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The Influence of Temporal Orientation and Affective Frame on use of Ethical Decision-Making Strategies

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Abstract

This study examined the role of temporal orientation and affective frame in the execution of ethical decision-making strategies. In reflecting on a past experience or imagining a future experience, participants thought about experiences that they considered either positive or negative. The participants recorded their thinking about that experience by responding to several questions, and their responses were content-analyzed for the use of ethical decision-making strategies. The findings indicated that a future temporal orientation was associated with greater strategy use. Likewise, a positive affective frame was associated with greater strategy use. Future orientation may permit better strategy execution than a past orientation because it facilitates more objective, balanced contemplation of the reflected-upon situation, and minimizes potential self-threat associated with past behavior. A positive affective frame likely improves strategy execution because it facilitates active analysis of the experience. Future directions and implications of these findings are discussed.

Keywords

Affective Framing; Ethical Decision-Making; Metacognitive Strategies; Sensemaking; Temporal Orientation

Ethical problems are common across all professions and fields. The unfortunate reality is that most, if not all, professionals will encounter workplace problems that involve ethical implications at some point in their careers. Many of these ethical problems will involve complex, dynamic situations, where multiple, often competing, guidelines and goals exist and resolutions are not readily apparent (Werhane, 2002). Given this complexity, the process of thinking through ethical problems has been proposed to involve engaging in a number of socially motivated and cognitively driven processes (Mumford et al., 2008). Mumford and colleagues (2008) described these complexities in a sensemaking model.

Sensemaking allows an individual to understand a dynamic situation by creating a mental representation of important elements in the situation, thereby facilitating decision-making and action (Drazin, Glynn, & Kazanjian, 1999; Hogarth & Makridakis, 1981; Walsh, 1989; Weick, 1995). Sensemaking, as applied to ethical decision-making, is the process of recognizing key factors influencing an ethical decision, integrating that information into a working schema, and applying that information in making a choice. Many strategies and constraints influence the sensemaking process. Some of the key processes important to sensemaking are thinking about prior life experiences or predicting future situations potentially relevant to the situation at hand.

Reflection upon one's own past experiences (Antes, Thiel, Martin, Stenmark, Mumford, Devenport, & Connelly, under review) or predicting future situations (Lieberman et al., 2002, Stenmark et al., in press), may serve to promote the use of strategies for solving current ethical dilemmas by promoting systematic information processing. Specifically, reflection on previous experiences allows individuals to consider errors made, which may promote the engagement of systematic processing. Furthermore, this temporal orientation (past-focused versus future-focused) has, in fact, been shown to impact other types of problem-solving activities (Antes & Mumford, 2009; Mainemelis, 2002); thus, it is reasonable to suppose that temporal orientation may influence ethical decision-making activities like strategy use.

Thus, the purpose of the present study is to examine temporal orientation in reflecting about different personal experiences with regard to working through ethical problems. Specifically, this study examines a past-focused orientation (the reflecting on past personal experiences that are similar to the ethical problem at hand) and a future-focused orientation (imagining a future situation that is similar to the ethical problem at hand), and how these orientations influence the execution of strategies associated with better ethical decision-making. Additionally, this study examines how considering either a positive or a negative similar situation impacts the execution of ethical decision-making strategies.

Ethical Decision-Making Strategies

Mumford's and colleagues (2006, 2008) model of ethical decision-making has received empirical support in initial studies, and the model has proven especially valuable for instructional interventions (Brock, Vert, Kligyte, Waples, Sevier, & Mumford, 2008; Kligyte et al., 2008; Mumford et al., 2008), because the model also emphasizes that, in making ethical decisions, individuals are able to navigate the various components of ethical dilemmas most effectively by using cognitive strategies. These strategies ensure that individuals consider and analyze as much of the relevant information as possible, in order to make the most effective, well-informed, decision. Cognitive strategies are useful ways of thinking about the problem situation that work to minimize common cognitive, such as information acquisition biases. In other words, strategies promote systematic information processing. They facilitate rational decision-making, preventing individuals from making quick decisions without thinking through the problem situation (Mumford et al., 2008).

Research examining complex cognition (e.g. Scott, Leritz, & Mumford 2004a, 2004b) has indicated that people can acquire strategies when working through complex problems and that application of these strategies influences subsequent problem solutions. Due to the complex, ambiguous nature of ethical problems, a strategic approach might be especially useful. Additionally, ethical problems tend to be personally relevant (Ashton-James & Ashkanasy, 2008; Gaudine & Thorne, 2001), and because ethical problems are complex and personal, individuals tend to rely on heuristic processing, which can lead to ineffective decision-making (Antes et al., under review).

Mumford and colleagues (2006) proposed a number of specific cognitive strategies that are useful in ethical decision-making: 1) Recognizing Circumstances, 2) Anticipating Consequences, 3) Considering Others, 4) Questioning Judgment, and 5) Looking Within. Recognizing circumstances involves thinking about origins of problems, individuals involved, and relevant principles, goals and values. Anticipating consequences is defined as thinking about possible outcomes, such as consequences for others and short-term and long term outcomes based upon decisional alternatives. Considering others involves being mindful of others' perceptions, concerns, and the impact of personal actions on others, socially and professionally. Questioning judgment relates to considering reasoning errors (i.e. personal bias, judgment errors) that people often make when making ethical decisions, and trying to reflect on the implications of poor decisions. Finally, looking within is defined as considering one's own biases, effects of one's values and goals, how to explain/justify one's actions to others, and questioning ability to make ethical decisions.

