contradictions, tensions, and competition reinforce and balance each other, providing an alternative way to approach problems as non-dual and as deeply interrelated with solutions that are mutually dependent (Chen, 2002).

In this vein, starting in the late 1980s, scholars began writing about the concept of paradox[8][9] as a theory which could help explain different, long misunderstood types of intrapersonal and

---

[5] To make this concept more tangible, examples of such challenges that could seem dualistic depending on the perspective, but really are in constant flow and balance with each other, one requiring the other, include: mind and body, self-compassion and self-discipline, strength and flexibility, happiness and sadness, hard work and rest.

[6] Yin-yang, or taijitu, thinking can be considered a dynamic, dialectical, comprehensive, holistic, and harmonious way of thinking characterized by a non-linear worldview, where there is no predefined and final goal but patterns are changing, being 'repeated' in a circular fashion (Wang, 2012).

[7] Taoist philosophy is an ancient Chinese philosophy underpinned by the Tao, which "references 'heaven-human integration' and refers to a complex world that is both objective and subjective (in balance) rather than separated … macro-level context is integrated with the micro-level object" (Li, 2018, p. 37).

[8] Curiously, the word paradox, defined as "one (such as a person, situation, or action) having seemingly contradictory qualities or phases" or "a statement that is seemingly contradictory or opposed to common sense and yet is perhaps true", seems the closest concept to yin-yang in western language, while having origins in Greek and Latin, only traces back to 1530-40 (Miriam-Webster, n.d.). Synonyms given for the word paradox are "puzzle, riddle, anomaly," seem to oversimplify the concept, which is sometimes brushed away as unsound on a purely rational basis or beyond the bounds of reason and thus trivialized. As such, the concept of paradox is observed to be less complex than the concept of yin-yang thinking in traditional Chinese philosophy where "unity of opposites" confers dynamism of "competition in rival forces" and inherent "mutual transformation" (Liu, 2021). The emerging familiarization with polarity management, created in the 1990s, begins to more closely approach the conceptualization of yin-yang.

[9] It is worth noting that a century prior to the popularization of the concept of paradox, Hegelian dialectical thinking, which has roots in Platonic thinking, was much discussed as a response to the limitations of dualism. It introduced a three part logical method of argumentation which included a thesis, antithesis, and synthesis. This trichotomy was essential in moving beyond a lens of binary opposition and allowed the thinker to respond to the thesis and antithesis in relation to each other (Hegel & Di Giovanni, 2010).

interpersonal tensions[10] observed in organizations in the hopes that paradox management[11] would improve collaboration, leadership, and business outcomes (Smith & Lewis, 2011). During the same period, polarity[12] thinking was developed. The notion of polarities quickly resonated with managers' experiences, leading to the recognition that strategic issues often entail fundamental tensions between apparent opposites (deWit and Meyer, 1998). Thus, polarity thinking led into the practice of polarity management so that leaders could learn to leverage its insights in their everyday work challenges (Johnson, 1996).

The practice of articulating polarity thinking and engaging with both/and thinking or multi-perspective-taking provides a strong foundation upon which to build improved adult competency and capacity in service of interpersonal collaboration. Unsurprisingly, books[13] have started emerging across disciplines to capitalize on the realization that this type of thinking adds richness to individuals and improves interpersonal collaboration. In the last three years, publications[14] have been increasingly oriented to a more professional management audience as leaders recognize the power of these concepts in enhancing collaboration and organizational effectiveness when employed day-to-day.

---

[10] Learning paradox: holding to old knowledge vs. building new knowledge. Belonging paradox: orienting to the self vs. others. Organizing paradox: focusing on creativity vs. efficiency.

[11] Defined as "managerial practices that realize the simultaneous accomplishment of multiple strategic objectives that are seemingly or actually incompatible" and addressed via two organizational mechanisms: decision-making structures and human resource practices (Yoon & Chae, 2012, p. 3501).

[12] Polarity is defined as an issue with two or more answers or elements that are interdependent. It draws a distinction between accuracy and completeness, with a focus on the latter, and encourages individuals to require "a temporary letting go of the primacy of your own view… to expand your view… once you have seen the accuracy of the other person's view, it becomes relatively easy to shift back and forth between the two perceptions" (Johnson, 1996, p. 49). While the term is sometimes used interchangeably with paradox or dilemma because they all reference an inherent tension among elements, it is considered the closest to a yin-yang concept due to its focus on honoring wisdom and value in every perspective.

[13] *Polarity Management: Identifying and Managing Unsolvable Problems* by Barry Johnson (1992, new editions in 1996, 2014). *Managing Polarities in Congregations: Eight Keys for Thriving Faith Communities* by Roy Oswald (2009). *Polarity Coaching: Coaching People & Managing Polarities* by Kathy Anderson (2010). *Unleashing the Positive Power of Differences: Polarity Thinking in Our Schools* by Jane A. G. Kise (2013).

[14] *Navigating Polarities: Using Both/And Thinking to Lead Transformation by* Brian Emerson and Kelly Lewis (2019). *And: Making a Difference by Leveraging Polarity, Paradox or Dilemma (Polarity Partnerships)* by Barry Johnson (2020, 2021). *The 7 Management Polarities: A Tactical Handbook For Leading Teams* by Shane Hipps and Brian Tracy (2021). *Both/And Thinking: Embracing Creative Tensions to Solve Your Toughest Problems* by Wendy Smith and Marianne Lewis (2022). *Lead with AND: The Secret to Resilience and Results in a Polarized World* by Tim Arnold (2022). *Paradoxical Leadership: How to Make Complexity an Advantage* by Ivo Brughmans (2023).

While valuable to see this type of discourse and its vocabulary entering wider contexts and becoming more mainstream, reading alone is typically insufficient to drive behavior change and thus will not support the mental and emotional shift required to internalize and leverage polarity thinking (Michie, Van Stralen, West, 2011). To expand adults' capacity to engage in not just either/or thinking but also both/and multi-perspective-taking requires transformational learning[15] - an ongoing pursuit to be engaged with for life, a process that some have described as an 'infinite game.'[16]

The research of this thesis thus asks: How might training aimed at expanding both/and thinking and multi-perspective-taking capacity in adults be effectively facilitated?

The focus of the research - a field study - offers a grounded framework in response to this research question. It builds on the work of adult learning theorists, draws on observations and discussions with current practitioners, and is based on first-hand experiences of adults exposed to versions of these topics in real-time training. The output of this research provides a starting point for continued conversation in this domain and offers a foundation to be built on or reconfigured to suit other contexts.[17]

---

[15] The concept of transformational learning has been defined differently by different scholars (Mezirow, 1995; Cunninghanm, 1998; Ellsworth, 2005). In general it references concepts similar to those discussed related to both/and multi-perspective-taking - the process of learners developing more open and inclusive perspectives of the world (Sandlin, 2013).

[16] In an infinite game, like business or politics or life itself, the objective is not to win—the objective is to keep playing, there is no defined endpoint, there are no winners or losers in an infinite game, there is only ahead and behind (Sinek, 2020). In this case, ahead is taken to reference increasing self-awareness and capacity for both/and thinking and multi-perspective-taking across contexts.

[17] There do exist a few consulting firms leveraging the concepts of polarity thinking, both/and thinking, and multi-perspective-taking to enhance their personal and professional development services. As is common, the core of their methods and insights are proprietary, which creates a barrier to expanding access to more people who would like a facilitation framework to anchor on and apply these concepts in more settings. This research study focuses on synthesizing relevant ideas for the pursuit of expanding multi-perspective-taking, further motivating the value of this work, and putting forward a more comprehensive, freely accessible framework for use by whoever might find the concepts relevant to their facilitation efforts.

II. Background

To anchor the considerations of how a training might be effectively facilitated in service of increasing adult capacity for multi-perspective-taking, an understanding of adult development theories, adult learning theories, and the practice of teaching and facilitating adult audiences is helpful.

Adult development theories[18] take many forms, with underpinnings in a range of perspectives, including temporal (Levinson, 1978), psychosocial (Erikson, 1964), sociocultural (Vygotsky, 1978), developmental (Neugarten, 1976; Vaillant, 2002), cognitive (Piaget, 1967) and moral (Kohlberg, 1984) ideas. More recently scholars have integrated perspectives, combining ideas into a constructivist view that acknowledges patterns or stages in how adults develop but also attributes more agency to adults in their life-long development process that adapts as meaning-making changes over time and grows in sophistication.[19] A core component of the constructivist view comprises an expanded conception of the process of knowing[20] that includes the intrapersonal (an understanding of the self) and the interpersonal (an understanding of relating to others) alongside the cognitive (knowing) as having constant and inseparable influence on the development of one's meaning-making capacity (Kegan, 1994). These integrated perspectives on adult development affirm the plasticity of adult development and the potential for adults to transform their thinking and multi-perspective-taking over time through experience, reflection and integration.

---

[18] Adult development is an extremely broad topic that tries to understand the changes across a variety of domains across human life from the end of adolescence until death. The theories and scholars referenced in this writing are but a subsample intended to highlight the range of ideas explored. Additionally, it is relevant to note that many of these ideas build or divert from previous theories, but the relationship between the works is much more a complex web than a few discrete ladders of thinking.

