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The Role of Counterfactual Thinking in Group Decision Making

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Abstract

The paper attempts to discuss the role of counterfactual thinking in the context of group decision-making. The paper presents a theoretical framework postulating relationships amongst different identified variables in the form of propositions in order to strengthen the arguments in favor of the theoretical framework. The paper argues that different types of counterfactual experiences i.e. self-referent and other-referent counterfactual experiences as well as different directions of counterfactual experiences i.e. upward and downward counterfactual experiences, are likely to activate a counterfactual mind-set which leads to increased information search and sharing in groups, thereby affecting the accuracy of group decision making outcome, i.e. decision accuracy. Moreover, by employing the concept of cognitive complexity, it is proposed that dispositional factors are also likely to play an important role in information search and sharing and consequent group decision-making accuracy.

The Role of Counterfactual Thinking in Group Decision Making

Introduction

Counterfactual thinking or "what might have been" scenario is one of the most pervasive phenomena taking place in human life. It is rather common place that individuals regret the choices they have made and the actions they have taken. Thinking about what might have been, about alternatives to our own past choices and actions, is central to human thinking and emotion. Such thoughts are called counterfactual thoughts.

Counterfactual thoughts are mental representations of alternatives to past events, actions, or states (Byrne, 2007; Epstude & Roese, 2008; Roese, 1997). It can be either *upward counterfactual* i.e. better alternatives as compared to reality, leading to regret or *downward counterfactual* i.e. worse alternatives as compared to reality, leading to the feeling of relief. Attention to and consideration of alternatives to reality play a central role in our understanding of events. The ability to entertain counterfactual possibilities emerges quite early in life (normally by the age of 2) and seems to manifest once the child masters the lexical skills to express subjunctive ideas of "if only" (German & Nichols, 2003; Beck, Robinson, Carroll, & Apperly, 2006; Perner, Sprung, & Steinkogler, 2004). Moreover, previous researches have shown that counterfactual reasoning is common across various nations and cultures (Gilovich, Wang, Regan, & Nishina, 2003), although the particular focus of those counterfactuals revealed different priorities inherent in diverse cultures (Chen, Chiu, Roese, Tam, & Lau, 2006). According to Hofstadter (1979) counterfactual thinking is a vital property of intelligence itself. Besides that, counterfactuals produce consequences that are both beneficial and aversive to the individual (Roese, 1997).

Over the past several decades, research on counterfactual thinking has demonstrated a wide array of judgmental consequences on being exposed to counterfactual events. Past research, however, has focused quite exclusively on judgments related to counterfactual events themselves, with particular attention to

emotional reactions and causal judgments. For instance Zeelenberg and Pieters (2007) demonstrated the impact of counterfactual thinking on judgment and decision making by focusing more on the emotion termed as *regret*. However, little investigation has been made if and how counterfactual mind-set affects future, unrelated tasks of information search and sharing along with decision making in groups. The past literature on the effects of priming reveals that, both social judgments of others (Higgins, Rholes, & Jones, 1977) as well as one's own actions can be influenced by discrete, although relevant constructs incidentally stimulated in a preceding event (Galinsky & Moskowitz, 2000; Dijksterhuis et al., 1998).

The accuracy of decision making, to a great extent depends on sharing and coordination of critical pieces of information, particularly when decision is being made by a group of individuals and not just a single individual (Kiesler & Spoull, 1982). It is evident that in general, complex decisions, be it related to economic issues for instance, whether and how much to raise interest rates to the issues related to law for example, whether to accuse or convict a person to the martial issues like, when and where to attack, are frequently made by a group of individuals. If a decision making group does not have the access to full information it requires then it might engage in a biased information search, hence leading to sub-optimal decisions. It is believed that by sharing of information, the organization will benefit in the long run because the prosperity of any organization depends on its capability to synchronize amongst various functional divisions by being able to pool significant information among diverse units. Failure to share information can impede an organization's decision accuracy, leading to reduced profitability, besides that it can also lead to devastating damage to assets and loss of life in extreme cases. A particularly catastrophic instance regarding this was described in the formal congressional report concerning the September 11 terrorist attacks on World Trade Centre and Pentagon, which implicated insufficient sharing of information as a possible factor. It was claimed by the House and Senate committees on the federal intelligence agencies that because of turf conflicts between the Central Intelligence Agency as well as Federal Bureau of Investigation, and incompetence on the part of administration, pertinent pieces of information remained inaccessible, thus

decreasing the possibility of discovering a pattern in the terrorist clues (Senate Select Committee on Intelligence, & The House Permanent Committee, 2002).