Indeed, studies have shown that execution of cognitive strategies is related to sensemaking and results in decisions of greater ethicality (Antes et al., 2007; Caughron, Antes, Stenmark, Thiel, Wang, & Mumford, under review; Mumford et al., 2006). These strategies serve as tools that an individual may use to ensure that he or she considers and analyzes as much of the relevant information as possible, minimizes biases in judgment, considers effects on others, and manages emotions. Ultimately, these strategies promote systematic information processing, which facilitates sensemaking and ethical decision-making (Mumford et al., 2008; Kligyte, Marcy, Sevier, Godfrey, & Mumford, 2007). Thus, execution of these strategies appears to be an important element in the gathering and analyzing of situational information in order to make an effective ethical decision; indeed, execution of these strategies can be considered an indication of the extent to which a decision-maker considers and analyzes the important aspect of the problem-situation (e.g., goals, consequences, others' perspectives, one's own biases, etc.).

Self-Reflection and Ethical Decision-Making

Actively drawing upon experiential knowledge is the basis of self-reflection. Self-reflection, though, can also be thought of as interjecting oneself into probable future situations based on one's past situations. Because self-reflection requires that one contemplate and sometimes challenge past decisions or actions, and scrutinize possible future ones, it is a powerful mechanism for improving the quality of decisions.

Self-reflection on one's past experiences may be important to ethical decision-making, particularly in the use of strategies, because individuals can use experiences that have components similar to the current situation in order to inform the current decision. The available literature on the use of personal, experiential knowledge indicates that this is a valuable source of information in solving complex problems in order to make an effective decision (Scott, Lonergan, & Mumford, 2005; Spalazzi, 2001; Weisberg, 2004). Furthermore, self-reflection has been shown to remove subjective bias from one's decision-making because it requires that one systematically compare components of past, similar situations with current dilemmas (Dörner & Schaub, 1994).

Additionally, people may consider ethical experiences that *could* happen to them in the future. Thinking about potential future scenarios can help people to generate plans that take into account many important situational variables, which, in turn, helps to more effectively solve the problem at hand (Mumford, Schultz, & Osburn, 2002). Indeed, reflecting on the potential consequences of different actions that could be taken in solving a problem has been demonstrated to be a critical process in ethical decision-making (Stenmark et al., in press).

Temporal Orientation

Considering that an individual's orientation to time has been shown to influence their problem-solving activities and ultimately their problem solutions (Antes & Mumford, 2009; Mainemelis, 2002), it is important to consider how orientation in self-reflection might influence the strategies important to ethical decision-making.

Future-focus.

When thinking with a future orientation, people tend to apply broader categorization schemes, see future events as more prototypic, and apply more comprehensive structures in interpreting future events, as opposed to when they consider past or present events (Karniol & Ross, 1996; Liberman et al., 2002). In other words, future events tend to be construed in a more schematic, abstract, and coherent way.

Additionally, thinking about the future versus the past may affect a person's goals and motivation. Specifically, a future orientation is related to a preference for goals of intrinsic interest in decision-making. Additionally, thinking about the future is associated with approach (or pull) motivation, while thinking about the past is associated with avoid (or push) motivation. Moreover, in imagining different futures, people analyze the advantages and disadvantages of these potential future states, select the future that fits best with their goals, and then generate plans to achieve those goals, while minimizing negative outcomes (Karniol & Ross, 1996; Liberman & Trope, 1998).

People, however, tend to make poor predictions about their own future behavior (e.g., Dunning, Griffin, Milojkovic, & Ross, 1990; Griffin, Dunning, & Ross, 1990). This is suggested to be the case for a number of reasons. First, because future thinking tends to be schematic, people fail to take contextual information into account when predicting their behavior and planning actions (Nussbaum, Trope, & Liberman, 2003). Indeed, this appears to be the basis for planning biases, in which people inaccurately predict the amount of time and resources required for completing tasks (Buehler, Griffin, & Ross, 1994; Kahneman & Tversky, 1979). Second, related to the effect that future-thinking has on goals and motivations, people tend to assume that their behavior will line up directly with their personal values, once again, failing to take into consideration the potential impact of strong contextual variables that may cause them to act in ways they would not expect (e.g., Ajzen, Brown, & Carvajal, 2004).

Past-focus.

Self-reflection involves reviewing personal experiences that are similar to the situation at hand, in order to draw out important information about relevant aspects of the situation, including causes, consequences, and contingencies (Daudelin, 1996; Jonassen & Hernandez-Serrano, 2002; Nokes & Ohlsson, 2005). Consideration of these aspects of the situation is critical in making an effective decision, as these situational elements influence how the problem should ultimately be solved (Stenmark et al., in press; Mumford, Schultz, & Osburn, 2002). Further, self-reflection has been demonstrated to aid in decision-making and problem solving (Dorner & Schaub, 1994). For example, in a study of creative problem-solving, Scott, Lonergan, and Mumford (2005) found that participants who actively used their past, personal experience in solving the problem produced better solutions.