[19] It is important to note that, while these integrated perspectives provide increasing richness to our understanding of adult development, there are still limitations. For example, constructivist views often strongly anchor in cognitive ideas focused on the mental structures, schemas, or assumptions used by adults to guide their meaning-making process. Conceptualizing cognitive development as movement towards more complex mental schemas is helpful and can also easily overlook how systems of inequality may influence this movement, particularly when the research question looks to generalize a philosophy. Scholars have begun to explore intersectional identities and what it means to 'know' or develop knowledge (Belenky & O'Neill, 1987; Collins, 1989; Smith & Baxter, 1994; Gegeo & Watson-Gegeo, 2001), though there is significant opportunity to build on this research to enrich our understanding of adult development theory.

[20] "When I refer to 'mind' or 'mental' or 'knowing' I am not referring to thinking processes alone. I am referring to the person's meaning-constructive or meaning-organizational capacities," which encompass "our thinking and our feelings and our relating to others and our relating to parts of ourselves" (Kegan, 1994, p. 29).

Adult learning theories have also been conceived in many forms, though attention on constructivist and transformative theories best serve as complements to the adult development theories discussed. Constructivist learning theory focuses on adults' ability to create new understanding by drawing on prior experience in combination with learning from engaging in new experience. The characteristics of adult[21] learners thought to influence how learning is approached include: preference for self-directed learning; ability to draw on life experience to assist with learning; readiness to learn in service of improving capacity to handle current social roles or work responsibilities; preference for immediate applicability of new knowledge to real-life situations and problems; and shifts towards internal rather than external motivation to learn (Knowles, 1978; 1984). Transformative learning theory takes these ideas a step further, expressing the possibility of not only increasing knowledge but creating significant changes in adult learners' fundamental assumptions about themselves and their relation to the world. (Mezirow, 1995) Similar to constructivist learning theory, this theory leverages the wealth of adult experience while also changing frames of reference, letting "learners move toward a frame of reference that is more inclusive, discriminating, self-reflective, and integrative of experience" (Mezirow, 1997, p. 5). To adopt these adjusted frames of reference, critical examination of one's internalized meaning perspectives[22] are required.

The practice of teaching adult audiences is particularly effective when the modalities of both problem-solving and reasoning as well as social and emotional intelligence are engaged (Mezirow, 1995). Further, in order to help adults develop and access increasingly complex and adaptive forms of seeing, knowing, relating, and caring, reflection is essential as it "makes possible action with a conscious aim" (Dewey, 1933, p. 17). This exploration and reflection is heightened in group-based environments, as development is most salient in context, in

---

[21]As opposed to child learners. The term andragogy is typically used instead of pedagogy to provide a clear distinction between adult and child learning theories.

[22] Meaning perspectives are made up of "habits of mind" and resulting "points of view" (Mezirow, 2000, p. 17). These include theories, beliefs, cultural expectations, goal orientations, and evaluations, unconscious expectation, reaction, presuppositions, value judgments, stereotypes, and individual distinctive ways of interpreting experience that have been uncritically acquired in childhood and through socialization (Cox, 2015).

interaction with one's environment, and effective group facilitation leaves space for both highly variable individual experiences and collective reckoning as this perspective "brings individual cognitions to the foreground against a background of social context" (Derry, 1996, p. 164). Lastly, and somewhat specific to facilitating critical examination of internalized modes of thinking, perspectives, and beliefs of meaning-making, the process of participant engagement with the material and self should not be performed sequentially, but rather in a circular or recursive process as directed by learner need (Taylor, 1997).

Even with the knowledge of these foundations, it is important to recognize that fostering learning in adults cannot be reduced to a one-size-fits-all approach, and even when personalized, context-aware approaches are adopted, learners may still exhibit discomfort or resistance. For example, immunity to change, not to be confused with disliking or resisting change, describes a phenomenon where an adult holds internal conflict (which they may be completely unaware of) between their unconscious thoughts and desires and the need for change. They may even want and outwardly agree to the change, but their internal conflict stymies the process (Kegan & Lahey, 2009). There are two similar concepts that relate to deeply ingrained patterns of meaning-making directed towards either objects (functional fixedness[23]) or the self (shadow[24]) that can similarly block adults' engagement in learning processes oriented to facilitating multi-perspective-taking. In addition to the intrapersonal experience of resistance, there may also be interpersonal factors in a group dynamic, such as psychological safety[25] that lessens an individual's ability to engage deeply with the material.

---

[23] Functional fixedness was originally coined to describe the phenomenon in which a mental block limits the ability of an individual to use an object in a new way to assist in problem solving. It was highlighted through the study of the "Candle Problem" in which study participants were unable to consider a box being used to hold tacks as a possible tray to hold a lamp (Dunker, 1945).

[24] The shadow self traditionally refers to parts of the self - for example, personality traits, thoughts, emotions or other qualities - that may be difficult to acknowledge, identify with, or embrace because they do not fit comfortably into an individuals' self-conception. It is important to note, however, that there is no normative implication to what is found in the shadow self. The shadow self could contain traits traditionally believed to be 'positive' if the traits were invalidated or minimized by others throughout life, causing the individual to repress the traits within themselves (Jung, Adler & Hull, 2014).

[25] Psychological safety references the belief that the environment is safe for interpersonal risk taking - that speaking up, participating, or engaging in some other manner will not result in threat to the individual. This goes beyond interpersonal trust to also include a broader environment of mutual respect and care in which a level of comfort in offering parts of the self is possible (Edmonson, 1999).

Drawing on this understanding of theories in adult development, adult learning, adult education, and adult teaching and facilitation, this research involved a field study to empirically examine what it takes to effectively facilitate both/and multi-perspective-taking in adults and to explore measures of efficacy.

III. Methodology

To explore the process of facilitating both/and multi-perspective-taking in adults, a field study of an adult development training was conducted. The facilitators of this training anchor their practice in the discussed academic foundations of adult development theory and focus on engaging participants in a series of exercises[26] facilitating multi-perspective-taking as part of a broader effort to facilitate individual transformation.[27]

The field study was designed to provide qualitative insight into the components of an effective facilitator-participant dynamic. Additionally, it offered an opportunity to attempt to develop a more formal link between the impact of the training experience and some of the individual outcomes believed to be linked to enhanced multi-perspective-taking to further evaluate the facilitator impact.

Data Collection

The field study collected data in three primary ways, with informed consent obtained from both facilitators and all training participants before engaging in any research. See Exhibit 1 for a summary of the sequencing of data collection steps:

1. Participant observation
2. Participant surveys
3. Facilitator interviews

---

[26] Across the two days, the exercises included collectively filling out two polarity maps, placing oneself within a polarity map, a small group exercise to engage with a portion of the shadow self, and ten paired discussion prompts to reflect on the self, others, and the self in relation to others. See Exhibit 2 for the full training agenda and Exhibit 3 for examples of the exercises and prompts.

[27] It is important to note that the training observed was not created for the purpose of this research. Rather, it was a pre-existing program. However, the facilitators of the training did permit augmentations to the training to support the research. Full access to the training for observation, participant surveys, and follow up interviews with the facilitators was permitted. Still, given the research was secondary to the original conception of the participant experience, there were limitations to what was possible to adjust.

1. Participant observation

Participant observation was conducted during the training with overt presence - i.e., known and visible to participants - but without the observer participating in the training. Structured, anonymized observational field notes were taken according to the observation guide available in Exhibit 4. This guide was developed in conversation with the practitioners facilitating the training and by extracting observable forms of concepts from the adult development learning principles. Particular focus was given to creating a concrete observational guide to notice the hypothesized conceptual markers of facilitating transformational learning: "confirming and interrupting current frames of reference, working with triggers for transformative learning, acknowledging a time of retreat or dormancy, developing the new perspective" (Apte, 2009, p. 172).

The observation took place over a two-day pilot training of twenty-six adult educators from the New England area of the United States.[28] See Exhibit 5 for an overview of the participants. It was led by two expert facilitators: the lead, who is a Lecturer at the MIT Sloan School of Management and runs a company focused on delivering self-transformational training for adults, and a collaborator, who is an expert in educational contexts, and regularly works with the lead to deliver this type of training. There was no cost to the participants to attend the training. It was offered as a pro-bono initiative focused on learning how to expand the training to non-corporate participants - educators in this case. All adults were personally invited by a third-party educator in the region, accepted the invitation, and opted-in to the pilot experience. The training took place across two rooms provided by the MIT Sloan School of Management in Cambridge, MA.

---

[28] While the educator audience was not actively selected for this research, it became a great opportunity to observe facilitation of multi-perspective-taking with a group of individuals whose core role is to offer the same space and development in service of their students and peers in their day-to-day work. This presented a unique opportunity for the facilitators of the training to offer the material and pause during many moments to have 'meta moments' where they lifted the hood, so to speak, about their intentions with the activities or structure of the training. This turned out to be quite impactful and would be interesting to consider for other populations.

