Role of General Competence in Risk and Ambiguity Preferences

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Abstract

Previous research has demonstrated that risk and ambiguity preferences are both influenced by a decision-maker's perceived sense of competence. However, related research has been limited to the effects of task-specific competence rather than those of general competence. In this paper, we argue that a perception of competence need not be related to the domain of the evaluated decision in order to impact an individual's risk and ambiguity preferences. We manipulated participants' perceived sense of competence in a domain unrelated to the economic gambles they were later asked to evaluate. Although our research did not demonstrate significant differences in uncertainty preferences between our assigned competence groups and our control group, future research that refines and expands upon our methodology may reveal significant evidence supporting our argument.

Key words: risk, ambiguity, competence

Introduction

Every day, we make thousands of decisions in which the outcomes are unclear or uncertain. This uncertainty can be broken down into two distinct categories: risk and ambiguity. Decisions that involve risk can be easily represented as probabilities. Examples include flipping a coin or rolling a die. Decisions involving ambiguity are difficult to pin down with probabilities, as they are not easily quantifiable. Ellsberg (1961) describes ambiguity as "a quality depending on the amount, type and 'unanimity' of information," while Knight (1921) describes ambiguity as "unmeasurable uncertainty." Examples of decisions under ambiguity involve a sense of vagueness, such as choosing a team to win the Super Bowl or predicting the winner of a presidential election. Previous research has explored how individuals behave under these two sources of uncertainty and has attempted to understand what causes people to behave differently from one another when faced with risk or ambiguity.

Differential uncertainty preferences have been attributed to a variety factors such as personality traits, mood effects, and individual IQ. We focus on the role that perceived competence plays in choice under uncertainty. While perceived competence has emerged in recent literature as an influence on choice under uncertainty, current discussions have been limited to task-specific competencies rather than a general sense of competence. We examine how manipulating an individual's perceived sense of competence in tasks distinct from risk/ambiguity evaluations, influences their uncertainty preferences. This more global perspective raises an important question about the nature of competence: does positive and negative feedback only impact our perceived competence within the domain of the praised/criticized task? Or, does this feedback influence a more general sense of competence that mediates our choices under uncertainty in all domains? We

support the latter of these two claims: that perceived competence is a more global construct, meaning that manipulating an individual's sense of competence in one domain will impact his or her uncertainty preferences in domains that extend beyond the domain of the original manipulation.

In our present study, we explore the validity of this claim in hopes that our findings shed new light on the nature of competence, especially with regards to choice under uncertainty. Sections 1-3 review previous literature, providing motivation for our focus on perceived general competence and uncertainty preferences. Section 1 introduces the concept of competence and describes the effects of both task-specific and general competence on behavior. Section 2 focuses on the role that competence plays in the formation of individuals' ambiguity preferences. Section 3 explores the relationship between risk attitudes and competence. Section 4 reviews our methodology and the results of our present investigation. Finally, Section 5 provides a general discussion of our findings and the implications of our findings on future research.

Section 1: Competence

Previous research from social psychology has implicated competence as a major influence on task performance and behavior. However, before these practical implications are discussed, it would be helpful to provide a formal definition of competence. Heath and Tversky (1991) argue that competence is based upon a perception of contrasting states of knowledge. They add that competence is enhanced by "general knowledge, familiarity, and experience" and diminished by calling to attention "relevant information that is unavailable to the decision-maker, especially if it is available to others." We expand Heath and Tversky's definition of competence to include perceptions of self-efficacy, a central mechanism in Bandura's (1977) theory of social learning.

Self-efficacy is defined by Bandura as "one's belief in one's capacity to perform a task successfully." Similar to the relationship between knowledge states and perceived competence discussed by Heath and Tversky, an individual's perceived self-efficacy is dependent upon their evaluation of information (environmental cues, feedback cues, etc.,) which in turn informs them about their own capacities (Gist, 1987). For the purposes of this paper, we will use the terms perceived competence and perceived self-efficacy interchangeably to refer to an individual's sense of knowledge, experience, and efficacy for a given task or domain.

