ABSTRACT: This study examined basic personality characteristics, narcissism, and cynicism as predictors of ethical decision-making among graduate students training for careers in the sciences. Participants completed individual difference measures along with a scenario-based ethical decision-making measure that captures the complex, multifaceted nature of ethical decision-making in scientific research. The results revealed that narcissism and cynicism (individual differences influencing self-perceptions and perceptions of others) showed consistently negative relationships with aspects of ethical decision-making, whereas more basic personality characteristics (e.g., conscientiousness, agreeableness) were less consistent and weaker. Further analyses examined the relationship of personality to metacognitive reasoning strategies and social-behavioral response patterns thought to underlie ethical decision-making. The findings indicated that personality was associated with many of these social-cognitive mechanisms which might, in part, explain the association between personality and ethical decisions.

KEY WORDS: ethical decision-making, personality, research integrity, individual differences

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As concern about research misconduct grows within the scientific community, so does the desire to explain what might account for unethical behavior on the part of scientists. Fundamental to the present investigation is the notion that research integrity ultimately depends on the decisions that scientists make in their work. Therefore, this study examines some of the individual-level factors that might distinguish a researcher who makes ethical decisions from a researcher who makes less ethical decisions.

Ethical decision-making is a direct antecedent of ethical behavior. That is, the integrity of a researcher’s behavior depends on the decisions that he or she makes in a situation with ethical implications. Making an ethical decision is a complex process that involves taking into consideration causes and outcomes that are often not black and white (Beu, Buckley & Harvey, 2003). More specifically, ethical decision-making can be viewed as a cognitive process during which an individual takes into consideration the components of the situation, considers potential responses to the problem, and chooses a course of action most appropriate given its likely outcomes for oneself and others (Mumford et al., in press). Thus, better ethical decisions arise from better execution of this decision-making process (Christensen & Kohls, 2003).

Influences on ethical decision-making can generally be classified as factors concerning the situation in which the decision must be made and factors of the individual making the decision (Ford & Richardson, 1994). A number of situational factors have been investigated in previous research, including production pressures, rewards, and supervisor expectations (Robertson & Rymon, 2001; Sims & Keon, 1999; Tenbrunsel, 1998). Likewise, examination of individual-level influences has ranged from demographic variables such as gender and nationality to education, moral development, and basic personality factors (Lund, 2000; Malinowski & Berger, 1996; Robertson & Schlegelmilch, 1993; Treviño & Youngblood, 1990; Verbeke, Ouwerkerk & Peelen, 1996; for a review, see O’Fallon & Butterfield, 2005).

Although investigation of both individual and situational factors is critical to a complete understanding of ethical decision-making (Stead, Worrell & Stead, 1990; Treviño & Youngblood, 1990), the findings regarding individual-level factors are of particular interest for several reasons. First, although a number of studies
have examined the influence of individual characteristics on ethical decision-making, the findings have been somewhat inconsistent (O’Fallon & Butterfield, 2005). These inconsistencies might be in part the result of the use of different criteria to represent ethical responding. For example, some studies explicitly investigate ethical decision-making (e.g., Terpstra, Rozell & Robinson, 1993), whereas others assess outcomes as diverse as behavioral intentions (e.g., Robin, Reidenbach & Forrest, 1996) and moral judgment (e.g., Harrington, 1997). Second, there is a lack of research specifically examining the relationship between individual difference factors and the ethical decision-making of scientists. Instead, most investigations have studied individuals within business contexts, which might not generalize to scientific professions. Third, there appears to be a popular belief that some “types” of people are innately “bad” and thus are predisposed to unethical behavior. Empirical tests of this assumption hold significant implications for both research and practice.

The purpose of the present study was to examine the role of basic personality dimensions, narcissism, and cynicism in the ethical decision-making of graduate students training for careers in the sciences using a criterion measure that captures the complex, multifaceted nature of decision-making in research. Additionally, this study examines some potential social-cognitive mechanisms that might shed additional light on the relationship between scientists’ personality attributes and their ethical decisions.

**Theoretical Background and Hypotheses**

**PERSONALITY**

Personality can be defined as a person’s characteristic pattern of thinking, feeling, and behaving (Myers, 2007). It has been shown that personality is an important influence on the behavior of individuals in the workplace (Barrick & Mount, 1991). Essentially, personality exerts its effects on human behavior by shaping the manner in which a person experiences and perceives the world (Goodstein & Lanyon, 1999). A well-researched conceptualization of personality known as the “Big Five” consists of five basic dimensions on which people vary: openness, conscientiousness, extraversion, agreeableness, and neuroticism (McCrae & Costa, 2003). Openness reflects an individual’s imaginative, intellectual, and open-minded nature. Conscientiousness refers to a quality of being dependable, responsible, and persevering. Extraversion refers to gregariousness, assertiveness, and talkativeness. Agreeableness reflects a good-natured, easy-going, cooperative characteristic. Finally, neuroticism reflects a tendency towards anxiousness, depression, and affective instability.

Previous studies of the influence of personality on integrity in the workplace have revealed fairly consistent and sizable positive relationships between conscientiousness and integrity (e.g., Murphy, 2000; Ones, Viswesvaran & Schmidt, 1993). The findings regarding the relationships between workplace integrity and extraversion, neuroticism, agreeableness, and openness have been much less consistent, but all have been linked to workplace behavior in general (Murphy, 2000; Barrick, Mount & Judge, 2001). However, some studies have shown agreeableness to be positively and neuroticism to be negatively related to integrity, with effect sizes rivaling those seen with conscientiousness (Ones & Viswesvaran, 1998). It is important to note that studies examining workplace integrity have primarily investigated low-level positions and have operationalized integrity as *not engaging in counterproductive behaviors*, such as wasting time and stealing from the organization. Therefore, the generalizability of these findings to the professional work of scientists remains somewhat unclear, but prior research suggests that basic personality characteristics will be, at least in part, related to ethical decision-making in the sciences.