2. Participant surveys

Participant surveys were conducted before and after the training. The surveys were designed to elicit participant perceptions of self-efficacy, mindset, personal growth, belonging, the participant experience, relationship between the participants and the facilitators, and applicability of the experience beyond the training.

To collect this data, two types of surveys were presented to participants:

    A.   Quantitative: Likert-scale questions - at the beginning and end of training

    B.   Qualitative: Open-ended questions - at the end of the training

A. Likert-scale questions

Eight questions were developed to assess self-efficacy, mindset, personal growth, and belonging, drawing on known scales for each of these areas.[29] Questions one and two were focused on self-efficacy and were taken from the general self-efficacy scale (Schwarzer & Jerusalem, 1995). Question three was focused on mindset and taken from Dweck's three item scale (Dweck, 1999; Dweck, 2006). Questions four and five were focused on personal growth and taken from Ruff's general well-being scale (Ryff et al., 2007; Ryff, 1989). Questions six, seven, and eight were focused on belonging and taken from the Simple School Belonging scale (Whiting, Everson, & Feinauer 2018). Participants were asked to respond to the questions using a five-point scale ranging from strongly disagree to strongly agree. See Exhibit 6 and Exhibit 7 for a list of the structured survey questions.

B. Open-ended questions

Four open-ended questions were created to gain insight into the participant experience, relationship between the participants and the facilitators, and applicability of the experience beyond the training. These questions supported additional first-person reflections on the

---

[29] Presently there is no formal scale to measure facility with multi-perspective-taking or both/and thinking. As a result, self-efficacy, mindset, personal growth - were selected as the components to measure in this experimental research for their adjacency to multi-perspective-taking capacity as well as for having existing tested scales that could be easily leveraged with participants.

training to complement the quantitative measures and the observations of the observer. See Exhibit 8 for a list of the open-ended survey questions.[30]

3. Facilitator interviews

Facilitator interviews were conducted with the two facilitators jointly before and after the training to build an understanding of the vision for the training and its intended and realized outcomes, as well as a debrief on the facilitator experience of the training. See Exhibit 9 for the guiding questions for these open-ended interviews.

Data Analysis

To identify themes and develop insights from the field study, two types of analysis were performed:

1. Thematic analysis – for the qualitative observational notes, open-ended survey responses, interviews, and focus group discussion.
2. Statistical analysis – for the quantitative Likert-scale survey responses.

1. Thematic analysis

Thematic analysis was conducted to identify themes related to the facilitator-participant dynamic and participant experiences that may have influenced the effectiveness of the training with respect to stimulating increased access to and fluency with multi-perspective-taking.

---

[30] Two notes regarding the administration of the surveys during the training experience. First, initially, all of the Likert-scale as well as the open-ended questions were intended to be offered before the training started and at the end of each day of training. Two adaptations occurred to this plan: the Likert-scale questions on belonging were not asked at the beginning of the training, and the participants only received the surveys at the end of both training days. These decisions were made by the facilitators in real-time during the training experience in an attempt to manage the emotional energy and comfort of the participants. The first adaptation was based on the facilitators' view that participants may not have enough information to answer a belonging question before the training began, potentially leading to awkwardness or doubt at the onset of the training. The second adaptation was decided when the first day ended with a higher-than-expected emotional impact, and the facilitators felt it was more appropriate to end the day on a restful note rather than with survey completion. Additionally, for both of the adaptations, there was a belief that collecting the responses at the end of the second day would provide enough data for analysis.

The process began by reviewing the notes and responses from the participant observations. The data was read carefully and coded according to the observation guide, clustered into related threads. An inductive approach was then taken to identify patterns and articulate themes evident in the coded data. The same approach was then followed for the open-ended survey responses as well as the interview notes. Identified themes across the data sources were collated. See Exhibit 10 for a summary of the process and examples from the coding.

The focus group discussion leveraged the output of the initial thematic analysis to orient the conversation. The notes generated from the focus group discussion were then subject to the same thematic analysis technique, with the focus group themes serving to refine and augment the original themes. An emergent framework of insights was then developed.

2. Statistical analysis

Within-subjects statistical analysis was conducted to determine if there was any significant change in the participants' sense of self-efficacy, mindset, and personal growth based on a comparison of each participant's response to the five Likert-scale survey questions between the beginning and the end of the training.

To determine which statistical test would be most appropriate to compare the means of the paired sample, the normality of the distribution of each survey question response was first tested. This was done using a Kolmogorov–Smirnov normality test. Upon determining that none of the responses were Gaussian, or normally distributed, the Wilcoxon signed-rank test was selected as the best statistical test to use with the non-parametric data. See Exhibit 11 for the results of the Kolmogorov–Smirnov normality test.

Knowing that a sense of belonging could have meaningfully influenced the ability for a participant to have engaged with the training overall, a correlation was run to explore a

potential confounding effect of belonging and a change in a participant's experience of sense of self-efficacy, mindset, and personal growth from the beginning to the end of the training.

Lastly, to better contextualize the results, a review of the participant open-ended survey responses to the fourth question - focused on forward looking applicability of the training experience - was considered to assess whether participants perceived opportunity and self-growth even if their survey responses did not significantly change.

IV. Findings

The thematic analysis of the field study observational notes reveals themes and considerations for guiding and supporting the learning process of participants as well as grounding and enabling capabilities for facilitators of multi-perspective-taking in adults. The participant open-ended responses indicate predominantly positive takeaways from the experience across a range of topics from self-awareness to group dynamics to personal and professional life, as well as some constructive feedback for the training. Analysis of the Likert-scale survey measures suggests that the training had directionally positive, but limited statistically significant impact on participant self-reported view of self-efficacy, mindset, and orientation towards personal growth. Lastly, the facilitator follow-up interview highlighted additional tangible and intangible outcomes and aspects of the training that impact the facilitator experience and perception of training efficacy and satisfaction.

Themes and considerations when facilitating multi-perspective-taking in adults

Two focal points in facilitation emerged in conducting a thematic analysis of the observational notes from the training - the relationship between the facilitator and the participants and the relationship between the facilitator and themselves.

Relationship between facilitator and participants

The role of a facilitator in relation to the participants is to facilitate multi-perspective taking, but to actually do so they must guide and support their learning process.

Guiding the learning process involves setting and developing the cognitive frame within which the participants experience the learning journey in a given training. At the outset of a training, transparently articulating the intention and goal for the time and previewing the content is useful to engage expectations. During the training, the facilitator chooses frameworks to explore together, plans transitions, targets prompts, and rearticulates key concepts. At the end of the training, a summary in context is needed to frame the core ideas of the training, situate

the relevance and applicability of the content in the day-to-day, target reflection, and initiate a call to action for participants to determine how they want to carry the experience forward within themselves and their lives. Facilitator prompts probing participants to examine their beliefs around whether they were narrating a curated past or authoring a lived present were especially resonant in sparking initial reorientations of self-perception and relationship to others before diving into deeper explorations of polarities and multi-perspective-taking.

Supporting the learning process focuses on recognizing the importance of active physical, mental, emotional, and social environmental choices. The physical environment encompasses everything from the location, room, design, decor, resources for room setup, object positioning, expectations for how objects may be interacted with, to the availability of food, drink, and rest. The mental, emotional, and social environment encompasses setting and maintaining the terms of engagement for the group, anchoring in gratitude, community, and co-creation; creating space for affirmations, questions, challenges, and responses. It is important that this space is not only created for the facilitator-participant interactions but for the participant-participant interactions as well. In fact, it is when participants rearticulate a concept or respond to another participant's question in their own words that the material lands more meaningfully because they frequently bring local context-aware terminology and more accessible framing to the discussion while also revealing a level of interest or relevance of the material which can encourage other learners to pay particular attention to the concept.

Ultimately all of these choices are in service of the learner and facilitating a space in which they may feel able to begin to release their grasp on current frames of reference in service of their own journey to expand their multi-perspective-taking capacity. And, while it is difficult to control every aspect of an environment, it is important to be aware that all of these aspects have varied impact on participants' sense of ease, place, safety, comfort or burden.

Rarely discussed in the literature is the relationship between the facilitator and themselves in facilitating multi-perspective-taking. Prior to beginning the training, facilitators need to ground themselves in their role and enable themselves to respond dynamically and effectively to participants and situations during the training.

Grounding the self begins with the reminder that the role of the facilitator is to be of service to the participant learners and the group learning community. While knowledge, consideration, and preparedness are necessary, at no point in the training is it about showcasing that work. Rather, as previously discussed, it is about effectively guiding and supporting participants without regard for the amount of appreciation received for the effort invested. Furthermore, grounding the self reminds the facilitator of what can and cannot be controlled during the training. A few things can be controlled such as the setup of the environment, the mindset and attitude brought by the self, and the reactions of the self and vocabulary used in the moment. Everything else is emergent, especially the state, engagement, and reactions of participants to the material as well as where they are on their own personal journeys of awareness and capacity for multi-perspective-taking. Facilitator acceptance of this 'not knowing' is foundational to being able to engage in the moment with whatever comes up while continuing to serve as a guide through the content.