The above instance clearly indicates that team members should find ways to congregate and integrate relevant information from one another in an effective manner to make an unbiased decision. However, group discussions are primarily symbolized by their propensity to emphasize on shared instead of unshared information. It has been found in previous studies that groups are inclined to focus on the information known to each individual as compared to what only a few members know (Stasser & Stewart, 1992; Larson et al., 1994; Winquist & Larson, 1998). This tendency indicates that group decisions are frequently biased towards shared information. Hence, building on the previous studies (Stasser & Stewart, 1992; Galinsky & Kray, 2004) it is suggested in this paper, that thinking about alternatives to past events ("if.....only" counterfactual thoughts) can be instrumental in resolving the biased information search and sharing in groups. Therefore, it is posited in the present work that stimulating different types and directions of counterfactual mind-sets is likely to amplify the sharing and search of exclusive information and eventually improve decision accuracy in teams, on the premise that counterfactual thinking increases the tendency for individuals to be more aware of relevant alternatives and engage in mental simulation during subsequent decision making (Galinsky & Moskowitz, 2000), thereby increasing information sharing and search along with improving decision accuracy.

The Theoretical Framework

We propose here a theoretical framework of relationships between independent, mediating, moderating and dependent variables as shown in Figure 1 below. The framework integrates counterfactual thinking, cognitive complexity in group decision making, further leading to accurate decision making. The model or framework anticipates positive relationship between self-referent/other-referent counterfactual experiences and group decision accuracy, although this relationship is anticipated to be high in the case of self-referent counterfactual experiences as compared to other-referent counterfactual experiences. Both self-referent and other-referent types of counterfactual experiences are expected to generate counterfactual thoughts which are

likely to activate counterfactual mind-set. Counterfactual mind-sets increase the propensity to share and search for more relevant information, thus enhancing decision accuracy in groups.

Moreover, the framework also takes into account the effect of direction of counterfactual experiences i.e. upward and downward counterfactual experiences. Again the model anticipates positive relationship between both upward and downward counterfactual experiences and group decision accuracy. However, it is expected that upward counterfactual experiences will have high positive relation with group decision accuracy as compare to downward counterfactual experiences.

Finally, the framework considers the potential moderating role of cognitive complexity affecting the strength of relationship between relevant information search and sharing as well as group decision making accuracy. We discuss below the rationale for each of the independent variables and moderating variables on the group decision accuracy as the outcome variable.

Insert Figure 1 about here

Counterfactual Mind-Sets and Group Decision Making Accuracy

Counterfactual thoughts are frequently expressed as conditional propositions that link an antecedent and a consequent event and are often depicted by an expression of "if only..." (Roese, 1994). Individuals recreate their past through these counterfactuals. Previous studies revealed that counterfactual thoughts are frequently triggered when an event nearly occurred (Kahneman & Varey, 1990) or when antecedents to that event were salient in one way or another (Roese, 1997; Kahneman & Tversky, 1982). Moreover, thinking about "what might have been" can affect our future approach towards problem solving and performance (Roese, 1994), even in an unrelated context (Galinsky & Moskowitz, 2000).

