Published in final edited form as:

Ethics Behav. 2011 ; 21(5): 351–366. doi:10.1080/10508422.2011.604293.

Sensemaking Strategies for Ethical Decision-making

Jay J. Caughron,
Radford University

Alison L. Antes,
Northern Kentucky University

Cheryl K. Stenmark,
San Angelo State University

Chaise E. Thiel,
The University of Oklahoma

Xiaoqian Wang, and
The University of Oklahoma

Michael D. Mumford
The University of Oklahoma

Abstract

The current study uses a sensemaking model and thinking strategies identified in earlier research to examine ethical decision-making. Using a sample of 163 undergraduates, a low fidelity simulation approach is used to study the effects personal involvement (in causing the problem and personal involvement in experiencing the outcomes of the problem) could have on the use of cognitive reasoning strategies that have been shown to promote ethical decision-making. A mediated model is presented which suggests that environmental factors influence reasoning strategies, reasoning strategies influence sensemaking, and sensemaking in turn influences ethical decision-making. Findings were mixed but generally supported the hypothesized model. Interestingly, framing the outcomes of ethically charged situations in terms of more global organizational outcomes rather than personal outcomes was found to promote the use of pro-ethical cognitive reasoning strategies.

Keywords

ethics; ethical decision-making; reasoning strategies; sensemaking

When addressing ethical conduct within organizations, it is important to note the nature of organizational settings. The old model of organizations as bloated bureaucracies has faded. Many of the structures within organizations that individuals relied on as they approached their tasks have evaporated. The boundaries between organizations have blurred. The line

Correspondence: Jay J. Caughron at jcaughron@radford.edu or Radford University, Department of Psychology, 444 Russell Hall PO box 6949, Radford, VA 24142.

between management and workforce has become fuzzy. The relationship between providers of services and products and their customers or clients has developed a new intimacy and complexity. These factors combine to create an environment that is dynamic and complex. People are increasingly finding themselves in situations marked by competing interests, values, and goals, where stakeholders of multiple stripes come together to achieve personal as well as organizational goals

In this complex environment, individuals must make decisions that are responsive to multiple competing demands in a timely manner. It is not difficult to see how the complexity and ambiguity of modern organizations can thrust people into situations that call for ethical decision-making. Circumstances in which a variety of people have competing interests, the outcomes are difficult to predict, and there is sufficient ambiguity to obscure ethical procedures are ripe for ethical misconduct to occur (Mumford, Connelly, Brown, Murphy, Hill, Antes, Waples, & Devenport, 2008).

Ethical Decision-making Strategies

Previous research has identified a wide array of cognitive reasoning strategies that can promote ethical decision-making. Using these studies to inform their work, Mumford and colleagues consolidated the list of reasoning strategies to a set of seven distinct cognitive reasoning strategies and established that these strategies can promote ethicality (cf., Antes, Brown, Murphy, Hill, Waples, Mumford, Connelly, & Devenport, 2007). The strategies are 1) recognizing personal circumstances, 2) anticipating consequences, 3) considering others' perspectives, 4) seeking help, 5) questioning your own judgment, 6) dealing with emotions, and 7) examining personal values. Extended definitions of these strategies are provided in Table 1.

Research has shown that these strategies are related to ethical decision-making, however several questions remain. For instance, why are these strategies used in some situations but not in others? Also, why do these strategies have an effect on ethical decision-making? This study was designed to address how the use of these reasoning strategies influences the earliest stages of ethical decision-making (i.e., sensemaking) and to help define the conditions in which an individual is more or less likely to use these strategies.

Sensemaking

When faced with a novel, complex, or ambiguous set of circumstances, people tend to move very quickly to develop an understanding of their situation. What is happening? Why is it important? How will this impact me? Do I need to continue to monitor this situation? How can I act to stabilize this situation? All of these are questions people must answer in order to understand unusual circumstances and direct their own behavior. Seeking to understand novel and ambiguous situations is often called sensemaking.

Sensemaking is a complex cognitive process by which an individual develops an understanding of a vexing set of circumstances. The process of making sense of an emergent situation helps people figure out what caused the situation, what the likely outcome of the situation is, and how they can influence the developing situation (Weick, 1995; Weick,

Sutcliffe, & Obstfeld, 2005). More simply, sensemaking begins when an individual realizes something abnormal is happening and ends when that individual understands the situation well enough to make a decision to act, monitor, or ignore the situation.

Sensemaking can be broken down into three components: problem recognition, information gathering, and information integration. Problem recognition is the first step of sensemaking (Weick, 1995; Weick, Sutcliffe, & Obstfeld, 2005). During this stage, the individual recognizes that the status quo has been disturbed and that attention should be paid to this developing situation. Eventually a decision can be made regarding whether or not action is necessary. However, problem recognition is merely the act of realizing that something in a given situation is out of the ordinary.

After an individual recognizes that something is awry, the second and third stages of sensemaking can begin. Namely, information is gathered and integrated (Mumford, Baughman, Supinski, & Maher, 1996). This involves looking for information that can help the individual understand how this situation differs from expectations. Once this information has been gathered the individual can assign meaning to the information and decide how important each piece of information is. Once meaning has been given, the individual can put these pieces of information together to see if larger patterns can be identified. Ultimately, the goal of sensemaking is to identify how important the emergent situation is, why it differs from the norm, and what can be done to influence the outcome of the situation if that is necessary.

