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Engagement and temporary teams: considerations for value engineering study teams and facilitators

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ENGAGEMENT AND TEMPORARY TEAMS:
CONSIDERATIONS FOR VALUE ENGINEERING
STUDY TEAMS AND FACILITATORS

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Abstract

The purpose of the current research is to contribute to the VE community's understanding of how the dynamics of temporary teams may influence participant engagement, by answering the question, "what factors impact individual team member engagement on a VE study team?" In today's business environment, the traditional permanent work team is no longer a reality for many employees (Jacobssen & Hallgren, 2016). Even those who do maintain membership in a permanent team are often tasked with serving on additional committees, task forces and decision-making teams to aid their organization in developing new products or navigating change. Value Engineering (VE) study teams present a unique scenario in which small, in-person teams of technical subject matter experts must solve complex problems in just a few days, having had no previous interaction. These teams can be classified as "temporary." To understand what factors contribute to a participant's engagement during a VE study, ten, semi-structured interviews were conducted with VE study team members. Themes from the interview data aligned with the literature's framing of intellectual, social and affective engagement (Soane et al., 2012). Technical expertise, direct engagement by the facilitator, clear roles, prioritization of teambuilding, and viability of the project, were among the factors cited as impacting team member engagement. Recommendations were made related to prioritizing pre-study activities, creating a VE team member cadre for continued team member development, and setting the tone for engagement. These findings and recommendations may be applied to temporary team settings other than VE teams as well, in terms of the importance of context setting, early team member interaction, psychological membership and psychological safety for team success.

Keywords: temporary team, value engineering, engagement, project teams, teambuilding

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Chapter 1: Introduction

You are a consultant, tasked with analyzing the design of a substantial new government construction project. You hop on a plane on Sunday afternoon, arrive in a new city, drop your bags at the hotel, and show up at 8:00 a.m. monday morning to a room of six new faces. Aside from one or two emails to coordinate logistics, you really have not had any prior communication. After some quick introductions, you get right to work. As a team, you are expected to analyze the design for this project, and develop alternatives that will increase its value – improving functionality and reducing construction cost and time, while enhancing performance. The stakes are high, with multi-million dollar figures, multi-year project schedules, and the knowledge that ideas developed in this very room will have real, tangible impacts.

After five demanding days, you pack up your bags and hop back on a plane. You will likely never work with any of these individuals again, and you will certainly never work with the exact same team. You leave with no guarantee of ever knowing the impact of your work. Over the course of those five days, your team put together a list of well thought-out alternatives, some, all, or none of which may be implemented. It is in the hands of the project team now, and aside from word-of-mouth down the line, you will not have any formal follow-up. Your work is considered done as soon as the study ends. As the jets fire up and the wheels leave the runway, you cannot help but ponder the uniqueness of what you just experienced, and how it differs from your usual team at your firm.

Nature and Scope of the Problem

Today's business environment is host to a variety of organization types and designs, creating the opportunity for individuals to work in increasingly varied configurations (Jacobssen & Hallgren, 2016). Temporary teams are on the rise, with the traditional team fading into the

background of organizational life for many employees. Even those who do maintain membership in a permanent team are often tasked with serving on additional committees, task forces and decision-making teams to aid their organization in developing new products or navigating change (Cummings & Worley, 2015). The faster, constantly changing, more global marketplace "makes collaboration indispensable" in creating, "a 360-degree view that, when utilized skillfully, leads to smarter solutions and faster decisions" (Miller & Katz, 2014, p. 6). From flat, non-hierarchical startups, to larger, heavily matrixed organizations that rely upon self-managed work teams, to completely virtual organizations that must foster collaboration remotely, the presence of different types of work groups creates both an opportunity and a challenge for individuals and teams. The immense pressure to perform, coupled with constantly changing permutations of team membership and assignments poses a potential threat to individual engagement and performance.

A wide array of research and literature on the nature of organizations has been devoted to team development (e.g., Lencioni, 2002, Smith & Berg, 1987, Tuckman, 1965, Walker, 1973). It is generally understood that new teams undergo a formation process (forming) , during which time members establish roles and learn to handle conflict (storming), define group norms (norming), and determine how they will ultimately work together effectively (performing) (Tuckman, 1965). But what happens when the team development timeline is dramatically condensed? As the use of project teams and multidisciplinary work groups to accomplish "critical organizational tasks" (Parks & Cowlin, 1995) has become more prominent, temporary teams are becoming far more common. For organization development practitioners and business leaders, understanding the behavior of these teams and their individual members will be critical to facilitate their success.

Temporary teams are characterized by their temporality and certain termination (Sieben, Braun, & Ferreira), defined by Goodman and Goodman (1976) as "a set of diversely skilled people working together on a complex task over a limited period of time," (in Popa, 2005, p. 1). Engwall and Svensson (2004) noted, "past research has shown that temporary organizations such as projects have a different logic compared to permanent organizations," (p. 391). Temporary teams require members to collaborate quickly and effectively. Norms, roles and trust must be dealt with immediately. Temporary groups, according to Meyerson, Weick, and Kramer (1996) "have a finite life span, form around a shared and relatively clear goal or purpose, and their success depends on a tight and coordinated coupling of activity" (Lennox, Terrion, & Ashforth, 2002, p. 57).

Long term team interactions allow for the processes of team building to take place at a natural rate. In contrast, without the benefit of time, temporary teams may be limited in their ability to "progress through the necessary team formation cycle, yet [they] are expected to produce intangible outcomes in a limited time," (Han & Hovav, 2012, p. 378). Bakker, Boros, Kenis, & Oerlemans (2012) hypothesized that project teams which expect to keep collaborating for longer time frames will behave differently than teams which have a shorter expectation of interaction, noting that the limit in time and scope creates a hyper-awareness among members that their time together is temporary. This awareness may cause team members to use stereotypes to determine whether they will trust one other (Han & Hovav, 2012), and to demonstrate more opportunistic and self-interested behavior (Bakker et al., 2012). As a result, members may dive into conflict more readily to protect their interests, or disengage from the group and ignore conflict completely, silently siding with the majority opinion (Ellis, 2003; Saunders & Ahuja,

2006; Walker, 1973). The process of "psychologically joining the group," investing in group membership and the group's outcome, may not happen at all (Bushe & Coetzer, 2007).

If the compressed time frame of temporary teams precludes team members from mentally and emotionally committing to the group, their individual level of engagement, and therefore the team's overall engagement and performance, may suffer. Kahn (1990) noted that personal engagement with the work at hand varies based upon an individual's beliefs about the benefits associated with their work role, and whether they feel they have control of the resources required to perform in the role. These beliefs and the individual's overall engagement is rooted in intellectual, social and affective elements (Kahn, 1990; Soane et al., 2012). When team members can see the end before they have even begun, the perception of relative benefits may be impacted. Similarly, immediately diving into work before adequately addressing needed team processes such as establishing trust and clarifying roles (beyond title or technical expertise), may impact members' perception of control and ability to perform in the role. Since individual engagement impacts individual performance and team engagement, both of which impact team performance (Costa, Passos, & Bakker, 2014), understanding ways to increase individual engagement in temporary team settings is of utmost importance.

Significance of the Research

The Value Management (VM) field, governed by SAVE International's Value Methodology, provides a particularly pertinent example of the dissolution of the traditional, permanent work team. The Value Methodology is a systemic process used to improve the value of projects through the analysis of functions (SAVE International). Value Engineering (VE), Value Management (VM) and Value Analysis (VA) refer to the use of the Value Methodology when applied to industrial design and construction, administration or management, and concept

planning or process, respectively. The current research focused exclusively on VE studies, centering on the temporary teams convened to assess the design of public construction and engineering projects, as referenced in the introduction to this chapter.

The Value Methodology is predicated on the use of multidisciplinary teams of subject matter experts in technical disciplines, led by a facilitator. VE study teams are typically composed of only five to seven members and convene in-person, for a mere five days or less, with near instantaneous expectations of high performance. Team members have typically never met or worked together before the study, and while there is some potential for meeting again in the future, the same exact team will likely never be reconvened. Team members come from various locations to convene onsite near the project location. A VE study "requires that members of the value team work together harmoniously and in unison if its output is to exceed the sum of the individual efforts," (Stewart, 2010, p. 9). The value team may include external consultants, or members from different departments within the same organization, and "it is not unusual for there to be both superiors and subordinates from the same organization participating simultaneously within the context of the value effort," (Stewart, 2010, p. 10). The VE team is convened to analyze a project that has already been designed and proposed by a separate design team.

VE studies are mandated by federal law for all state highway projects exceeding $25 million and all federally funded water and wastewater projects exceeding $10 million. In addition, Value Management processes must be maintained by executive agencies under the Defense Authorization Act, and under the Office of Management and Budget's Circular A-131, federal agencies must use VE to reduce program and acquisition costs (Stewart, 2010). The resulting volume, and impact, of VE studies executed each year is significant.

A VE study always follows the Value Methodology Job Plan, composed of the following six steps:

1. Information: Gather information to better understand the project. Includes a presentation from the original design team to the VE team with project details.
2. Function Analysis: Analyze the project to understand and clarify the required functions.
3. Creativity: Generate ideas on all the possible ways to accomplish the required functions.
4. Evaluation: Synthesize ideas and concepts and select those that are feasible for development into specific value improvements.
5. Development: Select and prepare the 'best' alternative(s) for improving value.
6. Presentation: VE team presents the value recommendation to the project stakeholders and original design team.

Team members provide the technical expertise to analyze the project components and devise creative solutions, which the Facilitator keeps the team moving through each phase. VE study team members are actively involved in the Information through Presentation phases, all of which occur during the three to five-day study timeline. This requires team members to share ideas actively, work together, quickly switch roles as needed to produce drawings and write-ups, and then stand up in front of the project team at the end of the study to present their ideas. A Preparation phase occurs before the study, which involves setting up study logistics. An Implementation phase occurs after the conclusion of the study. This involves the original design team (not the VE study team) reviewing the VE team recommendations and deciding which ones

to implement. The VE team is not present for this process, though the Facilitator may be involved to guide the design team and other stakeholders through the decision process.

The VE study environment is unique from other facilitated processes in that it follows the six phases of the Job Plan, in the exact order outlined above, every single time, to ensure that study deliverable deadlines are met. It is a highly structured, rather than highly adaptive, process. The Job Plan is designed from the perspective that a problem must be thoroughly understood and analyzed before it can be solved (Stewart, 2010). It is intended to facilitate deep understanding of the project elements, dedicated time for brainstorming, thorough exploration of alternative solutions, and clear communication of those ideas to the project team, all within just a few days. It is also intended to create a team environment in which all members can share their ideas, progress through project analysis at the same pace and develop alternatives collaboratively. Though the phases of the Job Plan are specifically defined, the activities within each phase can be determined by the Facilitator's style. Facilitators at different firms may use various techniques and tools to accomplish each phase, ranging from standard flip charts and full-group discussions, to more facilitated designs, to the use of proprietary customized software to document each phase in detail. Function analysis is the only phase which requires a specific methodology to be used, dictated by SAVE International.

The Job Plan structure ensures that the team works through each step together, rather than having one person jump ahead to a specific solution before others have had the opportunity to think through an idea. In this way, the Job Plan is designed to provide the structure to accelerate team creativity and drive innovative solutions for complex and large-scale projects in a dramatically reduced time frame. It also fosters an environment in which unique team dynamic

may emerge, resulting from the temporary nature of the team, ambiguously defined roles, a rigid, fast-paced structure, and unfamiliar team members.

Purpose of the Research and Research Question

The purpose of the current research is to contribute to the VM community's further understanding of how the unique dynamics of temporary teams may influence participant engagement, by answering the question, "what factors impact individual team member engagement on a VE study team?" If VE facilitators knew specifically what factors contribute to individual team members' levels of engagement in this temporary environment, they could design their studies to engage participants from the outset, learn to watch for signs of disengagement, and maintain a quick-draw toolkit for re-engaging team members. As referenced previously, if theory serves us well, higher levels of individual engagement will lead to more successful team performance, and therefore, more successful study outcomes. Since the available literature linking individual engagement and temporary team membership is limited, this study seeks to establish a starting point by assessing individual engagement on VE study teams, from which future group level observations may be made and generalized to other industries and environments.