Task-Specific Competence

Studies examining the role that perceived competence plays in behavior has linked higher self-evaluations of competence with greater task-effort, persistence, expressed interest, and level of goal-difficulty selected for performance (Gist, 1987). However, a majority of research regarding competence has focused on particular, task-specific competencies rather than a more global sense competence. For example, research has shown that an individual's perceived, entrepreneurial competence is positively correlated with their intention to start their own business and that the effects of perceived learning from entrepreneurial courses is mediated by this perceived, entrepreneurial competence (Chen et al., 1995; Zhao et al., 2005). This finding places new emphasis on strengthening entrepreneurial competence in order to foster entrepreneurship, rather than solely focusing on teaching business skills. Additionally, self-evaluations of sales competence provided by life insurance salespeople were positively correlated with the number of calls made, the number of sales made, and average weekly revenue generated by each salesperson (Barling & Beattie, 1983). Further more, work done by Graham et al. (2005) demonstrated that individuals

that perceive themselves as more competent investors trade more often and also tend to have more internationally diversified portfolios.

The aforementioned studies all provide evidence that task performance and individual behavior are not necessarily dependent on an individual's skillset or knowledge but rather on how much the individual believes in their own abilities. However, each of the previous studies evaluated a remarkably specialized sense of competence: entrepreneurial competence, sales competence, and investment competence. This literature indicates that competence influences behavior, albeit only within the domain of the specified competence and without generality (i.e. entrepreneurial competence impacts entrepreneurial behavior but not necessarily sales behavior). This interpretation of competence suggests that our sense of competence is compartmentalized into a multitude of distinct, task-specific competencies rather than one that generalizes across domains.

General Competence

While a majority of literature regarding competence focuses on task-specific competencies, a collection of studies has shown that a general sense of competence can impact behavior across a variety of domains. Most notably, Tipton and Worthington (1984) developed a scale to measure "generalized self-efficacy" (GSE) or "people's expectations that they can perform competently across a broad range of situations." Participants were asked to indicate their agreement with 27 presented items using a 7-point Likert scale for each item. The 27 presented items gauged participants' beliefs about their own general abilities (e.g. "I can succeed at most any endeavor to which I set my mind.") Participants were classified as either "High GSE" or "Low GSE" based upon their responses to the 27-item scale. In two following studies to check for the construct's

validity, participants were asked to complete one of two tasks: a self-determination task or a behavioral self-modification task. The self-determination task measured how long participants could hold a book parallel to the ground using their non-dominant hand. The behavioral self-modification task tracked participants' ability to extinguish unwanted, personal habits (e.g. smoking or drinking) that were provided by the participants.

The results of the two studies revealed positive correlations between GSE scores and both self-determination and behavioral self-modification. High GSE participants held their arms outstretched for a significantly longer period of time than low GSE participants. Additionally, high GSE participants demonstrated a greater ability to modify their behavior and curb negative habits over a four-week period. According to Tipton and Worthington, "the fact that the criterion tasks were unrelated, one being a laboratory behavior and the other a troublesome personal behavior, supports the construct validity of GSE across situations." Tipton and Worthington's GSE scale provides evidence that perceived general competence can predict behavioral patterns in a similar manner as task-specific competence.

In addition to the previous study, Harrison et al. (1996) examined the relationship between the perceived general competence of American expatriates and their ability to assimilate into their new host culture. Their findings showed that American expatriates with high perceived general competence expressed significantly greater degrees of general, interaction, and work adjustments than those with lower perceived general competence. This provides further evidence that perceived general competence can influence behavior just like perceived, task-specific competence.

Section 2: Ambiguity and Competence

Thought experiments conducted by Ellsberg (1961) reveal that certain patterns of choice under uncertainty violate expected utility theory and that our preferences are dependent upon the source of uncertainty. Ellsberg demonstrates that individuals prefer to bet on clear bets over vague bets, a phenomenon referred to as ambiguity aversion. Ellsberg accomplishes this through a thought experiment involving urns and different colored balls. Ellsberg proposed two urns for participants to consider. One urn was composed of 50% red balls and 50% black balls, while the second urn was composed of red and black balls in an unknown proportion. Participants were then asked to consider a situation in which they would win one hundred dollars if a ball of a certain color was drawn and zero dollars if the other color was drawn. After being informed which color ball was needed to be drawn in order to win, participants indicated which urn they would prefer to have the ball drawn from. Participants demonstrated a clear preference for the urn with known 50-50 distribution of red and black balls, regardless of what color ball was needed to win.

This pattern of choice violates expected utility theory. By indicating that they would prefer to draw from the 50-50 urn when a red ball is needed to win, participants are indicating that they believe that there are fewer than 50 red balls in the urn of unknown proportion. However, these same participants also indicated that they would prefer to draw from the 50-50 urn when a black ball was needed to win. The urn with unknown proportions of red and black balls cannot simultaneously have more red balls than black balls AND more black balls than red balls. This violation of expected utility theory illustrates a general preference for bets based on risk over those based on ambiguity, a phenomenon described as ambiguity aversion or source preference. However, this generalization of ambiguity aversion would be challenged by Heath and Tversky (1991) and their *Competence Hypothesis*.