Even though these three processes represent a very early stage of the decision-making process, it is important to note that personal biases and situational factors can influence how one makes sense of their circumstances. Not surprisingly, how one interprets an emergent situation is likely to impact the ethicality of decisions regarding acting, monitoring, or ignoring that situation. For example, an individual may demonstrate a tendency to seek out certain types of information and disregard others. Similarly, there may be environmental pressures on the individual that dictate which outcomes are valued. This can result in overemphasizing some aspects of the problem and deemphasizing others. Stated more directly, early attempts at sensemaking can set the trajectory a given decision path takes in complex, ambiguous situations. It is important that we understand how people use sensemaking in these types of situations to inform their subsequent ethical decision-making.

With regard to information gathering, given that ethical events often involve multiple, competing goals, it is likely that those who consider fewer variables are more likely to take a narrow-minded or short-sighted view of a given situation. As such, these individuals are less likely to consider the downstream consequences of their actions (as well as the actions of others), and are more likely to underestimate the importance of neglected stakeholders' concerns and goals.

Similarly, making an ethical decision often involves considering multiple options, weighing the pros and cons of those options in light of their feasibility, and rendering a decision that recognizes the concerns of multiple parties. Of course, it is rare that all stakeholders can get everything they want. However, making sure to consider as many concerns as possible, from

a variety of stakeholders is likely to prevent people from rendering decisions that unduly harm stakeholders. Thus the integration of information aspect of sensemaking also appears to be an important issue to consider with regard to ethical decision-making.

We suggest that sensemaking is the process by which the previously stated reasoning strategies have their beneficial effects on ethical decision-making. Take recognizing circumstances as an example strategy. Given that the execution of the recognizing circumstances strategy involves considering the origins of a problem, the individual's role to play in the unfolding event, and the goals relevant to the situation it is likely that those who employ this strategy will consider a larger number of issues, a wider variety of issues, and integrate those issues into a coherent mental model of the situation as they approach the problem. A similar line of reasoning suggests that the application of the considering others strategy will perform in much the same way. Given these arguments the following two hypotheses are suggested:

H1: Individuals who engage in more effective sensemaking will also make more ethical decisions.

H2: Using cognitive reasoning strategies will promote effective gathering and integration of information.

Framing

In order to investigate why strategies are used in some circumstances but not in others, we suggest personal involvement may have a role to play. Ethical situations are often emotionally charged and can influence how others perceive the actor in a given situation. Situations involving ethical decision-making often provide a certain degree of personal gain, gain that sometimes must be put aside in order to avoid inconveniencing or even harming others. We suggest two ways in which personal involvement can play a role in ethical decision-making.

We suggest that when an individual feels responsible for causing an event they are more likely to engage in systematic processing, that is think more critically about the situation at hand. Thus, in this case, people are more likely to use the cognitive reasoning strategies suggested by Mumford and colleagues (Mumford, Connelly, Brown, Murphy, Hill, Antes, Waples, & Devenport, 2008). The use of these strategies will enhance the sensemaking process which will in turn promote higher ethicality in subsequent decision-making.

A second way in which personal involvement can influence ethical decision-making is through perceived outcomes. It is likely that when an individual recognizes personally relevant outcomes may result from a given situation, they will think more critically about the situation. Thus, a similar argument as to the one made earlier would suggest that personally relevant outcomes could result in more strategy use, enhanced sensemaking, and more effective and ethical decisions being made.

However, the nature of the strategies themselves suggest otherwise. When an individual engages in recognizing their circumstances, they are involved in considering the roles others have to play in the unfolding drama. Similarly, when an individual anticipates consequences,

it is not merely for themselves but for others. Lastly, the considering others strategy involves taking on the perspective of others when examining the problem. Thus we suggest that outcomes that are personally relevant may cause people to become distracted, focus on themselves, and reduce the degree to which individuals use the cognitive reasoning strategies.

H3: Framing will influence the degree to which an individual uses cognitive reasoning strategies.

H3a: When the individual is framed as being a cause of an ethical situation that individual will be more motivated to critically examine the situation and thus engage in more strategy use rather than when they do not feel responsible.

H3b: When the potential outcomes of an ethical situation are framed in terms of the organization the individual will adopt a wider perspective and engage in more effective strategy use as compared to situations in which the outcomes are framed in personal terms.

The three hypotheses set forward essentially argue that reasoning strategies will influence how an individual engages in sensemaking which will, in turn, influence ethical decision-making. Figure 1 represents these hypotheses in a conceptual model. Hypothesis three speaks to the linkage between situational factors and the use of cognitive reasoning strategies. Hypothesis 2 speaks to the linkage between the cognitive reasoning strategies and sensemaking. Finally, hypothesis 1 speaks to the influence sensemaking has on ethical decision-making (see Figure 1).

Method

Sample

The sample consisted of 163 undergraduate students (52 males and 111 females) drawn from an introductory psychology course at a large southwestern university. The study was announced via a website posting describing the study as a leadership problem-solving study. Three hours of research credit in their psychology courses were awarded for participation. The mean age of the participants was 19.2 years of age. The mean reported ACT score was 24.96 suggesting that these students represent a set of typical undergraduates in terms of demographics and general intelligence.

General Procedures

Upon arriving at the study location, participants read and signed an informed consent form. The study was conducted in a single 3-hour session divided into two blocks. The first block was half an hour long and involved a proctor guiding the participants through a series of timed individual difference measures. The second block was scheduled for two and a half hours. During this time, the participants were allowed to complete the remainder of the study materials at their own pace.

The primary experimental task was a low fidelity simulation (Motowidlo, Dunnette, & Carter, 1990) consisting of a written scenario in which the participants assumed the role of a

manager overseeing the production of a new medicine at a pharmaceutical company. The participants read a brief description of the company involved in the scenario, including a brief statement about the current circumstances the company was facing. Throughout the rest of the vignette the participants read mock emails from the head of the company presenting four separate, albeit related, problems and asking for solutions for each problem. The participants then wrote their solution in the form of an email to the head of the company.