Enabling the self to be able to respond dynamically and effectively to participant needs during the training starts with accepting that the subject matter of multi-perspective-taking is personal, vulnerable, and unpredictable, not just for participants but also the facilitator. Enabling the self means preparing to experience discomfort and tension, understanding the experience, and recognizing when it is helpful to allow the discomfort or tension to be and stay present in the room versus when it is helpful to address it quickly. In these moments in particular, the line between facilitator and participant blurs significantly. It is important to note that this is one of the most powerful opportunities to express the concepts of multi-perspective-taking in practice for the benefit of the group. Additionally, it is important to

grant oneself grace in the event that a facilitative choice to discomfort does not land. In these moments, a co-facilitator is particularly helpful both for developing awareness but also for redirecting the attention of the group and regaining credibility with the material and the participants.

Participant views on impact of training experience

The participant open-ended survey responses indicate broadly positive sentiment towards the impact of the training while also noting a few areas for constructive development of future iterations of the experience.

The first two questions focus on backward looking reflections regarding the personal self-reflective experience of the training. Ten participants commented with surprise on how they experienced self-doubt or impostor syndrome in the training only to eventually discover they were more capable than they realized. Eight participants commented on how surprising it was for the group dynamic to be as rich and supportive as it was and how much they felt personally connected to their co-participants, especially in such a short period of time. For the participants who didn't resonate as much with the training, they proactively commented that the experience of getting to know the other participants in this particular environment of self-reflection and discovery towards more multi-perspective-taking was sufficiently enjoyable to make remaining in the training worth it. At the same time, two participants commented that the stylistic choices of the facilitators to emphasize certain methods of communication implicitly valued a certain type of contribution and identity more than others. Six participants commented on the value of the tangible tools and frameworks offered to ground the ideas. At the same time, three participants noted the training was too theoretical and divorced from the professional reality of the participants in the room that it was hard to draw a connection to applicability of the content outside of the training environment.

The third question centers on isolating the choices of the facilitators that enabled or disabled learning. Responses indicated a wide range of facilitation choices that enabled engagement in the material, from showing empathy, respect, and gratitude to modeling the multi-perspective taking behavior of interest to sharing tools to responding in effective ways to comments about letting go of control in some situations in the training to ensure participants were empowered to direct their own learning to offering breaks and food. Responses also indicated a range of facilitation choices that disabled engagement with the material from how introductions were led to emotional transparency offered by the facilitators as they navigated the collective experience to over-attention on self-development and lack of attention to external systems in play.

The fourth question focuses on forward looking reflection for how the experience of the training might impact participant life. Responses indicated positive sentiment for how the training experience will carry forward in personal and professional life. Twenty-four of the twenty-six participants cited increases in self-confidence in navigating situations, perceived value in revisiting the training tools and activities to enhance self-reflection and collaboration, and specific upcoming group experiences where they plan to test some of the facilitation methods they learned to improve the group outcome. The remaining two participants did not cite a concrete expectation for how the training experience would carry forward but believed that it would manifest in unknown ways on an undetermined time frame.

See Exhibit 12 for a more detailed summary of the topics which emerged from the thematic analysis of open-ended survey questions, including examples of written responses from participants.

Participant views on self-efficacy, mindset, and orientation towards personal growth

The summary statistics of the Likert-scale questions show heavy tails in the response distribution to each question, with respondents clustering around agree or strongly agree for

each question. See Exhibit 13 and Exhibit 14 to view the distributions of the survey responses at the beginning and the end of the training.

There is evidence of some change in average response from the beginning to the end of the training. Feelings of confidence and calmness in self-efficacy, perceptions of a malleable mindset, and views of life as a continuous process of personal growth all increased. Feelings of having new experiences as being important in the process of personal growth decreased. See Exhibit 15 and Exhibit 16 to view all of the summary statistics for the survey responses.

While there was some movement in the average response, the only change that was statistically significant was the response to one of the personal growth questions: "My life is a continuous process of learning, changing, and growth." See Exhibit 17 for an overview of the Wilcoxon signed-rank test results determining which survey question response changes were statistically significant for the sample.

Probing into what may have contributed to the limited significance of the results, the data indicates that, while the average self-reported response predominantly improved across the measures of self-efficacy, mindset, and personal growth, there was a fair amount of variability in the impact of the training depending on the participant. For some participants there was an improvement in the question response, for others a decline, and, even more commonly, for the rest there was no effect. See Exhibit 18 to view the proportion of participants that indicated experiencing these different effects in their survey responses from the beginning to the end of the training.

One possible explanation for these findings could be that feelings of belonging played a role in the directionality of change in a participant's self-reported survey results. However, the correlations between the self-reported feelings of belonging and change in response to the self-efficacy, mindset, and personal growth questions indicate weak to very weak correlation. See Exhibit 19 to view the full correlation matrix.

Themes and considerations from facilitator follow-up interview

The conversation with the facilitators indicated overall satisfaction with their experience of the training, optimism for continued future iterations of the training given the perceived impact on participants from follow-ups they had received in the weeks following the training, and excitement for ways they might take the feedback from participants and develop an even more salient iteration of the training for similar audiences.

The satisfaction following the training seemed buoyed by the energized buzz that encapsulated the end of the second day of the intense two-day training, the gratitude felt for the opportunity to engage with the audience, and the opportunity for the facilitators to work together in partnership. The optimism came from follow-up communication revealing that three individuals had chosen to change roles in the weeks following the training, two of which were able to do so with the help of participants from the training, and that several groups of other participants had started sub communities to serve as brainstorming partners to each other to further their work in their respective professional environments. There was general agreement that the types of ideas core to multi-perspective-taking require a considerable time for participants to integrate into their thinking let alone realize that they have. As a result, the active life changes described in the communication serve as a good proxy for evincing participants' increased capacity, deeper self-understanding, and enhanced ability to connect and collaborate with others.

Finally, there were many ideas for how to enhance the curriculum, including finding additional ways to frame the content, building out a more substantive resource list for participants to engage with as a follow-up to the group training content, and brainstorming other ways to measure the long-term impact of the experience.

V. Discussion

The findings from the field study reveal several interesting insights and perspectives which augment current views of facilitating multi-perspective-taking and offer direction for further study. At the same time, it is important to consider the limitations of the study and its methodology, as well as possible improvements for more rigorous future design and analysis.

Summary of insights and perspectives which stood out

From the observation, what stood out was the reminder of the importance of orientation towards community building and learning, how much every small choice impacts the participant comfort or burden, how much influence the facilitator has to guide the learning of participants, how much of the training experience and outcome are outside of the control of the facilitator, the influence of participants on each other's knowledge engagement and consolidation, the importance of the facilitator's relationship with themselves, and the facilitator's preparation required to be able to respond effectively and stay in service of the learning experience of participants throughout the training.

From the survey responses, what stood out was both the clustering of participant responses as well as the fact that responses to questions surrounding mindset, behavior, and life orientations can shift, even if slightly, within a two-day training. It is frequently thought that these capacities are difficult to impact, so the resonance of this training offers optimism that meaningful opportunities may significantly shift the orientation and multi-perspective-taking capacity of adults, if such training is engaged with over time.

Finally, participants' self-reported love for community and deep desire for the space to get to know peers and engage in open communication was stark. While not the direct subject of this training, the implied lack of such opportunities in the day-to-day practice of these participants offers options to integrate training such as these in other team building or

professional development activities as a way to spread and embed the impact of multi-perspective-taking beyond one-off training.

Limitations of the methodology

The primary limitations of the study and its underlying methodology involve the scale and setup of the observation, which influence the extent to which the findings can be generalized and used to inform broader decisions around facilitation.

The chosen observation was a singular two-day training that had been pre-arranged with a set of participants from a specific field. In-depth observational analysis typically necessitates a much more extended period of observational opportunities, either multiple similar short trainings or longer-term individual training. Additionally, this study's design focused on a specific population available at the time — adult participants who were unfamiliar with each other but members of the same profession. An alternative choice could more intentionally specify the relationship between the participants prior to the training, for example, all from the same organization or all from different organizations but tasked with solving a complex problem together. Regarding both participant and facilitator selection, there was no possibility of intentionally selecting for particular demographics or dynamics to understand how that might influence the results of the facilitation. This could be an area for developing a more nuanced methodology, especially if the research question was narrowed.

The analytical method used to assess the efficacy of the facilitation leveraged observation and a subset of survey questions from known scales related to outcomes of interest. Observation is limited by the lens of the observer but it is necessary to answer how and why questions as indicated by the subject of this research. To bolster the rigor of the observational technique, more structured analysis could be proposed to build on the findings from this research. For example, obtaining higher fidelity observational recordings such as video or audio could generate more source material for performing analysis and interpretation, or including multiple observers to engage in the material could expand the data collected and

compensate for individual blindspots. While the selective survey items utilized components from known scales with adjacent cognitive concepts to multi-perspective-taking, they have not been validated as the most suitable way to assess changes to multi-perspective-taking capacity. At present there is no alternative validated survey mechanism to test for this, which is an opportunity for future investment. Lastly, the survey responses were only taken at the end of the training rather than after some time, for example, in a multi-week or multi-month follow up with participants, to more deeply understand the impact of the learning from the training. Given that integration and application of multi-perspective taking is a lifelong pursuit, a more longitudinal approach to assessing the impact of facilitative training would be particularly valuable.