Stasser and Stewart (1992) argued that framing a task as a problem with a single answer enhanced the sharing of exclusive information as compared to framing the task as a subjective, critical one. Framing is explained as a process of structuring, integrating and interpreting information cues in a given event (Lewicki, Saunders & Barry, 2006). In the present research, it is proposed that this awareness of alternative and converse realities that result from exposure to counterfactual scenarios can exert an influence on subsequent information search and sharing behavior as well as judgment in groups by activating a mental simulation mind-set in which various alternatives are considered. Galinsky and Moskowitz (2000) argued that salient counterfactual raises awareness of multiple options which enables individuals to make better decisions, possibly because of exposure to a counterfactual mind-set in a previous, unrelated context. This led people to ask more hypothesis-disconfirming questions, increased cognitive flexibility and assisted in overcoming functional fixedness, apparently by increasing the accessibility of alternative hypotheses.

There is enormous body of research on counterfactual mind-set focused on individual decision making (Galinsky & Moskowitz, 2000; Wolf, 2010). The fact that counterfactual mind-sets can influence individual decision making does not necessarily suggest that it will have similar impact on group decision making as well. In reality, researches have shown that, manipulations which influence individual decision making do not affect group decision making on several occasions, rather have effects contradictory to the ones they have on individual decision making. For instance, accountability manipulations was found to have favorable impact on individual decision making (Tetlock, 1992), whereas damaging effects on group decision making (Stewart, Billings & Stasser, 1998). Moreover, it was also noticed that creating group norms in one context had more pronounced impact when the same group involved in discussion and arrived at a judgment unlike when every group member took a similar decision individually (Postmes, Spears & Cihangir, 2001).

It is proposed in the present research, that self-relevant and upward directed counterfactual thoughts or experiences can be instrumental in having high positive impact on decision making as compared to other-relevant and downward directed counterfactuals. Self-relevant counterfactuals may do well at producing mental

simulations and the consideration of alternatives because of the fact that this type of counterfactual is more self-critical and self-implicating than other types which is likely to lead to more upward counterfactuals. Generation of upward counterfactuals is expected to result into "regret" and negative affect. Negative (as opposed to neutral) affect may act as a signal that goal progress is insufficient or problematic, whereas positive affect signals adequate goal progress (Schwarz, 1990). Moreover, negative affect may act as a general alarm or signaling system, which then heightens a range of cognitive activity (Lieberman, Gaunt, Gilbert, & Trope, 2002). Besides that, the generation of self-focused, upward counterfactual comparisons requires more complex cognitive processing of the event than do other comparisons. For self-focused thoughts, there is a direct link from an upward comparison to a behavioral intention and, eventually, to changed behavior, although for other-focused thoughts this is not the case (Morris & Moore, 2000). Self-relevant thoughts that are upward versus downward may also produce divergent effects, given that rumination and recrimination are likely to follow from self-relevant upward counterfactual thinking but not self-relevant downward counterfactual thinking (Sherman & McConnell, 1995). In a laboratory experiment, students who reacted to outcome feedback on the first round of a puzzle task with upward counterfactual comparisons (as opposed to downward comparisons or no comparisons) were more likely to show improved performance on subsequent rounds of the task (Roese, 1994). We therefore propose:

Proposition 1a: Groups with self-relevant counterfactual thoughts will enable the group to perform better in terms of increased information sharing and search along with decision accuracy, as compared to groups with other-relevant counterfactual thoughts.

Proposition 1b: Information sharing and search as well as decision accuracy will increase in the upward counterfactual groups as compared to downward counterfactual groups.

Counterfactual Thinking and Information Search and Sharing in Groups

According to probability estimation, such items are statistically more likely to be revealed during group interactions that are known to more team members. Since, a

larger percentage of the entire information accessible to team members consists of the shared information and so a tentative hypothesis might be formulated by them which is consistent with that common information, as not only individuals but groups are prone to verify their hypotheses by testing them in a biased manner (Schulz-Hardt, Frey, Luthgens & Moscovici, 2000), as a result unshared information is least likely to be attended. However, if unshared information is noticed, shared information is still paid more attention (Larson, Foster-Fishman & Keys, 1994), this signifies a motivational ground for biased information sampling. Janis (1982) reports a similar decision making bias known as “group think”, which is a biased decision making process in which pressure toward consensus takes precedence over other concerns as well as the quality of the decision. Group think is so powerful that it can direct group members to remain silent even if they possess useful exclusive and private information.