Mumford, Friedrich, Caughron, and Byrne (2007) suggest a number of reasons that experiential knowledge is useful in thinking about problems. This knowledge is integral to generating plans, which are an important element of any problem solution. It is contextually-based, thus, it contains rich information about the relevant situational variables mentioned previously. Finally, this knowledge often contains valuable mental models that can be used

to guide problem-solving. In other words, this experiential knowledge can be thought of as a form of contextual knowledge that provides a model, or a guide, for action when people encounter similar situations in the future (Hershey, Walsh, Read, & Chulef, 1990).

Despite the fact that this experiential knowledge is highly accessible, and can be valuable in facilitating decision-making and problem-solving, the self-reflection process may not always be effectively executed. Experiential knowledge can only aid problem-solving to the extent that it is appropriately applied to the current problem. In a study of the variables affecting the use of reflections for problem-solving, Antes et al. (under review) instructed participants to reflect upon positive or negative experiences that had happened to them in the past, and to reflect on either the processes or outcomes associated with the experience. The results of this study suggest that when participants focused on a positive past experience, they were more likely to use reflection in decision-making, as compared to those instructed to focus on negative experiences and the outcomes involved in those experiences. Importantly, the use of their reflection was associated with more ethical decisions. The focus on the process of reflecting on positive experiences was believed to be valuable because it permitted a more thorough analysis of the past situation, which assisted in analysis of the current situation. This study demonstrated that self-reflection (reflecting on a similar past experience, when solving an ethical problem), when it is actively applied to making the current decision, is, indeed, an important process involved in ethical decision-making.

It is apparent that the temporal orientation an individual applies in thinking about problems impacts the nature of that analysis. It is not, however, precisely clear how temporal orientation impacts problem-solving activities. Indeed, the literature on temporal orientation is divided the comparative value of past- vs. future-focus in solving ethical problems. On one hand, a future-focused orientation may lead to more abstract thinking than a past-focused orientation (Lieberman et al., 2002), which could potentially bias individuals. However, future-focus might be better in an ethical context because imagining possible futures adds flexibility compared to the constraints of specific past experience. Future-focus permits analysis in a non-threatening, non-distracting way. Thus, a future focus may allow for a less emotional, more objective analysis, allowing the important situational elements to be effectively abstracted and used in the present problem-solving situation (Karniol & Ross, 1996). Moreover, ethical problems are dynamic and complex, which makes analysis and consideration of relevant contextual information even more critical in making an effective decision (Mumford et al., 2008). Thus, a future-focus, which fails to take contextual information into account (Nussbaum, Trope, & Liberman, 2002) may not be as useful in solving ethical problems as past-focused self-reflection, which facilitates the analysis of contextual information (Daudelin, 1996; Jonassen & Hernandez-Serrano, 2002; Nokes & Ohlsson, 2005).

While the benefits of self-reflection and a future focus are well-documented, a comparative analysis suggests that a future-focus may be more effective for making ethical decisions. Reflection upon past events may further perpetuate emotional and subjective examinations of relevant factors, which has been shown to be detrimental to ethical decision-making (Kligny, Connelly, Thiel, & Devenport, under review). Therefore, a future-focused orientation during ethical problem-solving may serve to eliminate bias vis-à-vis the removal of oneself from subjective and emotional information processing. In fact, a future-focus may stimulate the use of strategies if it promotes systematic, rational, and controlled information processing, as suggested. Thus, we propose the first hypothesis:

H1: A future-focused orientation will promote the use of strategies in ethical decision-making.

Affective Frame

Whether a decision-maker reflects on a positive or negative event in solving a comparable ethical problem may also influence the effectiveness of problem-solving activities. Indeed, the framing of any given situation affects decision-making and behavior (Levin & Gaeth, 1988; Levin & Lauriola, 2003; Levin, Schneider, & Gaeth, 1998; Tversky & Kahneman, 1981; Van Schie & Van Der Pligt, 1995). There is evidence to suggest that considering positive events may be beneficial for considering both past events and future events.

Indeed, in reflecting upon past experience, people find it more difficult to recall important details of an experience when they are focused on a negative event, as opposed to a positive event (Argembeau & Van der Linden, 2003; Janiszewski, Silk, & Cooke, 2003; Levin et al., 1998). This failure to recall details appears to be especially true when the negative past experience is associated with a negative self-appraisal, due to some sort of perceived past failure (Alicke & Sedikides, 2009; Denny & Hunt, 1992; Sedikides & Green, 2004). Thus, people may not only have better cognitive access to positive past experiences, but they may be more motivated to actively analyze those positive experiences, as opposed to negative experiences (Antes et al., under review). Despite the fact that negative events are often more salient to people (Miron-Shatz, Stone, & Kahneman, 2009; Rozin & Royzman, 2001), it is likely that reflecting on positive experiences will be more useful in problem-solving. This is due to the idea that negative events are less likely to be effectively analyzed to abstract important contextual information. Indeed, Antes et al. (under review) found that reflecting on past experiences that were perceived as positive was associated with more effective use of the reflection, and ultimately a more effective ethical decision.

