

EXAMINING THE RELATIONSHIP BETWEEN TRAIT GOAL
ORIENTATION AND BEHAVIOR IN TEAM DEBRIEFING SESSIONS

by

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Abstract

The present study explored the impact of the individual difference, goal orientation, on the team intervention, debriefing, thus contributing insight into a previously unexplored component behind debriefing effectiveness. Three sub-dimensions of goal orientation were examined in terms of their influence on debriefing: learning goal orientation, performance-prove goal orientation and performance-avoid goal orientation. The outcomes investigated included elements of a successful debrief: self-correction, self-promotion and speaking up behavior. A sample ($N=69$) of undergraduate students at the University of Central Florida individually completed a goal orientation self-report measure and participated in a team debriefing session within their three-person teams. The audio-recorded debriefing videos were transcribed and coded line-by-line to indicate the presence of the outcome variables. Hierarchical multiple regressions were utilized to analyze the direct relationships between the specific goal orientation sub-dimensions and hypothesized outcomes. Theoretical and practical implications are discussed.

Dedication

This manuscript is dedicated to my parents. You are more than parents to me, you were my first mentors. I respect you as intellectuals and you have engendered in me the importance of education and the pursuit of knowledge. You have held me to standards that are only exceeded by the ones that I have set for myself. Thank you for your unwavering support and for consistently challenging me my entire life.

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Introduction

Organizations today are recognizing the importance of teamwork and the process of having individuals work in groups. Extensive research has demonstrated that working in groups or teams can be beneficial for completing complex tasks and enhancing performance outcomes (Driskell, Salas & Hughes, 2010; LePine, Piccolo, Jackson, Mathieu & Saul, 2008; Tannenbaum & Cerasoli, 2012). The movement to incorporate the use of teams into a work setting is grounded in empirical research; however, teams are a multi-faceted area of study that may face challenges and new requirements in the workplace. One of the many issues teams face is improper communication. The Joint Commission released a recent report citing the root causes to adverse events reported between the years 2004-2013 in which, communication was ranked among the top three primary root causes across 76% of adverse events (The Joint Commission, 2004-2013). Furthermore, communication was ranked as the number one root cause attributed to patient related deaths or permanent loss in function related to delay in treatment and fire-related events (The Joint Commission, 2004-2013). This demonstrates that even though teams are usually cast in a positive light, they do incur problems that require edification in order for teams to be effective.

In sum, the literature supports that organizations need individuals to work in teams because this allows them to complete complex tasks more effectively than individuals; however, teams are not perfect and they face many challenges. In order for them to overcome these obstacles they must possess the tools necessary to fix these issues and engage in effective teamwork. These tools are labeled as “interventions” which inherently exist to remedy issues in teams (Shuffler, DiazGranados, & Salas, 2011). Debriefing is one of these intervention tools.

This debriefing intervention facilitates healthy, constructive communication. Taking the Joint Commission report into account, the proper team intervention tool, debriefing, can be a feasible answer to potentially saving human lives that are lost due to issues in communication (The Joint Commission, 2004-2013). Debriefing has also been found to increase effectiveness (Tannenbaum & Cerasoli, 2012) and is easily implemented. Additionally, it possesses practicality (e.g. cost-effectiveness), (Tannenbaum & Cerasoli, 2012) which takes into consideration the management of resources when funding the implementation of team interventions.

Debriefing is a team feedback intervention tool that requires individuals to discuss their actions, reflect on past occurrences and learn better ways to plan for the future in a constructive environment (Smith-Jentsch, Cannon-Bowers, Tannenbaum, & Salas, 2008; Tannenbaum & Cerasoli, 2012). Debriefs have exhibited the ability to increase the effectiveness of teams and small groups by 25% (Tannenbaum & Cerasoli, 2012). Tannenbaum and Cerasoli (2012) outlined three primary characteristics that effect debriefing: facilitation, structure, and multimedia aides. Despite the extensive research outlining the characteristics of effective debriefs, the different components (e.g. personality traits, motivation, goal-setting, and self-efficacy) that are linked to these characteristics remain unexplored (Tannenbaum & Cerasoli, 2012). The literature has provided empirical support for the influence of individual differences on teams (Driskell et al., 2010). Furthermore, Shuffler, et al. (2011) discussed team interventions and their effect on individual motivation and goal-setting. Though the specific intervention, debriefing was not analyzed, the aim of this research could build upon the general research regarding interventions by analyzing specific interventions such as debriefing. In sum, past

research has supported interventions and goal-setting behavior (Shuffler et al., 2011), which is a critical element of goal orientation and could impact debriefing.

Goal orientation is defined as an individual's inherent propensity to enter into a situation with the goal of either demonstrating or developing their ability (Dweck, 1986; Dweck & Leggett, 1988; VandeWalle, 1997). Empirical research has found that goal orientation affects an individual's approach to feedback-seeking (VandeWalle, 1997), task performance (Brett & VandeWalle, 1999) and motivation (Aguinis & Kraiger, 2009). The study investigated the impact of goal orientation on debriefing, contributing to a previously unexplored antecedent to debriefing effectiveness.