**NARCISSISM**

In addition to an investigation of the broad personality characteristics captured by the Big Five, an examination of narcissism could shed further light on the role of personality in ethical decision-making. Narcissism is a self-concept variable reflecting an inflated, grandiose perception of oneself (Penney & Spector, 2002). A narcissistic individual experiences a sense of entitlement, lack of empathy, and need for power resulting in interpersonal insensitivity, exploitation of others, and even violent aggression (Rhodewalt & Morf, 1995), particularly in response to negative feedback or the threat of failure (Bushman & Baumeister, 1998). In addition, narcissists experience a preoccupation with concerns of power and success (Campbell, Bush, Brunell & Shelton, 2005). Narcissistic individuals seek opportunities to prove their dominance and garner the admiration of others (Penney & Spector, 2002; Wallace & Baumeister, 2002). Unfortunately, these objectives may be obtained at the expense of others (Campbell, Reeder, Sedikides & Elliot, 2000). For instance, Judge, LePine, and Rich (2006) recently found that narcissism was related to enhanced self-ratings of leadership and performance in the workplace relative to supervisory ratings.
Furthermore, narcissism was also related to more favorable ratings of respondents’ workplace deviance than was supported by supervisor’s ratings. Similarly, Munro, Bore, and Powis (2005) interviewed medical school staff to elicit descriptions of problematic medical students and found that the behaviors and characteristics of “problem students” resembled those exhibited by narcissists. For example, the staff reported that problem students displayed a lack of concern for others, failed to take responsibility for their actions, made offensive comments, and were self-centered.

Scientific research endeavors are collaborative and social by nature, often requiring sustained interaction with research assistants, colleagues from other laboratories, and human research participants, and many ethical guidelines among scientists reflect the demands of each of these social spheres. Given these observations, it seems plausible that narcissism might prove detrimental to the ethical conduct of scientific research at one or more of these social levels, in addition to the less social dimensions of research such as data management and business practices.

**CYNICISM**

Whereas narcissism primarily concerns distorted self-perceptions, cynicism concerns a distorted perception of other people. Some research has suggested that cynicism refers to negative perceptions of people in general (e.g., Kanter & Mirvis, 1989), although others have suggested that cynicism may be directed more specifically towards an organization and the people and things in one’s workplace (e.g., Andersson, 1996). Still another view of cynicism holds that it can be directed specifically toward an individual’s occupation (e.g., O’Connell, Holzman & Armandi, 1986). Furthermore, researchers have conceptualized cynicism as both a personality construct (e.g., Smith, Pope, Sanders, Alfred & O’Keefe, 1988) and an attitude (e.g., Wanous, Reichers & Austin, 1994). The attitudinal approach to cynicism seems to be gaining support, as research suggests that cynicism might be more malleable than typical personality characteristics (Andersson & Bateman, 1997).

A cynical individual holds the view that people are fundamentally self-serving and pursue their selfish interests at the expense of others (Guastello, Rieke, Guastello & Billings, 1992). Again, the social nature of scientific research makes it likely that this individual difference variable could be related to ethical decision-making in research. Whether the target of a person’s cynicism is another individual, an organization, or people in general, a cynic’s skepticism about the motives and behaviors of others may provide a social justification for misdeeds. The distorted view of cynical people leaves them little reason to adhere to ethical values espoused by a social system they believe to be permeated by ill intention and self-promotion (Goldfarb, 1991). Those who believe that other people are generally moral and trustworthy, in contrast, might be more likely to submit to social norms that restrict selfishness and personal aggrandizement, although one could also argue that this same belief might lead some people to exploit the morality they expect from others (Liberman, Samuels & Ross, 2004).

**UNDERLYING FACTORS IN ETHICAL DECISION-MAKING**

Establishing a relationship between personality attributes and ethical decision-making should help predict the ethical behavior of scientists. However, our interest in the present research extended further to why certain personality attributes might be related to ethical decision-making. Indeed, researchers interested in the influence of personality on workplace behavior have argued that the link between personality and workplace behavior has already been established, and that future research must seek to understand why this linkage exists (Barrick, Mount & Judge, 2001; Hogan & Holland, 2003). It is for this reason that we examined several social-cognitive factors that might account for the relationship between personality and ethical decision-making.

Engaging in ethical decision-making involves strategically reasoning through the aspects of the problem (Mumford et al., in press). We refer to these strategies as “metacognitive” reasoning strategies because they involve a reflective approach to the problem in which one steps back and deliberatively reasons through and assesses the thinking process itself (Croskerry, 2003). For example, more effective decisions involve thinking through the causes of the situation and likely outcomes of various courses of actions (Yuthas & Dillard, 1999). Additional strategies include considering the potential impact of one’s decisions upon others (Watley & May, 2004) and proactively managing one’s emotional reactions to the situation to improve decision-making (Connelly, Helton-Fauth & Mumford, 2004; Gaudine & Thorne, 2001).

People’s initial perceptions of the ethical situation will greatly influence the manner in which they work through the problem and their ultimate responses to it (Thomas, Clark & Gioia, 1993). Hence, because personality might influence how an individual perceives aspects of the situation, personality might also be related to engaging (or not engaging) in these reasoning strategies during decision-making. For example, it is
unlikely that narcissists will concern themselves with the effects of their actions on others (Campbell, Bush, Brunell & Shelton, 2005). In addition, it may be that the disillusionment characteristic of cynicism overwhelms people, leaving them ill-equipped to manage their emotions (Bakker & Heuven, 2006).

In addition to these metacognitive processes, the social-behavioral response patterns that people engage in when confronted with an ethical situation may also influence the ultimate ethicality of their decisions. For example, engaging in deception while considering and working through the problem may result in less ethical decisions (Steinel & De Dreu, 2004). In addition, failing to take responsibility for one’s role in the situation is likely to result in unethical decisions (Markman & Tetlock, 2000). Due to a narcissist’s aggressive, exploitive nature, for example, it is more likely that a narcissistic individual will engage in these kinds of behaviors leading to less ethical decisions. Likewise, it may be that the suspicious, defensive nature of a cynic might encourage responses that are retaliatory or that involve passive withdrawal from the situation altogether. These responses are also likely to lead to less ethical decisions.

These assertions about metacognitive reasoning strategies and social-behavioral response patterns raise a final question pertaining to the structure of the relationship between these variables. It might be that personality—especially characteristics that influence self-perceptions and perceptions of others—does not exert direct effects on ethical decision-making, but instead operates only indirectly by influencing the way an individual thinks through and responds to an ethical situation. In the present study, we examined the associations between ethical decision-making and basic dimensions of personality (captured by the Big Five taxonomy), narcissism, and cynicism. Furthermore, we extended our analysis to examine social-cognitive mechanisms that we propose underlie ethical decision-making in an attempt to clarify more precisely why personality might make a difference.