Research Setting and Definitions

Based upon Kahn's (1990) and Soane and colleagues' (2012) research on engagement, individual engagement will be framed as a "state" of engagement (as opposed to a specific set of behaviors), self-identified by participants. A sample of ten VE study team members will be interviewed. Interviewees will be asked to identify what engagement "looks like," for example, how they can tell if another team member is, or is not, engaged during the VE study. Temporary teams will be defined as VE study teams which convene for five days or less.

Summary

Chapter 1 explored how the changing work environment has led to the dissolution of many traditional, permanent work teams. The differing dynamics present in temporary, as opposed to permanent, work teams were outlined, and the VM field was introduced as a particularly germane example of the use of temporary teams in a high stakes environment. This chapter presented the research question, "what factors impact individual team member engagement on a VE study team," and highlighted the importance of understanding how a finite time frame may impact individual engagement, and therefore team success.

Chapter 2: Literature Review

The proposed research project is an exploration of individual engagement in situations of temporary team membership, addressing the question, "what factors impact individual team member engagement on a VE study team?" A review of the existing literature revealed that although the topic of temporary teams has increased in relevance and prevalence in recent years (Feldbrugge, 2015, Jacobssen & Hallgren, 2016, Rink & Ellmers, 2009, Son & Rojas, 2011, Valentine & Edmondson, 2014), the available literature is still limited. To sufficiently explore the standing body of knowledge and identify potential gaps, two primary topics were reviewed: (1) individual engagement as applied to work roles and its impact on performance, and (2) the nature of temporary teams as compared to permanent teams. The three elements of individual state engagement (intellectual, social, and affective) were used to organize the literature on temporary team membership (Soane et al., 2012). Topic areas included: types of temporary teams, information processing, swift trust and role expectations, psychological safety, conflict, and temporary employee membership perceptions.

Individual Engagement

Kahn (1990) proposed a role engagement theory to describe how individuals experience personal engagement at work. Role engagement is a motivational concept, referring to "the harnessing of an employee's full self in terms of physical, cognitive, and emotional energies to work role performances," (Kahn, 1990, p. 700). This means that role engagement requires investment of energy and application of these three areas to the role. Engaged individuals are characterized by being psychologically present and focused on their roles. The extent of engagement is dependent upon the individual's role perception, or "psychological experiences of self-in-role" (Kahn, 1990, p. 702). Kahn (1990) noted that people vary in their level of personal

engagement depending upon their own beliefs about the benefits associated with their work roles, and whether they feel they have control of the resources required to perform in the role.

Engaged individuals demonstrate a positive attitude towards their work and the willingness to actively participate in their work environment, showing high levels of self-efficacy (Bakker et al., 2012) and organizational commitment (Demerouti, Bakker, De Jonge, Janssen, & Schaufeli, 2001). Individual engagement can fluctuate over time depending upon differing job, and other, conditions, including resources and demands (Breevaart, Bakker, Demerouti, & Hetland, 2012; Sonnentag, Dormann, & Demerouti 2010). Building upon Kahn's (1990) work, Soane and colleagues (2012) designed an assessment tool designed to measure state engagement in individuals, grounded in intellectual, social and affective elements. State engagement is defined as a general state of being engaged, in comparison to viewing engagement as a set of behaviors. The Intellectual, Social, Affective (ISA) Engagement Scale (Soane et al., 2012) measures three different facets of engagement: intellectual, social and affective. Intellectual engagement was defined as, "the extent to which one is intellectually absorbed in work;" social engagement as, "the extent to which one is socially connected with the working environment and shares common values with colleagues;" and affective engagement as, "the extent to which one experiences a state of positive affect relating to one's work role" (Soane et al., 2012, p. 7-9).

Engagement is important because it leads to both personal fulfillment and high performance (Ruona, 1999). Current research has demonstrated that high levels of engagement are associated with increased task performance (Costa et al., 2014), and that the first condition for engagement is a defined work role that provides a focus for engagement (Soane et al., 2012). Kahn (1990) noted that work roles provide a channel for engagement based upon the alignment

of self and role, therefore meeting personal needs for fulfillment, meaningfulness, safety and availability (Soane et al., 2012). These findings imply that in a team setting, clarity of role may contribute to engagement.

Team work engagement is distinct from individual work engagement in that it is dependent upon individual actions and cycles of interaction that create shared patterns of behavior (Morgeson & Hofmann, 1999). Costa and colleagues (2014) found that at the team level, work engagement is positively related with task and team performance, collective positive affect and efficacy beliefs. Team work engagement is also positively related to individual work engagement (Costa et al., 2014). Costa and colleagues (2014) proposed that team work engagement is a multidimensional construct that is characterized by affective and cognitive dimensions, including, team vigor (a high level of energy and expression of willingness to invest) team dedication, and team absorption.

Defining Temporary Teams

To fully understand what makes temporary teams unique, we first must understand how temporary teams are defined, and what different types of temporary teams exist. A review of the literature revealed many different terms for temporary teams, with "project teams" appearing most frequently. Project teams are characterized by addressing a complex and concrete task, under finite time and scope constraints, with strong goal-orientation, while operating autonomously (Saunders & Ahuja, 2006; Salvesburhg, Gevers, van der Heijden, & Poell, 2012). Project teams are generally defined as "time-limited configurations that produce time-limited outputs," (Cohen & Bailey, 1997, p. 242), involving "groups of people who are temporarily grouped together around specific tasks to be solved, after which the team disbands and may or may not collaborate again in different compositions," (Bakker et al., 2012, p. 383).

Jacobssen and Hallgren (2016) proposed four different types of project teams, distinguished by (1) the source of team membership initiation and (2) the nature of the task at hand. These categories are shown in Figure 1 below.

Figure 1

Jacobssen and Hallgren (2016) Team Type Matrix

		Nature of task	
		Expected events	Unexpected events
Team initiation	Being assigned	[1] Routine teams	[3] Action teams
	Self-selected membership	[2] Emergent teams	[4] Impromptu teams

Routine teams are formed around expected tasks and membership is assigned by management. These teams often appear in routinized projects common in the construction and manufacturing industries, and are structured to "facilitate team development, an enhanced working climate, as well as to create synergy among team members," (Jacobssen & Hallgren, 2016, p. 586). Emergent teams are similarly formed around expected events, but membership is self-assigned. In these cases, "formation is triggered by situations where structured, management-initiated teams cannot entirely meet the requirements of the task at hand and therefore less structured groups emerge to accommodate the situation," (Jacobssen & Hallgren, 2016, p. 586).

Action teams and impromptu teams form around unexpected events. Action teams are "assigned top-down and consequently suitable for handing unexpected situations," and are "intentionally formed and focused on highly structured operations" (Jacobssen & Hallgren, 2016,

p. 586). As compared to action teams, impromptu teams are formed by the members, rather than being assigned by management, and are never formed in advance. They are triggered by an unexpected event, formed via a voluntary bottom-up process, and reliant upon the commitment of the individual members (Engwall & Svensson, 2004; Jacobsson & Hallgren, 2016). Examples of impromptu teams include emergency response, and military teams (Wildman et al., 2012). Impromptu teams may form spontaneously around common interests, similar practices, common goals or in response to external threats (Jacobsson and Hallgren, 2016).

Elsewhere in the literature, impromptu teams are also referred to as "ad hoc" or "swift starting" teams. Members of ad hoc teams must work together to obtain a common goal, but without any prior agreement regarding how to work together (Genter, Agmon, & Stone, 2011), and are disbanded when the specific problem has been solved, or goal has been achieved (Saunders & Ahuja, 2006). In the context of problem-solving or organization improvement activities (such as quality improvement teams, employee involvement groups or task forces) ad hoc teams are often labeled "parallel teams," as they exist simultaneously with the formal structure of the organization, involving people from different departments or work units (Cohen & Bailey, 1997, p. 242), such as decision-making teams or committees. In today's work environment, many parallel teams may interact almost entirely virtually. Virtual short-term teams are a separate classification, as they do not experience in-person interaction upon formation. A large body of research exists on the nature of virtual or distributed teams; however, the current study acknowledges the different dynamics in virtual and in-person interaction, and focuses on the latter.

An extreme example of a swift-starting or impromptu team is the so called "cheetah team." These ad hoc teams are never planned, and are formed in response to unanticipated,

critical problems, oftentimes during project execution or product development (Engwall & Svensson, 2004, p. 297). “Task force, emergency team, SWAT-team, hot group and red team are all labels sometimes applied with similar connotations” (Engwall & Svensson, 2004, p. 299). In these situations, team members devote all their energy towards a single goal on a full-time basis for the duration of the project, which is why the team’s major strengths are autonomy and intense focus (Engwall & Svensson, 2004). For example, emergency response teams are defined by having well trained experts, with no previous work experience together, facing high stakes, relying on one another’s expertise to reach their goal, and “performing their team task almost immediately” upon team formation (Wildman et al., 2012). The unique nature of cheetah teams and emergency teams often allow for them to “bypass common routines and break existing rules, if necessary” due to their “problem-driven character,” “high priority” and “strong sense of urgency to accomplish the goal of the mission” (Engwall & Svensson, 2004, p. 305).

A final category of temporary teams is that of organizations which rely on flexible staffing or shift work. In these cases, a new team dynamic is created on each shift, depending upon the composition of the team and team members’ previous relationships or interactions with one another (or lack thereof). Valentine and Edmondson (2014), wrote about role based coordination in temporary groups, identifying a structure called “team scaffolds” that allow for quick role establishment to quickly facilitate the success of fluid, fast-paced, interdependent work with individuals who do not know each other well. Scaffolds are a “structure that make it easier for people to act like a team” despite constantly changing participants. In this way, “even when team membership stability is not feasible, other dimensions of traditional team structures, like boundedness and collective responsibility, can be adapted to facilitate group coordination,” (Valentine & Edmondson, 2014).

VE teams demonstrate characteristics from multiple categories detailed above. However, there is no existing temporary team framework which perfectly describes the nature of a VE team and its dynamics. They may be considered "routine" project teams (Jacobssen & Hallgren, 2016) as they are formed in response to a known problem. But, they also have the added element of running parallel to team members' normal jobs and involving multidisciplinary members (Cohen & Bailey, 1997). VE teams are "ad hoc" in that they are disbanded once the goal of the study has been completed (Saunders & Ahuja, 2006). They are also unique in that they occur for an extremely short, focused duration of time, and dominate team members' attention and energy for that duration, making them similar to Engwall and Svensson's (2004) "cheetah teams." VE teams are formed in accordance with SAVE International's Value Methodology, following a pre-determined process for conducting each study and placing members in roles as subject matter experts representing a specific discipline. In this way, VE teams use "scaffolds" (Valentine & Edmondson, 2014), which allow for quick role establishment and coordination in pursuit of a known goal. Team members understand that they are there to contribute technical expertise, the facilitator is acknowledged as the formal leader of the study, and it is known to all that a specific process will be utilized, with clearly outlined steps and required actions from team members.

The Factor of Time

The number one factor causing differences in the dynamics of temporary and permanent teams is the influence of time. Pressures to perform under deadlines, a rushed team formation process, and having the finish line already in sight all impact the way people behave as individuals and team members. The influence of time appears in temporary team settings in the form of heuristic information processing, interference with shared mental models, swift trust

formation, differing views of conflict, temporary employee mindsets and barriers to psychological membership.