Individual Difference Measures

Measures were administered in order to control for the role of individual differences upon the variables of interest. Participants' personality, intelligence, need for cognition, planning skill, narcissism, and cynicism were examined as covariates. Need for cognition was measured with Cacioppo and Petty's (1982) Need for Cognition scale. This measure asks participants to respond to a series of 15 statements, indicating the degree to which they prefer complex versus simple problems. This scale typically produces internal consistency coefficients in the .80s. Evidence for its construct validity may be obtained by consulting Cacioppo and Petty (1982).

Planning skills were measured using an abbreviated version of Marta, Leritz, and Mumford's (2005) planning measure. This assessment tool presents participants with a series of business cases. Participants are asked to indicate the actions they would take in developing a plan to solve the problems presented in each case. This measure produces reliability coefficients in the .70s. Evidence for the validity of this measure can be obtained in Marta, Leritz, and Mumford (2005). Cynicism was measured using the cynicism subscale of Wrightsman's (1974) Philosophies of Human Nature measure. This is a standard measure for assessing cynicism and evidence bearing on its validity can be obtained in Wrightsman (1974). Need for Cognition, planning skills, and cynicism were the only covariate control measures to demonstrate significant relationships with the variables of interest. Thus they were the only three that were retained in the final analysis.

Experimental Manipulations

Framing of cause—Each of the manipulations were written into the scenario. The framing of cause manipulation had two levels, including situational cause and personal cause. In the situational cause condition, the problem was described as being caused by some set of circumstances occurring outside the participant's control. In the personal cause condition, it was indicated that the problem was caused by the participant's character in the scenario. In order to present the problem in one of these ways the text was changed in the email presenting each problem. For example, in one of the scenarios participants were presented with a problem in which a new cancer treatment was delayed by one set of experiments. In the personal caused condition, the participants were informed that they were the ones who asked for this line of studies. In the situational cause condition, the experiments are described as part of routine protocol at the organization. A pilot test of the materials showed that participants in the personal cause condition scored higher on a manipulation check measure assessing the degree to which they felt personally responsible for the problem, as indicated by a mean score of 2.70 (SD=1.10) on a 5 point Likert scale as

compared to 2.42 (SD=.94) for those in the situational cause condition, a difference that was statistically significant (t(59) = 19.8, p <.01).

Framing of consequences—This manipulation framed the consequences stemming from the problem towards the individual or the individual's employer. For example, in the same scenario described above, outcomes in the personal framing of consequences condition were framed as being personally relevant (e.g., promotion opportunity, demotion, reputation gains and losses). Alternatively, in the organizational framing of consequence condition, the outcomes are framed in terms of organizational outcomes (e.g., profits, losses, market share gains and losses). A pilot test of the materials showed that participants in the organizational outcomes condition perceived the outcomes as significantly more organizationally relevant than those in the personal outcome condition as indicated by a mean score of 3.10 (SD=1.28) compared to a mean of 2.63 (SD=1.07) on a 5-point Likert scale (t(119) = 26.7, p <.01).

Content coding—Content coding was used to measure three different types of variables in this study: strategy use, sensemaking, and ethicality. The three judges involved in the content coding effort were all senior-level graduate students who received over 20 hours of training. During this training, the judges were introduced to operational definitions regarding the strategies, sensemaking, and ethicality. Additionally, time was spent during each training session rating materials and comparing ratings on a subset of materials drawn from the participants' responses to the stimulus materials. Ratings for each construct were made on a 5-point Likert scale. Discussions were held when judges did not agree on how to rate a given response until the judges had a minimum reliability of .70 on ten items drawn from the participant materials for each construct they were rating. After this was achieved, the judges were given the rest of the participant materials to rate and reliabilities were checked again at the end of the study. The judges were blind to the participants' conditions. Judges were each given a manual describing the rating strategy, which included definitions of each construct, markers that highlighted key aspects of the construct, and example materials drawn from participant responses representing high, medium, and low performance on each construct.

Strategy use—With regard to coding the strategies, the judges were familiarized with the definitions for each strategy, as described previously in Table 1. For example, the recognizing circumstances strategy was defined as the process by which "people think about how their position in their group, organization, and society related to the origins of the problem, individuals involved, and relevant principles, goals, and values." Some of the markers for this strategy included "defining their role and responsibilities," "recognizing the causes of the situation," and "demonstrating knowledge of the potential conflicts between people and goals."

As mentioned above, examples drawn from participant materials were used to demonstrate examples of high, medium, and low performance for each construct. The examples below were drawn from responses to the first scenario in the participants' materials in which a new cancer drug has shown some problems when administered to older patients and two of the advisors working on the project have given the participant conflicting advice regarding how

to proceed in resolving the issue. The example used from the participant materials denoting a high level of performance reads as follows:

> The drug was very effective. It shrank most of the people's tumors. It was not as effective for some elderly patients and some of them also had side effects. Dr. Garrison wants to hold up the drug to study the side effects. Dr. Miller thinks the drug should go to market because the side effects are minor.

The example denoting a moderate level of performance is as follows:

> The drug shrank 90% of the participants' tumors. Some of the elderly patients experienced side effects and the drug did not work as well on them. People in the company want to see it work.

Lastly, the example demonstrating a low level of performance read as follows:

> It didn't work as well on older participants.

Similar procedures were used to train the judges on each of the seven strategies listed in Table 1. Cronbach's alpha was used to assess the interrater reliability for each of the strategies that were coded. Reliabilities for the recognizing circumstances strategy was .73, for anticipating consequences was .80, and for considering others was .66. The other 4 strategies, dealing with emotions, examining personal motives, seeking help, and questioning judgment were not demonstrated by the participants frequently enough to gather reliable data for them, thus these strategies were not examined in the analyses.