Research literature on group problem solving (Stasser, Taylor, & Hanna, 1989; Kray, Galinsky & Wong, 2006) reveals that though efforts have been made to increase information sharing in groups but results were not very positive. The propensity of teams to recede from sharing exclusive and potentially disconfirming information is robust. It is very certain that to achieve the highest quality decision, adequate information sharing is extremely important. Scholars have investigated methods that foster the discussion of exclusive information and decrease biased information sharing by modifying the context and structure of group discussion, but the bias was found quite resistant to such intercessions. It was established that making a decision appear more significant, has a counterproductive effect and resulted into reducing the rate of information sharing in groups (Larson et al., 1994). Furthermore, separating the discussion of information from the final decision is unsuccessful in weakening the bias (Stasser, Taylor & Hanna, 1989) and increasing the size of the group (Stasser et al., 1989) also failed to decrease biased focus on shared information. Stewart et al., (1998) showed that, increasing accountability by demanding a team to defend its decision in presence of others in fact amplifies the emphasis on shared information.

Finally Stasser and Stewart (1992) could show some positive results, they proposed that framing a task as a problem having a single answer enhanced the sharing of exclusive information as compared to structuring the task as a subjective or critical

one. Stasser and Stewart (1992) also determined that a problem-solving frame promoted more focus on significant pieces of information, as opposed to a subjective frame, due to which the groups looked for consensus so as to attain closure on the task. Postmes, Spears and Cihangir (2001) reported that constructing group norms that encouraged critical thinking and questioning as opposed to group norms that promoted consensus, led to greater acknowledgement of exclusive information and higher precision in decision making. Still there is lack of conclusive findings on this issue and the precise nature of the process remains unclear requiring systematic investigation. Hence, it is anticipated that counterfactual mind-sets, similar to group norms (Postmes et al., 2001), can be stimulated prior to as well as independent of a group information sharing and decision-making session. Given that activating counterfactual thinking encourages an enduring cognitive orientation (Galinsky & Moskowitz, 2000), it is anticipated that counterfactual stimulation will improve group information search and sharing as well as the decision accuracy, even when the information sharing and decision making context is functionally not related to the context in which counterfactual thoughts were actually triggered. We therefore propose:

Proposition 2: Self-relevant upward counterfactual groups will share, search as well as discuss more critical information as compared to other-relevant upward counterfactual groups.

Counterfactual Thinking and Group Decision Making

Epstude and Roese (2008) define counterfactuals as evaluative thoughts about imagined alternatives to past events. They are epitomized by the phrase “what might have been” and may serve the important beneficial functions of behavior and mood regulation. Counterfactual thoughts tend to be elicited by events that nearly occurred (Kahneman & Varey, 1990; Miller & McFarland, 1986) or when an unusual sequence of events led to a particular outcome (Kahneman & Tversky, 1982; Kahneman & Miller, 1986). Not just the considerations of alternatives recreates the past, it also makes a powerful impact on how individuals perform in the future. Experiencing an event in which a salient counterfactual exists as well as in which an incident almost or might have happened can affect succeeding performance (Galinsky, Seiden, Kim, & Medvec,

2002; Roese, 1994). In the similar vien, Roese (1994) demonstrated that instructing participants to generate counterfactual thoughts regarding how their performance could have been better on a preceding anagram task resulted into improved performance on a subsequent anagram task. Counterfactual mind-sets have been shown not only to impact individual decision making, but also appear to help groups overcome coordination problems such as sharing unique information (Galinsky & Kray, 2004). Counterfactual thinking has also been shown to increase the scrutiny of persuasive message content (Krishnamurthy & Sivaraman, 2002), enabling decision makers to distinguish between strong and weak arguments. Still not many researchers have explored whether different cognitive orientations can be activated prior to and independent of group information search and sharing including decision making. Thus it is proposed that generating different types and directions of counterfactual thought in one context can affect subsequent information search and sharing along with decision making accuracy in groups.