Han and Hovav (2012) found that the time constraints cause individuals to utilize stereotypes and expectations from prior experience to determine whether they will trust their temporary teammates. This "heuristic," rather than systematic (Bakker et al., 2012), processing of information can be helpful in establishing trust more quickly, but can also lead to gender and other stereotypes being carried over onto the temporary team (Sieben et al., 2016). On the positive side, employee's trust for one coworker can create a "positive spillover effect" on other third parties trusted by that coworker, which suggests that trust in one encourages trust in others (Miller & Katz, 2014). On the other hand, heuristic processing can lead team members to become guarded or mistrustful (Miller & Katz, 2014). Individuals may "approach new interactions and unfamiliar people from a standpoint of judging…[where they] size people up, compare them with others… see them as competitors, find fault, and engage with them cautiously if at all… [underestimating] their ability to contribute based on their ideas, differences, or traits" (Miller & Katz, 2014, p. 7).

Temporary teams are not only more prone to heuristic modes of information processing, but also may be more task focused than teams with longer durations (Bakker et al., 2012), due to their limited time frame and goal-orientation (Chae, Seo, & Lee, 2015). Time frame is a core element of temporary team members' shared mental model, since "deadlines and temporariness of projects are the central notions around which project teams are formed, and on-time task completion is one of the most frequently used measurements of project success" (Nordqvist, Hovmark, & Zika-Viktorsson, 2004). In some cases, limited time frame can facilitate swift trust formation as "direct sharing of knowledge related to problem solving is a more effective way for

team members to achieve their tasks quickly, even though they are not familiar enough with each other to share their knowledge" (Chae et al., 2015, p. 146). In this way, task-related information may be shared freely, though deeper relationships or personal information may not be shared.

In many cases, the stress of impending deadlines can limit the ability of teams to form shared mental models and work together cohesively (Ellis, 2003). Under stress, team members tend to become more self-focused and less team-focused, resulting in decreased interaction (Ellis, 2003). Frequent interaction between team members is critical to trust development, establishment of a common philosophy, norms and roles, and ultimately team performance (Buvik & Rolfsen, 2015). Extreme time constraints may also result in individual and team role stress, defined as "the strain resulting from ambiguity, conflict, or overload in multiple task requirements or roles of employees" which may impair individual and team performance (Savelsbergh et al., 2012).

Role Expectations and Swift Trust

A critical component of new team formation is that of establishing roles and mutual expectations for individual members. Buvik and Rolfsen (2015) suggested that "the early clarification of role expectations and the feeling of team coherence and team identity had a positive impact on trust development, consistent with previous research," (p. 1491). Relationships between people are heavily influenced by their mutual role expectations (Feldbrugge, 2015; Gabarro, 1987) and unclear roles can break down trust (Meyerson, Weick, & Kramer, 1996). Prior experiences working together helps with the quick formation of roles and delegation of tasks (Reagans, Argote, & Brooks, 2005) whereas team members who have not worked together before may spend an inordinate amount of time reaching a stable state (Buvik & Rolfsen, 2015; Son & Rojas, 2011).

Trust is something that usually grows over time and is based on participants' willingness to engage in vulnerability, honesty, transparency, and to build familiarity with other team members (Adams & Webb, 2000; Lewicki et al., 2006; Rousseau et al., 1998). Positive prior interactions between new team members facilitate trust development (Buvik & Rolfsen, 2015; Poppo, Zhou, & Ryu, 2008). The challenge facing temporary teams is how to quickly build trust, establish a sense of group cohesion, and work together successfully when members do not have any prior experience with one another, and may never work together again (Buvik & Rolfsen, 2015; Lennox, Terrion, & Ashforth, 2002).

Establishing trust is critical for temporary teams who may be engaged in complex, cross-functional problem-solving. Lack of trust in a relationship has been shown to limit the amount of information that is shared, and even change the nature of shared information between team members (Buvik & Rolfsen, 2015). Discussing potential problems and solutions openly, freely exchanging ideas and disclosing inadequacies or mistakes, increases the team's ability to succeed (Buvik & Rolfsen, 2015). When individuals do not feel trust within a group, they are less likely to speak up, which may result in costly errors as well as limited creativity and performance (Bienefeld & Grote, 2014). In the early stages of trust development, aligned work processes, common philosophy and clear roles are integral (Buvik & Rolfsen, 2015), since the most effective teams are those that form stable and balanced communication patterns early on (Zijlstra et al., 2012).

The "swift trust" model describes how trust may be quickly established in temporary groups (Popa, 2005; Saunders & Ahuja, 2006). The goal-orientation of temporary teams means that members are more likely to focus on the task at hand, rather than relationship building (Kelly & Loving, 2004), and that they often must begin working together knowing little more

than each other's technical expertise (Meyerson et al., 1996; Widman et al., 2012). Saunders and Ahuja (2006) define swift trust as, "a form of depersonalized action that allows team members to act as if trust were present from the start of the project… [which enables] members to take action and deal with the uncertainty, ambiguity, and vulnerability that arise while working on complex interdependent tasks with strangers," (p. 685). The presence of trust is especially important in temporary teams, as it impacts knowledge sharing and therefore, ultimate project performance and outcomes (Han & Hovav, 2012). Particularly in settings with high pressure and limited time, the ability to access the collective wisdom of the group is crucial. In contrast to traditional trust built upon familiarity, shared experience, reciprocal disclosure, threats and deterrents, fulfilled promises, and demonstrations of non-exploitation of vulnerability (Meyerson et al., 1996), swift trust is based on assumption, willingness to take risk, information sharing and suspended judgment (Popa, 2005).

Trust or lack of trust enables individuals to govern their own behavior in socially appropriate ways, understand the behaviors of others, and create an enjoyable group environment (Popa, 2005). Popa (2005) found that, "the best predictors of swift trust were proactive attributions of trustworthiness, generalized trust, and affect. People may be even more willing to swiftly trust others because they have a propensity to trust others in general, or because they like their group members at face value due to a heuristic association with people they have trusted in the past," (p. 79). Emotional triggers have a powerful influence on whether swift trust is formed (Wildman et al., 2012), as do levels of familiarity, transparency and fear of rejection (Moldjord & Iverson, 2015). The two origins of trust, (1) the "shadow of the future" (expectation of continued interaction), and (2) the "shadow of the past" (prior relations), are both necessary to promoting cooperation and trust in temporary groups (Poppo et al., 2008).

Saunders and Ahuja (2006) argue that deep trust development may not be warranted in temporary groups because goal clarity and task focus, with the addition of some swift trust, is sufficient to achieve the group's goals. An effort to "agree on goals and clearly communicate the expectations to team members so that conflict [may] be avoided" may be sufficient (Saunders & Ahuja, 2006) since temporary teams may be primarily viewed as delivery tools to complete a specific task and then disband (Feldbrugge, 2015). The literature shows that similarity on goals, values, personality and attitudes can, "improve individual's attitudes, performance and participation in collective activities," (Kristof-Brown & Stevens, 2001, p. 1083). Therefore, uniting behind a common goal may foster accelerated trust development and facilitate high performance.

Psychological Safety

Trust also provides the foundation for psychological safety. Edmondson (1999) defines psychological safety as "a sense of confidence that the team will not embarrass, reject, or punish someone for speaking up" (p. 354). In the context of VE studies, speaking up is extremely important; whether to offer a new creative idea, challenge an existing paradigm, provide a different perspective, or build out the details of a team member's idea. Since studies take place in-person, in a highly-collaborative environment, psychological safety is critical. However, the development of psychological safety may be challenged by the willingness or ability of members to embrace swift trust in such a time-limited environment.

Conflict

Our understanding of temporary team dynamics would not be complete without an exploration of conflict, which may show up differently in temporary settings due to time pressures and role stress. The shadow of the future model (Poppo et al., 2008) suggests that

individuals who do not expect to work together again would be less likely to engage in conflict resolution. Bakker and colleagues (2012) agree that "the shorter perspective of time working together in teams with a short time frame can often give rise to opportunistic behavior and team conflict" (p. 387). Temporary team members tend to experience more relational conflict and less cooperation or willingness to manage conflict (Bakker et al., 2012), and may have difficulty distinguishing task conflict from relational conflict, leading to tension in the team dynamic and decreased team performance (Saunders & Ahuja, 2006).

In some cases, temporary team members may ignore conflict completely. While avoidance of relational or personal conflict can improve team functioning, avoidance of task-related conflict can result in poorer quality outputs and limited team success. The task conflict that could improve team performance in the long run may not have enough time to take effect in these temporary settings (Bakker et al., 2012; Saunders & Ahuja, 2006). Bushe and Coetzer (2007) note that "the clearer and more accepted the task as well as members' roles and power relations in the group, the less likely that overt conflict will be required… [and] such groups may be able to develop without an over 'storming' phase" (p. 188).

Temporary Employee Mentality

Literature on individual behavior in temporary settings is extremely limited. Most of the literature related to temporary team members focuses on the dynamics between temporary and permanent group members when a newcomer is added to an established group (Mills, 1957). There is not much existing research on multiple temporary members comprising a temporary group. However, understanding the temporary employee mindset is still useful in framing how temporary team members may view their membership differently than a more permanent work

setting. This literature can provide clues for interpreting the dynamics of VE study teams, including the behavior of more experienced versus less experienced VE study team members.

Walker (1973) found that temporary newcomers tend to avoid conflict and act in compliance with the majority thinking of the group, while the permanent members view the newcomer as a vehicle for reducing workload. Arthaud-Day and colleagues (2012) found that individuals alter their tendency to engage in organizational citizenship behaviors (such as being helpful to colleagues, tolerating minor inconveniences, or taking on extra job tasks), depending on the prevailing motivations and norms of the established group. Braun and colleagues (2013) demonstrated that members of temporary teams may be more likely to collaborate to get the immediate work done, including "citizenship behaviors such as helping co-workers who have got stuck in their work or finding creative solutions for a problem and thereby focusing more on the project completion than on the regular processes (e.g., job descriptions, work flows)" (p. 873).

Rink and Ellmers (2009) argued that newcomers can have the most positive impact on group decision making when they are able to deviate from the set practices or collective opinions of the established group. Their temporary status means that they are less pressured to assimilate to the group's norms, less focused on developing positive interpersonal relationships, "less inclined to behave in ways that confirm old-timers' expectations," and more actively involved in group decision making processes (Rink & Ellemers, 2009, p. 766). In contrast, Blatt (2008) contended that, "temporary employees are highly concerned about their relationships at work, in part because, compared with permanent employees, their social standing is ambiguous," (p. 861). Uzzi and Spiro (2005) found that team creativity and success increases with a mix of old and new members, since old members alone are less creative, and new members alone may take too long forming and storming.

Psychological Membership

Bushe and Coetzer (2007) studied two primary drivers of team development: membership and competence. Teams are unable to be successful until individual members "psychologically join" the group, and determine that it can succeed. Bushe and Coetzer (2007) note that "many organizational groups exist in pre-identity states where members experience the group as one more object in the environment they must deal with in the pursuit of their personal needs and goals" (p. 188). Once members have psychologically joined and determined that others will confirm their role identity within it, they are then able to focus on the identity of the group as a whole (Bushe & Coetzer, 2007). Bushe and Coetzer (2007) proposed that "members enter the group with more or less explicit beliefs about what the group should be like" and that their decision to fully join depends on "their experience of how congruent the group is with their ideal image of the group," (p. 188). In addition, an individual's willingness to psychologically join the group may be impacted by their perceived level of control over their experience (Perry, 2005). Members also consider how competent they believe the group will be, and determine their confidence in the group's ability to perform and succeed at its tasks before fully committing psychologically (Bushe & Coetzer, 2007).

Team members who are accustomed to highly structured, hierarchical organizational life may have a difficult time immediately feeling comfortable in cross-functional temporary teams. In the case of VE, most team members are engineers or specialized technicians. Engineering traditionally emphasizes individual performance over collective accomplishments, and "favor[s] means-end maximization, efficiency, closure, optimization, stability [and] predictability" (Buch & Andersen, 2015, p. 22), contributing to an individual's tendency to view the team as an obstacle to be overcome, rather than an opportunity for social connection. Perry (2005) found

that personal decisions about how, when and where to engage with the group, and the development of close personal relationships, influence the individual experience (Perry, 2005). Viewing the group as an obstacle may create barriers to immediate trust formation, formation of personal relationships, willingness to collaborate or willingness to participate in temporary teams.