With regard to future-focused thinking, most of the available literature stresses that it is important to consider negative information (e.g., restrictions and contingencies) when solving problems, in order to account for planning and processing errors that often lead people to underestimate the amount of time and resources required for plan execution (Dorner & Schaub, 2004; Mumford, Schultz, & Van Doorn, 2001; Xiao, Milgram, & Doyle, 1997). On the other hand, there is research to suggest that considering positive future events is also beneficial to problem-solving (Mumford, Loneragan, & Scott, 2002; Patalano & Seifert, 1997), in order to consider potential opportunities involved with successful plan execution. Indeed, in a study of forecasting and ethical decision-making, Stenmark et al. (in press) found that participants who considered a larger number of positive outcomes of potential future actions generated higher quality forecasts, and higher quality forecasts were associated with better ethical decision-making. Indeed, it seems that the most natural form of reflection would include both positive and negative imagery simultaneously.

Thus, it appears that a positive affective frame is beneficial for self-reflection because it allows for a less restrained analysis of the important contextual factors than does a negative affective frame; the negative affective frame can be cognitively distracting, and likely to lead to less effective use of cognitive strategies. Additionally, a positive affective frame for future-focused orientation appears to be effective in allowing the decision-maker to consider potential opportunities associated with effective plan execution. Thus, we propose the following hypothesis:

H2: A positive affective frame will be more beneficial for strategy execution for both past-focused orientation and future-focused orientation, as compared to a negative affective frame.

We propose that a future-focused orientation will result in the greater use of ethical decision-making strategies, as this focus allows for more objective, balanced, less emotional information-processing activities. We also proposed that a positive affective frame will lead

to greater execution of ethical decision-making strategies because a positive frame is less cognitively distracting than a negative frame, and because it is important to consider potential opportunities when making decisions regarding complex, ethical problems. Thus, it is likely that an interaction will be observed, such that when an individual has a future-focused orientation, a positive affective frame will be more beneficial, due to the increased objective processing about the problem. On the other hand, when individuals engage in self-reflection, analyzing past events that they have actually experienced, a negative affective frame is likely to be even more detrimental to active processing, because of the negative self appraisals associated with those past events. Thus, the final hypothesis suggested:

H3: A future-focused orientation involving a positive affective frame will lead to the greatest execution of ethical decision-making strategies.

Method

Sample

One-hundred and twenty-nine undergraduate students from a large Southwestern University participated in this study. Participation was voluntary, and participants received course credit in their psychology courses. The sample consisted of 74% females, mostly Caucasian (73%), majoring in business (24%), the social sciences (21%), pre-professional programs (18%), engineering (10%), or studying the physical sciences, education, or the performing arts (10% were undeclared majors). Their average age was 19 years, with 76% being freshman or sophomores. Participants reported having four years of work experience on average.

Procedure

This study was described to participants as a three hour study involving a critical thinking task that required participants to solve problems. When participants arrived at the study's data collection site, the purpose and requirements of the study, along with compensation for participation (credit for their psychology class), were reviewed, and students read and signed the informed consent document if they wished to participate. The participants' study packets contained the experimental task central to the study, in addition to instruments used to collect individual differences measures that might influence performance on the key research tasks (these measures are discussed in the covariate section). After providing participants with five minutes to complete a timed covariate measure, participants were instructed to complete the remainder of the packet of materials at their own pace. The experimental task was completed first followed by the remaining covariate measures.

Experimental Task.—The scenarios from Antes et al. (under review), which described ethical problems that might be encountered by a manager in a small retail store were presented to participants to provide them with a basis for consideration and analysis of a past or future situation that they had experienced or would be likely to experience in the future. Without these problems to stimulate participant's thinking it would be difficult for individuals to spontaneously draw upon a past experience or imagine a future experience.

There were four problems presented, focusing on ethical problems including accurate reporting of data, conflicts of interest, protection of employees, and adherence to managerial responsibilities. Before participants received these problems, they received a short description of the context surrounding the retail store. All participants received each of the four ethical problems, and they were presented in counterbalanced fashion.

In addition to giving instructions to consider a related experience, participants were given direction regarding the type of situation that they should consider in order to assist them

with recalling or imagining a personal ethical experience. For instance, after being presented with the example managerial problem where a decision had to be made to resolve how to report important business data, participants were prompted to think about a situation where they were (or might be in the future) faced with a problem about submitting some kind of information, such as submitting a time card, grades, or reporting previous employers or salary on an application.

After reading the ethical problems, participants completed a modified think-aloud procedure where they responded, in writing, to several open-ended questions that required them to think through the experience that they recalled or imagined. These items asked participants to describe the: 1) factors they considered (or would consider), 2) consequences or outcomes in the past (or future) experience, and 3) how they made (or would make) a decision.

Manipulations.—Before responding to the think-aloud questions, the manipulations were introduced. Temporal orientation was manipulated by asking participants to either think about a similar problem from their past, or a likely future (occurring in approximately 5 years in the future), experience. A past *and* future condition was included which asked participants to think of a situation in their past that was likely to occur again approximately 5 years in the future. This condition was included because if the mechanisms regarding temporal orientation worked as expected, then the performance of this condition would fall between the separate past-focused and future-focused conditions. In addition, affective frame was manipulated by asking participants to consider a past, or likely future, experience that was (or would likely be) either negative or positive.