Group decision making provides a mechanism for channeling individual members' knowledge into productive organizational outcomes. The idea that group decisions are more informed than individual decisions has considerable intuitive appeal. Groups unites individuals having unique viewpoints, knowledge, as well as competence which, if pooled effectively, must be capable of accomplishing better results as opposed to individual decisions, or the average of a set of individual decisions. Information exchange process is necessary for effective team performance. However, the results have been used to call into question the nature of group interactions, with a number of researchers pointing out the negative implications of failures to share unique knowledge or information and solve the hidden profile problem (Dennis, 1996; Thomas-Hunt, Ogden & Neale, 2003) in particular and decision making accuracy in general, on the other hand, researches have shown that activating a counterfactual mind-set can improve individual problem solving (Galinsky & Moskowitz, 2000), and facilitate performance on tasks that require convergent thinking (tasks that have only one solution, as opposed to divergent tasks that involve the generation of multiple ideas) (Kray et al., 2004). We therefore propose:

Proposition 3: Self-relevant upward counterfactual groups will make decisions more accurately as compared to other-relevant upward counterfactual groups.

Cognitive Complexity and Information Search and Sharing and Decision Making in Groups

The success of any organization is basically dependent upon the accurate decision making practices. Rise in intensity of competition and rapid technological growth has pressured organizations to utilize work groups and teams largely in pursuit of this their organizational objectives (Sundstrom et al., 2000). Growing organizations perform decision tasks that are no longer simple and repetitive, rather they are more intricate and complex and beyond the management and capability of a single individual. Teams or work groups play an important role in solving the increasing complexity of a task because numerous group tasks still include an assortment of cognitive processes (for instance, critical thinking, problem solving, judgment, and decision making) and also involve various types of cognitive demands, for example, pooling and organizing assets or efforts of individual members (Cooke et al., 2003). Subsequently, the comprehension of team level cognition can pick up vitality to understand group behavior and practices in a better way so that performance variations between teams can be explained.

Generally, in context of decision making, accurate decisions cannot be made without sufficient amount of information (Kiesler & Spoull, 1982). Hence, the specific manner in which a group seeks out as well as handles information is of immense importance in developing a framework for accurate group decision-making. In order to make accurate decision few scholars have recognized the significance of cognitive complexity, according to which organizational problems are considered from multiple perspectives (Bartunek, Gordon, & Weathersby, 1983). Although, the concept of cognitive complexity was originally developed to illustrate the information processing distinctiveness among individuals (Driver, 1987), in the present work it is considered relevant to extend its moderating effects on information sharing and search as well as group decision accuracy.

Dispositional factors, therefore, are very likely to play an important role in the manner individuals make decisions. Scholars have expansively investigated numerous

dispositional variables which affect decision making choices for example, tolerance for ambiguity, self-efficacy, risk taking and cognitive motivation (Markman, Balkin & Baron, 2002; Forbes, 2005). In spite of, common scholarly conformity that the majority of these dispositional characteristics can be traced back to differences in information processing (Iederan, Curseu & Vermeulen, 2009), the role of group cognition in decision making and counterfactual thinking remains somewhat underexplored. Hence, the role of cognitive complexity in decision-making is considerably important to enhance our understanding in this area.

Cognitive complexity characterizes the complexity of an individuals' cognitive structure. Cognitive complexity is defined by two main structural components that are "differentiation and integration". Differentiation represents the capability to perceive numerous dimensions in a stimulus instead of a single dimension only, whilst integration indicates the capability to identify various relations amongst different characteristics (Schroder, Driver, & Streufert, 1967).

However, previous studies have tried to investigate cognitive complexity as a predictor of human performance in a broad range of domains for instance, predictive accuracy (Bieri, 1955; Crockett, 1965), interpersonal attraction as well as sociability (Adama-Webber, 2001), communication (Burleson & Samter, 1990), attribution (Streufert & Nogami, 1984), leadership (Zaccaro, 2001), negotiation (Pruitt & Lewis, 1975), creativity (Quinn, 1980), and decision making (Choi, 2010; Gruenfeld, 1995; Iederan, Curseu & Vermeulen, 2009). But the majority of the studies focused on investigating the effects of cognitive complexity at the individual level task performance (Hendrick, 1979; Stone, Sivitanidee, & Magro, 1994), and not the group or team level task performance.