VI. Conclusion

The research study finds that facilitating multi-perspective-taking in adults presents significant complexity and opportunity with regard to both the relationship between the facilitator and the participants as well as the facilitator with themselves. The field study identifies some structured guidelines that facilitators can follow to check-in with themselves and see if they are being intentional about these components, and offers a set of structured survey questions to gain feedback and iterate on the training. Finally, even within a two-day training, the field study suggests that it is possible to deeply engage adults and shift their perceptions towards personal growth and multi-perspective-taking.

Moving forward, this research — building on the work of adult learning theorists and practitioners — offers a foundational framework for trainers, managers, and interested others to more tangibly explore what it means to facilitate multi-perspective-taking in adults.

The research is optimistic that we may one day see the threads of best practices associated with facilitating multi-perspective-taking not just in one-off trainings or personal development courses but incorporated into manager expectations, team norms, and interpersonal vocabulary across contexts. As Mezirow (2000) notes, this type of development allows us to "transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mind-sets) to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action." (p. 7-8). It is my personal hope that familiarity with these concepts will increase accountability and enhanced capacity in all individuals to facilitate incredible collaboration and change within our world.

VII. References

American Psychological Association. (2015). *APA Dictionary of Psychology* (2nd ed.)

Apte, J. (2009). Facilitating Transformative Learning: A Framework for Practice. *Australian Journal of Adult Learning*, 49(1), 169–189.

Argyris, C. (1990). *Overcoming organizational defenses : facilitating organizational learning.* Allyn and Bacon.

Argyris, C. (2008). *Teaching Smart People How to Learn*. Harvard Business Review Press.

Belenky, & O'Neill, E. (1987). Women's Ways Of Knowing: The Development Of Self, Voice And Mind. *Canadian Woman Studies*, 8(4), 89–.

Brookfield, S. (1986). *Understanding and facilitating adult learning (1st ed.)*. Jossey-Bass.

Chen, M. (2002). Transcending Paradox: The Chinese "Middle Way" Perspective. *Asia Pacific Journal of Management,* 19(2), 179–199.

Collins, P. (1989). The Social Construction of Black Feminist Thought. *Signs: Journal of Women in Culture and Society*, 14(4), 745–773.

Cox, E. (2015). Coaching and Adult Learning: Theory and Practice. *New Directions for Adult and Continuing Education, 2015* (148), 27–38.

Cunningham, P. M. (1998). The social dimension of transformative learning. *PAACE Journal of Lifelong Learning*, 7, 15-28.

De Dreu, & Weingart, L. R. (2003). Task Versus Relationship Conflict, Team Performance, and Team Member Satisfaction: A Meta-Analysis. *Journal of Applied Psychology*, 88(4), 741–749.

Derry, S. J. (1996). Cognitive schema theory in the constructivist debate. *Educational Psychologist*, 31(3/4), 163-174.

Descartes, R. (2008). *Meditations on first philosophy* (M. Moriarty, Trans.). Oxford University Press.

Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Lexington, MA: D. C. Heath.

deWit, B., & Meyer, R. (1998). *Strategy: process, content, context: an international perspective* (2nd edition). London: Thomson Learning.

Duncker, K. (1945). On problem-solving. *Psychological Monographs*. 58 (5), Whole No. 270.

Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development*. Philadelphia: Psychology Press.

Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York: Random House.

Edmondson, A. (1999). Psychological Safety and Learning Behavior in Work Teams. *Administrative Science Quarterly*, 44(2), 350–383.

Ellsworth, E. (2005). *Places of learning*. New York, NY: Routledge

Erikson. (1964). *Childhood and society*. (2d ed., rev. and enl.). Norton.

Gegeo, & Watson-Gegeo, K. A. (2001). "How We Know": Kwara'ae Rural Villagers Doing Indigenous Epistemology. *The Contemporary Pacific*, 13(1), 55–88.

Hegel, & Di Giovanni, G. (2010). *Georg Wilhelm Friedrich Hegel: The Science of Logic*. Cambridge University Press.

Johnson, B. (1996). *Polarity management identifying and managing unsolvable problems*. HRD Press.

Johnson, B. (2001). *Polarity management: beyond gap analysis.* Polarity Management Associates.

Johnson, B. (2005). *Polarity management: a summary introduction.* Polarity Management Associates.

Jung, Adler, G., & Hull, R. F. C. (2014). *Collected Works of C.G. Jung. Volume 7, Collected Works of C.G. Jung, Volume 7 ; Two Essays in Analytical Psychology* (Adler & R. F. C. Hull, Eds.; Course Book). Princeton University Press.

Kahane, A. (2004). *Solving tough problems : an open way of talking, listening, and creating new realities* (1st ed.). Berrett-Koehler.

Kegan, R. (1994). *In over our heads : the mental demands of modern life*. Harvard University Press.

Kegan, R. (2009). *The Evolving Self*. Harvard University Press.

Kegan R., & Lahey, L. L. (2009). *Immunity to change : how to overcome it and unlock potential in yourself and your organization*. Harvard Business Review Press.

Kohlberg, L. (1984). *The psychology of moral development : the nature and validity of moral stages* (1st ed.). Harper & Row.

Kim, K. (2011). The Creativity Crisis: The Decrease in Creative Thinking Scores on the Torrance Tests of Creative Thinking. Creativity Research Journal, 23(4), 285–295.

Knowles, M. S. (1978). Andragogy: Adult learning theory in perspective. *Community College Review*, 5(3), 9-20.

Knowles, M. (1984). *The Adult Learner. A Neglected Species (3rd Ed.)*. Gulf Publishing.

Knowles, M. (1984). *Andragogy in Action*. Jossey-Bass.

Levinson, D. J. (1978). *The Seasons of a man's life* (1st ed.). Knopf.

Li, P. (2018). The Epistemology of Yin-Yang Balancing as the Root of Chinese Cultural Traditions. In *The Psychological and Cultural Foundations of East Asian Cognition*. Oxford University Press.

Liu, & An, R. (2021). Applying a Yin–Yang Perspective to the Theory of Paradox: A Review of Chinese Management. *Psychology Research and Behavior Management*, 14, 1591–1601.

Mezirow, J. (1995). Transformation theory of adult learning. In M. R. Welton (Ed.), *In defense of the lifeworld: Critical perspectives on adult learning* (pp. 39-70). State University of New York Press.

Mezirow, J. (1997). Transformative learning: Theory to practice. In P. Cranton (Ed.), *New Directions for Adult and Continuing Education: No. 74. Transformative learning in action: Insights from practice* (pp. 5– 12). Jossey-Bass.

Mezirow, J. (2000). Learning to think like an adult: Core concepts of transformation theory. In J. Mezirow & Associates (Ed), *Learning as transformation: Critical perspectives on a theory in progress* (pp. 3-33). Jossey-Bass.

Michie, S., Van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science*, 6(1), 1-12.

Neugarten, B. (1976). Adaptation and the life cycle. *Counseling Psychologist*, 6, 16-20.

Piaget, J. (1967). *The language and thought of the child*. World Publishing Co.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57, 1069-1081.

Ryff, C. D., Almeida, D. M., Ayanian, J. S., Carr, D. S., Cleary, P. D., Coe, C., … Williams, D. (2007). *National Survey of Midlife Development in the United States (MIDUS II), 2004-2006: Documentation of the Psychosocial Constructs and Composite Variables in MIDUS II Project 1.* Ann Arbor, MI: Inter-university Consortium for Political and Social Research.

Sandlin, Wright, R. R., & Clark, M. C. (2013). Reexamining theories of adult learning and adult development through the lenses of public pedagogy. *Adult Education Quarterly*, 63(1), 2–23.

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs*, 35-37. Windsor, UK: NFER-NELSON.

Senge, P. (2006). *The fifth discipline: the art and practice of the learning organization* (Rev. and updated.). Doubleday/Currency.

Sinek, S. (2020). *The infinite game*. Portfolio Penguin.

Smith, & Lewis, M. W. (2011). Toward a Theory of Paradox: A Dynamic equilibrium Model of Organizing. *The Academy of Management Review*, 36(2), 381–403.

Smith, & Lewis, M. W. (2022). *Both/and thinking: embracing creative tensions to solve your toughest problems*. Harvard Business Review Press.

Smith, & Baxter, M. B. (1994). Knowing and Reasoning in College: Gender-Related Patterns in Students' Intellectual Development. *The Journal of Higher Education* (Columbus), 65(4), 513–.

Taylor, E. (1997). 'Building on the theoretical debate: a critical review of the empirical studies of Mezirow's transformative learning theory', *Adult education quarterly, 48* (1): 34–60.