Sensemaking—Three key elements of sensemaking were coded for in this study: The number of issues participants identified, the variety of issues identified, and the degree to which the issues were taken together or integrated in the participants' responses. In coding for the former variable, the number of issues identified, judges merely counted the number of different and distinct issues the participants identified when prompted to "summarize the relevant concerns, goals, and opinions of all the people involved… (including your own)" and to predict the "potential outcomes for all parties involved."

The second sensemaking variable, the variety of issues identified, was rated somewhat differently. The judges were instructed to look for indicators that participants recognized four distinct types of issues in their responses. These issue types were 1) financial, 2) logistical, 3) social, and 4) ethical. Financial issues were elements of the problem involving money. Logistical issues were those issues that dealt with managing resources, manufacturing a product, maintaining communication chains, or other practical concerns with product development and delivery. Social issues were those that involved people, such as managing conflicts between people, managing relationships with customers, or considering the impact of issues on employees. Finally, ethical issues were defined as those that specifically mentioned potential misconduct (e.g., stealing or lying), doing what is 'right,' or considering how others could be harmed by pursuing a given course of action. The judges denoted the presence of each of these issue types with a 1 or rated the item as a 0 if the participants did not mention issues of a given category. These ones and zeros were then summed such that the participant was given a score between 0 and 4 indicating how wide a variety of issues they identified.

The third, and final, sensemaking variable was that of information integration. This was rated on a 5-point Likert type scale. The judges were given example materials in which participants exhibited high, moderate, or low levels of integration when responding to the prompts "summarize the relevant concerns, goals, and opinions of all the people involved… (including your own)" and to predict the "potential outcomes for all parties involved." High levels of integration were demonstrated when the participant 1) addressed the problem as a whole, 2) recognized the relationships between issues in the situation, and 3) addressed multiple issues in any potential actions mentioned. Low levels of integration were demonstrated when the participant 1) discussed issues independently, 2) overlooked relationships between issues, and 3) focused actions on resolving a few or only one issue in the situation.

Once again Cronbach's alpha was used to assess the reliability of the judges' ratings on each of these variables. The reliability for the number of issues identified was .68, for the variety of issues identified was .71, and for information integration was .74.

Ethicality—Judges used a 5-point Likert type scale to rate the ethicality of responses to each of the four scenarios presented to the participants. An examination of existing literature regarding the nature of ethical responses in ambiguous circumstances revealed three aspects of problem solutions that should be considered when judging the ethicality of a response (Darke & Chaiken, 2005; Gilligan & Attanucci, 1988). First, is holding the welfare of others in high regard, this marker for ethicality was called Regard for Others. Second, was making sure to fulfill personal obligations, this marker was called Attending to Personal Responsibilities. The third, and final, marker of ethicality was called Adherence to/ Awareness of Social Obligations and involved being mindful of norms, values, duties, and guidelines within a given social system regardless of whether or not they represent personal values.

Judges were told to consider each of these three aspects of ethicality when making their ethicality rating for each response. Thus responses that knowingly hurt others, willfully disregarded personal commitments, and violated appropriate norms of expected behavior towards an individual or to social groups more generally (e.g., patients) were rated lower in ethicality than responses that either did not mention these things or, in the best case scenario, actively mentioned pursuing actions that took the welfare of others into account, respected personal obligations, and were mindful of broader social norms and values. Cronbach's alpha was used to assess the reliability of the judges' ratings for ethicality. The average alpha across the 4 scenarios was .87.

Results

Table 2 presents the correlations between ethicality, the sensemaking variables, and the strategy variables. It is of note that the ethicality variable correlated significantly with all three sensemaking variables ($p<.01$). Ethicality was also significantly correlated with the strategy variables as were the sensemaking variables. In order to control for co-variation among predictors and the existence of other relevant control variables, hierarchical multiple regression was used to test the first two hypotheses.

Hypothesis 1 was examined using a multiple regression approach. In this analysis we predicted ethicality from sensemaking. The first step of the regression contained the control variables need for cognition and cynicism. The second step included the sensemaking variables. The change in R^2 between block 1 and block 2 was significant (p <.05), indicating that the sensemaking variables are significantly related to ethicality over and above the model with the control variables alone. An examination of the beta weights reveals that the number of elements identified was not related to ethicality, the relationship between ethicality and the number of issue types identified approached statistical significance (β =. 151; p <.10), and the relationship between ethicality and information integration was statistically significant (β = .265; p <.05). These results offer partial support for hypothesis 1, higher quality sensemaking does appear to be related to higher levels of ethicality in decision-making. Figure 2 offers a pictorial representation of these relationships.

The next set of analyses examined hypothesis 2. As with hypothesis 1, we used multiple regression but this time we examined the relationships between the cognitive reasoning strategies identified in Table 1 with sensemaking. In each of these analyses need for cognition and planning skill were retained as covariates in the first step of the regression. The change in R^2 for the second block was significant in each analysis which examined the amount of variance accounted for by the addition of the anticipating consequences, recognizing circumstances, and considering others reasoning strategies.

The number of issues identified was significantly related to recognizing circumstances (β = . 515; p <.05). The anticipating consequences and considering others strategies, with regard to the number of issues identified only approached significance (β = .171; β = .169; p <.10). The only strategy variable significantly related to the number of issue types identified was considering others (β = .286; p <.05). Lastly, information integration was significantly related to recognizing circumstances and considering others (β = .558; β = .213; p <.05), while anticipating consequences was approaching significance (β = .155; p <.10). Thus hypothesis 2 was partially supported; the use of reasoning strategies identified in previous research is related to higher quality sensemaking. Figures 3, 4, and 5 offer a pictorial representation of these relationships.