Manipulation checks for the independent variable, affective frame were obtained by content-coding the participants' responses to the reflection or future scenario questions. Four doctoral students received five hours of training on the constructs to be coded prior to beginning the rating task. The extent to which the response indicated a positive or negative affective frame was rated on a scale of one to five, with a score of one being highly negative (i.e. described an experience with negative consequences for the individual), and a score of five being highly positive (i.e. described an experience with positive consequences for the individual). Inter-rater reliability was assessed via intraclass correlation coefficient (ICC), and across the four scenarios, ICC = .82 for the affective frame rating. A *t*-test between the positive and negative conditions comparing the means on the ratings of affective frame was statistically significant, $t(127) = 8.05, p < .01$, with participants in the negative affective frame condition receiving lower (more negative) scores ($M = 2.21, SD = .42$) than those in the positive affective frame condition ($M = 2.97, SD = .65$).

Dependent Variables

Participants' responses to the open-ended questions about their past or likely future experience provided the material for the dependent variables of interest. These responses were coded for the extent to which participants executed each of the five reasoning strategies. Four doctoral students coded the responses provided by participants, after receiving 10 hours of training regarding construct definitions, markers of strategy execution, and benchmark examples of low, moderate, and high levels of strategy execution. For example, for the strategy Anticipating Consequences, a response that discussed a number of different outcomes that could occur in the future (or did occur in the past), outcomes for the self and others, and/or long-term and short-term outcomes, would receive a high score for the execution of that strategy, whereas a response that focused more on other elements of the situation, such as the motives or processes, without much mention of outcomes, would receive a low score for the execution of that strategy. A score (on a five point scale) was obtained for each of the strategies for the degree to which the strategy was executed.

Strategy execution did not differ across the four business scenarios; therefore an aggregate score for the use of each strategy was used for the subsequent analyses. The inter-rater agreement was assessed using intraclass correlations, and the values were all satisfactory, ranging from .71 to .83 and averaging .79.

Covariates

Several individual difference variables were assessed in order to take into account their potential effect on performance in the study. The first covariate, verbal intelligence, was measured using the Employee Aptitude Survey (Ruch & Ruch, 1980), as intelligence has been shown to influence problem-solving (Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). The next individual difference assessed was state affect, as emotion has been shown to significantly influence ethical decision-making (Klignite, Connelly, Thiel, & Devenport, under review). State affect was measured using the Positive and Negative Affect Scale (Watson, Clark, & Tellegan, 1988). Task engagement was also assessed using a 7-item scale asking participants to report their level of engagement and interest in participating in the study, as motivation on the task might influence the effectiveness of the manipulations and participants' responses. Finally, given the nature of the study task, elaboration, the extent to which the participants' responses to the open-ended writing tasks were complete and detailed, was considered. Because there did appear to be some variance in the amount of depth and detail of response, it was important to have ratings that this variable so that it could be controlled for in the analyses and not influence findings with respect to application and ethicality. Ratings of elaboration were completed on a 5-point scale and the overall ICC value was .93. The measure of elaboration was the only covariate that was found to be significantly related to the dependent variable of interest, thus, it was the only covariate included in the final analyses.

Analyses

A multivariate analysis of covariance (MANCOVA) was performed, given the intercorrelations of the dependent variables. The independent variables were temporal orientation (i.e., past-, future-, or past and future-oriented) and affective frame (positive or negative), and the dependent variables were the scores for execution of the five different cognitive reasoning strategies relevant to EDM. Elaboration was included as a covariate in the analysis. Next, Univariate analyses of covariance (ANCOVA) were conducted to examine the effects of temporal orientation and affective frame for each of the strategies. The adjusted cell means were then examined to determine the pattern of the effects induced by these independent variables on strategy execution.

Results

As presented in Table 1, the Wilks Lambda multivariate tests of overall differences among the conditions revealed that elaboration was a statistically significant covariate ($F(5, 118) = 21.23, p < .01$) and that the main effects for temporal orientation ($F(10, 236) = 3.69, p < .01$) and affective frame ($F(5, 118) = 4.73, p < .01$) were also statistically significant. The interaction effect approached statistical significance according to the Wilks Lambda multivariate test ($F(10, 236) = 1.78, p = .066$); this effect was statistically significant according to Roy's Largest Root ($F(5, 119) = 2.53, p = .033$), a more liberal test.

The univariate analyses (see Table 2) revealed that elaboration was a statistically significant covariate across all five reasoning strategies. More centrally, however, the main effect for temporal orientation proved statistically significant for anticipating consequences ($F(2, 122) = 11.93, p < .01$), considering others ($F(2, 122) = 6.88, p < .01$), and questioning judgment ($F(2, 122) = 4.03, p < .05$). Examination of the cell means (see Table 3) indicated that the

future-focused condition produced the highest strategy execution for all five of the strategies (as mentioned previously, however, these differences were statistically significant only for anticipating consequences, considering others, and questioning judgment). Thus, while not all of the strategy execution scores were statistically significant for the future-focused condition, the pattern was the same across all strategies, indicating that a future-focused orientation leads to better strategy execution than a past-focused orientation, consistent with Hypothesis 1.

The main effect for affective frame was significant for recognizing circumstances ($F(1, 122) = 14.96, p < .01$), anticipating consequences ($F(1, 122) = 15.11, p < .01$), considering others ($F(1, 122) = 10.44, p < .01$), and looking within ($F(1, 122) = 6.39, p < .05$). Further inspection of the cell means (Table 3) revealed that, aside from questioning judgment, the positive frame was significantly higher for all four of the other strategies, indicating that a positive affective frame leads to better strategy execution than a negative affective frame, consistent with Hypothesis 2.