Literature Review

Teamwork Issues

Effective teamwork is required for groups to successfully accomplish a task (LePine et al., 2008). However, individuals do not always properly engage in teamwork (Barrick, Stewart, Neubert, Mount, 1998). The literature has revealed a variety of factors that have been attributed to ineffective teamwork. Some aspects that can influence teamwork effectiveness are skill expertise, organizational change, and individual differences (Hackman, 1998; Salas, Burke, & Cannon-Bowers, 2000). In order for individuals to engage in teamwork effectively they need to possess teamwork skills, in addition to task-work skills (i.e. job roles, requirements) (Salas et al., 2000). However, individuals do not always possess teamwork skills (Hackman, 1998). Another factor that has been found to result in poor teamwork engagement is organizational change, which requires extensive development efforts (Hackman, 1998). To expound this, an individual is not always required to possess these aforementioned skills or a propensity for teamwork when first entering the workforce; yet due to a push by organizations to increase the implementation of teamwork the individual may face the obligation to adapt to this organizational change. Solutions (e.g. interventions) are a combination of tools and processes that enable organizations and teams to remedy these problems.

Debriefing

Interventions are tools that aid in team development (D'Abate, Eddy, & Tannenbaum, 2003); they are implemented to correct teamwork issues, enhance the development of shared mental models, team satisfaction, and performance (Entin & Serfaty, 1999; Salas, Burke, Bowers, & Wilson 2001; Smith-Jentsch et al., 2008; Volpe, Cannon-Bowers, Salas, & Spector,

1996). A plethora of intervention tools exist such as team training (Entin & Serfaty, 1999; Salas et al., 2001; Smith-Jentsch et al., 2008; Volpe et al., 1996), checklists (Lingard et al., 2005), goal attainment scaling (GAS) (Evans, Oakey, Almdahl & Davoren, 1999), daily goal sheets (Phipps & Thomas, 2007), and debriefing (Tannenbaum & Cerasoli, 2012). However, the present study focused on one specific intervention tool, debriefing because it is widely implemented, economical, and has demonstrated the ability to significantly improve team effectiveness (Tannenbaum & Cerasoli, 2012). Communication is a key element to debriefing, and communication plays a significant role in the issues that many teams face (i.e. adverse events, fire-related incidents, and patient-related deaths), (The Joint Commission, 2004-2013).

Debriefing is a team intervention tool that requires individuals to participate in a discussion about their actions, reflect on past events, receive and deliver feedback as well as create plans for the future in a constructive environment (Smith-Jentsch et al., 2008; Tannenbaum & Cerasoli, 2012). Debriefs do this by guiding individuals or teams through a series of questions that facilitate an environment in which the aforementioned debrief processes can occur (Tannenbaum & Cerasoli, 2012). The debriefing session can occur at many points in time. The current study analyzes debriefing as it occurs in what Marks, Mathieu, and Zaccaro (2001) referred to as a “transitional phase.” A transitional phase is period of time in which the group focuses on goal specification and strategy development, whereas an action phase is characterized by goal accomplishment or strategy implementation (Marks et al., 2001). The transitional phase can occur in-between or after an action phase. In sum, it is important to recognize that the debriefing sessions are occurring between task completion phases (e.g. action phases) and the teams do not receive feedback during the action phases in this study.

Organizations use debriefing because it is a cost effective, time efficient intervention tool (Tannenbaum & Cerasoli, 2012). A recent meta-analysis found that debriefs have also exhibited the ability to increase the effectiveness of teams and small groups (Tannenbaum & Cerasoli, 2012). In a study conducted by Smith-Jentsch et al. (2008) debriefs were found to enhance the effectiveness of teams by enhancing the accuracy of team mental models, teamwork, and team performance outcomes. These findings constitute a further examination into what makes a debriefing session successful.

Support from the literature has provided a more in depth examination of specific debriefing criterion (i.e. certain factors that must occur in a debrief for it to be a successful team intervention tool), (Dismukes, Jobe, & McDonnell, 1997; Dismukes, Field, McDonnell, & Jobe, 1998). These criterion are: team members reflection on past experiences, discussion of what went well and what went poorly, identification of areas that need improvement, discussion of challenges, identification and correction of knowledge gaps, development of a shared understanding of team member roles and responsibilities, and creation of plans that will lead to the future success in the team (Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012). The level of effectiveness of a debrief is contingent on each individual's contribution to the session (Smith-Jentsch et al., 2008). These processes can positively or negatively impact a debrief (Smith-Jentsch et al., 2008). These individual differences are manifested in the form of behaviors that relate to the fulfillment of the debrief criterion. These behaviors are self-correction (Smith-Jentsch, Zeisig, McPherson, & Acton, 1998), acknowledgment of issues and areas that need improvement (Smith-Jentsch et al., 2008), and engagement (Dismukes et al., 1997). Examining the relationship between individual behaviors linked to effective debriefing and their subsequent

relationship with goal orientation could shed light on factors that contribute to the level of success in debriefing.