In order to test the third hypothesis regarding the effect of the manipulations on the cognitive reasoning strategies, a multivariate analysis of covariance (MANCOVA) was used. Need for cognition was retained as a covariate in this analysis. This analysis was used to see how manipulating the framing of the causes and consequences influenced the use of the cognitive reasoning strategies. The omnibus results reveal a significant main effect for the framing of consequence variable (F_{cons} (3, 152) = 3.16; p <.05; η^2 = .06), but no other significant main effects or interactions (F_{caus} (3, 152) = 2.05; p <ns; $F_{cons*caus}$ (3, 152) = 1.70; p <ns). Thus hypotheses 3a was not supported, framing the individual as being responsible for causing an ethical event does not appear to have an effect on strategy use.

An ANOVA was used to examine the framing of consequences manipulation further. The results of this analysis showed that this manipulation was significantly related to recognizing circumstances (F (1, 154) = 9.49; p <.01; η^2 = .06), anticipating consequences (F (1, 154) = 7.70; p <.01; η^2 =.05), and considering others (F (1, 154) = 2.44; p <.01; η^2 = .05). Figure 6

presents a graphical representation of the means for these relationships, revealing that in each case when the outcomes were framed as being organizational rather than personal higher levels of strategy use were observed. This finding supports hypothesis 3b, framing the outcomes of an ethical situation in terms of being organizationally relevant, individuals engage in more effective strategy use.

Discussion

Before discussing the implications of these findings, a few limitations should be noted. First, the use of an undergraduate sample could limit the generalizability of these findings. The majority of the individuals participating in this study were Midwestern students between the ages of 18–21. It is possible, indeed likely, that samples that included older individuals might respond differently to these experimental manipulations. Given that people have an increasing level of experience with ethical dilemmas as they grow older, it would not be surprising that they would approach ethical dilemmas from a different perspective. It is important to note that it is unclear whether or not older participants will be any better at making ethical decisions. It could be that experience teaches people how to better handle ethical problems. Alternatively, people who have experienced the ‘losing end’ of ethical dilemmas may become jaded leading them to make worse decisions. Further research in this area is warranted.

On another note, this study did not focus on variables such as self-image or other social domains which are known to vary with age and instead focuses on the cognition individuals engage in when presented with an ethical problem. Given this fact, the effect of using an undergraduate sample should provide some degree of generalizability and still function to further our knowledge of the cognition involved in making ethical decisions (Wintre, North, & Sugar, 2001). Additionally, while generalizability is of some concern, the best way to establish boundaries on generality is via replication. Thus, the concern of internal validity was of tantamount importance in this study as compared with the effects on external validity which will be better addressed with replications of this study with older participants.

A second limitation to consider when interpreting these findings is that there was a lack of power in some analyses. This can be seen in the small eta squared values in the MANCOVA analysis as well as the marginally significant findings in the regression analyses. We interpret these findings with caution given the limited power afforded by the sample size and the use of a low fidelity simulation task. It is likely that these effects stemming from the manipulations might demonstrate much larger effects in real world settings, due to the fact that a low fidelity simulation can only approximate the impact the potential outcomes would have on an individual’s emotional and cognitive processes.

One final limitation that should be mentioned is the potential for method bias. All the variables reported in this study were collected using expert raters judgments on materials from a low-fidelity simulation. The participants responded to three different questions for each scenario during the course of the experiment. The first two responses were content coded for information bearing on sensemaking and strategy use. Ethicality was coded for using the third response participants gave for each scenario. Because these data were

collected using the same method it is likely that some of the variance they share is due to the method rather than the constructs themselves being interrelated. Thus the findings should be interpreted accordingly.

Bearing these limitations in mind, we feel that certain implications are warranted. On the broadest level, taken together these findings suggest that taking a broad perspective from the earliest stages of encountering an ethical situation can help individuals make more ethical decisions. Sensemaking involves the recognition and diagnosis of a novel, unusual, or ambiguous situation. Sensemaking begins when a person recognizes that a strange situation is unfolding and ends when a person has established some understanding of the circumstances in their mind, thus preparing the way for action. Given that ethical dilemmas are often novel, unusual, or ambiguous situations sensemaking is particularly relevant. Additionally, it is often the case that the initial understanding of an ethically ambiguous situation coupled with the first few actions one takes creates a trajectory for the unfolding situation. Thus, knowing how to encourage people to be effective at creating an understanding of an ethical situation can go a long way towards creating the type of momentum that will facilitate the most ethical resolution

The evidence supporting this assertion stems from the three findings from the current study. First, is the finding that considering a variety of issues and integrating disparate information were related to higher ethical decision-making. Second, is the fact that the strategies of recognizing circumstances and considering others had a notable impact on sensemaking. Third, and finally, that framing issues in terms of organizational outcomes rather than personal outcomes caused the strategies of recognizing circumstances and considering others to be used more effectively. We will discuss each of these points in turn.

The first set of findings supporting the assertion that taking a broad perspective promotes ethical decision-making is the pattern of results bearing on the relationship between sensemaking and ethical decision-making. Interestingly, the number of different issues the individual considered was not significantly related to ethicality. However, the variety of issues considered approached significance and the integration of information was significantly related to ethical decision-making. Thus it appears that it is not enough merely to engage in active cognition about the problem at hand; if that were the case merely considering a large number of issues would be related to ethical decision-making. Rather, how one goes about actively thinking about the problem matters. Considering a variety of issues and integrating that information into a coherent, understandable interpretation of the given situation is important for coming to an ethical decision. While promoting active cognition in a hectic environment is a challenge in and of itself, it is important that the active cognition individuals engage in takes into account multiple perspectives and a variety of issues.