The interaction between temporal orientation and affective frame was significant for questioning judgment ($F(2, 122) = 3.15, p < .05$) and it approached statistical significance for considering others ($F(2, 122) = 2.95, p < .10$). Inspection of the cell means indicates that, for questioning judgment, participants in the past-future condition, when considering negative events, had the highest strategy execution scores. For considering others, however, participants in the past-future condition considering negative events exhibited the lowest strategy execution scores, whereas participants in the future condition, considering either positive or negative events, demonstrated the highest strategy execution scores (participants in the other cells fell in between). Furthermore, while not statistically significant, the pattern of results for the three remaining strategies (recognizing circumstances, anticipating consequences, and looking within) paralleled that of considering others: participants in the past-future condition who considered negative events showed the worst strategy execution, while those participants in the future condition showed the best strategy execution scores, for both positive and negative affective frames. Thus, Hypothesis 3 was not supported. The only statistically significant interaction effect turned out to involve the only strategy with a pattern of results that was different from all of the others, rendering it particularly uninterpretable.

Discussion

Before turning to the broader implications of the present effort, certain limitations should be noted. First, the study was conducted in a sample of undergraduate students, which may place limits on the generalizability of these results to individuals who are older, or have greater work experience. Older adults may have different perspectives on ethical issues, and thus may respond differently to similar problems. Furthermore, the composition of the sample could be seen as a limitation. The majority of the participants involved in this study were female (74%), and the 129 undergraduates in the sample were from a single site. Thus, the generalization of the conclusions from this study may be limited, due to potential sample biases. While gender has proven to be a relevant factor in other ethical decision-making studies (Stenmark et. al., under review), in this study, gender was not found to be significantly related to relevant outcome variables. It should also be highlighted that this study investigated the cognitive process involved in ethical decision-making, not on the ethicality of those decisions, which has been the focus of most previous research. Thus, while a sample of young women may have less experience with ethical events, it is likely that the way they think about such events will be similar to other people (e.g., older people and/or males). This study should be replicated with a larger and more diverse population, in

order to determine precisely the role age and gender may play in the processing of ethical events.

Another limitation pertains to the methodology employed. Participants were prompted to think about past or future experiences, and therefore, processing of, and responses to the think-aloud questions, may not operate in the same way as naturally occurring consideration of ethical experiences. This type of experimental paradigm, however, allows for an assessment of the critical cognitive variables of interest, and has been shown to provide reliable and valid results. Thus, this can be a valuable methodology for studying ethics-related phenomena (Mumford et al., 2006).

Another limitation involves the way in which the cognitive processes examined in this study were elicited. In this study, participants were prompted to self-reflect upon a past experience or to imagine a future situation they might likely experience, as opposed to spontaneously drawing upon this information, as would occur in real-world decision-making. On the other hand, once an experience (past or future) is activated--whether prompted or spontaneous--there is no reason to believe that processing would be different

Finally, given the range of potential responses to the think-aloud questions, the study prompts were open-ended, thus measurement of the dependent variables was based upon expert ratings of these responses. This approach to measurement may potentially be criticized, due to its apparently subjective nature. In order to mitigate this criticism, however, the raters were extensively trained in the constructs of interest, including thorough definitions and objective markers of those constructs, and they were provided with benchmark examples. Furthermore, the inter-rater agreement coefficients were sizable, indicating that the constructs were reliably scored on the open-ended response material.

Even bearing these limitations in mind, we believe that the results obtained help to clarify the way temporal orientation and affective frame affect ethical decision-making strategies. Based on the results of this study, we can draw the following conclusions: 1) a future-focused orientation leads to greater strategy use, 2) framing events in a positive valence does the same, and 3) the effects are additive, i.e. future orientation does not decrease the effectiveness of positive framing.

Theoretical Implications

These results have a number of important implications, both theoretical and practical. First, the results of this study suggest that analyzing an event that one might face in the future, which is similar to an ethical problem at hand, leads to greater execution of ethical decision-making strategies. These strategies involve a thorough analysis of a number of different elements of the problem situation, and it appears that a future-focused orientation facilitates such analysis. Specifically, this future-focused orientation promotes more analysis than a past-focused orientation. It has been demonstrated that the temporal orientation of problem-solving activities impacts the quality of the ultimate problem solution (Antes & Mumford, 2009; Mainemalis, 2002). Furthermore, it is known that a future-focused orientation tends to be more schematic and abstract, while a past-focused orientation tends to be more contextually based and concrete (Karniol & Ross, 1996; Liberman et al., 2002). While ethical decision-making is held to require a thorough analysis of the context, including the causes, goals, and contingencies involved (Mumford et al., 2008), in this study, the less contextually-based future-focused orientation proved to facilitate a more thorough analysis of the ethical problem, as demonstrated by higher strategy execution scores. This is likely due to the bounded nature of past experience, as compared to future experience (Antes et al., under review; Karniol & Ross, 1996). Past experiences, having already occurred, are more concrete and could be potentially threatening, especially if they are associated with self-

appraisal. Additionally, reflection on past events is likely to promote an emotional, subjective analysis of the relevant situational factors, as compared to a future-focused orientation. Potential future experiences, being more abstract and more impersonal, are likely to facilitate a greater amount of active analysis in imagining how the event could potentially occur. Thus, a future-focused orientation during ethical problem-solving may facilitate the removal of oneself from subjective and emotional information processing, allowing for greater use of ethical decision-making strategies.