Bushe and Coetzer (2007) propose that temporary groups with short durations may not require members to psychologically join, if the task at hand can be successfully completed without members needing to feel part of the group. If membership is a concern, then membership issues must be resolved in the first half of the group's life for it to move on to issues of competence quickly enough to be effective (Bushe & Coetzer, 2007, p. 207). Since VE studies have a dramatically accelerated timeline, team members may not have adequate time to reconcile barriers to psychologically joining the group, including releasing judgments and stereotypes, building personal relationships, overcoming lack of confidence, or developing the ability to focus on the group despite ongoing demands in their normal jobs.

Summary

The literature demonstrates that individual engagement is an important construct which can contribute to engagement at the team level, ultimately impacting team performance. A combination of energy at the intellectual, social and affective level comprise the component parts of holistic individual engagement. Especially when considering temporary teams with an expedited formation process, mental and emotional investment may impact individual engagement, and vice versa. Finite time frames create new conditions within which individual team members must operate, creating many potential barriers to effective team formation and performance. This review highlighted gaps in the existing body of knowledge regarding how

temporary team membership may impact individual levels of engagement, as well as defining the dynamics within a VE study team, which is a unique combination of existing temporary team types. Though some recent research has begun to reveal trends in temporary team dynamics, the link between these topics and individual member engagement is yet to be explored.

Chapter 3: Research Methods

The purpose of this study is to understand what factors impact participant engagement in Value Engineering (VE) studies. The intent is to contribute to facilitators' understanding of how to increase engagement, and therefore maximize team performance, to achieve optimal outcomes from VE studies. This chapter consists of an overview of the research design, sample, data collection methodology, interview protocol and survey design, data analysis and interpretation, comments on validity and reliability, the researchers' role, and steps taken for the protection of human subjects.

Research Design

To understand what factors contribute to a participant's engagement during a VE study, a qualitative interviewing technique was employed. A qualitative approach allowed for the discovery of emergent themes, since there is little existing literature on temporary teams and individual engagement (Creswell, 2014). In addition, Creswell (2014) suggests a qualitative approach is appropriate when seeking to understand the meaning individuals or groups ascribe to a social or human problems; in this case, the individual experience in a very specific setting. A set of fourteen, semi-structured questions were used to gain insights from ten VE study team members of varying experience level.

Research Sample

As noted above, this study involved one sample of VE study team members. As a previous employee of a value engineering consulting firm, the researcher had access to a large sample of past VE study team members. A convenience sample was used to invite participants for the ten interviews. The sample consisted of individuals whom the researcher had personally met on VE studies, or whom other facilitators recommended.

Data Collection and Interview Protocol

Interviews were conducted via phone, audio recorded using an iPhone app, then transcribed and analyzed. An interview protocol was developed (shown in Figure 2 and Appendix D), based upon the reviewed literature on engagement and temporary teams.

Using an open-ended protocol, as opposed to asking specific questions targeted at validating a hypothesis and predetermined key themes, was intended to help remove the researcher's own bias from informing the data. Interviews were targeted for a one-hour duration, but participants were invited to continue longer, or end sooner, depending on their schedule and interest level. The primary purpose of these interviews was to gather as much information as possible.

Figure 2

Interview Protocol

Sample: VE Study Team Members	Duration: approximately 1 hour

Hello _____,

Thank you for taking the time to be interviewed for my thesis! I have prepared a set of questions related to engagement on VE teams. These are designed to be open-ended. If something comes up that you would like to share, please feel free to share it. Our interview will evolve based on what you feel is important to talk about, and I will ask follow-up questions as needed.

Before we begin, I want to confirm that you have received and read the informed consent waiver that I emailed you. Are you still comfortable with me recording the call? This is simply to ensure that I can focus on what you are saying and have a conversation, rather than trying to type at the same time.

If all sounds good, then we will jump right in.

1. How many VE studies have you participated in?
2. Of those studies, approximately how often have you encountered someone you know, or have worked with before?
3. What is your motivation to participate on a VE study?
4. Can you share a story about the best VE team that you ever worked with? What made it so great?
5. What characteristics make a great VE team member?
6. What are the primary factors that contribute to VE study success?
7. What does it look like when another team member is “engaged” during a study?
8. When you participate on a VE team, what factors impact how engaged you are as a team member?
9. Do you think that engagement matters to study success? Does it make a difference to have engaged team members?
10. What are some things that you think work really well in terms of engaging VE team members on a study?

11. What are some things that can be done to engage *new* VE team members and set them up for success?

12. Imagine you are in the Creativity stage of a VE study (no rules, no criticism, just unbounded creativity!). What is one crazy out-of-the-box idea that would dramatically improve the success of a VE study?

13. Is there anything else we have not touched on that you feel is important to share?

Thank you again for taking the time to speak with me today! I am conducing a total of 10 interviews. Once I have completed the interviews, I will analyze my data and develop recommendations for increasing engagement on VE study teams. I will be working on writing up my results this spring. I will send you a copy of the full report once it is complete so that you can see the outcomes of the study.

Data Analysis and Interpretation

Data from the interview transcripts were organized and analyzed, reviewed for general themes, and then coded using Tesch's (1990) general coding process for qualitative data analysis. These findings were used to develop recommendations for increasing engagement on temporary VE study teams.

Validity and Reliability

Validity (ensuring accuracy of findings) and reliability (ensuring consistency in data collection and analysis) are of utmost importance to the credibility of this study. Specific techniques were used to ensure that the research process and outcomes are both valid and reliable.

In ensuring internal validity of the study, the following strategies were employed. First, potential bias is clarified in the following section, "The Researcher's Role." Second, during analysis, negative or discrepant information running counter to major themes in the research findings were sought out, though in the end, the study did not actual reveal discrepant

information. Lastly, the final report documents have been reviewed by two separate academic readers.

Reliability was ensured by us of an interview protocol. The same researcher conducted all interviews. During data analysis, codes were carefully tracked to ensure that they did not "drift" or change meaning during analysis. Codes were constantly compared with raw data, and code memos were developed.

The Researcher's Role

It is important to note that in the months leading up to this study, the researcher regularly participated as an assistant facilitator on VE studies. Interest in pursuing this research topic arose when she noticed differing levels of participant engagement on the VE studies she witnessed. Recognizing that VE studies are predicated on uniquely temporary teams, and applying her knowledge of group dynamics, she designed this study with the desire to bring visibility to the dynamics that may be at play which influence participant engagement in this unique temporary environment. Her hope is that facilitators will use the outcomes of this study to inform their facilitation techniques and find ways to set participants up for success by engaging them fully from the outset. The researcher had previously worked with about half of the interview participants, and the others she had never met prior to the interview.

Previous observations that some VE study participants may not be as engaged as others does contribute to the researcher's perspective. Use of the data analysis and interpretation steps, as well as strategies for maintaining validity, outlined above, helped to prevent the researcher's prior experiences from impacting the outcomes of the study. The researcher strived to approach the interviews with open-minded curiosity and a desire to learn about participant experiences. There was, and is, no extrinsic advantage or disadvantage for the researcher to report out

findings of any specific nature. Every effort was made to ensure objectivity; however, as noted in the preceding paragraphs, context from past experiences were brought to the study that may subconsciously shape the way the data were viewed, collected and interpreted.

Protection of Human Subjects

Approval to conduct the proposed research study was obtained from Pepperdine University's Institutional Review Board (IRB) in July 2016. The researcher completed the Collaborative Institutional Training Initiative (CITI Program) MSOD Human Subjects Training course modules as of September 24th, 2015.

All interviews were conducted by phone, as participants were members of various organizations that are geographically dispersed. Prior to data collection, prospective interview participants were emailed by the researcher with a brief description of the project and an invitation to participate in an interview.

A consent form was provided to each interview participant describing the confidentiality measures that were taken by the researcher. Participants were asked to thoroughly review this consent form and were encouraged to ask questions for clarification to ensure complete understanding. Participants were asked to keep a copy for their records. Interview appointments were then scheduled.

Since interviews took place by phone, and were scheduled at the convenience of the participants, it was not anticipated that this study would be disruptive to the individual's ability to complete usual job tasks. There was no cost to participants, and no financial incentive for participation.

Interviews were audio recorded and then transcribed. Acknowledgement that the interview was to be audio recorded was included on the participant consent form. To protect

confidentiality, no participant or company names were included in the interview transcripts, study narrative or reporting documents. Only aggregate data were reported in the research and publication of results. Participants were asked to find a quiet, private place from which to participate in the phone interview or survey to ensure confidentiality.

Data were maintained securely during the data collection process by remaining in the possession of the researcher at all times. Data were de-identified and coded. Now that data collection is complete, the data is to be stored electronically as password protected files and deleted after three years. At the conclusion of the study, all participants were emailed a link to access the full report documentation and published results.

Summary

Chapter 3 provided an overview of the research methodology that was implemented in conducting this study. This included the research design, sample, data collection and interview protocol, data analysis and interpretation, steps to ensure validity and reliability, explanation of the researcher's role, and a description of actions taken to ensure protection of human subjects.

Chapter 4: Results

The purpose of this research was to contribute to the VM community's understanding of how the unique dynamics of temporary teams may influence participant engagement, by exploring the question, "what factors impact individual team member engagement on a VE study team." This chapter presents the results of ten interviews conducted with VE team members.

The 14 interview questions were designed to be open-ended in nature and to encourage participants to share stories about their own personal experiences. Beginning with context-setting questions related to the individual's experience on VE teams and what impacts VE study success, the interviews then directly addressed team member engagement, before asking participants to think about one, out-of-the-box idea that would increase the success of VE study teams. The final question asked participants if there was anything else they felt was important to share. Approximately half of the participants felt that the interview had covered the salient points, and had no further comments. The other half chose to speak further. All responses to this final question expanded upon topics already discussed. Therefore, the themes that arose from this final question are included with the appropriate grouping of responses for questions 1 through 13 in this results section.

VE Study Experience

Ten individuals participated in the interviews, which were between 30 and 60 minutes in duration. All participants were white males, ranging in age from approximately 35 to 65, and were working professionals in architecture or engineering disciplines. Participants were categorized as having "low", "medium," or "high" levels of experience with VE, based upon the number of studies they have attended as a team member, illustrated in Figure 3. Data were

analyzed by experience level, however no significant differences were found related to team member's years of experience and their responses or engagement level.

Figure 3

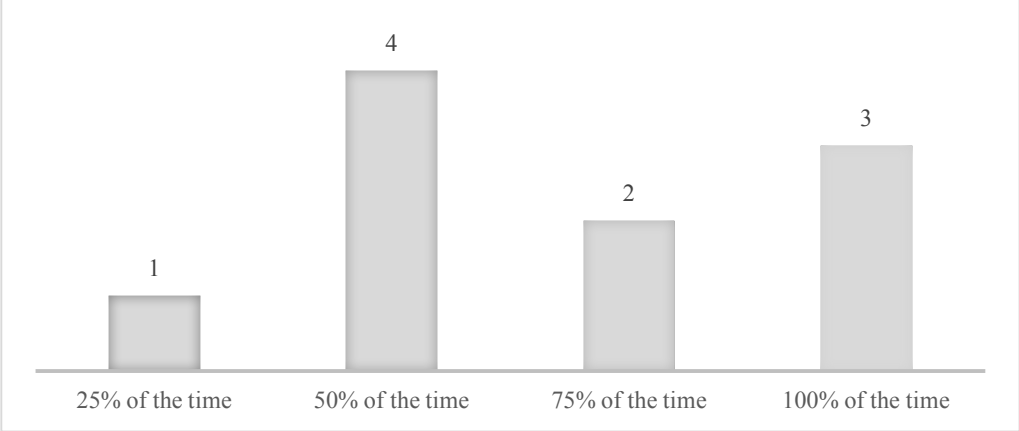
Experience level of participants

Experience Level	Number of Studies	N = 10
Low	5 or less	3
Medium	10 to 15	3
High	20 or more	4

Since one of the primary elements of a temporary team is unfamiliar team members, participants were asked approximately how frequently they encounter at least one other team member on a VE study team with whom they have worked previously. As shown in Figure 4, most participants said they encounter at least one or two team members with whom they are familiar more than half of the time. However, "familiar" encompasses a wide breadth of experiences – from having met once, to having worked together multiple times. It should be noted that in general, the majority of the team is unfamiliar with one another, and there are always new faces in the room. In addition, the specific team composition is always unique.