The second line of evidence for the above assertion comes from the findings regarding the relationship between cognitive reasoning strategies and sensemaking. The strategies that were examined were originally developed by Mumford and colleagues and have been shown to be related to ethical decision-making in a variety of studies, using a variety of techniques (Antes, et al., 2007). What has been unclear up to this point is why these strategies have

been associated with higher levels of ethical decision-making. Some evidence to clarify this issue was found in the current study. Recognizing circumstances and considering others were the two strategies that demonstrated the clearest relationship with sensemaking in this study.

Both, recognizing circumstances and considering others were significantly related to information integration, additionally, considering others was significantly related to the variety of issues identified by participants. Recognizing circumstances and considering others are two strategies that encourage individuals to consider multiple lines of information and think about a problem from multiple perspectives. Given that the variety of issues considered and the act of integrating information were significantly related to ethical decision-making (albeit marginally in the case of the variety of issues identified) this adds credence to the assertion that broader perspective-taking is important at the beginning stages of ethical cognition.

The final line of evidence that lends itself to the assertion that taking broader perspectives facilitates ethical decision-making comes from the effects of manipulating environmental conditions on the strategies used by the participants. Interestingly, whether the cause of the event was construed as something that the participant initiated or as something thrust upon them by the circumstances had no discernable effect on strategy use. Rather, what seemed to influence how effectively participants used the reasoning strategies was how the outcomes were framed with regard to their level of impact (e.g., personal vs. organizational).

A strong argument could be made that when outcomes are framed as being very personally relevant it is likely that the individual will engage in more active cognition and develop a more effective solution to a given problem. However, as stated earlier, it is not merely the act of engaging in active cognition that is important. It is how the individual thinks about the problem while they are engaging in active cognition that matters. In this case, when the outcomes were framed as being organizationally relevant, participants more effectively utilized the anticipating consequences, recognizing circumstances, and considering others reasoning strategies.

This finding suggests that emphasizing the personal relevance of outcomes for individuals rather than emphasizing the broader impact those outcomes may backfire, at least with regard to ethical decision-making. It is conceivable that making a situation personally relevant will encourage an individual to pay more attention or use a larger portion of their available cognitive resources on a given problem. However, people tend to be notoriously self-focused and facilitating this personal focus may only exacerbate the tunnel vision people are already likely to demonstrate. This finding suggests that helping others see the larger, organizational impact of a given set of circumstances and their role within that situation, is likely to be a more effective strategy than merely helping the individual see the personally relevant outcomes inherent in a given situation.

Interestingly, it is often the case that an organizational leader will work to help people see the personal relevance of a given situation rather than the organizational relevance. Managers often try to help people see the good or bad outcomes that may result if a given

situation isn't handled effectively in order to increase their motivation to make an effective decision. However, highlighting the potential individual level rewards or consequences someone might face could lead them to make a less ethical decision. This study suggests that organizational leaders should emphasize broader outcomes rather than more personal outcomes when ethical decisions are being made.

Taken together these findings help clarify conditions in which individuals are likely to use pro-ethical cognitive reasoning strategies. Specifically, organizational leaders are encouraged to frame outcomes in terms of the organization rather than emphasizing personally relevant outcomes It appears that one mechanism by which these pro-ethical cognitive reasoning strategies have their effect on ethical decision-making is through their effect on sensemaking. Sensemaking is an important cognitive process that facilitates the individual's ability to understand a situation, make decisions, and take action. As such it is likely that it determines the trajectory a problem takes and the solution that is likely to arise. Individuals should be encouraged to consider a broad array of issues and perspectives from the very beginning of addressing an ethically sensitive issue and to form a coherent, unified understanding of that situation such that the concerns and goals of multiple parties can be attended to when resolving issues of this type.

References

Antes A, Brown R, Murphy S, Waples E, Mumford M, Connelly S, Devenport D. Personality and ethical decision-making in research: The role of perceptions of self and others. Journal of Empirical Research on Human Research Ethics. 2007; 2:15–34. [PubMed: 19385805]

Cacioppo JT, Petty RE. The need for cognition. Journal of Personality and Social Psychology. 1982; 42:116–131.

Darke PR, Chaiken S. The pursuit of self-interest: Self-interest bias in attitude judgment and persuasion. Journal of Personality and Social Psychology. 2005; 89:864–883. [PubMed: 16393021]

Gilligan C, Attanucci J. Two moral orientations: Gender differences and similarities. Merrill-Palmer Quarterly. 1988; 34:223–237.

Marta S, Leritz L, Mumford MD. Leadership skills and the group performance: situational demands, behavioral requirements, and planning. The Leadership Quarterly. 2005; 16:97–120.

Motowidlo SJ, Dunnette MD, Carter GW. An alternative selection measure: The low-fidelity simulation. Journal of Applied Psychology. 1990; 75:640–647.

Mumford M, Baughman W, Supinski E, Maher M. Process-based measures of creative problem-solving skills: II. Information encoding. Creativity Research Journal. 1996; 9:77–88.

Mumford M, Connelly S, Brown R, Murphy S, Hill J, Antes A, Waples E, Devenport L. A sensemaking approach to ethics training for scientists: Preliminary evidence of training effectiveness. Ethics & Behavior. 2008; 18:315–339. [PubMed: 19578559]

Weick, K. Sensemaking in organizations. Beverly Hills, CA: Sage; 1995.

Weick K, Sutcliffe K, Obstfeld D. Organizing and the process of sensemaking. Organization Science. 2005; 16:409–421.

Wintre M, North C, Sugar L. Psychologists' response to criticism about research based on undergraduate participants: A developmental perspective. Canadian Psychology/Psychologie Canadienne. 2001; 42:216–225.