A common problem associated with future-focused temporal orientation, however, is that people tend to be poor at predicting their own behavior, by failing to take into account contextual factors that may impact their future behavior, and assuming that their behavior will align with their values (e.g., Barnes & Brown, 2010; Nussman, Trope, & Liberman, 2002). In fact, due to these prediction biases, past behavior has been demonstrated to be a better predictor of one's own behavior than a behavioral prediction (Fazio & Zanna, 1981; Osberg & Schrauger, 1986). In light of these observations, one might ask how a future-focused orientation could be better than a past-focused orientation for ethical decision-making. First, in this study, the primary dependent variable was the execution of cognitive strategies that have been demonstrated to be related to better ethical decision-making. In other words, the dependent variable involved measurement indicating a more thorough analysis of the problem situation. Thus, in this study, a prediction about future behavior was not measured; the "quality" of the potential future experience, in terms of accuracy, or some other criterion was not considered. It appears that a future-focused temporal orientation is likely to improve ethical decision-making vis-a-vis an improved active analysis of the important elements of the problem situation (e.g., goals, outcomes, others' perspectives, one's own potential biases, etc.).

Furthermore, the findings from this study concern a specific type of problem-solving: ethical decision-making. A future-focused temporal orientation may not be as beneficial for other types of problem-solving and decision-making activities. As ethical problems are inherently personally relevant and tend to elicit a certain amount of subjectivity and emotion (Ashton-James & Ashkanasy, 2008; Gaudine & Thorne, 2001), it is likely that the future-focused orientation, as compared to self-reflection, by allowing for a more objective, impersonal information analysis, facilitates ethical decision-making processes. Thus, these findings are not inconsistent with the literature on people's ability (or inability) to predict their future behavior.

Second, consistent with Antes et al. (under review), the results of this study suggest that when considering personal experiences related to a current ethical problem, it is better to focus on an experience framed as positive, as opposed to negative. Specifically, participants in the positive affective frame condition demonstrated higher strategy execution scores, indicating a more thorough analysis of the problem situation. This result occurred in both the past-focused and future-focused orientation conditions.

It is likely that when considering past experiences, less information will be available to participants when analyzing negative experiences, as opposed to positive experiences, due to an unwillingness to attend to negative self-appraisals (Argembeau & Van der Linden, 2003; Janiszewski, Silk, & Cook, 2003; Levin et al., 1998). Additionally, people are less willing to invest cognitive resources in analyzing negative experiences, as opposed to positive experiences (Antes et al., under review). Finally, Bowers' (1992) affect congruent effect research showed that positive affect enables access to more information in memory due to the fact that we tend to have more positive information encoded in memory.

This main effect found for affective framing is also consistent when considered in light of a future-focused temporal orientation. Indeed, while much of the literature on planning and forecasting, involving predictions of potential future outcomes, stresses the importance of considering negative consequences, in order to avoid potential optimism biases in generating solutions to complex problems (Mumford, Schultz, & Van Doorn, 2001), there is also evidence to suggest the importance of considering potential positive consequences. For example, Mumford, Friedrich, Caughron, & Byrne (2007) propose that effectively solving complex problems involves considering both positive and negative future consequences. Furthermore, an empirical study by Stenmark et al. (in press) found that the analysis and consideration of positive future outcomes was more important for problem-solving than considering negative future outcomes.

These observations, along with the findings from the present study, suggest that, while it may be important to consider the potential harm that could be done in taking actions to solve ethical problems, it may be even more important to consider the potential positive outcomes and events that could occur as an effect of the ultimate problem solution. In other words, while it is likely to be important to consider threats, contingencies, and restrictions, in regard to developing problem solutions, it is also critical to consider potential opportunities for positive outcomes and experiences.

Training Implications

The findings from this study also have important implications for ethics training programs. First, the results of this study demonstrate that reflecting on personal experiences not only contributes to the analysis of ethical problems, it works best when that experience is in the future and within a positive context. Thus, ethics training programs aimed at improved problem-solving, especially by improving cognitive reasoning strategies, should provide instruction on imagining such future events, focusing on positive outcomes, in order to prompt a more thorough analysis of the problem situation. This finding may be particularly useful for training graduate students and young professionals on ethical issues. These younger professionals may not have enough experience to have relevant past professional experiences to draw upon in self-reflection. Thus, especially for younger trainees, ethics training programs may do well to encourage this future-focused orientation in order to facilitate a thorough analysis of the ethical problem. Indeed, in the present study, the finding that the future-focused orientation was better for strategy execution might potentially be due to the younger study population employed. Future research should examine how these different temporal orientations differ with regard to age and experience, in order to better understand the mechanisms involved in the consideration of past versus potential future personal experiences.