Figure 4

How often do you encounter familiar people on a VE team?



To begin understanding what engages individual members of a VE team, participants were first asked about their personal motivation to participate on a VE study. The most significant theme was the opportunity to learn something new, identified by six of ten participants. Having the opportunity to see how other firms and engineers approach complex problems, and learning about other technical disciplines were both cited as key motivating factors. Four of the ten interviewees mentioned the opportunity to be "helpful" as another contributing factor, including the ability to help make a project better, and the altruistic drive to help another person do their work better.

Figure 5

What is your motivation to participate on a VE study?

Theme	Characteristic Quotes	N
Learning	"I love Value Engineering studies, myself. It's probably as much about the furthering of my education as it is anything." "I do enjoy the challenge as well as the opportunity of seeing somebody's else's design. Maybe there's something that you can learn from that, something you can pick up and if it's a good thing incorporate it into your own practice down the road."	6
Being helpful	"I feel like VE studies can play an important role in the development of a project, a design, and some good things can come out of it. I'm happy to help others accomplish that." "That's the kind of thing that motivates me, I don't know how much it motivates other people but just to have that almost altruistic aspect of it where you're there to help, make somebody else do their job better."	4
Beneficial for future work	"Owners that I have worked for are superior owners. [interacting with them] It's business development. It's marketing. It's all that. As well as you are getting paid fair wage for that week yourself. It's a huge value."	3

Study Success

The next set of questions addressed successful VE teams and team members. Although the focus of this study is engagement, it was important to begin with open ended questions about what makes these teams successful. This design allowed for themes related to engagement to emerge naturally, and ensured that the researcher was not prematurely or inaccurately leading interviewees to make the link between engagement and team success. It quickly became apparent that considering engagement was a valid pursuit.

In discussing the best VE team they have every worked with, participants shared stories spanning multiple project types and geographies. But one thing was clear: team chemistry and the individual team members make the study successful. Participants spoke most about an open environment where people could contribute their ideas. They also described studies where there was a significant amount of team buy-in and collaboration, where people cared about the project at hand, were fully present for the study and had fun together.

Next, interviewees were asked about specific characteristics of great VE team members. The most referenced characteristic was technical experience. Seven of the ten participants talked about the importance of having the "right personality" to be successful in a VE setting. When prompted to explain further, the theme that emerged was being outgoing, or at least having the comfort to express your ideas in a group setting, which is key to the VE process. A collaborative, team mentality was another important theme, followed by VE experience and being personally invested in the success of the project.

Finally, when asked about the primary factors that contribute to VE study success, two primary themes emerged. The first was team chemistry and buy-in, throughout the VE study and during the final presentation phase. The second was early communication of project information so that the team can come prepared.

Figure 6

Can you share a story about the best VE team you ever worked with? What made it so great?

Theme	Characteristic Quotes	N
Open environment where people could contribute ideas	"The memorable ones, I think, are the ones where I learn the most because the technical experts were in fields I typically don't get involved in…I can listen to them and piggy back on their ideas. It's like a brainstorming session on steroids." "people were open with ideas and didn't hold anything back." "open, where people can put their ideas forth"	5
Team chemistry and buy-in	"They were the personality where they were outgoing and we got together and it was fun. Everybody wanted to go to lunch together every day. That one just really gelled and I think it was really through the selection of the team members that brought that thing together." "More successful studies I've been on have been a collaboration where in some cases a civil engineer gets up and he presents an electrical idea, or vice versa, or know enough about it that they can present it."	3

Figure 7
What are some characteristics of great VE team members?

Theme	Characteristic Quotes	N
Technical experience	"It helps to have people who have been on a lot of teams, have the knowledge, understand a lot of viewpoints... You can have a rich library in their brains for the technical side of it as well as experience working with people, teams. You can bring things together and really enjoy it." "It's hard, very, very, very hard, for a person of that low experience to really step in and be that respected member whose words are going to be substantial and respected by the team. It's a challenge for the young people. There is no replacing experience." "Rock solid professionals and good people."	8
Outgoing personality	"I occasionally see people who are introverts and don't like speaking in groups who struggle with the VE process because even though they listen well, it's hard for them to express themselves. I think you…have to be able to really quickly get your thoughts out." "The right personality to be there."	7
Collaborative, team mentality	"A committed bunch of guys who are all supportive of one another, who can laugh and joke and have a good time through the creative phase of the Value Engineering, and yet knuckle down to business and work very closely with one another to help develop each other's ideas." "Having that mentality that we're all a team, we're all striving for the same goal." "It's important in a VE context to look for the overlaps, to look for things that will be synergies, where the same idea will benefit more than one discipline."	5
VE experience	"Experience with Value Engineering environment where they know what to expect."	4
Invested in the project	"People who get jazzed by the nature of the project because it's the kind of thing that they would love to design themselves given the opportunity." "We're all more adept when we're excited about something, when we're really interested in it."	4

FIGURE 8

What are the primary factors that contribute to VE study success?

Theme	Characteristic Quotes	N
Team chemistry and buy-in	"Engaging, not just on a professional level or a technical level, but also on a personal level just to get to know these people, even for the short time we're working with them, gain their trust." "That there's total buy in by the entire team." "The facilitator and the team has to develop that team relationship." "I think the strength in numbers is important [during the final presentation]."	5
Early communication of project information	"Improve the chances of making sure your VE team's prepped, is getting the information earlier, and maybe even more important is just again staying in touch with them." "Success has a lot to do with getting the right information in enough time so that people can come prepared."	5

Engagement

The interviews then moved to the topic of engagement specifically. When asked what engagement "looks like," or how they can tell when other team members are engaged during a study, nine of the ten participants cited idea generation as the number one indicator of engagement. Coming up with ideas during discussion demonstrates that the individual is listening, thinking and engaged. More than half of participants said that minimizing outside distractions is an important indicator of engagement as well. When a team member is constantly checking email or stepping out for calls during the study, they are not fully engaged with the

current project. Finally, participants pointed out that asking questions and contributing in non-verbal ways, such as write-ups, drawings, or research, also show that a team member is engaged.

When asked what factors impact their personal level of engagement during a study, interviewees discussed the perceived viability of the project, and applicability of their own expertise. They communicated that it is important to them to feel that they can have a value added, as an individual and as a team. A few participants also noted that when the facilitator or other team members directly asked for their individual input or opinion during discussion, it increased their engagement.

In response to whether engagement is important to VE study success, all participants indicated that, yes, it is important. Half of the participants made the direct link that engagement is important because it impacts the number of ideas that are generated, which ultimately determines the success of the study (as noted in the earlier question about study success factors).

There are several things that participants felt worked well to engage VE team members. The most common theme was creating a safe space for contributing ideas. It is extremely important to those interviewed that individuals feel comfortable contributing ideas and do not feel criticized (which can discourage future contributions). Six of ten individuals noted that the opportunity to socialize and build personal relationships is important to team member engagement, and allows for informal teambuilding which can ultimately impact study success as well. The site visit is a critical piece which allows for this informal teambuilding, as noted by four of the ten interviewees. The facilitator directly asking questions of individuals to draw out their ideas was also discussed. Lastly, some participants talked about the importance of knowing each team member's background and expertise, to provide a starting point for relationship building.

To conclude the engagement questions, participants were asked about ways to engage new team members who have never participated on a VE study before. The most important theme was explaining the VE process ahead of time. Since it is a unique process, helping individuals know what to expect, and how to show up effectively, sets them up for success. Pairing new team members up with someone who is experienced with VE and providing adequate pre-study information about the project were also noted.

Figure 9

What does it look like when a VE study team member is engaged?

Theme	Characteristic Quotes	N
Contributing to idea generation, speaking up in discussion	"Well, I think that's when you almost have everyone making suggestions and the person that's running the VE meeting can't really keep up with all the suggestions. You've got a lot of ideas that are flying out there. I think that's when people are engaged."	9
Minimize outside distractions	"Every once in a while you find someone floats away, and is tapping on their keyboard, and not really paying attention, or they're just not really speaking up when you would expect them to do that." "A full commitment throughout the duration of the VE study, whether it's an 8-hour study or a 40 hour study, where each team member needs to be focused and encouraging others to stay focused on the team."	6
Asking questions	"If we're asking good questions, if we're asking lots of questions... It shows that we're really trying to understand what the approach is, what the mentality needs to be and what the facilitator needs from us as team members in order to do his or her job as well."	3
Non-verbal contributions such as research, drawings, write-ups	"Some I've seen contribute in more of a team dynamic way that they're more of the glue that kind of pulls things together. They might take bits and pieces of information from other contributors and tie it in a way, and communicate it back." "Some maybe are quiet and they don't talk but they're good at doing the research or writing things up."	3

Figure 10

When you participate on a VE study, what factors impact how engaged you are as a team member?

Theme	Characteristic Quotes	N
Viability of the project and ability to add value	"If limitations are set at the initial start of the VE meeting, then that limits the number of solutions you can come up with and you become somewhat disengaged because you're limited as to what you can do." "If it is really down my alley, uses my expertise, I am much more interactive than if I'm on the peripheral. Feeling like you are contributing value to the team."	4
Being addressed directly by the facilitator or other team members	"Maybe asking people direct questions gets [my] attention little bit more. Making [me] feel like [I'm] needed in the discussion."	2

Figure 11

Do you think engagement impacts study success?

Theme	Characteristic Quotes	N
Engagement impacts the number of ideas generated, and study success	"I just think that's success with any group. If you've got respect and you can develop a relationship and you can grow that relationship within the group, I think you can feed off the energy; build off ideas and concepts." "Everybody has to be engaged if it's going to be successful. If someone's really truly engaged, they're going to try to come up with viable ideas. I think that engaged people will make better suggestions." "If you don't have them hooked in and feeling like it's part of their product, then they could have just as many negative comments at the point in time when you're trying to present."	5

Figure 12

What are some things that you think work well on VE studies to engage team members?

Theme	Characteristic Quotes	N
Creating a safe space for contributing ideas	"The facilitator's got to nip [criticism] off right away and reinforce the fact that any idea is an idea that we're going to write on the board." "Team dynamic is extremely important to me… [it] falls back on the leader of the VE to create an atmosphere where people feel that they can speak freely about their ideas and not be embarrassed if they think something is off the wall."	7
Opportunities to socialize, build personal relationships	"The biggest issue I have is the team never gets a chance to form at the very beginning usually on the ones that I'm in, because you start, you have a half a day where you've got all these people that you're not going to see their face again unless they come to the report out. So it isn't until after you've maybe made a field trip and had some lunch and all that, that you even really get a chance to start forming that team." "That social life…after the end of the day where everybody is drained…tends to continue the process of Value Engineering, even informally…One might say, "I was thinking about that idea earlier on that we were talking about." The process continues informally but it's productive because then that informal discussion is brought to the table the next morning and it can only help."	6
Facilitator directly engaging individuals	"It's real easy to spot the wallflower and kind of draw them out, but you've got to draw them out in a way without embarrassing them or making them feel threatened. I think a lot of that is how the team forms and then what the facilitator can do to accelerate the person that's hanging back a little bit."	5
Site visits	"I really enjoy going out and kicking the dirt. We always do that. Once you go out and psychically stand at the project or go down inside the floating bridge, those kinds of things, your relationship with the project gets enriched."	4
Set context by discussing team members' backgrounds	"Create initial atmosphere where people know each other's backgrounds." "Maybe the more that they share about their experience and the types of projects they've done, the more they're making a commitment to contribute. Then they're more likely to be engaged and speak up."	3

Figure 13

What are some ways to engage new VE team members and set them up for success?