Goal Orientation

Though we know that debriefing is an effective intervention tool and certain factors exist that impact its level of effectiveness, research has failed to further investigate how individual differences affect debriefing. The literature on individual differences has yielded significant results when applied to team processes, team training, and team performance (Driskell et al., 2010). These findings provide support for the current investigation that extends beyond team training and into another team development intervention: team debriefing. The present study focuses on how the three types of goal orientation: learning goal orientation, performance-prove goal orientation, and performance-avoid goal orientation relate to participants' behavior during a debriefing session and how this impacts the debriefing process.

Goal orientation is defined as an individual's propensity to approach an achievement setting with a goal to either demonstrate or develop their ability (Dweck, 1986; Dweck & Leggett, 1988; VandeWalle, 1997). Goal orientation was originally categorized by two dimensions, performance and learning (Dweck, 1986; Dweck & Leggett, 1988; VandeWalle, 1997). Empirical research conducted by Elliot and Harackiewicz (1996) found that performance goal orientation, when divided into the dimensions labeled *prove* and *avoid*, shared differing relationships with intrinsic motivation levels when faced with a problem-solving task (VandeWalle, 1997). This led to the conceptualization of three types of goal orientation: *learning*, *performance-prove*, and *performance-avoid* (Brett & VandeWalle, 1999; VandeWalle, 1997). Brett and VandeWalle's (1999) study examining goal orientation, content goals, and task

performance found that learning goal orientation was related to skill improvement which led to higher training outcomes. Individuals with a higher level of learning goal orientation possess an increased motivation to learn in scenarios that pertain to training and development (Aguinis & Kraiger, 2009). Furthermore, goal orientation has been linked to feedback, a component of debriefing (VandeWalle, 1997). Learning goal orientation and an individual's willingness to seek feedback were positively correlated (VandeWalle, 1997). Conversely, VandeWalle's (1997) study also found a negative relationship between performance-avoid orientation and feedback seeking. These findings support the current avenue of research exploring an individual's goal orientation, subsequent behaviors, and their impact on debriefing characteristics that comprise an effective debrief. Furthermore, due to the past findings supporting the correlation between learning goal orientation and training and skill development the present research could possess implications for these two common aspects of team interventions.

Hypothesis

Learning goal orientation is defined as an individual's willingness to develop new skills, select challenging tasks, and seek out new opportunities that facilitate new skills or knowledge (Button, Mathieu & Zajac, 1996). It has been found that individuals who are high in learning goal orientation possess an increased drive to expend effort on a task (VandeWalle, 1997), are more open to new experiences, and promote optimism (VandeWalle, 1996). During a debrief there is a need for each team member to engage in self-evaluation and discussion about future actions (Salas et al., 2012). When an individual is willing to evaluate their performance, collaborate with team members, and implement new ideas they are proactively engaged in the debriefing session (Smith-Jentsch et al., 2008). Therefore, in the debriefing context it was expected that individuals who are high in learning goal orientation would engage in self-correction during a debrief.

Hypothesis 1: Learning goal orientation will positively predict self-correcting behaviors during debriefing.

Performance-prove goal orientation is defined as one's inclination to prove their ability to others and be perceived positively by their peers (Button et al., 1996). Individuals who are high in performance-prove orientation focus on demonstrating abilities that they are comfortable with in an attempt to display superiority over others (Brett & VandeWalle, 1999). One of the key elements of a constructive debrief is the acknowledgment of issues and areas that the team needs to improve upon (Smith-Jentsch et al., 2008). One flaw that hinders the effectiveness of debriefing session is the team's tendency to only discuss positive or negative aspects of their task (Smith-Jentsch et al., 2008). An individual who is high in performance-prove orientation will

focus on their success and ability in the attempt to be viewed positively by others (Button et al., 1996).

Individuals who are high in performance-prove goal orientation hold the intrinsic goal to appear superior in comparison to their team members. This led to the investigation of certain behavioral manifestations or strategies that an individual who is high in performance-prove goal orientation may or may not exhibit while also taking into account how these hypothesized behavioral manifestations could impact debriefing. Thus, the literature on impression management tactics revealed behaviors that the current study hypothesizes could be exhibited based on an individual's goal orientation and subsequently affect a debrief. Impression management is a process that individuals engage in to control or manipulate the way they are perceived by their peers. Five main categories of impression management have been identified by Jones and Pittman (1982), but for the purposes of this study only the strategy of "self-promotion" was analyzed. Individuals who engage in the impression management tactic, *self-promotion*, will only discuss positive aspects of their performance in order to receive positive peer reviews (Jones & Pittman, 1982).

Performance-prove orientation describes an individual's inclination to set intrinsic goals, that remain primarily constant over time, hence the taxonomy "trait" goal orientation; whereas the management tactic, self-promotion, focuses on a stratagem implemented as a tool to receive positive peer reviews through the means of promoting their own performance. Therefore, in the debriefing context I expected that individuals who are high in performance-prove orientation would only engage in self-promotion, discuss positive aspects of their tasking, neglect to acknowledge issues, and fail to address areas that need improvement in the debriefing session.

Hypothesis 2: Performance-prove goal orientation will positively predict self-promotion during debriefing.