Second, the results regarding the affective frame of the experiences considered in the processing of ethical problems underscores the importance of using positive cases and experiences in ethics training programs. By focusing on the rules, guidelines, and professional principles, most ethics training programs (Antes et al., 2009; Waples et al., 2009) usually focus on the negative incidents that could occur if a person makes the “wrong” decision. They emphasize which *unethical* behaviors should *not* be engaged in. The results of this study, however, suggest that focusing on potential positive outcomes and experiences leads to a better analysis of the ethical problem situation. Indeed, framing problem-solving and decision-making activities in terms of seizing opportunities, as opposed to avoiding threats, may prove to be valuable in ethics instruction.

It is important to remember, however, that making the “wrong” decision, especially in an ethical context, can have significant, negative repercussions for a number of people. More research is needed in order to find the balance between a complete focus on negative aspects

of problem situations and a focus on positive aspects of such situations. There is likely to be value in including information about the negative potentialities involved in ethical problem-situations, but it is clear from the results of the present study and other empirical studies with similar findings (e.g., Antes et al., under review; Stenmark et al., in press) that ethics instruction programs would do well to include a consideration of the potentially positive elements of ethical problem situations.

In conclusion, the findings of the present study suggest that considering future potential personal experiences similar to the ethical problem at hand promotes greater use of ethical decision-making strategies, indicating a more thorough analysis of the problem-situation. Thus, considering such experiences is likely to improve ethical decision-making, although this remains to be shown. Additionally, this study found that considering positive experiences is better for engaging in ethical decision-making strategies than considering negative experiences. Clearly, the processes involved in ethical decision-making are complex. Overall, this study demonstrates the importance of examining the cognitive processes involved in ethical decision-making, particularly the temporal orientation applied to the analysis of personal experiences in solving ethical problems. The findings of this study not only have theoretical implications, but they have important practical implications for ethics training programs. An improved understanding of ethical decision-making can help inform ethics training, allowing professionals to make better decisions when faced with complex, dynamic, ambiguous ethical problems. Ethics programs, especially those designed to educate young professionals, may do well to instruct people to imagine a potential future experience that is similar to ethical problems they are currently faced with, in order to facilitate their analysis of the problem, and ultimately their decision-making. Additionally, ethics programs currently tend to emphasize possible negative experiences that individual might encounter, but these findings suggest that participants might actually be better able to reason through ethical problems if they were framed in another manner—specifically, as possible positive experiences that might take place in the future. Some balance between considering past negative and positive and future likely negative and positive experiences is likely to best facilitate individuals' thinking in ethical decision-making.

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Table 1
Multivariate Analysis of Covariance for Strategy Execution

	<i>Df</i>	<i>F</i>	η_p^2
<u>Covariate</u>			
Elaboration	5, 118	21.23**	.47
<u>Main Effects</u>			
Temporal Orientation	10, 236	3.69**	.14
Affect	5, 118	4.73**	.17
<u>Interaction</u>			
Temporal Orientation x Valence	10, 236	1.78 [†]	.07

Note. *df* = degrees of freedom; *F* = F-ratio (Wilks Lambda); η_p^2 = partial eta-squared.

[†]
 $p < .10$.

*
 $p < .05$.

**
 $p < .01$.

Table 2

Analysis of Variance for Strategy Execution

	Recognizing Circumstances			Anticipating Consequences			Considering Others			Questioning Judgment			Analysis of Motivations		
	<i>df</i>	<i>F</i>	η_p^2	<i>df</i>	<i>F</i>	η_p^2	<i>df</i>	<i>F</i>	η_p^2	<i>df</i>	<i>F</i>	η_p^2	<i>df</i>	<i>F</i>	η_p^2
<u>Covariate</u>															
Elaboration	1, 122	52.16**	.30	1, 122	22.86**	.16	1, 122	26.98**	.18	1, 122	46.36**	.28	1, 122	38.42**	.24
<u>Main Effects</u>															
TO	2, 122	1.04	.02	2, 122	11.93**	.16	2, 122	6.88**	.10	2, 122	4.03*	.06	2, 122	1.99	.03
Valence	1, 122	14.96**	.11	1, 122	15.11**	.11	1, 122	10.44**	.08	1, 122	0.45	.00	1, 122	6.39*	.05
<u>Interaction</u>															
TO x V	2, 122	1.28	.02	2, 122	0.78	.01	2, 122	2.95 [†]	.05	2, 122	3.15*	.05	2, 122	1.63	.03

Note. *df* = degrees of freedom; *F* = F-ratio; η_p^2 = partial eta-squared.

[†] $p < .10$.

* $p < .05$.

** $p < .01$.

Table 3
Adjusted Means for Temporal Orientation and Valence on Strategy Execution

	Recognizing Circumstances			Anticipating Consequences			Considering Others			Question Judgment			Look Within		
	Valence			Valence			Valence			Valence			Valence		
	Negative	M	SE	Negative	M	SE	Negative	M	SE	Negative	M	SE	Negative	M	SE
Temporal Orientation															
Past	2.55	.11	3.06	.12	2.81	1.77	.14	2.36	.15	2.07	2.35	.15	2.80	.16	2.58
Future	2.79	.12	2.94	.11	2.87	2.59	.15	2.84	.14	2.72	3.02	.16	3.03	.15	3.03
Past & Future	2.49	.11	2.92	.12	2.70	1.90	.14	2.43	.14	2.17	2.14	.15	2.88	.15	2.51
M	2.61		2.97			2.09		2.54			2.51		2.90		1.92
											2.23		2.15		2.21

Note. M = mean; SE = standard error.