Vaillant, G. E. (2002). *Aging well: Surprising guideposts to a happier life from the Landmark Harvard study of adult development*. Little, Brown.

Vygotsky, & Cole, M. (1978). *Mind in society: the development of higher psychological processes*. Harvard University Press..

Wang, R. R. (2012). *Yinyang: The Way of Heaven and Earth in Chinese Thought and Culture*. Cambridge University Press: New York, United States of America.
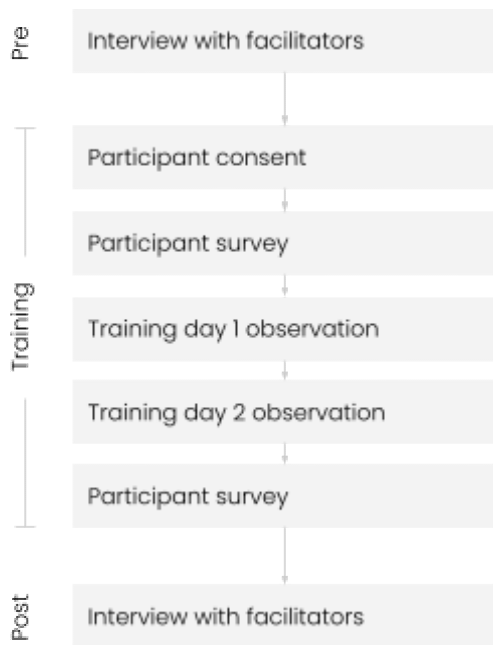
Whiting, Everson, K. C., & Feinauer, E. (2018). The Simple School Belonging Scale: Working Toward a Unidimensional Measure of Student Belonging. *Measurement and Evaluation in Counseling and Development*, 51(3), 163–178.

Wu, J. S. T., Hauert, C., Kremen, C., & Zhao, J. (2022). A Framework on Polarization, Cognitive Inflexibility, and Rigid Cognitive Specialization. *Frontiers in Psychology*, 1386.

Yoon, & Chae, Y. J. (2012). Management of paradox: a comparative study of managerial practices in Korean and Japanese firms. *International Journal of Human Resource Management*, 23(17), 3501–3521.

VIII. Exhibits

Exhibit 1. Summary of study components

Pre

Interview with facilitators

Training

Participant consent

Participant survey

Training day 1 observation

Training day 2 observation

Participant survey

Post

Interview with facilitators

Exhibit 2. Training agenda

Day 1	
Time	**Content**
13:30-14:30	Connection Container setting Framing How we'll be learning (expectations) Outline (agenda)
14:30-15:00	Introduce each other Polarity intro (engaging "learner" self)
15:00-15:15	Break
15:15-16:45	Narrative identity
16:45-18:00	Dinner
18:00-19:30	Intention Ground (connect to root, purpose)

Day 2	
Time	**Content**
9:00-10:30	Checkin Top 40 (intro) Integrated facilitator polarity
10:30-10:45	Break
10:45-12:30	Where do you stand — embody the polarity Superhero — shadow work
12:30-13:30	Lunch
13:30-15:00	Collage — experience Developmental models (cognitive frame) Where do you stand — embody the polarity
15:00-15:15	Break
15:15-17:00	Integration (individual to collective) Coherent Close

Exhibit 3. Examples of exercises and discussion prompts

Polarity map

upside

not knowing — knowing

downside

Integration framework

I | It

We | Its
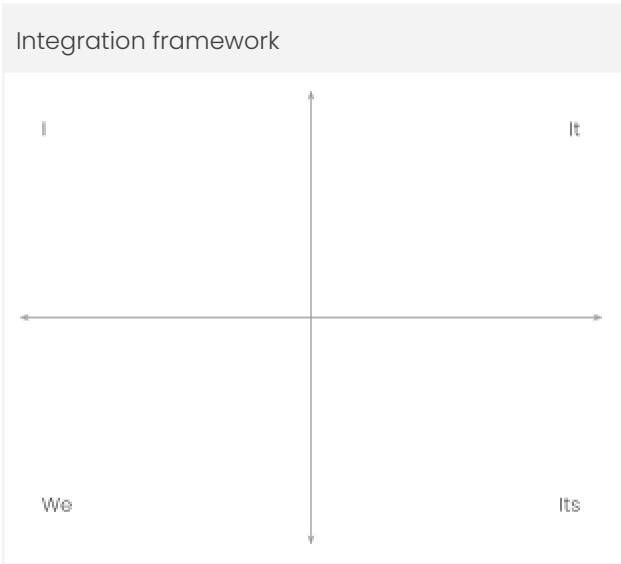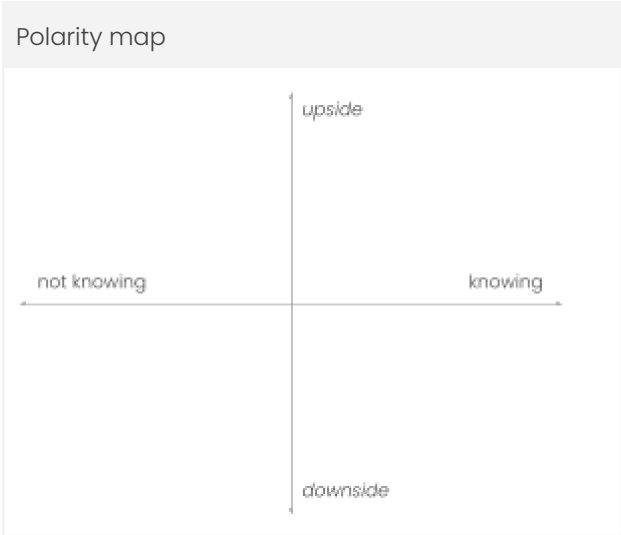
Discussion prompts after exercises

How was that?
What do you notice?
What does this mean for you?
What came up for you?
What stood out to you?
What surprised you?
What are you experiencing that's different?

When you consider this, what comes most naturally?
What, if you were to work on it, would benefit others?
Would you be willing to practice that?

What are your learnings and reflections on the topic?
What are your learnings and reflections on yourself?
What are your learnings and reflections about yourself in relation to others?

What does it feel like to be in this state?
When are you communing and it is (not) going well?
Why did you make that choice? What's right about it? What works? What might you be missing?

Reflection prompts

What called you?
Why are you here today?
Who is someone in your life that has enabled you to do something you never could have imagined?
Share two qualities about that person.
Are there qualities that stuck out for you?

Share the default story you tell.
Share a quieter story.
Imagine a possible future in a timeframe that would be meaningful to you. What are you doing? How are you being? How is your practice in the lived present limiting your future?

What's your name?
What's your superpower?
Introduce yourself.

What do you hope will come of this work?
How do you hope this will manifest in the world?

Exhibit 4. Training observation guide

Topic	Prompts
Timestamp	
Room as a vessel	- Size of groups (e.g., pairs, groups, plenary, etc.) - Formation of objects (e.g., chairs) and individuals within the room - Emotional quality (e.g., subtle energetics, quality of sound) - Momentum, alchemy (e.g., people still talking even when exercise completes)
Content transitions	- Order and duration of exercises, breaks - Shepherding of timing, content delivery - Shifts in the planned schedule
Facilitator verbal	- Questions vs. statements, initial vs. follow up - Wording, language, appeals to context - Intention to transform concepts from shadow to object to be tangibly discussed
Facilitator non-verbal	- Body language, facial expression, eye contact - Room positioning
Participant verbal	- Volume, pitch, tone, energy - Directedness of words (e.g., to facilitator vs. to another participant) - Affirmations, reframings, mental model insinuation, self-reference - Acknowledgment of feeling, change, uncertainty, vulnerability, comfort - Congruence or dissonance between words and (non-) verbal expression
Participant non-verbal	- Body language, facial expression, eye contact - Resonant acts beyond attention (e.g., writing notes, taking photos)
"Meta" moments	- Facilitator's call to reflect on a person's context in the exact time and space - Facilitator repeats and callbacks to previous content, individual comments, or exercise experiences from the day
Personal reflections	Own feelings / emotions as experience them - add context to observations; attempt to notice own awareness, presence, and/or bias in the moment

Exhibit 5. Participant overview

Survey question	Time
Number of facilitators	2
Number of participants	26
Age of participants	20s–50s
Profession of participants	Educators & administrators
Location of participants	New England

Note: Participants were not asked to fill out additional demographic information, so detailed statistics related to gender, sexuality, race, ethnicity, socioeconomics, neurology, ability, and other identities are not available for the participant population. At the same time, throughout the training, participants referenced aspects of their identity, indicating representation of male and female gender identity; Black, Latine, Asian, and White racial identity; domestic and international origin identity, and native English as well as non-native English speakers.

Exhibit 6. Participant quantitative survey questions - self efficacy & growth mindset & personal growth - wellbeing (asked at beginning and end)

Instructions: Please indicate the extent to which you disagree or agree with the following statements.