Performance-avoid goal orientation is defined as an individual's inclination to avoid taking on a new task, learning a new skill, or participating in any activity that could make them appear incompetent to others (Button et al., 1996). Performance-avoid orientation reflects an individual's fear of negative evaluation from others (VandeWalle, 1997). Individuals who are high in avoid orientation exhibit a tendency to avoid performance situations out of fear of appearing incompetent or being evaluated negatively (Button et al., 1996). However, one of the primary goals of a debriefing session is the development of accurate shared mental models among the team members (Smith-Jentsch et al., 2008). This can be problematic, as the development of shared mental models requires that all team members actively engage or "speak up" in the debrief. Edmondson (1999) defines *speaking up* behavior as, "speaking up with observations, concerns and questions that might have contributed to catching and correcting human error before patients are harmed." Therefore, in the context of debriefing it was expected that individuals who are high in performance-avoid goal orientation would "speak up" less during the debriefing session.

Hypothesis 3: Performance-avoid goal orientation will negatively predict speaking up behavior during debriefing.

Methods

Participants

The participants were undergraduate students attending the University of Central Florida. The participants were selected through an online voluntary research participation tool, SONA. The sample size consisted of 69 participants ($N=69$). The subject pool was randomly divided into teams comprised of three participants each resulting in 23 teams ($N=23$). The participants completed a two-part experiment consisting of a set of an online portion, completed individually, and an in-person session, in which they were assigned to teams. The participants were compensated accordingly with either SONA credit or a monetary equivalent.

Procedure

The participants completed a set of pre-measures before participating in the in-person portion of the experiment. When individuals participated in the in-person experimental portion of the study they were assigned roles and informed that they were to engage in the experiment as a team. The roles were randomly assigned to each participant. The roles were labeled: engineer, helm, and weapons. Each participant sat at a different computer and was given specific instruction regarding the role that they were assigned and the aspects of the task that their role was responsible for during the activity.

Study Design

The task the individuals engaged in was a space exploration-themed video game entitled, Artemis. The game consisted of three phases in which the team would complete tasking for which their role was responsible, in the context of the game. These phases were performance

episodes within the game in which the players were actively completing their assigned task, each phase lasting a maximum of twenty minutes. The team was responsible for successfully navigating a space ship and completing different aspects of a specified mission for each phase such as destroying enemy ships, traveling through a nebula, or docking at a base. The tasking assigned to each participant required the team members to be interdependent on one another. For example, if the mission was for the team to destroy an object in the game, then helm would have to steer the ship to face the object, engineering would have to adjust energy levels for the weapons, and weapons would have to fire upon the object. If one of the team members did not complete their task the mission would fail.

The debriefing session was held upon completion of the second phase of the game before the team began the third phase. Participants were first instructed to complete the first portion of the debrief session individually where they were seated. They were then instructed to sit in close proximity to a computer monitor located in the front of the room, away from their stations, that would review their debriefing questions. The participants were then instructed to respond to the questions and discuss their responses with their fellow team members. These structured debriefing questions were facilitated through *DebriefNow*. *DebriefNow* is a web-based tool that, through the use of algorithms, constructs questions that focus on improving team performance by assessing “disagreements, inaccuracies, lack of awareness, or perceived teamwork problems,” (See Appendix B.). Each participant independently responded to questions in *DebriefNow*, and *DebriefNow* then took the participants’ responses and determined topics that were of “high,” “moderate,” and “low” importance. The higher the level of importance of each topic indicated issues that were most prevalent amongst the team. The participants were not aware that their

individual responses to these questions would comprise the topics presented during the debrief until after their responses were recorded. The debriefing sessions were videotaped to capture the team's discussion for data analysis. The duration of the debriefing sessions ranged from five to twenty minutes, respectively.

Measures

The effect of trait goal orientation and behavior exhibited during a debrief was measured through the analysis of the debriefing videos and the self-report measure of trait goal orientation.

Goal Orientation. Goal orientation was measured through the administration of Vandewalle's (1997) 13-item measure of Goal Orientation (See Appendix B.) using a Likert-type response scale (1 = Strongly Disagree through 6 = Strongly Agree) for each item. This survey addressed the three dimensions of goal orientation. This scale had also been validated through research conducted by Vandewalle (1997). The measure analyzed all three dimensions of goal orientation (e.g. learning goal orientation, prove performance goal orientation, avoid performance goal orientation). The survey self-report measure of goal orientation was collected and analyzed.

Learning Goal Orientation. Learning goal orientation was analyzed through the self-report measure, Goal Orientation Scale. The scale included five items that assessed learning goal orientation. The learning goal scale items were tested and yielded high reliability, Cronbach's $\alpha = .72$ ($M = 22.62$, $SD = 2.99$), (See Appendix A. Table 4).

Performance-prove Goal Orientation. Performance-prove goal orientation was analyzed through the self-report measure, Goal Orientation Scale. The scale included four items that assessed performance-prove goal orientation. The performance-prove goal orientation items

of the scale were tested and high reliability was established, Cronbach's $\alpha = .79$ ($M = 16.81$, $SD = 3.67$), (See Appendix A. Table 6).

Performance-avoid Goal Orientation. Performance-avoid goal orientation was analyzed through the self-report measure, Goal Orientation Scale. The scale included four items that assessed performance-avoid goal orientation. The performance-avoid goal orientation scale items were tested and also yielded high reliability, Cronbach's $\alpha = .79$ ($M = 14.68$, $SD = 3.93$), (See Appendix A. Table 8).