Method

Sample
The sample consisted of 226 graduate students (90 males and 131 females; 5 did not designate) who attended the University of Oklahoma and ranged in age from 22 to 54 with an average age of 28.5 ($SD = 6.8$). Students in all graduate degree programs in the social, health, and biological sciences requiring participation in research for degree completion were recruited to participate. They were recruited no earlier than four months after beginning their degree program, and no later than four years into work on their degree. One-hundred thirty-eight participants (61%) were Caucasian, 50 (22%) were Asian, 9 (4%) African American, 9 (4%) Native American, and 20 (9%) identified themselves as other. Seventy (31%) were students in the social sciences, 61 (27%) in the health sciences, and 95 (42%) in biological sciences. There were 158 students in the first year of their graduate program and 68 in their third or fourth year. Thirty-eight (38%) percent of participants had completed a master’s degree or other advanced degree before entering their current program. At the time of data collection, 60% of students were employed in research positions and 40% were employed in non-research positions (e.g., teaching assistantships). However, all of the participants’ degree programs required active engagement in research in one of the university’s laboratories.

Procedure
The present investigation was part of a larger project examining research integrity and was approved by the University of Oklahoma Institutional Review Board. Contact information for all graduate students enrolled in the social, health, and biological sciences was obtained, and participants were recruited through flyers, e-mails, and telephone calls during the 2005 and 2006 academic years. In 2005, first-year graduate students were recruited. In 2006, third- and fourth-year graduate students were recruited. When participants were recruited, the study was described as an investigation of students’ educational experiences with respect to integrity and problem-solving, and they were informed that they would receive $100 as compensation for their participation. Upon making contact with potential participants, the graduate students were asked to choose from several data collection sessions being offered during the semester. The data collection sessions varied in size from 1 to 20 participants, but respondents always worked individually. Students agreeing to participate in the study completed a battery of paper-and-pencil measures taking about four to five hours to complete.

Upon arrival at the laboratory, participants completed an informed consent form and standardized psychological tests of cognitive ability and intelligence. They also completed a background data form evaluating individual, group, and organizational factors related to work in their research laboratories as well as a measure assessing exposure to a number of research experiences. The predictor variables central to this
investigation were assessed using established measures of the Big Five personality characteristics and narcissism and cynicism, which we describe in more detail below. Finally, participants completed a scenario-based measure of ethical decision-making presented to students as a work-oriented problem-solving measure to minimize demand characteristics. Participants were instructed to take breaks as necessary during the study.

PERSONALITY MEASURES

Big Five. The Big Five Inventory was administered to measure openness, conscientiousness, extraversion, agreeableness, and neuroticism (John, Donahue & Kentle, 1991). The measure consists of 44 short descriptive phrases, and participants rated themselves on a 5-point scale indicating whether the statements describe them (1 = disagree strongly to 5 = agree strongly). Substantial evidence demonstrating the internal consistency, construct validity, and retest reliability of this measure has been provided elsewhere (Benet-Martinez & John, 1998; John & Srivastava, 1999). In the present study, internal consistency reliability estimates for the five subscales ranged from .74 to .87.

Narcissism. The 37-item version of the Narcissistic Personality Inventory, which consists of four subfactors, was administered (Emmons, 1984, 1987). The first factor, labeled exploitiveness/entitlement, refers to adeptness at manipulating people and the sense that using others as a means to achieve desired outcomes is acceptable. The second factor, leadership/authority, refers to one’s preference for holding leadership roles and the belief that one is especially effective in positions of authority. The third factor, labeled superiority/arrogance, refers to the belief that one is simply better than others. The fourth and final factor, self-absorption/self-admiration, represents excessive vanity and the belief that one is extraordinarily special. Participants responded in a true-false fashion to statements such as “I am an extraordinary person,” corresponding to the self-absorption/self-admiration scale, and “I will never be satisfied until I get all that I deserve,” reflective of a sense of entitlement. The reliability and construct validity of this measure has been demonstrated in many previous studies (e.g., Emmons, 1987; Morf & Rhodewalt, 2001; Raskin & Terry, 1988). In the present study, the average internal consistency reliability estimate for the four factors was .83.

Cynicism and Trustworthiness. Two scales from Wrightsman’s (1964) Philosophies of Human Nature measure were included in this study. Wrightsman identified six aspects of beliefs about human nature, including trustworthiness, cynicism, independence, strength of will, complexity, and variability. The scales included for the purposes of our investigation included the 10-item cynicism scale, assessing the degree to which an individual is suspicious about the motives of other people, and the 10-item trustworthiness scale, which evaluates one’s belief that people are inherently good, honest, and conventionally moral. Participants responded on a 7-point scale indicating the extent to which they agreed or disagreed with items such as, “Most people would tell a lie if they could gain by it” (cynicism), and “Most people do not hesitate to go out of their way to help someone in trouble” (trustworthiness). Although we did not have strong expectations about how the trustworthiness scale would relate to ethical decision-making, we included this scale as a complement to the cynicism scale. Wrightsman (1991) reports that these scales are only modestly related (r = –.27 to –.33), suggesting that they might function independently in the prediction of ethical decisions. The construct validity of this measure has been demonstrated in previous studies (Wrightsman, 1974, 1992). Internal consistency reliability estimates in the present study were .75 and .79 for cynicism and trust, respectively.

ETHICAL DECISION-MAKING MEASURE

Given the difficulty of directly assessing actual ethical (or unethical) behavior, ethical decision-making measures have frequently been applied in studies of integrity (e.g., Treviño & Youngblood, 1990; Sims & Keon, 1999; Eastman, Eastman & Tolson, 2001) based on the logic that integrity, as reflected by an individual’s behavior, arises from the decisions that people make when faced with complex situations with ethical ramifications (Lovell, 2002; Miner & Petocz, 2003). Although other measures of integrity, such as self-reported incidents of misconduct (e.g., Martinson, Anderson, Crain & De Vries, 2006) and judgments made about the degree to which behaviors are unethical (e.g., Korenman, Berk, Wenger & Lew, 1998), have been utilized, it is commonly assumed that more ethical individuals are more likely to make ethical choices on ethical decision-making measures that represent a low-fidelity simulation of real-world ethical events (Motowidlo, Dunnette & Carter, 1990). In this approach, people are presented with realistic work scenarios and are asked to choose from among responses of varying degrees of ethicality. Although the decontextualized, hypothetical nature of these measures limits generalizability to actual behavior, these measures are practically appealing because they
provide a low-risk assessment of ethical behavior, and they are theoretically appealing because choices that people make are believed to be an antecedent of how they would actually behave.