Theme	Characteristic Quotes	N
Explain the VE process ahead of time	"Make sure they realize: Hey listen, you're being brought into this team, because someone feels that you've got key knowledge or experience to contribute to it, so you should feel that you're an important part of this team. It's not a VE individual." "Explaining what VE is…that's probably the main thing if somebody's doing a VE study for the first time." "Afford them the time to talk to the other members to make sure they understand that this is an open environment to speak freely. No idea is bad. We want all the ideas."	6
Pair up with more experienced VE team members	"If I see Joe's not volunteering for much, you've got to give him a little bit of a softball but you've also got to give him a partner there to help him through it… I think the experienced team members see the dynamics and I see a lot of them that will then try to help out the new ones." "I think that's the responsibility of the team that's doing the VE. They need to engage that person and kind of get an idea of what they've worked on and how they could fit into the team."	5
Pre-study information about this specific project	"Having a little bit of read ahead or watch ahead or whatever material to get a feel of how this particular VE study is going to be conducted with this particular facilitators philosophy, approach, steps, equations, formulas."	4

Ideas for Change

To conclude the interviews, participants were asked to imagine they were in the "creativity" phase of a VE study, and to brainstorm, without constraints, one or two out-of-the-box ideas that would improve the success of a VE study. Ideas were grouped based on their applicability to pre-study activities, the VE study itself, or post-study activities, as shown in

Figure 14 below. Ideas ranged from creating a personality style index of team members to ensure a good combination, to scheduling a pre-study call with accountability for reviewing materials, to incorporating teambuilding activities, to actually staying in the type of facility under study (for example, military barracks).

Figure 14

What is one out-of-the-box idea that would radically change how a VE study works to make it more successful?

Pre-Study	Schedule a pre-study call, with accountability for individuals to have reviewed information ahead of time. Present other similar study types and solutions ahead of time.
	Clarify roles and disciplines ahead of time in pre-study so people know what discipline they are there to represent. (This is sometimes confusing until day of!)
	Create a team member personality style index to aid in team composition and ensure a mix of personalities.
Study Design	Incorporate an ice-breaker at the beginning to enhance teambuilding.
	Do more teambuilding – a social night or dinner on the night everyone flies in.
	Keep everyone in close proximity – stay in the same hotel and have meals together.
	Cover function analysis (FAST diagramming) in a pre-study webinar, or set some context for how it works, so then you can spend more time on the specific FAST during the VE study, rather than explaining how function analysis (FAST) works.
	Don't spend too much time on function analysis during the study – it cuts into development time, which is more important.
	Spend less time on the *number* of ideas, and more time on developing and writing up good ideas.
	Stay in the type of facility you're VE-ing to get ideas (example, military barracks).
	Longer studies with time to think on things.
	The opportunity for the team to design a project from the ground up (essentially a charrette).
	Divide into smaller groups for discussion, rather than having the full room discuss everything together all the time.
Post-Study	Involve the VE team in the implementation meeting, or at least debrief them to help them learn for next time.
	Have a follow up discussion about why something is rejected or accepted to help with future learning.

Summary

Analysis of the fourteen interview questions combined to paint a consistent picture of the VE experience across all ten interviews, regardless of the individual's experience level or technical discipline. It became abundantly clear that the team dynamic is critically important to the success of the study. This dynamic is influenced by the personalities of individual team members, and by the facilitator's ability to create an open environment in which ideas may be shared freely. Team buy-in, focus on the project at hand, caring about making the project better, and being willing to stand together as a team during the presentation phase is key. The number of ideas was repeatedly discussed, both as an indicator of study success, and as an indicator of individual team member engagement. No significant contrary responses were noted during this study.

Chapter 5: Conclusions and Recommendations

Discussion and Interpretations

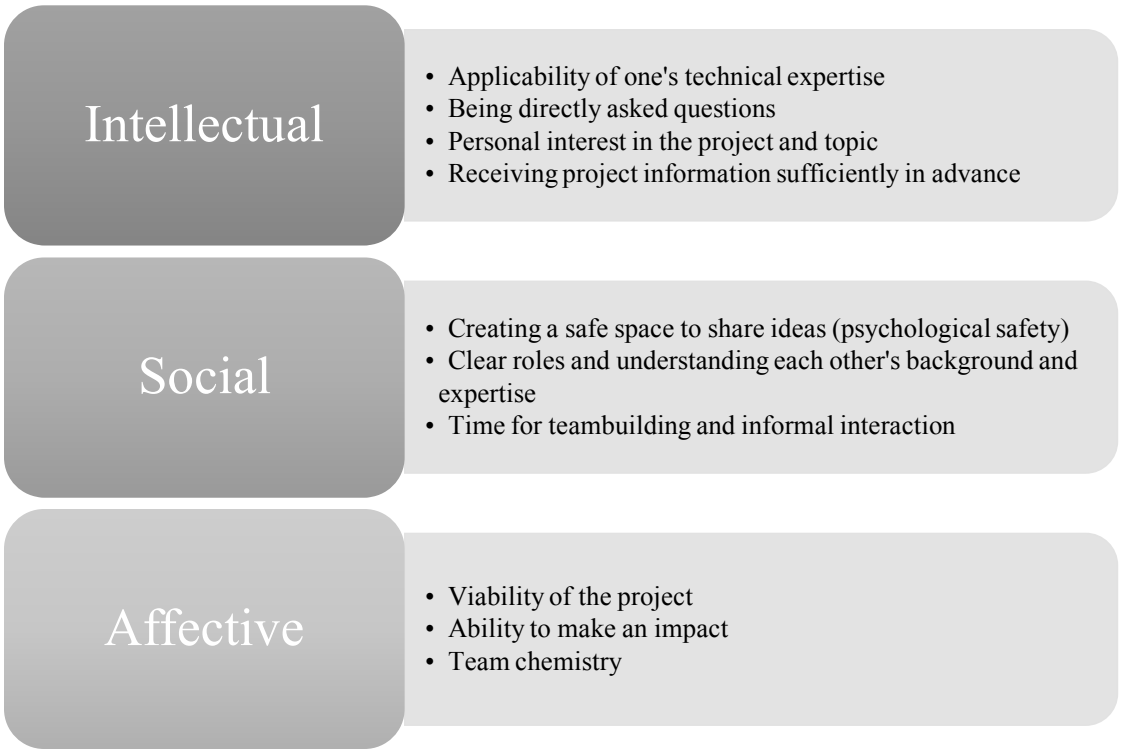
In the literature review portion of this study, individual engagement was defined in three ways: Intellectual engagement as, "the extent to which one is intellectually absorbed in work;" social engagement as, "the extent to which one is socially connected with the working environment and shares common values with colleagues;" and affective engagement as, "the extent to which one experiences a state of positive affect relating to one's work role" (Soane et al., 2012, p. 7-9). The literature demonstrated that individual engagement contributes to engagement at the team level, ultimately impacting team performance, and that mental and emotional investment may impact engagement. Expedited time frames were presented as barriers to team formation and performance.

Since the literature is extremely limited regarding temporary team formation and performance, the intention of the present study was to provide a starting point for understanding what factors impact individual team member engagement on a temporary team, using the Value Engineering (VE) study team as a sample. The results of the ten VE team member interviews readily aligned with the limited information available in the literature so far. The themes of social, intellectual and affective engagement, and mental and emotional investment clearly emerged, as did the connection of individual engagement to study success, via idea generation.

Interviewees defined engagement on VE teams as the following: contributing ideas, asking questions, participating in discussion, minimizing outside distractions, and doing research or drawings. Figure 15 summarizes the findings of this study related to the original research question: "what factors impact individual team member engagement on a VE study team," grouped by intellectual, social and affective engagement factors, as framed by the literature.

Figure 15

Factors which impact individual team member engagement on a VE study



Intellectual Engagement

At the heart of the VE process is technical expertise. VE teams are composed of skilled subject matter experts in various engineering disciplines, brought together in the interest of analyzing a complex problem and developing viable solutions. As such, it would make sense that intellectual involvement is an important part of keeping team members engaged.

Intellectual engagement on VE teams is impacted by the applicability of one's discipline and expertise, as well as a team member's personal interest in the project. Interviewees repeatedly mentioned the opportunity to learn something new, whether it be technical elements from another discipline, or simply another person's approach to a problem, as a motivating factor. Additionally, individuals must feel that their expertise is making a valuable contribution,

and is needed in the success of the study. Direct questions from the facilitator or other group members to access this expertise directly increases team member engagement.

This all makes sense in the context of "psychologically joining" a group, as presented in the theoretical basis for this study. Busche and Coetzer (2007) noted that to psychologically join a group, members must feel that they have a specific role within the group, and that the group has the ability to succeed (which will be revisited in the affective engagement discussion). Interviewees mentioned that when roles are ambiguous, they are less engaged. For example, many times there will be an individual who could represent a few different disciplines. If the individual is not sure which discipline they are there to represent, as compared to other members, they will spend time trying to figure out that role, and may be less able to dive into the project. Simply ensuring that Facilitators make roles explicit prior to the study may increase intellectual engagement from the beginning.

Aside from role clarity, ensuring that project information is provided before the beginning of the study is of utmost importance. In theory, there are typically pre-study documents which are distributed to team members virtually approximately a week in advance of the study. These may include drawings, cost estimates, and any other context-setting documents which will help the team understand the project and quickly jump into analysis, and can be anywhere from twenty to sixty pages, or more. In practice, oftentimes documents are provided with a day or less for team members to review. Many interviewees referenced the need for pre-study documents to be distributed far enough in advance that they have sufficient time for review. Not only does this impact preparation on an intrinsic level, but it also allows for team members to come prepared with questions for the original design team, therefore allowing

individual members to be more engaged during the design team's initial presentation of the project.

Preparation also includes setting expectations for what a VE study involves. Facilitators typically provide a brief overview of the Job Plan phases at the start of each study. They also mention the intent of each phase, specifically the difference between Creativity (free brainstorming with no criticism allowed) and Evaluation (weeding out ideas) phases repeatedly during the study as part of their facilitation of the process. However, an overview of the VE process tailored towards describing the specific intended *outcomes* of each phase could help to further reduce uncertainty and therefore facilitate higher engagement.

Social Engagement

Although it is not mentioned in the Job Plan, VE professionals have long understood the importance of a good team dynamic for study success. However, from a team development perspective, since the VE experience occurs in such a compressed time frame, best practices of team formation tend to get deprioritized in favor of study deliverables. Shrinking budgets for VE studies and facilitators delivering VE studies back to back contribute to teambuilding falling by the wayside. The theoretical literature, as well as the outcome of the present interviews, support the notion that group dynamics should be considered when looking for ways to increase member engagement and study success.

Perhaps most importantly, interviewees discussed the creation of a safe space in which to share ideas - in other words, psychological safety. Edmondson (1999) describes psychological safety as "confidence that the team will not embarrass, reject, or punish someone for speaking up" and, "a team climate characterized by interpersonal trust and mutual respect in which people are comfortable being themselves," (p. 354). Since interviewees defined study success by the

number of ideas produced, the presence of psychological safety to allow individuals to speak up and share ideas is elemental. Psychological safety is difficult to create on a VE team where members are expected to immediately share creative ideas during brainstorming. Though the explicit rule of the Creativity phase of the Job Plan is that there will be no criticism, team members, especially those who are inexperienced in a VE environment, tend to violate this rule. Even though it is not done with malintent, this can be extremely damaging to the confidence of other members, especially when facilitators collude and allow for criticism to emerge during Creativity. Remember, VE team members most often are completely unfamiliar with one another. There is no basis of relationship or trust to interpret criticism through a positive lens.

Social engagement is also impacted by participants' knowledge of one another's professional expertise. Participants expressed that not only is this helpful in a professional context, allowing them to access helpful knowledge during the study, but it also provides a basis for conversation to allow them to start socializing on a personal level. We know from past research that developing personal relationships and building trust increases team performance (Bienefeld & Grote, 2014).