Debriefing. The audio-recorded debriefing videos were transcribed and coded line-by-line to indicate the presence of the outcome variables which were: self-correction, self-promotion, and speaking up behavior. The transcription coding was developed through operational definitions of each outcome variable derived from the literature. Subsequent examples of each outcome variable, also from past research, and hypothetical examples that demonstrate how the coding was applied to the current study were also included (See Table 5). Each line of the transcript was analyzed for the presence of each outcome variable. For example: "Why did we miss the dock in the last mission?" self-correction = 1, self-promotion = 0, speaking up behavior = 1. Each variable was designated with a "1" or a "0" to signify the presence or absence of each variable (See Table 5).

Self-correction. According to Wilson, Burke, Priest and Salas (2005) "Self-correction entails team members monitoring their own and other's behavior during an event followed by a non-accusatory discussion of positive and negative examples of teamwork that occurred (after action review), (Blickensderfer, Cannon-Bowers & Salas, 1997). As part of the self-correction process, teams provide, seek, and accept constructive feedback (Smith-Jentsch et

al., 2008). Providing feedback on the positive and negative aspects of the task at its completion (such as after surgery) allows team members to reflect on what was done correctly and what needs to be improved to ensure safety of the workplace.” To illustrate this form of analysis an example of self-correction in the transcript was: "In the next mission we can try to conserve more energy so we don't run out" self-correction = 1, self-promotion = 0, speaking up behavior = 0.

Self-promotion. The operational definition for self-promotion is defined by Jones and Pittman (1982) and validated by Turnley and Bolino (2001) as: "Self-promotion, where individuals play up their abilities or accomplishments to be seen as competent." An example of this variable in the study was: "I've played games like this before, so I know what we can change in order to win the next mission" self-correction = 1, self-promotion = 1, speaking up behavior = 0.

Speaking up behavior. To analyze the outcome variable “speaking up behavior” Edmondson’s definition will be used as the foundation for the transcription coding. Edmondson (2003) defined speaking up behavior as: "speaking up with observations, concerns and questions that might have contributed to catching and correcting human error before patients are harmed." An example of this variable in the study was: "Were we supposed to follow the intrepid?" Self-correction = 0, self-promotion = 0, speaking up behavior = 1.

Analysis

To analyze the direct relationship between the specific goal orientation sub-dimensions: *learning, performance-prove and performance-avoid*, and the outcome variables: *self-correction, self-promotion and engagement*, a multiple regression analysis was run on the data. Specifically,

a hierarchical multiple regression was conducted to control for each of the other types of goal orientation while analyzing each individual hypothesis. To control for confounds such as excessive speaking each outcome variable was transformed into a proportion for analysis. For example: if a participant uttered a total of 100 lines of transcript and they exhibited self-correction in 32 lines then their score for self-correction would be .32. Similarly, if that same participant exhibited speaking up behavior in 10 lines their score would be .10. This method of variable calculation and quantitative communication analysis is supported by Riffe, Lacy, and Fico (1998).

Hypothesis 1 was tested using a multiple regression where self-correcting behavior is the dependent variable and learning goal, performance-avoid goal, and performance-prove goal orientation were the independent variables. The covariates, performance-prove goal and performance-avoid goal variables were entered at the first step and the control variable, learning goal orientation was entered at the second step of the regression. Hypothesis 2 was tested using a multiple regression where self-promotion was the dependent variable and performance-prove goal, learning goal, and performance-avoid goal orientation were the independent variables. The covariates, learning goal and performance-avoid goal variables were entered at the first step and the control variable, performance-prove goal orientation was entered at the second step.

Hypothesis 3 was tested using a multiple regression where speaking up behavior was the dependent variable and performance-avoid goal, performance-prove goal, and learning goal orientation are the independent variables. The covariates, performance-prove goal and learning goal variables were entered at the first step and the control variable, performance-avoid goal orientation was entered at the second step of the regression. The hierarchical method of multiple

regression was selected as the optimum way to analyze the data because it allows for the analysis of multiple outcome variables and multiple predictor variables while accounting for specific relationships within the analyses. Thus, we could determine specific directionality and strength of relationships to examine the hypotheses.

Results

To test the first hypothesis a hierarchical multiple regression was conducted to assess the relationship between learning goal orientation and self-correction, after controlling for performance-prove goal orientation and performance-avoid goal orientation (see Table 1). Preliminary analyses were conducted to ensure there were no violations of the assumptions of normality, linearity, multicollinearity and homoscedasticity. Performance-prove goal orientation and performance-avoid goal orientation were entered at Step 1, explaining 1.4% of the variance in self-correction. After entering learning goal orientation in Step 2, the total variance explained by the model as a whole was 2.7% ($F(3,65) = 0.60, p = .617$). Therefore, learning goal orientation explained an additional 1.3% of the variance ($\beta = -.12, t = -.917, p = .36$) in self-correction after controlling for covariates, (R squared change = .01, F change (1,65) = 0.84, $p = .36$), (See Appendix A. Table 1). In the final model no predictors were statistically significant.