The ethical decision-making measure used in the present study was developed by Mumford and colleagues (2006). Participants received 12 research scenarios relevant to their respective field (i.e., social, health, or biological science). These scenarios were one to two paragraphs in length and provided the background and contextual information for three ethical events and three technical events that followed from each. These technical events were included to limit the transparency of the measure, but only responses to the 36 ethical items were used for assessing ethical decision-making. Following each technical or ethical event, six to eight options were provided as potential responses to the situation. Given that real-world problems typically include multiple courses of action that might prove plausible responses to the issue at hand, participants were instructed to choose the two responses that they felt would most likely resolve the problem broached by an event. An example of a social sciences scenario, along with an ethical and technical event and their response options, is provided in the Appendix.

Construction of the Measure. Development of the ethical decision-making measure was based on a taxonomy of ethical behavior in the sciences developed and validated by Helton-Fauth et al. (2003). Development of this ethical taxonomy was created via reviews of the research integrity literature and codes of conduct of professional organizations in the social, health, and biological sciences. The review produced 17 dimensions of ethical behavior in research, which are subsumed under four broad domains of ethical research: data management, study conduct, professional practices, and business practices. The data management domain includes data massaging and publication practices, and study conduct concerns ethical behavior pertaining to institutional review board requirements, informed consent, confidentiality protection, and protection of human and animal subjects. Professional practices encompasses objectivity in evaluating work, recognition of expertise, awareness of professional commitment, exploitation of staff or collaborators, protection of intellectual property, and protection of public welfare and the environment. Finally, the business practices domain includes conflict of interest, deceptive bid and contractual practices, inappropriate use of physical resources, and inappropriate management practices.

After the content for the 12 broader scenarios was developed by identifying actual cases in the sciences and then abstracting them into short, one- to two-paragraph summaries, Mumford and colleagues (2006) used this taxonomy to develop the content to be presented in the ethical events arising from the broader scenarios. The ethical events were written to the dimensions of ethical behavior identified by the taxonomy; each of the 17 dimensions was represented in two to three ethical events arising from the broader scenarios. Under each broad scenario, the ethical events, along with the technical events, were arranged in a sequence representing how the scenario might actually unfold.

After each of the events arising from the broader scenarios, six to eight response options were provided such that, in the case of ethical questions, roughly one-third reflected responses of high ethicality (scored as 3), one-third represented moderate ethicality (scored as 2), and one-third represented low ethicality (scored as 1). As noted earlier, participants were asked to choose two responses that they believed would resolve the issue at hand. These response options to the ethical events provided the basis for assessment of ethicality of decision-making. In addition, the complex, realistic nature of the response options allowed them to also be scored on other bases aside from simply the ethicality of the behavior represented by each response. Specifically, the measure also allowed for analysis of the metacognitive reasoning strategies and social-behavioral response patterns reflected in each response, which might account for the selection of response options.

Scoring Ethicality of Responses. First, the average score from each of the 36 ethical events was obtained by calculating the mean of the two response options chosen under each ethical event. These event scores were then categorized according to which broad research domain they represented (i.e., data management, study conduct, professional practices, or business practices), and a mean ethicality score was obtained for each of these four domains.

Scoring Metacognitive Reasoning Strategies and Social-Behavioral Response Patterns. The response options to the ethical events were also scored in two additional unique ways; specifically, they were scored for the metacognitive reasoning strategies and social-behavioral response patterns that they reflected. The social-cognitive mechanisms to be scored were identified through a review of previous studies of ethical misconduct. A review of the literature yielded seven key metacognitive reasoning strategies, including (1) recognizing one’s circumstances (i.e., awareness of
broadly relevant principles, key individuals, and the complex nature of the dilemma), (2) seeking help, (3) questioning one’s judgment, (4) anticipating consequences, (5) dealing with one’s emotions, (6) analyzing personal motivations and biases, and (7) considering the effects of one’s actions on others (Anderson, 2003; Darke & Chaiken, 2005; Kahneman, 2003; Knaus, 2000; Munro et al., 2005; Schweitzer, DeChurch & Gibson, 2005).

Likewise, seven social-behavioral response patterns to be scored were identified through this review, including (1) involvement of others in the decision, (2) retaliation, (3) deception, (4) active involvement (versus passive disengagement), (5) avoidance of responsibility, (6) selfishness, and (7) making closed-ended decisions that curtail subsequent options. These dimensions appear in various forms and under various names in previous studies of ethical misconduct (Butterfield, Treviño & Weaver, 2000; Moore & Loewenstein, 2004; Street, Douglas, Geiger & Martinko, 2001; Tenbrunsel & Messick, 2004; Yaniv & Kleinberger, 2000).

Following the identification of these social-cognitive mechanisms, operational definitions were formulated indicating how responses to ethical events would be characteristic of engagement, or non-engagement, in these social-cognitive dimensions during decision-making. After being familiarized with these definitions, a panel of four psychologists rated each response option across all events on a seven point scale (1 = low to 7 = high) to indicate the extent to which it reflected each dimension. The average intrarater agreement coefficient was .91 for the metacognitive reasoning strategies and .83 for the social-behavioral response patterns. The average of the judges’ ratings was used to weight each response, and the average score on each social-cognitive dimension was obtained by computing the average weight across responses for the options selected for the ethical events.

Validity Evidence. Evidence for the construct validity of this ethical decision-making measure is based on a subset of the present sample and was reported by Mumford and colleagues (2006). The average split-half reliability coefficient for scores on data management, study conduct, professional practices, and business practices was .81. Criterion-related validity evidence for these scales was obtained by correlating scores on the ethical decision-making dimensions with putative causes of ethical decision-making, such as exposure to unethical practices in the students’ day-to-day research work, and outcomes of ethical decision-making, as reflected in the severity of punishments directed at ethical violations. Evidence for convergent and discriminant validity was obtained by correlated scores on the measure with individual difference measures. Furthermore, examination of the pattern of correlations obtained between scores on the measure provided additional construct validity evidence.