Interviewees touched on the importance of unstructured social time to get to know one another on a human level. They mentioned that not only does this help build trust and provide the basis for future relationships, but it actually contributes to better ideas on the study. A few individuals pointed out that when the team goes to dinner together or hangs out in the evenings during the study, the current project will often work its way into conversation. New ideas will be produced in this less pressured environment which are then brought to the study the following day.

Affective Engagement

Affective engagement in relation to VE can be characterized as a combined outcome from intellectual and social engagement. As described above, individuals want to feel valued as a team member. If they feel valued, they are more likely to be engaged and willing to continue to participate in discussions and share ideas. If they do not feel valued, it is easy to shut down, check out and disengage from the team and the process.

Maintaining affective engagement during the VE study has a lot to do with the perceived viability of the project, and ability of the team to increase its viability. As touched upon in the Intellectual Engagement discussion, psychologically joining a group is largely determined by an individual's perception of the team's ability to be successful. VE team members interviewed noted that projects with too many constraints, where they are unable to make a significant impact, or help the project succeed, significantly decrease their engagement with the study. If success of a study (as defined by those interviewed) is walking away feeling like the team developed viable ideas that will positively impact the project and serve the client, then the potential for achieving this will significantly impact engagement throughout the study.

Perhaps most importantly, affective engagement is increased by the feeling of team chemistry, which was mentioned repeatedly throughout the ten interviews. A collaborative and positive environment fosters the sharing of ideas and builds the confidence of individual members. Interview participants repeatedly emphasized that if a team member is only met with criticism during the early brainstorming stages of the study, he is likely to disengaged. The VE study is a unique environment in which members must balance trusting one another in a period of unbridled creativity (with no criticism allowed), and then work together to distill a large list of

creative ideas down to just the most viable ones. This requires a spirit of collaboration and positivity.

All the factors discussed above impact the engagement of the individual on a VE study, allowing them to show up fully present with their technical expertise, willing to share it with the group, co-creating an open and safe environment, feeling connected to the work and to one another, and leaving with an overall positive feeling towards the study.

Recommendations

It is important to acknowledge that VE teams have been in existence for a very long time, and that many intelligent individuals have worked to perfect the VE process over a period of many years to maximize its effectiveness. A VE professional reading this report may be questioning its value, feeling that the evidence and research presented thus far is nothing short of obvious.

There are many constraints which impact why VE studies are the way they are. Public funding limitations, the fatigue associated with full-time travel for facilitators, dependence on slow-moving public entities for information, and more, all contribute to a challenging environment, wherein VE teams have been, and continue to be, relatively successful. However, as an Organization Development practitioner, the researcher's role is to seek out ways to make these studies even more successful by emphasizing the impact of careful attention to the human component and team dynamic. To bring value to the VE community, the few key recommendations presented here are grounded in one overarching principle: Individual and team engagement *matter* to the success of VE teams, and deprioritizing them is a luxury the VE community cannot afford if they are to remain relevant and successful.

The recommendations are presented through a lens of best practices for the success of teams in general, made particularly important due to the compressed time frame in which VE teams operate. Each is grounded in the importance of pre-study activities and seeking to create consistency in engagement. The recommendations include: (1) prioritize pre-study sessions, (2) create a VE team member cadre, and (3) train facilitators to set the tone for engagement. Application of the study findings to other temporary team settings are also discussed following the recommendations.

Prioritize Pre-Study Sessions

In the high-pressure, expedited VE study process, it is critical to pay extra attention to setting context for team members so that they can arrive onsite ready and able to participate. Oftentimes, pre-study activities are limited to a brief call where the facilitator asks participants if they have received the pre-study documents, and asks if there are any questions. Sometimes there is brief discussion, other times there is not.

Ideally, there would be a full pre-study day as part of the VE session. Team members could arrive onsite, spend time getting to know one another, talk through the pre-study documents and brainstorm a list of questions to ask the design team at the initial presentation the following day. The reality is that budgets prevent this ideal structure.

What would be possible is a virtual pre-study session, conducted via video conferencing. The video conferencing piece is critical – a voice call is not sufficient to create accountability for being present, or to provide the benefit of putting a “face to a name” for other team members. Pre-study documentation would be supplied a week prior to the pre-study session. During this video call, the team would be tasked with introducing themselves on a personal and professional level, and with making a list of questions which they would be prepared to ask the design team at

the start of the study. It is estimated that 90 minutes would be sufficient for this call; easily falling within the budget for any VE study. This type of session kick-starts intellectual, social and affective engagement, creating accountability for being prepared, and beginning to unify the team behind a common purpose.

At an absolute minimum, team members should be provided a biography of all the other team members who will be participating on the study, including a photograph of the individual, and an explanation of what role the person will be fulfilling for that particular study. This would set individuals up for success by increasing their comfort level coming in, clarifying roles, and beginning to foster social engagement simply by seeing one another's faces. These small details require minimal effort from the facilitator, and would make a significant difference in the success of the VE team.

VE Team Member Cadre

Though some VE firms are already beginning to provide training for VE team members, and find themselves going back to the same highly effective and engaged VE team members repeatedly, the most successful VE firm would take measures to build a cadre of team members for whom they provide continual development.

This cadre would convene on a regular basis (for example quarterly) to learn about new information in the VE field and review salient topics. Things such as FAST diagramming and other technical competencies could be reviewed by the facilitator, with the opportunity for team members to ask questions and enhance their understanding. In addition, time could be taken for team members to share their experience on recent studies, and debrief examples of recommendations that were accepted or rejected. During this research, interviewees repeatedly mentioned their desire to know what happens to the recommendations they provide.

Showing team members that the VE firm is invested in their continued development would increase engagement and provide value to the VE firm, which would likely find itself with an overabundance of skilled, willing and available team members for new studies. The team members would benefit from new knowledge and virtual relationship-building with one another, increasing engagement when they arrive onsite, even in different team configurations.

This cadre would also be a perfect venue for establishing "VE champions" – experienced team members who could be used as a point of contact for new, inexperienced VE team members. These champions could be called upon to share their experience with new team members and help them understand what to expect during the study, increasing their chances of success. This would be a great tactic for creating buy-in to the VE process with new team members as well, since "VE champions" would be chosen for their passion for VE and confidence in the study process. This may, in turn, increase the likelihood that VE team members would respect the distinction between Creativity and Evaluation, solving for the recurrent psychological safety violations previously mentioned.

Train Facilitators to Set the Tone for Engagement

The facilitator has a direct hand in setting the tone for engagement, and should be grounded in the empirical basis for why engagement is important, as well as tools to increase engagement before and during the study. Though this recommendation may seem disappointingly obvious since great facilitators may do many of these things naturally, the key is consistency. Paying attention to the details that will create the same engaging experience for team members time and time again, and bringing new facilitators along to understand these keys to success, could be a competitive differentiator among VE firms.

Engaging in the pre-study activities described in the first recommendation is an important first step. When the team arrives onsite for the first day of the study, the facilitator should take the time to discuss engagement. These team members are full-functioning, intelligent adults, who are there with the best intent, to do the best job possible, but also bring their own context, fears, outside distractions and feelings to the session. Communicating to them that the study is designed to help them stay engaged, that the facilitator is there to make this the best experience possible, and that there are expectations grounded in creating this engagement, will make a difference.

It is important to set clear expectations in relation to outside distractions. Oftentimes, participants will set their laptops open on the table on the first day, presumably out of habit. The problem is that this increases the likelihood of checking email and falling victim to outside distraction during the study. The facilitator has a strong role in communicating to team members that phones and laptops should only be used during breaks, and during research for the Development phase. Communicating this through the context of creating a successful and engaging study for the individual and group should facilitate compliance with this expectation.

Making a point of engaging team members on a social level and making time for teambuilding in the session is of utmost importance. As expressed by the interview participants, teambuilding can be as simple as taking the team out to dinner and prompting a discussion on backgrounds and experience. It is the facilitator's job to encourage the team to spend time together, and to start the study off right by hosting a dinner or get together on the first night of the study.

Lastly, it is critical that the facilitator model the expectations and behaviors listed above. From taking time to engage individuals on a personal level, have informal conversations and

socialize, to taking the lead on organizing team get-togethers, to ensuring that their own cell phone and is put away during the session, modeling the behavior increases buy in. Facilitators need to bring the passion, energy and excitement to the VE study that they hope their team members will feel.

General Application to Temporary Teams

The findings from the current study may begin to be generalized to temporary teams in other contexts. Since the task-focused tendencies of temporary team environments can limit a team's ability to form shared mental models, setting context early and providing as much information as possible to align on shared goals is important to intellectual engagement (Ellis, 2003). Knowing what your team is interested in from an intellectual standpoint, and generating energy around this topic, can increase engagement levels.

In terms of social engagement, providing the opportunity for team members to interact as soon as possible (even if virtually) builds familiarity and may limit the need for members to rely upon swift trust and heuristic processing when they convene (Saunders and Ahuja, 2006; Popa, 2005). In addition, facilitating understanding of how members can relate to one another through clear roles bolsters the team dynamic (Soane et al., 2012). Psychological safety is the underlying determinant of participants' willingness to share ideas and engage with their teammates (Edmondson, 1999). Any activities which contribute to the building of trust among members to create psychological safety will only increase team success.

On an affective engagement level, members' willingness to psychologically join the group and invest in its success is key (Bushe and Coetzer, 2007). A commitment to the group results in a willingness to engage fully, on a social and intellectual level. This also impacts the overall team dynamic, which is another factor in individual affective engagement (Soane et al.,

2012). Since time is a critical factor in participants' willingness to engage on all levels in the work at hand, every effort should be made to communicate the team's value, and importance of each member's role. The may be accomplished by communicating how the work of this temporary team will contribute to a larger goal, and by following up with the team to share how their efforts ultimately made an impact, as mentioned in the VE study recommendations above.

Study Limitations and Suggestions for Additional Research

This study was primarily limited by a very small sample size. Additionally, the sample was drawn on an availability basis from individuals that the researcher had previous contact with, or was referred to by another facilitator. It can be assumed that the individuals who participated in the study had a relatively positive outlook on VE as a process, which could have impacted the results of the study. Additional research should focus on expanding the sample, including both male and female participants, and gathering insights from multiple VE firms. Interviewing VE facilitators to understand their perspective may also prove valuable, as would action research involving an entire team from a given study.

In addition, a deeper exploration of psychological safety and groupthink would provide further context for the temporary team dynamic. Understanding how psychological safety is built, and at what rate, in new teams, and how this may change based upon perceptions of temporality would be worth examining. Since VE is based in coming up with ideas to solve for unique and complex problems, and these ideas must be evaluated for their relative viability, it would be interesting to explore how group think may come into play. Knowing what we know about psychologically joining a group, and the differing levels of willingness to engage in conflict in a temporary setting, there may be implications for how group think manifests within VE studies and impacts the outcome.

Summary of Learnings

The results of this study indicated that there are key areas in which VE study facilitators may impact individual team member engagement. Factors impacting team member engagement were framed in terms of intellectual, social and affective engagement, per the theoretical basis for this study. Recommendations for increasing team member engagement through prioritizing pre-study activities, developing a team member cadre for continual development, and setting the tone for engagement were presented. These recommendations provided opportunities to go beyond traditional VE thinking, to acknowledge the importance of engagement, and increase consistency of beneficial activities, even within budget and time constraints.

The findings of this study suggest that focusing on simple activities to increase team member engagement will have a strong positive effect on team members and facilitators. It is easy to get lost in the grind of delivering VE studies over and over again, fighting jet-lag and sleep deprivation, showing up to complicated projects limited by budgets, government regulations and policies, working day and night on ideas which may or may not be ultimately adopted, and never knowing the ultimate outcome of the project. At the end of the day, it is important to remember that, in the words of one interviewee, these team members are, “rock solid professionals and good people.” They love engineering. They love solving complex problems. They find the different technical disciplines fascinating and enjoy learning from one another. And, they are driven by a genuine desire to help make projects better. Interviewing these ten passionate individuals about their experience was re-energizing and inspiring to the researcher. Hearing their stories, recording their ideas, talking through the challenges, and laughing together along the way only served to reinforce the belief that focusing on the

engagement of these individuals, and doing everything within the facilitator's power to create the best possible VE team experience, is far beyond worthwhile.