To test hypothesis 2 a hierarchical multiple regression was conducted to assess the relationship between performance-prove goal orientation and self-promotion, after controlling for learning goal orientation and performance-avoid goal orientation (see Table 2). Preliminary analyses were conducted to ensure there were no violations of the assumptions of normality, linearity, multicollinearity and homoscedasticity. Learning goal orientation and performance-avoid goal orientation were entered at Step 1, explaining 4.9% of the variance in self-promotion. After entering performance-prove goal orientation at Step 2, the total variance explained by the model as a whole was 5.0%, ($F(3,65) = 1.15, p = .34$). The performance-prove measure explained an additional 0.1% of the variance in self-promotion ($\beta = .04, t = .267, p = .79$) after

controlling for covariates, (R squared change =.001, F change(1,65) = .71, $p = .79$), (See Appendix A. Table 2). In the final model no predictors were statistically significant.

Similarly, to test the third hypothesis a hierarchical multiple regression was conducted to assess the relationship between performance-avoid goal orientation and speaking up behavior, after controlling for learning goal orientation and performance-prove goal orientation (see Table 3). Preliminary analyses were conducted to ensure there were no violations of the assumptions of normality, linearity, multicollinearity and homoscedasticity. Performance-prove goal orientation and learning goal orientation were entered at Step 1, explaining 0.9% of the variance in speaking up behavior. After entering performance-avoid goal orientation at Step 2, the total variance explained by the model as a whole was 1.0%, ($F(3,65) = 0.22, p = .88$). The performance-avoid goal orientation measure explained an additional 0.1% of the variance in speaking up behavior ($\beta = .04, t = .27, p = .79$) after controlling for covariates, (R squared change =.001, F change(1,65) = 0.08, $p = .79$), (See Appendix A. Table 3). In the final model no predictors were statistically significant.

Exploratory Analysis

Exploratory analyses were run on the data to examine other relationships that may be present. The analyses conducted reflected both observations and past literature. Eppler and Harju (1997) found that undergraduate college students were significantly more inclined towards “learning goals” than “performance goals”. Eppler and Harju (1997) assessed goal orientation on a continuum scale (e.g. learning to performance) rather than the current study that treated goal orientations as independent types. However, the items (e.g. scale items) and definitions of each goal orientation type align with the present study and served as theoretical support for the

exploratory analyses. College students are also heavily judged based on their performance (e.g. grades and GPA). Taking these factors into account two exploratory analyses were run (1) the relationship between learning goal orientation and self-promotion and (2) gender-specific samples (e.g. female only and male only) to test the relationship between learning goal orientation and self-correction. These analyses did not yield significant results. To be thorough, the raw scores (e.g. the raw score of each dependent variable before it was transformed into a proportion) of the dependent variables were also run and no significant relationships were found. Simple regressions were also conducted to further analyze the data, however no significant results were discovered.

Discussion

Summary

Though the hypotheses were not supported and exploratory analysis did not reveal any other significant relationships amongst the data, the present study contained both theoretical and practical implications. Null findings may have resulted do to the constraints imposed by the controlled laboratory setting and student sample. The present study examined goal orientation, which is a motivational driver. The participants were only compensated for their participation not their performance outcomes, which may have influenced their motivational drive to set specific goals. Performance is the primary way college students are assessed and if that premise is confounded or violated by the environment (i.e. controlled laboratory setting) then their behavior during the experiment may not be generalizable to the population.

Strengths

Trait goal orientation was measured online before participating in the in-person laboratory task. Debriefing sessions were measured during the physical experiment. Multiple measurement methods were used to avoid common method bias. The self-report measure of trait goal orientation and individual behavior were assessed through coded debrief transcriptions. The transcripts were coded line-by-line to indicate the presence of the outcome variables and the subsequent analyses were run on the data.

Theoretical and Practical Implications

Examining individual differences in debriefing sessions could build the foundation for future research in the area of debriefing and behavior as they relate to an individual's personality

traits. This research could be useful in the area of team development. Past literature supports that individual differences affect team processes, team training, and team performance (Driskell et al., 2010). The literature also supports that debriefing is a widely used and effective team intervention tool (Tannenbaum & Cersoli, 2012).

Though no significant relationship was found, this study contains implications for future research in the area of personality traits and their relationship with successful debriefing behaviors. Based on the results of the current study the question of debrief facilitation became salient. Was *DebriefNow*, a highly structured debrief facilitation tool, able to compensate for these individual differences consequently encouraging these positive debriefing behaviors (i.e. self-correction) when team members engage in debriefing? Another implication of the present study is the development of measures for the analysis of team interventions that require group discussion. A new method of analysis was employed to look at debriefing through quantitatively analyzing the communication. This method of analysis holds implications for future analysis of debriefing sessions through capturing communication data and quantitatively assessing behaviors.

Limitations

Certain limitations were present that could have impacted the study. The study was limited to a student sample. The simulated environment in which their performance was not being evaluated with “real-world” consequences or rewards could have confounded students’ intrinsic personality traits such as goal orientation. Students are also naturally higher in learning goal orientation, which is only heightened by their academic environment, which could have accounted for certain restrictions in the data.