More specifically, scores on these ethical decision-making scales were negatively related to self-reported exposure to unethical practices in the students’ daily research work (r = -.32), and were positively related to the severity of punishments awarded for ethical violations (r = .31). Scores on the ethical decision-making measure were only modestly related to scores obtained on measures of intelligence (r = .18) and divergent thinking (r = .16). In addition, scores on these scales were not related to measures of social desirability (r = -.01), which is unusual among self-report measures related to ethical thinking and behavior. Furthermore, the average observed correlation between scores on these scales, specifically data management, study conduct, professional practices, and business practices, was only .39, indicating measurement of related yet distinct aspects of ethical decision-making in the sciences. Additional evidence for the substantive meaningfulness of the scores on the measures was provided by the finding that scores on the metacognitive reasoning strategies were positively related to ethicality scores (average r = .39), and that the social-behavioral response patterns, such as deception (r = -.47) and selfishness (r = -.51), were negatively related to ethicality scores. Taken as a whole, the findings obtained by Mumford et al. (2006) provided initial evidence for the construct validity of this measure of ethical decision-making.

Analytical Approach

First, correlations between the personality characteristics and ethical decision-making in the four domains were examined. Next, multiple regression analyses were conducted in which the personality variables were used as simultaneous predictors of ethical decision-making in each of the four domains. The analyses of the social-cognitive mechanisms followed a similar approach. Specifically, correlations between the personality variables and the metacognitive reasoning strategies, followed by the social-behavioral response patterns, were obtained. Finally, the personality variables were used as predictors (in a series of simultaneous multiple regression equations) of the metacognitive reasoning strategies and social-behavioral response patterns.
Results

ETHICAL DECISION-MAKING

Correlations. The intercorrelations among the personality variables and ethical decision-making in each of the four domains are presented in Table 1. The observed correlations provided evidence that personality was indeed related to ethical decision-making. Openness and agreeableness were positively related to ethical decision-making regarding study conduct and data management. Narcissism, particularly the entitlement dimension, was negatively related to ethical decision-making in all domains of research. Cynicism and the belief that others are trustworthy were also both negatively related to ethical decision-making, although the latter was consistently weaker than the former.

Regressions. Table 2 presents the results obtained when scores on the four ethical decision-making domains were regressed on all of the individual difference variables. Examination of the regression weights provided indication of the relationship between each of the personality variables and ethical decision-making controlling for the other variables. Overall, the personality characteristics were significant (p < .05) predictors of ethical decision-making in each of the four domains.

In the data management domain, 10% of variance in ethical decision-making (R² = .10, p < .05) was accounted for by the personality characteristics, with cynicism (β = −.16, p < .05) and exploitiveness/entitlement (β = −.17, p < .05) being negatively related to ethical decision-making. With respect to study conduct, 14% of the variance in ethical decision-making (R² = .14, p < .01) was accounted for by personality. Openness (β = .15, p < .05) and neuroticism (β = .20, p < .01) were positively related and exploitiveness/entitlement (β = −.19, p < .05) was negatively related to study conduct. In the professional practices domain, 19% of the variance in ethical decision-making was accounted for by personality (R² = .19, p < .01). With respect to business practices, personality accounted for 11% of the variance in ethical decision-making (R² = .11, p < .05). A negative relationship of exploitiveness/entitlement was observed in both the business practices and professional practices domains, and cynicism was also negatively associated with ethical decision-making with respect to professional practices (β = −.19, p < .05). Furthermore, the results revealed that holding the view that other people are trustworthy was negatively related to ethical decision-making regarding professional practices (β = −.16, p < .05).

METACOGNITIVE REASONING STRATEGIES

Correlations. The correlations obtained between the personality measures and metacognitive reasoning strategies are provided in Table 3. Openness was positively related to recognizing the circumstances present in the situation and considering the effects of one’s actions on others. Agreeableness was positively related to questioning one’s judgment and dealing with one’s emotions during decision-making. Neuroticism was negatively related to questioning one’s judgment, dealing with emotions, and analyzing one’s personal motivations.

The findings with respect to narcissism revealed that superiority/arrogance and exploitiveness/entitlement were negatively related to the metacognitive reasoning strategies, as was cynicism. Finally, it was found that a belief in the trustworthiness of others was negatively related to consideration of the effects of one’s actions on other people.

Regressions. The results obtained when the metacognitive reasoning strategies were regressed on the personality variables are presented in Table 4. The personality variables were significant (p < .05) predictors of six of the seven strategies, with the variance accounted for by the personality variables ranging from 14% to 22%.

Examination of the regression weights revealed that openness was positively associated with several metacognitive strategies, including recognition of circumstances, anticipation of consequences, and consideration of others, while conscientiousness was negatively related to seeking help. In contrast to the positive influence of openness, exploitiveness/entitlement was negatively related to all of the metacognitive reasoning strategies with the exception of seeking help. Thus, it appears that less ethical responding on the part of narcissistic individuals may perhaps be accounted for by less engagement in metacognitive reasoning strategies when working through ethical problems.

Cynicism was also negatively associated with several metacognitive strategies, including recognition of circumstances, anticipation of consequences, and consideration of other people. These findings suggest that cynicism may reduce the effectiveness of decision-making by undermining the use of strategies that could make the elements of the situation salient and that might encourage a researcher to take into account potential outcomes. It was also found that a belief in the trustworthiness of others was negatively related to consideration of others. This finding suggests that persons who believe that others are fundamentally benevolent and moral may be more inclined to take advantage of their trustworthy nature.
TABLE 1. Intercorrelations among Personality and Four Domains of Ethical Decision-Making.

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**Note:** *p < .05; **p < .01. Reliability estimates are reported on the diagonal (coefficient α reported for personality measures; split-half reliability estimates reported for ethical decision-making).
SOCIAL-BEHAVIORAL RESPONSE PATTERNS

Correlations. Table 5 presents the results obtained when the personality variables were correlated with the social-behavioral response patterns. This analysis indicated that openness was positively related to involvement of others and negatively associated with retaliation, deception, and selfishness, whereas conscientiousness was negatively related to retaliation and selfishness.