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Appendix A

Pepperdine University Institutional Review Board Approval

Pepperdine University
24255 Pacific Coast Highway
Malibu, CA 90263
TEL: 310-506-4000

NOTICE OF APPROVAL FOR HUMAN RESEARCH

Date: July 19, 2016

Protocol Investigator Name: Allegra Keith

Protocol #: 16-07-320

Project Title: Engagement and Temporary Teams: Considerations for Value Engineering Study Teams

School: Graziadio School of Business and Management

Dear Allegra Keith:

Thank you for submitting your application for exempt review to Pepperdine University's Institutional Review Board (IRB). We appreciate the work you have done on your proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations 45 CFR 46.101 that govern the protections of human subjects.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an amendment to the IRB. Since your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite the best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete written explanation of the event and your written response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* at community.pepperdine.edu/irb.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval. Should you have additional questions or require clarification of the contents of this letter, please contact the IRB Office. On behalf of the IRB, I wish you success in this scholarly pursuit.

Sincerely,

Judy Ho, Ph.D., IRB Chairperson

cc: Dr. Lee Kats, Vice Provost for Research and Strategic Initiatives

Appendix B

Informed Consent Waiver

PEPPERDINE UNIVERSITY

Engagement and Temporary Teams: Considerations for Value Engineering Study Teams

You are invited to participate in a research study conducted by Allegra Keith and Dr. Ann Feyerherm, PhD at Pepperdine University, because you have experience leading or participating in Value Engineering (VE) study teams. Your participation is voluntary. You should read the information below, and ask questions about anything that you do not understand, before deciding whether to participate. Please take as much time as you need to read the consent form. You may also decide to discuss participation with your family or friends. You will be given a copy of this form for your records.

PURPOSE OF THE STUDY

The purpose of this study is to contribute to the Value Engineering community's understanding of how the unique dynamics of temporary teams may influence participant engagement on VE study teams.

STUDY PROCEDURES

If you volunteer to participate in this study, you will be asked to participate in an interview. If you participate in an interview, the researcher will schedule a phone interview with you at your convenience. Interviews are expected to take approximately one hour, and will include open-ended questions about your past experience on VE study teams. The interview will be audio-recorded, then transcribed by the researcher. You will be asked to avoid stating your name or company name during the interview to maintain anonymity. The purpose for audio-recording is to allow the researcher to pay attention to what you are saying, and ask good questions during the interview, rather than attempting to type responses at the same time. The audio-recording will not be shared with anyone.

All participants will be given access to the aggregate study results, reported in the final study documentation.

POTENTIAL RISKS AND DISCOMFORTS

There is minimal risk associated with participation in this study. Risks include fatigue or boredom during the interview. Participants may feel uncomfortable with certain questions during the interview, or may feel uncomfortable recounting events from past VE studies. Since interviews will take place by phone, and will be scheduled at the convenience of the participant, it is not anticipated that this study will be disruptive to the individual's ability to complete usual job tasks.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

Benefit to participants will include the ability to share their knowledge and experiences about VE studies and to contribute to the body of knowledge for the VE field. The research will contribute to the VE community's understanding of what factors impact team member engagement, which will hopefully then benefit facilitators, who will be able to inform their facilitation style and study design based on the research findings. If facilitators are able to incorporate these findings and engage participants more effectively, then future VE study participants will benefit as well.

CONFIDENTIALITY

The records collected for this study will be anonymous as far as permitted by law. However, if required to do so by law, it may be necessary to disclose information collected about you. Examples of the types of issues that would require me to break confidentiality are if you disclosed any instances of child abuse and elder abuse. Pepperdine University's Human Subjects Protection Program (HSPP) may also access the data collected. The HSPP occasionally reviews and monitors research studies to protect the rights and welfare of research subjects.

The data will be stored on a password protected computer in the principal investigator's place of residence. The data will be stored for three years and then destroyed. The data collected during interviews will be audio-recorded, then transcribed by the researcher. Responses to the interview questions will be de-identified and coded. Only the researcher will have access to the raw data.

Major themes and aggregate data will be reported in a final paper for Pepperdine University.

SUSPECTED NEGLECT OR ABUSE OF CHILDREN

Under California law, the researcher(s) who may also be a mandated reporter will not maintain as confidential, information about known or reasonably suspected incidents of abuse or neglect of a child, dependent adult or elder, including, but not limited to, physical, sexual, emotional, and financial abuse or neglect. If any researcher has or is given such information, he or she is required to report this abuse to the proper authorities.

PARTICIPATION AND WITHDRAWAL

Your participation is voluntary. Your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study.

ALTERNATIVES TO FULL PARTICIPATION

The alternative to participation in the study is not participating or only completing the items for which you feel comfortable.

EMERGENCY CARE AND COMPENSATION FOR INJURY

If you are injured as a direct result of research procedures you will receive medical treatment; however, you or your insurance will be responsible for the cost. Pepperdine University does not provide any monetary compensation for injury

INVESTIGATOR'S CONTACT INFORMATION

You understand that the investigator is willing to answer any inquiries you may have concerning the research herein described. You understand that you may contact the researcher or her faculty supervisor if you have any questions or concerns about this research.

Allegra Keith
Primary Researcher
541-280-1670
allegra.keith@pepperdine.edu

Dr. Ann Feyerherm, PhD
Faculty Supervisor
310-568-5598
ann.feyerherm@pepperdine.edu

RIGHTS OF RESEARCH PARTICIPANT – IRB CONTACT INFORMATION

If you have questions, concerns or complaints about your rights as a research participant or research in general please contact Dr. Judy Ho, Chairperson of the Graduate & Professional Schools Institutional Review Board at Pepperdine University 6100 Center Drive Suite 500 Los Angeles, CA 90045, 310-568-5753 or gpsirb@pepperdine.edu.

Appendix C

Protection of Human Subjects Training

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COURSEWORK REQUIREMENTS REPORT*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Allegra Keith (ID: 5109992)
- **Email:** aakeith@pepperdine.edu
- **Institution Affiliation:** Pepperdine University (ID: 1729)
- **Institution Unit:** MSOD
- **Phone:** 5412801670

- **Curriculum Group:** MSOD Human Subjects Training
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 1 - Basic Course

- **Report ID:** 17430425
- **Completion Date:** 24-Sep-2015
- **Expiration Date:** 23-Sep-2018
- **Minimum Passing:** 80
- **Reported Score*:** 96

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Belmont Report and CITI Course Introduction (ID: 1127)	24-Sep-2015	3/3 (100%)
History and Ethical Principles - SBE (ID: 490)	24-Sep-2015	5/5 (100%)
Defining Research with Human Subjects - SBE (ID: 491)	24-Sep-2015	5/5 (100%)
Informed Consent - SBE (ID: 504)	24-Sep-2015	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	24-Sep-2015	5/5 (100%)
Internet-Based Research - SBE (ID: 510)	24-Sep-2015	4/5 (80%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: https://www.citiprogram.org/verify/index.cfm?verify=15c0158b-4015-4448-bb0b-03e27373d9e3

CITI Program
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COURSEWORK TRANSCRIPT REPORT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Allegra Keith (ID: 5109992)
- **Email:** aakeith@pepperdine.edu
- **Institution Affiliation:** Pepperdine University (ID: 1729)
- **Institution Unit:** MSOD
- **Phone:** 5412801670

- **Curriculum Group:** MSOD Human Subjects Training
- **Course Learner Group:** Same as Curriculum Group
- **Stage:** Stage 1 - Basic Course

- **Report ID:** 17430425
- **Report Date:** 01-Jul-2016
- **Current Score**:** 96

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
History and Ethical Principles - SBE (ID: 490)	24-Sep-2015	5/5 (100%)
Defining Research with Human Subjects - SBE (ID: 491)	24-Sep-2015	5/5 (100%)
Belmont Report and CITI Course Introduction (ID: 1127)	24-Sep-2015	3/3 (100%)
Informed Consent - SBE (ID: 504)	24-Sep-2015	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	24-Sep-2015	5/5 (100%)
Internet-Based Research - SBE (ID: 510)	24-Sep-2015	4/5 (80%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: https://www.citiprogram.org/verify/index.cfm?verify=15c0158b-4015-4448-bb0b-03e27373d9e3

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Appendix D

Interview Protocol

Sample: VE Study Team Members	Duration: approximately 1 hour

Hello _____,

Thank you for taking the time to be interviewed for my thesis! I have prepared a set of questions related to engagement on VE teams. These are designed to be open-ended. If something comes up that you would like to share, please feel free to share it. Our interview will evolve based on what you feel is important to talk about, and I will ask follow-up questions as needed.

Before we begin, I want to confirm that you have received and read the informed consent waiver that I emailed you. Are you still comfortable with me recording the call? This is simply to ensure that I can focus on what you are saying and have a conversation, rather than trying to type at the same time.

If all sounds good, then we will jump right in.

1. How many VE studies have you participated in?
2. Of those studies, approximately how often have you encountered someone you know, or have worked with before?
3. What is your motivation to participate on a VE study?
4. Can you share a story about the best VE team that you ever worked with? What made it so great?
5. What characteristics make a great VE team member?
6. What are the primary factors that contribute to VE study success?
7. What does it look like when another team member is “engaged” during a study?
8. When you participate on a VE team, what factors impact how engaged you are as a team member?
9. Do you think that engagement matters to study success? Does it make a difference to have engaged team members?
10. What are some things that you think work really well in terms of engaging VE team members on a study?
11. What are some things that can be done to engage *new* VE team members and set them up for success?

12. Imagine you are in the Creativity stage of a VE study (no rules, no criticism, just unbounded creativity!). What is one crazy out-of-the-box idea that would dramatically improve the success of a VE study?

13. Is there anything else we have not touched on that you feel is important to share?

Thank you again for taking the time to speak with me today! I am conducing a total of 10 interviews. Once I have completed the interviews, I will analyze my data and develop recommendations for increasing engagement on VE study teams. I will be working on writing up my results this spring. I will send you a copy of the full report once it is complete so that you can see the outcomes of the study.

Appendix E

What is Value Engineering?

VALUE ENGINEERING OVERVIEW

DEFINITION

The Value Methodology (VM) is a systematic and structured approach for improving projects, products, and processes. VM, which is also known as value engineering, is used to analyze and improve manufacturing products and processes, design and construction projects, and business and administrative processes. SAVE International is the international governing and accrediting body of the Value Methodology.

VM helps achieve an optimum balance between function, performance, quality, safety, and cost. The proper balance results in the maximum **value** for the project. Value is the reliable performance of functions to meet customer needs at the lowest overall cost.

Value = Function/Cost

Function *is what the product or service is supposed to do.*
Cost *is the expenditure needed to create it.*

THE PROCESS

The VM follows SAVE International's standard job plan, which consists of six phases:

1. **Information**: Gather information to better understand the project.
2. **Function Analysis**: Analyze the project to understand and clarify the required functions.
3. **Creative**: Generate ideas on all the possible ways to accomplish the required functions.
4. **Evaluation**: Synthesize ideas and concepts and select those that are feasible for development into specific value improvements.
5. **Development**: Select and prepare the 'best' alternative(s) for improving value.
6. **Presentation**: Present the value recommendation to the project stakeholders.

SAVE International standards requires the following:

1. A multi-disciplinary team
2. Adherence to the six phases of the Job Plan (as outlined above)
3. Analysis of functions
4. Certified Value Specialist (CVS) facilitator

APPLICATIONS

VM is embraced by businesses, industries and government agencies around the globe. Building designers and contractors, automobile manufacturers, chemical and pharmaceutical companies and national, regional and local governments all use the process regularly. The benefits they achieve using VM far outweigh the investments as reduced time and cost, and increased quality contribute to corporate success and taxpayer value.

Additional information and resources may be found on the SAVE International website
http://www.value-eng.org/