Cognitive complexity suggests that individuals vary in their capacity to process information as per their level of cognitive complexity for instance; individuals who are more cognitively complex will be inclined to seek out for a wider range of information, cautiously consider all the pertinent factors related to an issue and then amalgamate them into a coherent position and utilize extensive information to arrive at a conclusion, while less complex individuals are likely to utilize comparatively less information to

make a decision and consider only one perspective and maintain it with dogmatic obstinacy (Driver, 1987; Gruenfeld & Hollingshead, 1993). Few studies have further confirmed that individuals high on cognitive complexity interpret information in a multidimensional way and incorporate information more competently, as compared to people low on cognitive complexity, (Schroder, Driver, & Streufert, 1967). Accurate decision making is difficult to be achieved without sufficient amount of information. Kiesler and Spoull (1982) have proposed that the quality of a decision is a function of the number of options available in a particular decision-making context. One of the focal ideas in cognitive complexity theory is that individuals vary in their information-seeking behaviors when they perform different cognitive activities like, problem solving, decision making, and planning. These activities are principally dependent on their cognitive complexity levels (Driver, 1987). Moreover, cognitively complex decision-makers are capable of synthesizing the relationship of different information. People high on cognitive complexity are likewise more likely to be logical in decision making tasks and invest more time so as to analyze the information in sight (Curseu, 2006).

Organizational decision making involves intense environmental complexity, uncertainty, and volatility (Cyert & March, 1963). Therefore, the cognitive complexity of the decision maker is a central requirement for a successful decision-making process. Therefore we propose:

> *Proposition 4: Groups high on cognitive complexity will share and seek for more information as well as make more accurate decisions as compared to groups low on cognitive complexity*.

Discussion and Implications

In this paper, an attempt has been made to address how counterfactual thinking and cognitive complexity affect group decision making. We also make an effort to formulate a theoretical model (figure 1) to integrate these contextual and dispositional variables and present a comprehensive picture of decision making in groups. In order to do that we develop a set of propositions regarding the independent, mediating and moderating effects of pertinent variables on group decision accuracy.

The present work has implications for researchers as well as practitioners. First, the proposed model, after empirical testing and validation will bridge some important gaps by postulating the role played by counterfactual thinking and cognitive complexity in information search and sharing as well as decision making literature. Empirical research will extend our understanding of information sharing in groups and counterfactual thinking in a number of important ways. It will bring to our awareness whether the activation of different types of counterfactual mind-set at the group level has different effects on group performance in terms of information search and sharing along with decision making, which can help us provide explanation for the tendency of groups to be unduly influenced by commonly held information. Second, most of the research on counterfactual thinking and decision making has focused on other-referent and individual decision making, the present work will be an extension in the field of counterfactual thinking and decision making by incorporating self-referent and group decision making. It would also clarify the beneficial effect of counterfactual thinking on information sharing and search as well as decision making. Third, it is also suggested that dispositional factors are also likely to have an impact on the process of information search and sharing as well as complex group decision making. The present paper argues that cognitive complexity will enhance the relationship between information search and sharing along with group decision making. Thus our work attempts to present a broader picture of group decision making by incorporating all the pertinent variables that were neglected in the past studies.

Managers frequently encounter difficulties related to team construction, which in turn positively affects group decision-making accuracy. Therefore, the issue we examine is practically relevant for managers. Managers awareness that counterfactual mind-set activation at the group level is beneficial for enhanced performance due to analytic mental simulations associated with it, can enrich their implicit understanding of how the teams would perform in a succeeding task, even if task is an unrelated one. Moreover, empirical study will reveal that group cognitive complexity positively affects group decision-making accuracy, thus managers can benefit from this information and create more efficient work teams by selecting individuals having particular personality

traits. Therefore, selection of the team, designing of the group, and training of the team can be developed accordingly.