The findings obtained for narcissism revealed that leadership/authority was positively related to involvement of others and negatively related to retaliation. Additionally, a sense of superiority along with a predisposition towards exploitiveness was positively related to deception, avoidance of responsibility, and selfishness. Furthermore, cynicism and holding the belief that others are trustworthy were positively related to social-behavioral response patterns likely to hinder ethical decision-making, including retaliation, deception, avoidance of responsibility, and selfishness.

Regressions. The results obtained when the social-behavioral response patterns were regressed on the personality measures are presented in Table 6. The findings indicated that personality was a significant predictor of retaliatory ($R^2 = .15, p < .01$), deceptive ($R^2 = .19, p < .01$), responsibility-avoidant ($R^2 = .21, p < .01$), and selfish ($R^2 = .18, p < .01$) responses. Specifically, we found that openness was negatively related to deception, avoidance of responsibility, and selfishness.

| Table 2. Regression Analysis for Personality Predicting Ethical Decision-Making. |
|-----------------|-----------------|-----------------|-----------------|-----------------|
|                  | Data Management | Study Conduct   | Professional Practices | Business Practices |
| Openness         | $\beta$         | .15*            | .03             | .02             |
| Conscientiousness| .05             | .05             | .05             | .03             |
| Extraversion     | .07             | .04             | .06             | .09             |
| Agreeableness    | .07             | .03             | .06             | .09             |
| Neuroticism      | .05             | .20**           | .06             | .05             |
| Leadership/Authority | .05          | .17             | .15             | .05             |
| Self-Absorption/Self-Admiration | .05       | .06             | .17             | .04             |
| Superiority/Arrogance | .03        | .09             | .01             | .11             |
| Exploitiveness/Entitlement | .17*     | .19*            | .27**           | .21*            |
| Cynicism         | .16*            | .12             | .06             | .01             |
| Trustworthiness  | .08             | .04             | .16             | .13             |

Note: $\beta$ = standardized beta coefficient. *$p < .05$; **$p < .01$.

| Table 3. Correlations of Personality with Metacognitive Reasoning Strategies. |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                               | Recognizing the Circumstances | Seeking Help | Questioning One's Judgment | Anticipating Consequences | Dealing with Emotions | Analyzing Personal Motivations | Considering Others |
| Openness                      | .16*            | .04             | .05             | .37*            | .05             | .07             | .16*            |
| Conscientiousness             | .09             | .13             | .00             | .12             | .06             | .01             | .04             |
| Extraversion                  | .06             | .05             | .12             | .05             | .10             | .11             | .06             |
| Agreeableness                 | .11             | .00             | .13*            | .12             | .17**           | .12             | .08             |
| Neuroticism                   | .05             | .08             | .16*            | .04             | .17*            | .17*            | .09             |
| Leadership/Authority          | .01             | .07             | .09             | .00             | .08             | .08             | .01             |
| Self-Absorption/Self-Admiration | .14*          | .03             | .16*            | .11             | .15*            | .13             | .09             |
| Superiority/Arrogance         | .23**           | .11             | .17*            | .20**           | .14*            | .16             | .19**           |
| Exploitiveness/Entitlement    | .35**           | .16*            | .30**           | .33**           | .31**           | .32**           | .31**           |
| Cynicism                      | .26**           | .06             | .15*            | .26**           | .15*            | .16*            | .22**           |
| Trustworthiness               | .09             | .08             | .09             | .09             | .05             | .11             | .14*            |
| $M$                            | 3.57            | .82             | 2.93            | 3.48            | 3.00            | 2.81            | 3.19            |
| $SD$                           | .39             | .21             | .43             | .40             | .43             | .42             | .42             |

Note: *$p < .05$; **$p < .01$. 
associated with several social behavioral-response patterns, including retaliation, deception, and selfishness. In addition, neuroticism was negatively associated with retaliatory and deceptive response patterns and positively associated with involvement of others.

The findings obtained for the leadership dimension of narcissism revealed that a personal belief in one’s leadership ability was negatively associated with destructive social responses, including deception and selfishness. On the other hand, the tendency to be exploitive of others was positively related to deceptive social responses along with greater avoidance of personal responsibility. A similar pattern was obtained for cynicism. A cynical view of others was associated with greater retaliation, deception, responsibility avoidance, and selfishness. Finally, the belief that others are trustworthy was associated with several negative social-behavioral response patterns, including avoidance of

TABLE 4. Regression Analysis for Personality Predicting Metacognitive Reasoning Strategies.

<table>
<thead>
<tr>
<th></th>
<th>Recognizing the Circumstances</th>
<th>Questioning One’s Judgment</th>
<th>Anticipating Consequences</th>
<th>Dealing with Emotions</th>
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Note: β = standardized beta coefficient. *p < .05; **p < .01.

TABLE 5. Correlations of Personality with Social-Behavioral Response Patterns.

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<th>Deception</th>
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Note: *p < .05; **p < .01.
personal responsibility and engaging in actions that limit the extent of future decision-making.

**Discussion**

The present study reveals that personality is modestly related to the ethical decision-making of scientists-in-training. Furthermore, we can conclude that the influence of specific personality attributes differs according to the particular domain of research conduct being considered. These findings underscore the value of taking the multidimensional nature of the practice of science into account when studying ethical decision-making. In addition to these broad conclusions, we found that narcissism and cynicism play stronger and more consistent roles in ethical decision-making than do more basic elements of personality.

Indeed, the subscales of the Big Five Inventory displayed rather weak associations with facets of ethical decision-making in this study, although neuroticism and openness appeared to play very modest roles within the domain of study conduct. Perhaps the most notable finding with regard to the Big Five was the absence of strong associations between ethical decision-making and conscientiousness, which is the personality variable most frequently studied in connection with integrity (Murphy & Lee, 1994). Although we found that conscientiousness was correlated with less retaliatory and selfish response patterns, conscientiousness was not broadly related to ethical decision-making and was not a significant predictor after taking into account the other variables we examined in this study. In fact, conscientiousness was even negatively related to seeking help from others. Thus, the role of such broad personality dimensions appears to be quite limited.