The present study analyzed data on the individual level which, due to the nature of the experiment, could have restricted the results and kept the proposed hypotheses from reaching significance. Conducting a multilevel analysis to examine the data on the team-level as opposed to the individual level may paint a clearer picture of the relationship between goal orientation and the outcome variables. Conducting this level of analysis was not possible given the current constraints of the study. Range restriction was another issue present within the data. The range was 0.4-6.5, which restricted the variance in the sample, forestalling the ability to detect an effect. The majority of the sample rated high in learning goal orientation with a mean of 4.70 ($M=4.52$, $SD= .60$) on a scale of 1 to 6, which could have impacted the detection for a significant effect (See Appendix A. Table 10).

The use of *DebriefNow* to facilitate the debriefing sessions could have impacted participants' inclination to "speak up." *DebriefNow* generated questions that stimulated discussion and brought up issues that the team experienced, lessening the need for individuals to speak up about issues or areas of confusion. It is also important to note that for the purposes of the present study only one coder could conduct the transcript coding. Future research should employ double-coding to establish reliability of ratings when coding for the presence of the outcome variables. Lastly, the participants may have behaved differently in a group discussion if they were not strangers. In the present study the participants had not met each other or interacted with each other in a team setting in the past. So the level of familiarity may have had an effect on behavior.

Future Research

Future multilevel analyses would illustrate a clear picture of the resulting data. The next step would be to move beyond the individual level and analyze the team level, while also accounting for gender and testing for significant relationships between each sub-dimension of goal orientation and the outcome variables. The key theme to the present results and implications for future research are to focus on the relationship that individual differences have with behaviors that are present in a successful debrief.

The social learning theory literature contains elements that may be considered for future research (Kanfer, 1990); specifically the self-efficacy construct should be taken into account. Self-efficacy has been found to influence goal choice, goal commitment, and task performance (Locke, Frederick, Lee, & Bobko, 1984). The literature has also supported the influence of low levels of self-efficacy on the moderating effects of feedback and an individual's effort expended on a task (Bandura & Cervone, 1986). This directly relates to elements contained within the present study. Bandura and Schunk (1981) also suggest that if their performance is not directly being assessed or rewarded, this could affect the individual's level of self-efficacy in certain environments thereby negatively influencing performance outcomes. Hence, when developing future research on individual differences in debriefing, participant's levels of self-efficacy may be examined.

Appendix A: Tables

Table 1*Results of Learning Goal Orientation on Self-Correction*

Model	Beta	t	Sig.	R ²	R ² Change
¹ (Constant)		5.69	.00		
PPGO	-.07	-.51	.61		
PAGO	-.06	-.45	.66		
² (Constant)		4.14	.00		
PPGO	-.03	-.16	.87		
PAGO	-.09	-.58	.56		
LGO	-.12	-.92	.36	.018	.018

Table 2*Results of Performance-Prove Goal Orientation on Self-Promotion*

Model	Beta	t	Sig.	R ²	R ² Change
¹ (Constant)		-.38	.71		
PAGO	.10	.82	.42		
LGO	.20	1.63	.11		
² (Constant)		-.39	.70		
PAGO	.08	.54	.59		
LGO	.18	1.42	.16		
PPGO	.04	.27	.79	.02	.02

Table 3*Results of Performance-Avoid Goal Orientation on Speaking Up Behavior*

Model	Beta	t	Sig.	R ²	R ² Change
1 (Constant)		1.92	.06		
LGO	-.09	-.73	.47		
PPGO	.00	.00	1.00		
2 (Constant)		1.73	.09		
LGO	-.09	-.67	.50		
PPGO	-.02	-.15	.88		
PAGO	.04	.27	.79	.001	.001

Table 4

Learning Goal Orientation Reliability Statistics

Cronbach's Alpha		
Based on		
Cronbach's Alpha	Standardized Items	N of Items
.715	.716	5

Table 5

Learning Goal Orientation Reliability Scale Statistics

Mean	Variance	Std. Deviation	N of Items
22.62	8.956	2.993	5

Table 6

Performance-Prove Goal Orientation Reliability Statistics

Cronbach's Alpha		
Based on		
Cronbach's Alpha	Standardized Items	N of Items
.786	.789	4

Table 7

Performance-Prove Goal Orientation Reliability Scale Statistics

Mean	Variance	Std. Deviation	N of Items
16.81	13.441	3.666	4

Table 8

Performance-Avoid Goal Orientation Reliability Statistics

Cronbach's Alpha		
Based on		
Cronbach's Alpha	Standardized Items	N of Items
.787	.788	4

Table 9

Performance-Avoid Goal Orientation Reliability Scale Statistics

Mean	Variance	Std. Deviation	N of Items
14.68	15.426	3.928	4

Table 10*Trait Goal Orientation Measure Descriptive Statistics*

		LGO	PGO	AGO
N	Valid	68	68	69
	Missing	3	3	2
Mean		4.52	4.20	3.67
Std. Deviation		.60	.92	.98