Conclusion

This paper focused and strengthened the current scholarly dialogue on counterfactual thinking and its role in enhancing group decision accuracy. Activating a cognitive mind-set that makes thoughts about alternative realities salient, might serve as a useful cue for groups to share and consider all of the information that their members' posses and this approach can have positive effects on group information search and sharing as well as decision making in groups. This notion reverberates Hackman's (2002) explanation of efficient teams as self-correcting performance units. Therefore, exploring how activating different types and directions of counterfactual thoughts and cognitive complexity can impair or facilitate group decision making task would certainly be a worthwhile pursuit.

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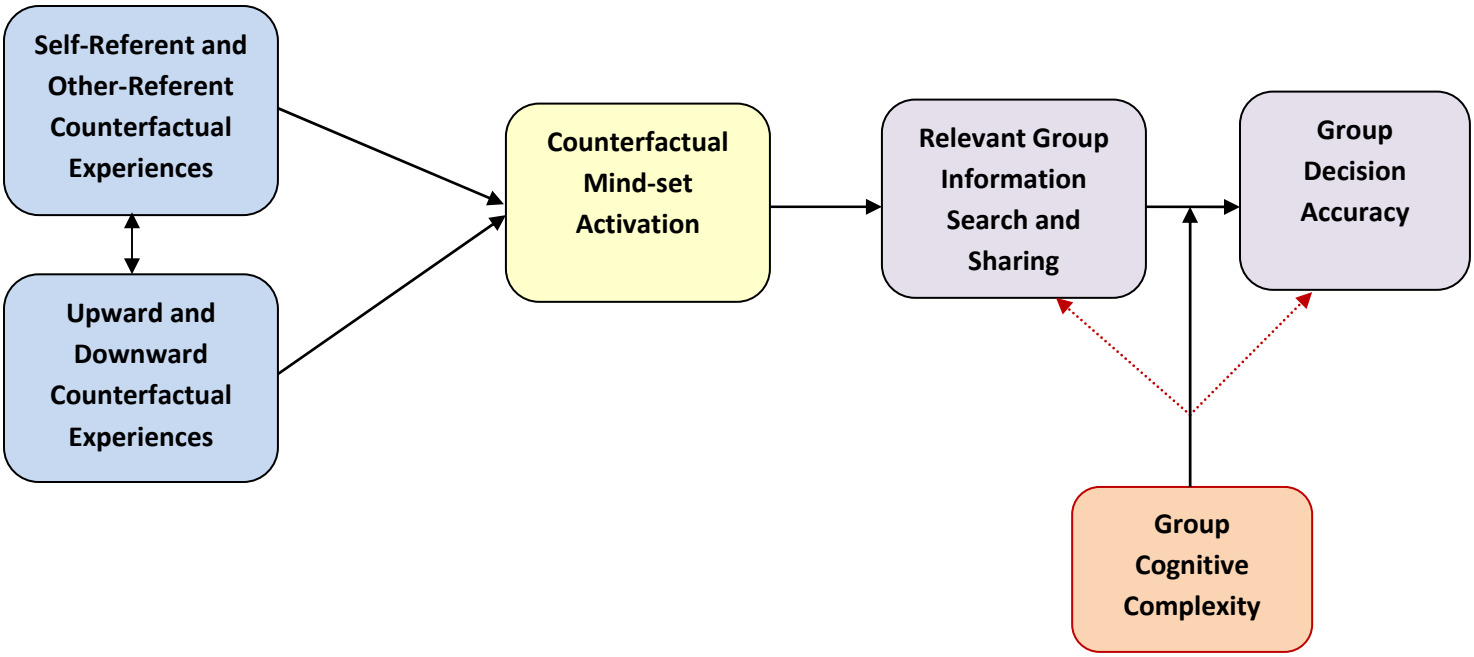
Figure 1: A Conceptual Framework of relationships amongst independent, moderator and dependent variables



Note: Solid arrows indicate direct relationship between the variables and red dotted arrows indicate moderating relationship between the variables.