In contrast, individual differences that focused more specifically on self-perceptions and beliefs about others played a more consistent role in ethical decision-making. For instance, narcissistic entitlement was related to less ethicality in decision-making in three domains of research (notably those involving interactions with other people). This finding was consistent with controlled laboratory studies showing that a tendency toward self-centeredness and a belief that one is owed what one desires may lead to the exploitation of others as means of acquiring desired outcomes (Campbell, Bonacci, Shelton, Exline & Bushman, 2004). Furthermore, being cynical about the motives of others was associated with less ethical decision-making in two domains of research. Thus, it appears that misconduct on the part of researchers could be related to a sense that selfishness and immorality are socially normative (Guastello, Rieke, Guastello & Billings, 1992; Martinson et al., 2006).

Alongside the measure of cynicism that we used in the present study, we also included a measure that assessed participants’ beliefs in the trustworthiness of others. We did not have strong expectations about how this belief would relate to ethical decision-making, given the fact that several outcomes seemed plausible. Indeed, although the relationships between scores on

<table>
<thead>
<tr>
<th>TABLE 6. Regression Analysis for Personality Predicting Social-Behavioral Response Patterns.</th>
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<tr>
<td>Agreeableness</td>
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Note: β = standardized beta coefficient. *p < .05; **p < .01.
the trustworthiness of others scale and dimensions of ethical decision-making were generally weak, it was interesting that these associations tended to be negative, even though scores on the trustworthiness scale were also negatively related to cynicism scores. Thus, believing that other people tend to espouse conventionally moral standards—rather than simply being the functional opposite of cynicism—appeared to operate as a sort of complement to cynicism. One interpretation of these results is that the belief that others might be restrained in their self-serving impulses by traditional morality could enhance some people’s impulse to take advantage of this restraint (Argandoña, 1999). Thus, whereas narcissistic entitlement and cynicism might lead an individual to engage in exploitation of others as a means to acquire their desired ends, the belief that others are trusting and morally restrained, perhaps even naïvely so, could serve to reinforce such tendencies by convincing researchers that their exploitive attempts will go unnoticed.

In addition to these general conclusions about the ethicality of decisions, examination of more specific mechanisms that might lead to ethical decision-making (i.e., metacognitive reasoning strategies and social-behavioral response patterns) could enhance our understanding of why personality is related to ethical decision-making in research. For example, our analyses revealed that entitlement and cynicism were associated with less ethical decisions, but also with less engagement in metacognitive reasoning strategies that could assist a researcher in thinking through an ethical problem. In further support of the conclusion that cynicism and narcissism may be detrimental to ethical decision-making, we were able to explore how they might be related to destructive social-behavioral response patterns such as retaliation and deception.

Before considering the practical implications of conclusions arising from the present study, the limitations of this investigation should be noted. First, the sample consisted of graduate students working at a single institution. Although the participants were drawn from a number of social, health, and biological programs across the university, it is possible that these findings would not generalize to graduate students working at other universities. Furthermore, it is possible that these findings might not extend to senior-level researchers with greater experience working in their professional fields.

In addition to these concerns regarding generalizability, it should be recognized that the present study examined ethical decision-making via a measure designed to simulate real-world ethical decision-making. Although this measure allowed a multifaceted examination of ethical decisions in research, caution is nonetheless warranted in extending these findings to explain actual incidents of misconduct in real-world research laboratories. Furthermore, the measure only assessed a subset of all the possible ethical events a researcher might encounter in his or her work. Despite the importance of these limitations, we believe that the present results have the potential to provide important insights into the nature of ethical decision-making in research contexts, with a number of interesting and valuable practical implications, which we explore briefly in the following sections.

**Best Practices**

The work of a researcher involves a great deal of social interaction both inside and outside of the laboratory. As a result, effective researchers must develop social skills that go beyond the technical skills necessary to conduct research in their field (Thomas, Sexton & Helmreich, 2003). These skills (e.g., the ability to communicate and to resolve conflicts) may be developed through formal training programs (Jenkins & Fallowfield, 2002), but other informal opportunities to use these skills within one’s workgroup may facilitate their development as well. Fostering a climate within the laboratory that promotes responsible social behaviors such as honesty and taking responsibility for issues, and modeling of these behaviors by supervisors within labs, may create such an atmosphere for social development alongside technical development (Brown, Trevisio & Harrison, 2005).

Our findings also suggest that introducing researchers to the metacognitive reasoning strategies related to better ethical decision-making could promote ethical decision-making. It is critical to provide researchers with tools that they can use when confronted with challenging ethical issues (Chen, 2003). The most effective approach to teaching these strategies may be to introduce researchers to them early in their careers and teach them how they can be applied in order to foster continued professional development (Fischer & Zigmund, 2001).

At this juncture, however, it is important to note that individuals typically fail to recognize their own shortcomings with regard to estimating and evaluating their cognitive and social competencies (Dunning, Johnson, Ehrlinger & Kruger, 2003). Narcissists, in particular, due to their tendency to exaggerate their self-worth and abilities, are unlikely to be aware of their social and intellectual deficiencies (Ames & Kammrath, 2004).
Therefore, attempts to educate researchers concerning ethical decision-making first require imparting an appreciation of biases that can diminish the effects of such training efforts (Betan & Stanton, 1999). These practical recommendations emphasize the point that the practice of research involves people—people who have certain predispositions, beliefs, and tendencies that they bring with them to the laboratory—and that the actions of researchers directly impact others.

**Research Agenda**

Two themes of the present effort have implications for future research. One theme concerns the criteria employed in studying ethical decision-making. Our results suggest that it might be important to consider ethical decision-making in research as a multifaceted construct (Beu et al., 2003). The second theme relates to the importance of examining underlying processes in ethical decision-making. Our findings suggest that examination of underlying cognitive and social approaches to ethical decision-making may ultimately allow for more complete theories and models of ethical decision-making in research.

In addition to these overarching suggestions, the research agenda flowing from the current effort suggests attention to a number of issues. First and foremost, in the present investigation it was not possible to study all personality variables that potentially impact ethical decision-making. Although the present findings point to the value of further investigations examining the variables specifically examined in this study, entitlement and cynicism in particular, a number of other variables might be of interest. Consideration of additional variables pertaining to self-views, such as the contingencies of self-esteem (Crocker & Park, 2004), could be beneficial in future research. Research examining variables regarding an individual’s orientation to other people, such as need for affiliation (Rooplekha & Damodar, 2003), may also be fruitful. Generally, it appears that studies examining personality variables that might explain how a researcher will perceive and respond to challenging social situations may be beneficial.