Statement					
I am confident that I could deal efficiently with unexpected events.	strongly disagree	disagree	neutral	agree	strongly agree
I can remain calm when facing difficulties, because I can rely on my abilities.	strongly disagree	disagree	neutral	agree	strongly agree
My mindset is something about me that I can't change very much.	strongly disagree	disagree	neutral	agree	strongly agree
My life is a continuous process of learning, changing, and growth.	strongly disagree	disagree	neutral	agree	strongly agree
I think it is important to have new experiences that challenge how I think about myself and the world.	strongly disagree	disagree	neutral	agree	strongly agree

Exhibit 7. Participant quantitative survey questions - belonging (only asked at end)

Instructions: Please indicate the extent to which you disagree or agree with the following statements.

Statement					
I feel like I am an important member of this training.	strongly disagree	disagree	neutral	agree	strongly agree
I am supported by this training.	strongly disagree	disagree	neutral	agree	strongly agree
I am accepted in this training.	strongly disagree	disagree	neutral	agree	strongly agree

Exhibit 8. Participant qualitative survey questions (only asked at end)

Instructions: Please respond to each question

Question
What, if anything, surprised you about your thoughts and experiences today?
What, if any, tensions did you observe in yourself throughout the day? How, if at all, were they resolved?
How, if at all, did the facilitator(s) enable or disable your engagement with the experiences today?
How, if at all, do you anticipate your experiences today informing how you go forward in your personal and professional life?

Exhibit 9. Facilitator interview questions (open-ended conversation guide)

Question
What was your experience of the training?
What did you find expected and unexpected? In the group, in the participants, in yourself?
Throughout the days, which choices did you find effective or ineffective in facilitating multi-perspective-taking? What leads you to understand them as effective or ineffective?
How, if at all, does this experience inform how you will go forward in your facilitation?

Exhibit 10. Thematic analysis – process summary

1	Familiarization with data
2	Generate initial codes
3	Search for themes
4	Review themes
5	Define and name themes
6	Discuss results
7	Present findings
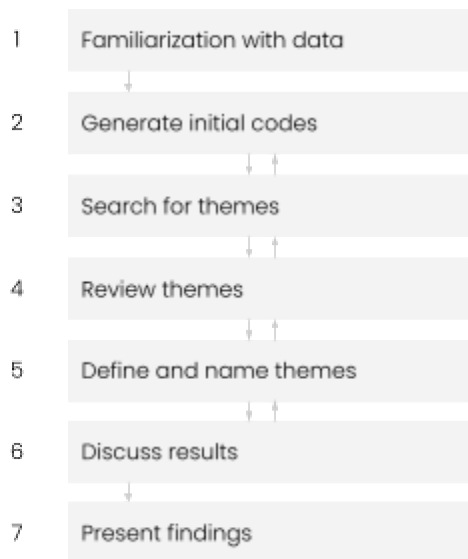
Exhibit 11. Participant Survey: Kolmogorov–Smirnov normality test results - self efficacy & growth mindset & personal growth - wellbeing (asked at beginning and end)

Survey question	Time	Statistic	P-value	Interpretation
I am confident that I could deal efficiently with unexpected events.	Beginning	0.999	0.000	In all cases, distribution is not Gaussian (i.e. underlying data for each survey response does not reflect a normal distribution; requires non-parametric statistical analysis techniques to compare the participants before- and after- training responses)
	End	1.000	0.000	
I can remain calm when facing difficulties, because I can rely on my abilities.	Beginning	0.999	0.000	
	End	0.999	0.000	
My mindset is something about me that I can't change very much.	Beginning	0.841	0.000	
	End	0.841	0.000	
My life is a continuous process of learning, changing, and growth.	Beginning	1.000	0.000	
	End	1.000	0.000	
I think it is important to have new experiences that challenge how I think about myself and the world.	Beginning	1.000	0.000	
	End	1.000	0.000	

Exhibit 12. Participant Survey: Thematic analysis of responses to each open-ended response question & sample participant responses

What, if anything, surprised you about your thoughts and experiences today?

Sample comments from participants

"The amount and quality of thoughts and comments of the group. The openness of thoughts and attitude."

"- Surprised to be accepted + validated
- Deep engagement, thought, and learning
- Unsettling + provoking contradictions
- Attention to body + self in order to serve the group"

"I discovered that certain places of discomfort can move me to where I want to be."

"I am surprised to learn about how setting up intentions before the session helped me in making the most of it."

"I found myself in alignment w/ a lot of perspectives that were shared, challenged by a few. I couldn't help but notice that while participants were from diverse racial, age, gender identity etc., we all seemed very similar ideologically. I wonder what would have happened if some participants were not as aligned in this way."

What, if any, tensions did you observe in yourself throughout the day? How, if at all, were they resolved?

	15						
	10						
	5						
	0						
	generally staying present / pacing	honoring self (needs) vs being present for group	own view vs dominant view in the room	relevance of content to the 'real world' / overemphasis on self-work	superhero / reflection / activity	self doubt	movement

Sample comments from participants

"Physically I struggled to stay present at times but my colleagues helped pull me back in."

"Tension between risk taking + staying safe ... being angry, sensitive, frustrated, triggered, etc VS being openly available to others and their experiences"

"Tension w/ over commitment to self work and not enough to me structure / ideological exterior. I was reciprocated and heard."

"I am still grappling with the idea of implementing it in varied context. Specially with people with diverse goals and orientation."

"The challenge of presenting my "small" self [superhero activity] to the group. Resolved by group empathy and support."

How, if at all, did the facilitator(s) enable or disable your engagement with the experiences today?

Bar chart with the following approximate values:

Category	Value
space / breaks / movement / food	8
engagement / responding / listening	6
open / flexible / letting go	6
authentic / transparent / modeling	6
empathy / supportive / attentive / respect / gratitude	5
theory / tools	4
other - constructive	4
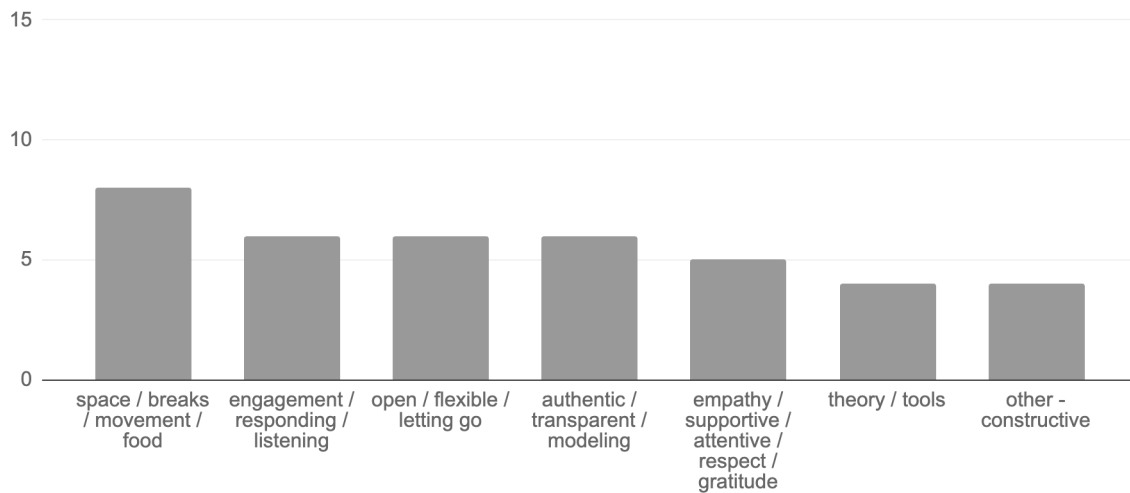
Sample comments from participants

"The use of breaks felt appropriate. Food greatly helps me. I don't need to worry about it or the $ for it"

"The respect and engagement was incredibly generous. There were times when I felt not fully engaged but the authenticity pulled me back in."

"Mirroring -> very helpful to remain neutral + create safe space [picture drawn] -> shiny yurt of mirrors to see yourself + others + our problems, strengths etc more clearly"

"I think the facilitators really let go of the outcome of this workshop so that each learner can experience their own learning"

"Transparently with the fluidity of the process and their own emotions as they worked through the process with us."