Competence Hypothesis

Building off of Ellsberg's (1961) thought experiments, Heath and Tversky sought to explore ambiguity aversion outside the confines of novel chance lotteries and instead focus on source preferences associated with uncertain beliefs about general knowledge. Throughout a series of studies, Heath and Tversky asked participants multiple-choice questions based on general knowledge and requested them to provide a percent value that reflected how likely it was that their selected answer was correct. Participants were then presented with an opportunity to either bet on their answer or a chance lottery with a likelihood of winning equal to their listed percent value. Heath and Tversky found that individuals were more likely to bet on their uncertain belief (ambiguity) over the chance lottery (risk) when they felt more knowledgeable about the domain (participant listed a higher percent value). On the contrary, when individuals felt less knowledgeable about the question (participant listed a lower percent value), they were more likely to bet on the chance lottery over their uncertain belief. Their findings support their proposed *Competence Hypothesis* in which "willingness to bet on uncertainty relies not only on the estimated likelihood of an event occurring and the precision of this estimate, but also upon one's sense of understanding of the relevant context." Heath and Tversky's research provides evidence that people prefer to bet in contexts in which they feel knowledgeable or competent rather than in contexts in which they feel uninformed or incompetent, even when probabilities are held equivalent. Not only did Heath and Tversky's work alter our understanding of decision-making under uncertainty, their *Competence Hypothesis* also introduced the concept of competence as a major factor in source preference.

Further research by Keppe and Weber (1995) reinforces the *Competence Hypothesis* through their examination of participants' certainty equivalents for ambiguous gambles. A certainty equivalent is the amount of money a participant would need to be paid in order for them to be indifferent between this certain payment and a given lottery. Keppe and Weber presented participants with lotteries based on general knowledge questions and asked participants for their certainty equivalents for betting both for and against a singular lottery. Keppe and Weber then summed these two certainty equivalents and observed that the sum of certainty equivalents for a given participant is dependent on his or her judged knowledge of the class of events that the lottery was based on. Higher ratings of judged knowledge were correlated with higher certainty equivalent sums. This finding reinforces Heath and Tversky's *Competency Hypothesis* by demonstrating that ambiguity aversion is dependent upon the judged knowledge or sense of competence of the decision-maker.

Comparative Ignorance Hypothesis

Work by Fox and Tversky (1995) demonstrates that an individual's sense of competence is undermined when he or she compares their relative lack of knowledge of an event to their superior knowledge of another event or to a more competent individual. Most significantly, as competence is undermined, individuals become more averse to ambiguity. Fox and Tversky argue that the salience of this contrast is the main source of ambiguity aversion, as individuals display a "reluctance to act on inferior knowledge." Additionally, they argue that ambiguity aversion should arise when participants evaluate clear and vague prospects jointly but that this ambiguity aversion is greatly reduced when the prospects are evaluated in isolation. According to Fox and Tversky, a comparative context is necessary for ambiguity effects to occur.

Most relevant for the purpose of this paper is Fox and Tversky's Study 6, in which subjects are presented with a forced comparison between themselves and more knowledgeable individuals. In this study, the authors asked participants to evaluate whether or not they thought a specific stock would rise or fall on a given day. Next they were asked if they would prefer the prospect of winning $150 if their evaluation came to fruition or $50 for certain. Participants in the test condition were told that the same test was being administered to Stanford graduate students focusing on economics. This manipulation forced participants to compare themselves to individuals that possessed a higher state of knowledge within the decision context than their own. Fox and Tversky found that individuals that were exposed to their own "relative lack of knowledge" or relative incompetence were more likely to select the sure prospect over betting on their stock evaluation.

All together, research supporting the aforementioned hypotheses have revealed that manipulating perceptions of competence has a profound effect on ambiguity preferences of individuals. As competence is enhanced, individuals become more tolerant of ambiguity. On the contrary, as competence is undermined, individuals become more averse to ambiguity.