Additionally, future research examining personality should consider the typical composition of a researcher’s personality. For example, are cynicism and narcissism common characteristics in scientists? The work of Feist (1994; 1998) suggests that creative, productive scientists are more likely to be dominant, hostile, and impulsive. His research also suggested that such scientists are more exploitative and deceitful. Wallace and Baumeister (2002) maintain that narcissists are more likely to seek high-pressure, high-profile professional careers. Paradoxically, then, some of the most successful scientists could actually be among the least ethical in certain respects. This is an important issue for further investigation.

In addition to these considerations, future research should examine the interaction of environmental and situational factors with personality in the ethical decision-making process. Past research has asserted the importance of considering the interaction between the person and the situation, and, in addition, has provided evidence in support of the existence of this interaction effect (Treviño & Youngblood, 1990). For example, the competitiveness of the research environment might be a critical variable influencing the expression of narcissistic and cynical tendencies (Exline, Single, Lobel & Geyer, 2004). In addition, a researcher’s experience with his or her mentor might influence how he or she generally perceives other researchers in the field and field norms (Brown & Treviño, 2006; Dickson, Smith, Grojean & Ehrhart, 2001). In the worst-case scenario, if the mentor serves as a bad model, then a novice researcher might learn these negative behaviors and/or become cynical about the research enterprise in general.

In addition to examining whether particular environments might serve to accentuate or diminish the expression of these personality characteristics, a related line of research would consider whether narcissism and cynicism change over a scientist’s lifetime and how this might relate to success and to ethical behavior. It has been proposed that in some situations cynicism and narcissism might actually be adaptive (Meyerson, 1990; Wallace & Baumeister, 2002). For example, when researchers set out to refute criticism of the work to which they have contributed a substantial portion of their life, perhaps a bit of narcissism is necessary to fully defend their position. At the heart of this issue, one finds a common debate among researchers concerning the malleability of personality across the lifespan (Srivastava, John, Gosling & Potter, 2003). It has been suggested that cynicism and narcissism might be more responsive to certain life experiences than more basic personality characteristics tend to be (Campbell & Foster, 2007; Johnson & O’Leary-Kelly, 2003). Therefore a critical question for the future is whether the nature of the scientific enterprise encourages or dissuades narcissism and cynicism as a scientist develops and acquires experience. If such an association exists, then understanding the development of
such characteristics and how they lead to unethical decision-making and behavior could prove to be of great value to the integrity of scientific fields.

Educational Implications

The scientific community should recognize that deep-rooted personal characteristics might influence how scientists think about, and respond to, various situations in their work. The social nature of the scientific enterprise makes this point particularly salient given that a researcher may find him- or herself faced with making decisions that require a trade-off between personal advancement and consideration of the impact of one’s actions on others. Encouraging scientists to step back and objectively reflect when confronted with challenging situations in their work may be critical to overcoming the potential negative effects of tendencies toward self-centeredness or skepticism about others. This objective analysis might be encouraged by responsible conduct of research training programs that provide scientists with training in the use of reasoning strategies that can serve as tools for thinking through the situation at hand.

Clearly, ethical decision-making in research is a complex phenomenon, and personal biases shaped by one’s own characteristics are just one factor operating to influence the integrity of one’s behavior. Nevertheless, it is fruitful to dispel the notion that research misconduct occurs as an isolated incident only among a few “bad apples.” Instead, in the interest of self-awareness, self-development, and the scientific enterprise, scientists should take note of their own potential susceptibility to the influences of personal characteristics that they bring with them into the laboratory and the possibility that environmental and experiential influences could drive the expression of such characteristics in a direction that is detrimental to the integrity of the field.

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**References**


Appendix

Example from Ethical Decision-Making Measure

(Broad Scenario)

Moss is a researcher in the laboratory of Dr. Abrams, a well-known researcher in the field of economics. Moss is trying to develop a model to predict performance of stocks in the technology sector, but she is having difficulty analyzing and selecting trends to include in the model. She enlists the help of Reynolds, another experienced researcher working on a similar topic. With Reynolds’ help, Moss eventually analyzes and identifies some key trends, working them into a testable model. She also discusses some of her other research ideas with Reynolds. Two weeks later, Moss comes across a grant proposal developed by Reynolds and Abrams. She sees that it includes ideas very similar to those she discussed with Reynolds. She takes the matter to Abrams, who declines to get involved, saying that the two researchers should work it out on their own.

(Ethical Event)

1. Reynolds admits to Abrams that he used slightly modified versions of Moss’s ideas. Abrams is upset with this, but Reynolds is a key person on the proposal team and the grant application deadline is soon. What should Abrams do? Choose two of the following:

(Response Options)

a. Fire Reynolds from the lab on the grounds of academic misconduct.
b. Leave Reynolds as first author on the proposal since he wrote up the ideas.
c. Remove Reynolds from the proposal team, and offer Moss the position if she allows her ideas to be used.
d. Ask Moss to join the grant team, placing her as third author on the proposal if she allows her ideas to be used.
e. Acknowledge Moss in the grant proposal because the ideas were hers originally.
f. Apologize to Moss and indicate that the proposal must go out as is to meet the deadline.
g. Remove Moss’s ideas from the proposal and try to rework it before the deadline.

(Technical Event)

2. Moss is upset about Reynolds using her ideas and she decides to do something about it. Given that Moss works very closely with Reynolds and their boss Abrams, evaluate the likely success of the following plans of actions Moss can take. Choose two of the following:

(Response Options)

a. Moss asks Reynolds to give her credit by putting her name on the grant proposal as well.
b. Moss asks Reynolds about the incident and tape records his reaction to later show Abrams.
c. Moss searches for annotated notes about her ideas that are dated prior to her conversation with Reynolds.
d. Moss appeals for a “mock trial” for Reynolds to testify under oath to his superiors that the information was his.
e. Moss searches for Reynolds’ lack of understanding of the concepts he claims were his own by questioning him in front of other students.
f. Moss attempts to sway other researchers to support her to Abrams.
g. Moss visits Reynolds’ office in hopes of finding evidence that she contributed to the proposal.
h. Moss asks Reynolds to write an account of their conversation on the day in question and shows her comparison account to him as evidence that he is using her ideas.

Note: Above example represents one example from the social sciences scenarios. Bold text indicates the key elements noted in the manuscript.