Wrightsman, L. Assumptions about human nature: A social-psychological approach. 1. Monterey, CA: Brooks/Cole; 1974.

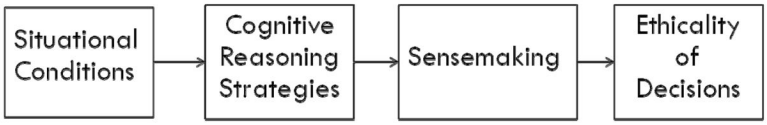

Figure 1.
Conceptual model showing the hypothesized role of environmental factors, ethical reasoning strategies, and sensemaking in ethical decision-making.

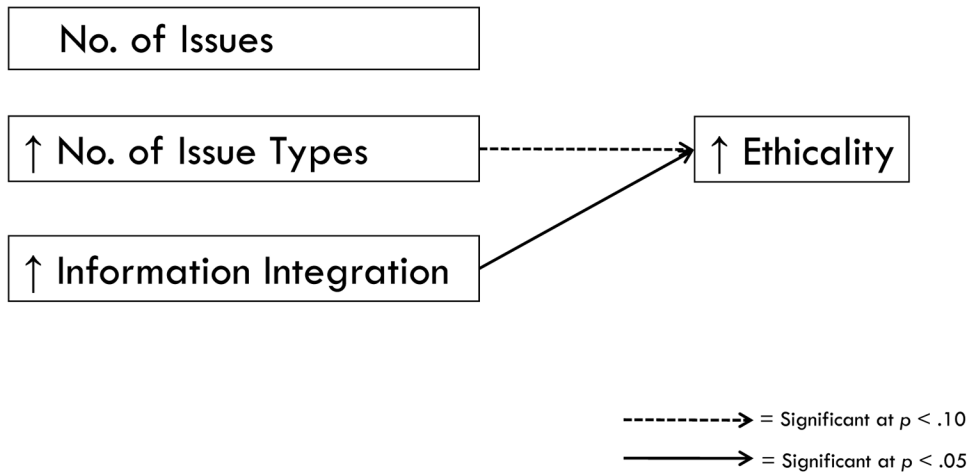

Figure 2.
Summary of multiple regression findings predicting Ethicality from Sensemaking variables.

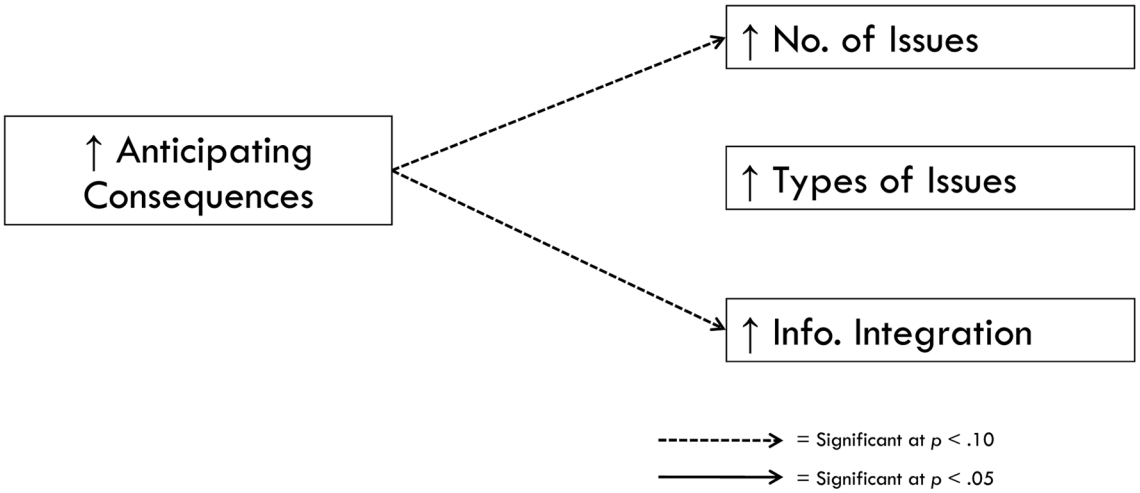

Figure 3.
Summary of multiple regression findings predicting sensemaking from anticipating consequences.

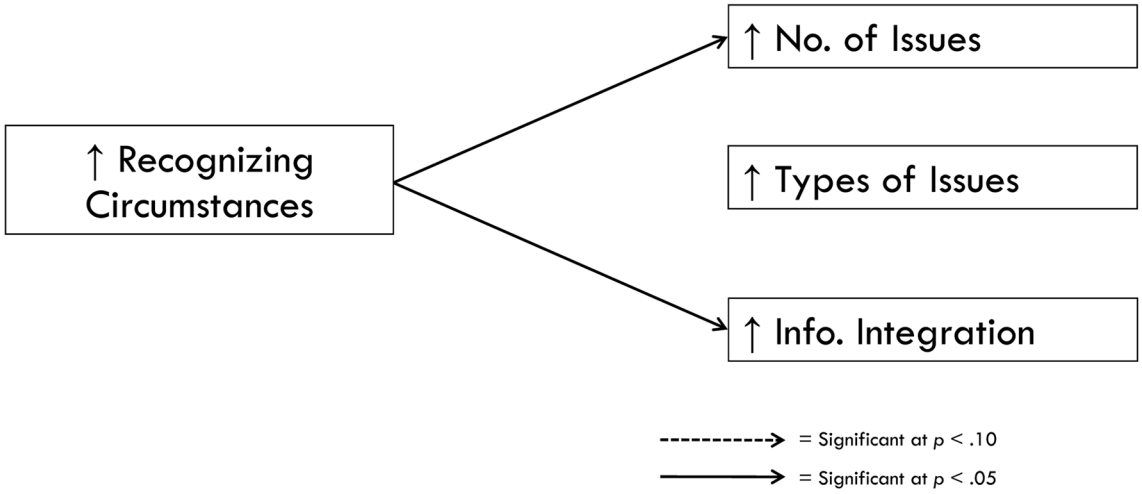

Figure 4.
Summary of multiple regression findings predicting sensemaking from recognizing circumstances.