How, if at all, do you anticipate your experiences today informing how you go forward in your personal and professional life?
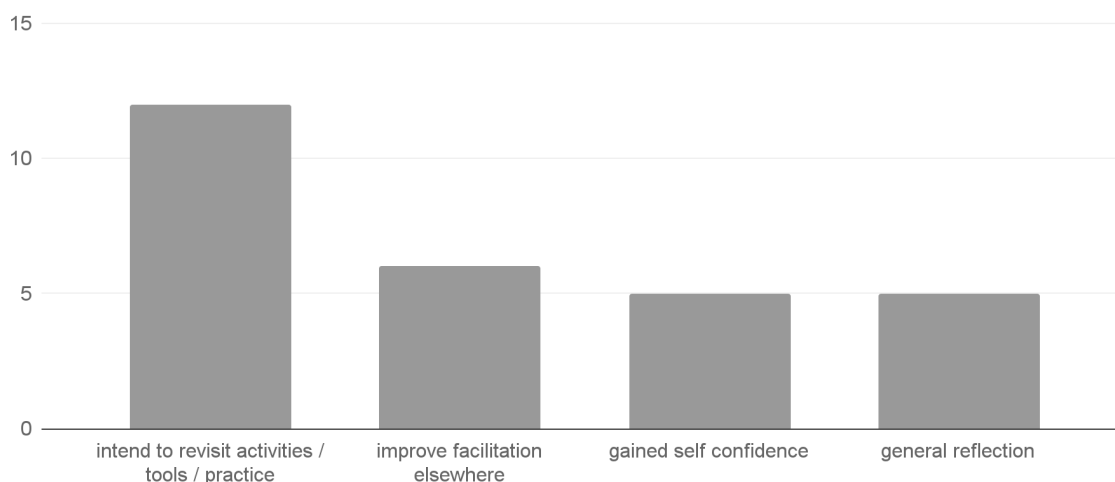
Sample comments from participants

"- Courage to show up authentically
- Connections to like-minded collaborators
- Practical tools for facilitating groups + internal thought processes"

"Self-awareness and speaking about self is a part of growth. Listening to others' self awareness and reflection is also an important part of understanding what it means to be human."

"Embracing polarity. There is no ""bad"" if you understand the downside. The ""bad"" is part of the process. We are all on a fluid journey. It is not linear"

"- I am much more confident to be a facilitator in the future
- I am braver + more likely to take risk!
- I love authenticity more!"

"I will continue to think about quadrants + educator, facilitator, transformation + how they connect + when we live in which role + why"

Exhibit 13. Participant survey: response distributions - self efficacy & growth mindset & personal growth - wellbeing (asked at beginning and end)
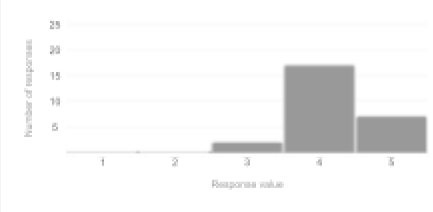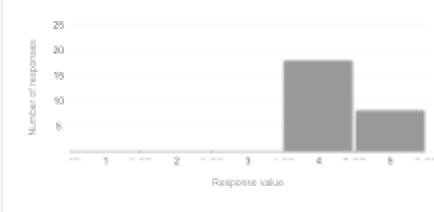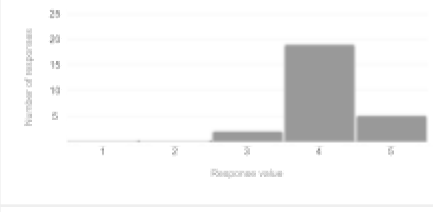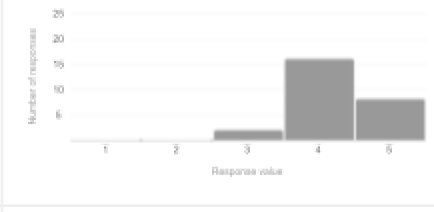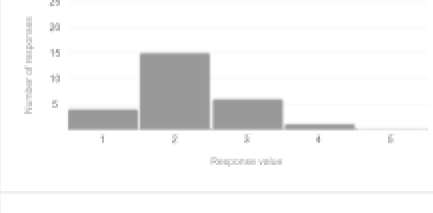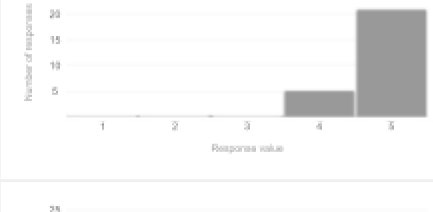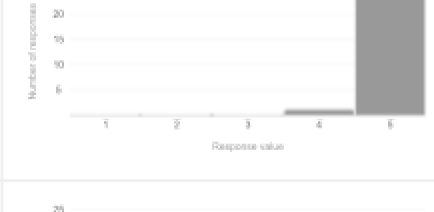
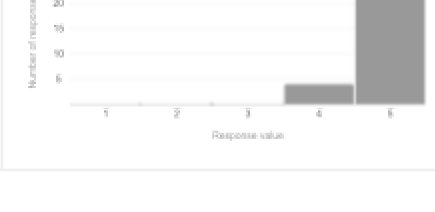| Survey question	Beginning	End
I am confident that I could deal efficiently with unexpected events.		
I can remain calm when facing difficulties, because I can rely on my abilities.		
My mindset is something about me that I can't change very much.		
My life is a continuous process of learning, changing, and growth.		
I think it is important to have new experiences that challenge how I think about myself and the world.		

53

Exhibit 14. Participant survey: response distributions - belonging (only asked at end)

Survey question	End
I feel like I am an important member of this training.	
I am supported by this training.	
I am accepted in this training.	

Exhibit 15. Participant survey: summary statistics - self efficacy & growth mindset & personal growth - wellbeing (asked at beginning and end)

Survey question	Time	Min	Max	Median	Mean	Mean change*
I am confident that I could deal efficiently with unexpected events.	Beginning	3	5	4	4.19	0.12 *more confidence in ability to deal with unexpected events*
	End	4	5	4	4.31	
I can remain calm when facing difficulties, because I can rely on my abilities.	Beginning	3	5	4	4.12	0.12 *more belief in personal ability to remain calm*
	End	3	5	4	4.23	
My mindset is something about me that I can't change very much.	Beginning	1	4	2	2.15	−0.35 *more belief that self has a flexible mindset*
	End	1	4	2	1.18	
My life is a continuous process of learning, changing, and growth.	Beginning	4	5	5	4.81	0.15 *more belief in life as a continuous process*
	End	4	5	5	4.96	
I think it is important to have new experiences that challenge how I think about myself and the world.	Beginning	4	5	5	4.88	−0.04 *less belief in importance of new experiences*
	End	4	5	5	4.85	

*Reminder: looking at overall means is useful in so far as it reflects a directional idea of the difference in the experience of the group, but we these references are merely provided as summary statistics. For the purpose of this field study, to look in depth at whether or not we believe we saw a significant change, we focus on a within-subjects statistical analysis of change in any particular question category from the beginning to the end of the 2-day training. See Exhibit XXX and XXX for details and results on the analytical approach to testing for normality and then applying a non-parametric paired-sample test.

Exhibit 16. Participant survey: summary statistics - belonging (only asked at end)

Survey question	Time	Min	Max	Median	Mean
I feel like I am an important member of this training.	End	3	5	4	4.31
I am supported by this training.	End	4	5	5	4.54
I am accepted in this training.	End	3	5	5	4.65

Exhibit 17. Participant Survey: Wilcoxon signed-rank (paired-sample) test results - self efficacy & growth mindset & personal growth - wellbeing (asked at beginning and end)

Survey question	Statistic	P-value	Interpretation
I am confident that I could deal efficiently with unexpected events.	8.0	0.25683	p-value > 0.05. Cannot reject null hypothesis. No difference between beginning and end.
I can remain calm when facing difficulties, because I can rely on my abilities.	8.0	0.25683	p-value > 0.05. Cannot reject null hypothesis. No difference between beginning and end.
My mindset is something about me that I can't change very much.	28.5	0.05270	p-value > 0.05. Cannot reject null hypothesis. No difference between beginning and end.
My life is a continuous process of learning, changing, and growth.	0.0	0.04550	p-value < 0.05. Can reject null hypothesis. Difference between beginning and end.
I think it is important to have new experiences that challenge how I think about myself and the world.	2.0	0.56370	p-value > 0.05. Cannot reject null hypothesis. No difference between beginning and end.

Exhibit 18. Participant Survey: more detailed view of relative change in participant self-reported self efficacy & growth mindset & personal growth results

Survey question	Participant response unimpacted	Participant response improved	Participant response declined
I am confident that I could deal efficiently with unexpected events.	73%	19%	8%
I can remain calm when facing difficulties, because I can rely on my abilities.	73%	19%	8%
My mindset is something about me that I can't change very much.	50%	42%	8%
My life is a continuous process of learning, changing, and growth.	85%	15%	0%
I think it is important to have new experiences that challenge how I think about myself and the world.	88%	4%	8%

Exhibit 19. Participant Survey: Correlation between change in participant self-reported self efficacy & growth mindset & personal growth results and each measure of belonging

Survey question	Measure of belonging		
	I feel like I am an important member of this training.	I am supported by this training.	I am accepted in this training.
I am confident that I could deal efficiently with unexpected events.	−0.241	−0.246	−0.133
I can remain calm when facing difficulties, because I can rely on my abilities.	0.010	0.211	0.143
My mindset is something about me that I can't change very much.	−0.018	−0.014	−0.178
My life is a continuous process of learning, changing, and growth.	−0.217	0.181	0.074
I think it is important to have new experiences that challenge how I think about myself and the world.	−0.130	−0.106	−0.072

Exhibit 20. COUHES approval

The determination for this study was Exempt, ID: E-4829.

A paper copy of the consent form was handed to all participants before the training started, and the researcher was available for any questions. All participants opted-in to participate in the study.