Table 11

		Correlations					
		SC_P	SP_P	SU_P	LGO	PGO	AGO
SC_P	Pearson Correlation	1	-.900**	-.500**	-.134	-.112	-.115
	Sig. (2-tailed)		.000	.000	.270	.356	.341
	N	73	73	73	70	70	71
SP_P	Pearson Correlation	-.900**	1	.072	.203	.141	.118
	Sig. (2-tailed)	.000		.545	.093	.244	.327
	N	73	73	73	70	70	71
SU_P	Pearson Correlation	-.500**	.072	1	-.095	-.022	.029
	Sig. (2-tailed)	.000	.545		.436	.855	.811
	N	73	73	73	70	70	71
LGO	Pearson Correlation	-.134	.203	-.095	1	.198**	-.194**
	Sig. (2-tailed)	.270	.093	.436		.003	.003
	N	70	70	70	232	230	232
PGO	Pearson Correlation	-.112	.141	-.022	.198**	1	.562**
	Sig. (2-tailed)	.356	.244	.855	.003		.000
	N	70	70	70	230	235	234
AGO	Pearson Correlation	-.115	.118	.029	-.194**	.562**	1
	Sig. (2-tailed)	.341	.327	.811	.003	.000	
	N	71	71	71	232	234	236

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

Table 12*Transcription Coding and Communication Analyses*

Term	Definition	Example	Self-Correction	Self-Promotion	Speaking Up
Self-correction (positively predict)	Self-correction is defined by (Smith-Jentsch, et al., 1998) as, "Team members must take responsibility for evaluating their own performance, diagnosing root causes of performance problems, identifying solutions, and planning for future tasks."	"In the next mission we can try to conserve more energy so we don't run out."	1	0	0
		"In the next mission we can try to conserve more energy so we don't run out."	1	0	0
Self-promotion (positively predict)	Jones and Pittman's (1982) definition, validated by Turnley and Bolino (2001): "Self-promotion, where individuals play up their abilities or accomplishments to be seen as competent."	"I don't think we had any problems."	0	1	0
		"I've played games like this before, so I know what we can change in order to win the next mission."	1	1	0
Speaking Up Behavior (negatively predict)	Speaking Up behavior is defined by Edmondson (2003) as "speaking up with observations, concerns and questions that might have contributed to catching and correcting human error before patients are harmed."	"Where were we supposed to dock in the last mission?"	0	0	1
		"We shouldn't have used all our energy trying to go faster."	1	0	1

Appendix B: Trait Goal Orientation Measure

Scale

1. (Strongly Disagree)

through

6. (Strongly Agree)

Items

Please answer the following questions about your learning style using the provided response scale.

Learning Goal Orientation

1. [TRAITGO_1] I am willing to select a challenging work assignment that I can learn a lot from.
2. [TRAITGO_2] I often look for opportunities to develop new skills and knowledge.
3. [TRAITGO_3] I enjoy challenging and difficult tasks at work where I'll learn new skills.
4. [TRAITGO_4] For me, development of my work ability is important enough to take risks.
5. [TRAITGO_15] I prefer to work in situations that require a high level of ability and talent.

Prove (Performance Goal) Orientation

1. [TRAITGO_6] I'm concerned with showing that I can perform better than my coworkers.
2. [TRAITGO_7] I try to figure out what it takes to prove my ability to others at work.
3. [TRAITGO_8] I enjoy it when others at work are aware of how well I am doing.
4. [TRAITGO_9] I prefer to work on projects where I can prove my ability to others.

Avoid (Performance Goal) Orientation

1. [TRAITGO_10] I would avoid taking on a new task if there was a chance that I would appear rather incompetent to others.
2. [TRAITGO_11] Avoiding a show of low ability is more important to me than learning a new skill.
3. [TRAITGO_12] I'm concerned about taking on a task at work if my performance would reveal that I had low ability.
4. [TRAITGO_13] I prefer to avoid situations at work where I might perform poorly.

Appendix C: DebriefNow Questionnaire

After completing Round 2 of the Part II laboratory study and corresponding self-report emergent state and reactions measures (as outlined in this document), the participants will engage in a debriefing exercise. Using the DebriefNow website portal (www.debriefnow.com), they will first answer a series of questions asking them about their recent team experience. After team members have answered the questions, DebriefNow will use sophisticated algorithms to identify key issues for the team which will appear in our customized discussion guide. For instance, it will determine where the team members disagree on the team's Round 2 experience or where everyone agrees that the team did poorly. This discussion guide will be used by the team members to discuss ways to improve their performance in Round 3.

Sample questions include:

1. I have a clear understanding of our team's *goals* and what the team is expected to accomplish.
2. Our team has a *clear, logical plan* for ensuring work gets accomplished.
3. Members of our team maintain an awareness of the "*big picture.*"
4. We do an effective job of *sharing information* with one another between meetings
5. We track and use the right *information* and *data* to make effective decisions.
6. How well does our team *uncover obstacles* to team effectiveness?
7. All team members fully understand what they and others *are supposed to do* on the team (e.g., no role confusion).
8. To what extent do our team members *support and assist* one another?
9. There is a high level of *trust* among members of our team.
10. As a team, we are sufficiently *innovative and creative* (e.g., we generate, stimulate, and are open to new ideas).

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