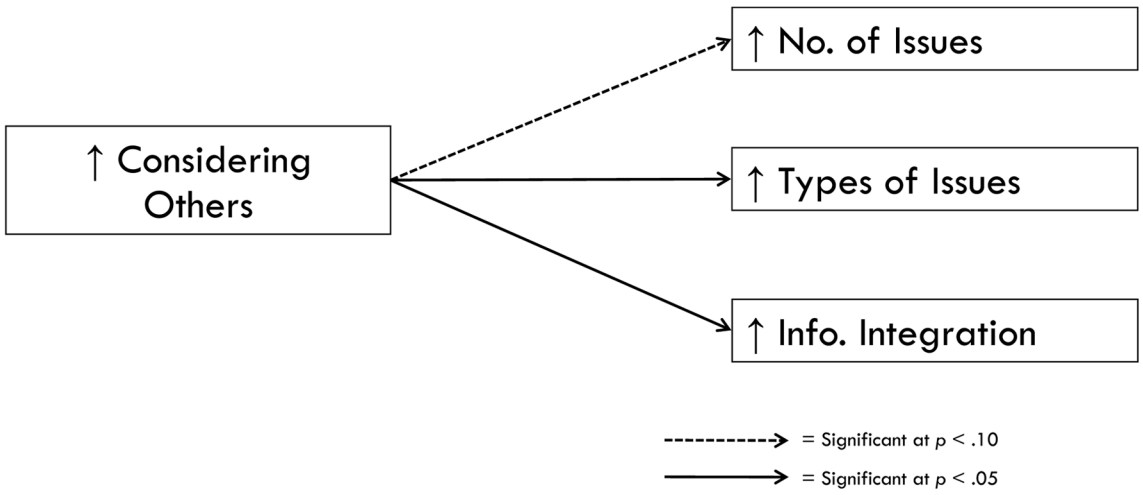

Figure 5.
Summary of multiple regression findings predicting sensemaking from considering others.

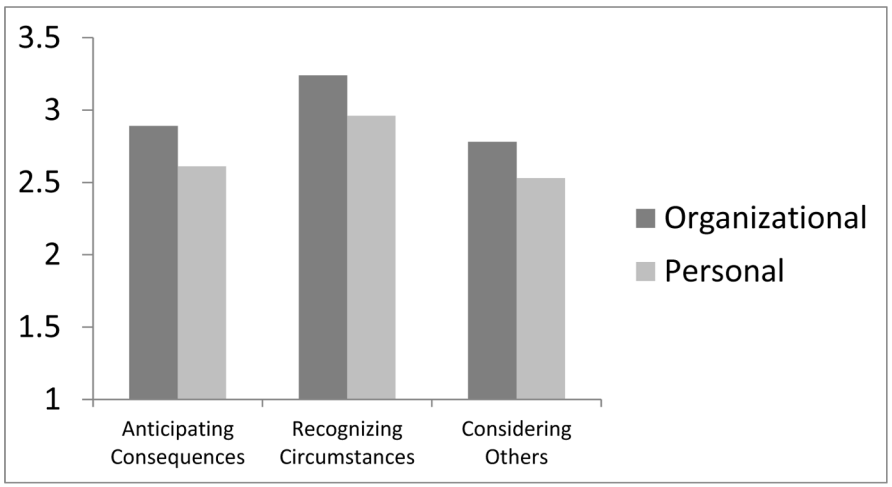

Figure 6.

Graphical display of mean differences in strategy used for the Framing of Outcome manipulation.

Note: Personal condition significantly lower at the p<.01 level for all strategies as rated on a 5-point scale.

Table 1

Expanded definitions of cognitive reasoning strategies relevant for ethical decision-making

Strategy	Operational Definition
1 Recognizing your circumstances	Thinking about origins of problem, individuals involved, and relevant principles, goals & values; considering one's own role in causing and/or resoling the problem
2 Seeking outside help	Talking with a supervisor, peer, or institutional resource, or learning from others' behaviors in similar situations
3 Questioning your own and others' judgment	Considering problems that people often have with making ethical decisions, remembering that decisions are seldom perfect
4 Dealing with emotions	Assessing and regulating emotional reactions to the situation
5 Anticipating consequences of actions	Thinking about many possible outcomes such as consequences for others, short & long term outcomes based upon possible decision alternatives
6 Analyzing personal motivations	Considering one's own biases, effects of one's values and goals, how to explain/justify one's actions to others, & questioning ability to make ethical decisions
7 Considering the effects of actions on others	Being mindful of others' perceptions, concerns, and the impact of your actions on others, socially and professionally

Note: Adapted with permission from Mumford, Connelly, Brown, Murphy, Hill, Antes, Waples, & Devenport, 2007

Table 2

Correlations between the Ethicality, Strategy Use Variables, and Sensemaking Variables

	1.	2.	3.	4.	5.	6.	7.
1. Ethicality	--						
2. Recognizing Circumstances	.569	--					
3. Anticipating Consequences	.571	.879	--				
4. Considering Others	.484	.847	.841	--			
5. No. if Issues Identified	.403	.826	.783	.763	--		
6. Variety of Issues Identified	.372	.634	.627	.634	.582	--	
7. Information Integration	.450	.890	.835	.826	.764	.547	--

Note: All correlations significant at the $p < .01$ level.