Section 3: Risk and Competence

Competence and Risk

Studies linking competence with risk attitudes are relatively scarce, however work done by Krueger and Dickson (1994) demonstrate how positive and negative feedback about previous risk-taking impacts future risk attitudes. Krueger and Dickson argue that attitudes towards risk reflect differences in how risk is conceptualized. For individuals that are risk averse, risk represents a possible threat. For individuals that are more risk tolerant on the other hand, risk represents possible opportunity. The competence manipulations carried out by Krueger and Dickson are

particularly relevant to our discussion, as we implement an adapted version of their methodology in our present investigation to manipulate general competence, rather than risk-evaluation competence. Krueger and Dickson presented participants with a questionnaire consisting of several economic gambles and dilemmas. Additionally, participants indicated how competent they believed they were at evaluating gambles and dilemmas. After participants completed these questionnaires, they submitted their responses to a confederate that used a computer program "developed by experts to evaluate decision-making skill" to evaluate their responses. In reality, no such evaluation took place. Instead, participants were provided with feedback unrelated to their responses. Participants were told that they performed either "very well" or "very poorly" on their gamble evaluations as well as their dilemma evaluations (with no mentioning of risk or risk-taking.) After this feedback, participants were asked to evaluate a second battery of gambles and dilemmas. Also, participants indicated yet again how competent they believed they were at evaluating gambles and dilemmas. Individuals that were told they evaluated gambles very well demonstrated a significantly greater preference for risk in the second battery of gambles and provided higher ratings of their own competence at evaluating gambles. Individuals that were told they evaluated gambles very poorly demonstrated a significantly lower preference for risk in the second battery of gambles and provided lower ratings of their own competence at evaluating gambles. The same pattern of behavior was replicated for the economic dilemmas.

Krueger and Dickson show that as individuals are made to feel more competent in their ability to evaluate risk via positive feedback, their attitudes toward risk become more tolerant. The reverse also holds true. Individuals that are made to feel incompetent in their ability to evaluate risk via negative feedback, become more risk averse. However, Krueger and Dickson argue that the effects of competence manipulations are context-specific and not generalizable. They

substantiate this claim by calling attention to individuals that were provided with positive feedback for one task (e.g. gambles) and negative feedback for the other task (e.g. dilemmas). These participants demonstrated greater risk-taking in the first task and lower risk-taking in the second. Krueger and Dickson argue that this phenomenon rules out the possibility of global competence effects.

We disagree with this argument and believe that manipulations to an individual's perceived general competence can have behavioral effects across domains. Gamble and dilemma competencies were made distinct from one another by the presentation of feedback provided by Krueger and Dickson. Participants were presented with feedback on gambles as well as feedback on dilemmas, framing the two tasks and competencies as distinct. We believe that if Krueger and Dickson provided feedback based on an individual's "general decision-making" competence rather than providing two distinct gamble and dilemma feedback reports, participants would still display altered risk preferences for both gambles and dilemmas based on the valence of the general feedback.

Section 4: Present Investigation

The following study examines the role that general competence plays in choice under both risk and uncertainty. Unlike previous studies that have manipulated competence in a specific task and then measured behavioral effects within the same domain, we attempt to manipulate participant competence within a domain completely distinct from economic uncertainty evaluation. For this purpose, we selected an anagram task in which participants would be instructed to generate as many words of a specified length from a given string of letters. Following their

completion of the anagram task, participants were provided positive feedback, negative feedback, or no feedback regarding their performance.

While anagram performance has been linked to cognitive flexibility (Beversdorf et al., 1999; Walker et al., 2002), no research has suggested that anagram performance is predictive of patterns of choice for economic uncertainty evaluations. Further reasoning behind the use of the anagram task is that participants typically have very little experience in unscrambling words from a string of given letters. Because participants rarely find themselves needing to perform anagram tasks, their perceived competence for the task is relatively undefined. Our competence manipulations through positive and negative feedback will likely serve as the first time participants are made aware of their "anagram competence."

Participants

Participants were 150 subjects recruited using Amazon's Mechanical Turk platform. Subjects received a payment of $0.35 in exchange for their participation. Only subjects over the age of 18 were recruited for this study. Additionally, the subject pool was restricted to residents of the United States. All tasks and questions involved in the study were conducted online. Fourteen participants did not complete the entirety of the survey and were thus excluded from further analysis, leaving 136 responses to be analyzed (49% female, mean age 37.9).

Anagram Task and Feedback Manipulation

Following their confirmation of consent, participants were presented with an example anagram task to familiarize them with the timed anagram task that would be administered following the example. Participants were informed that responses during this example anagram

task would not be recorded and that they could advance to the timed anagram task whenever they pleased. In the example anagram task, participants were instructed to generate as many 3-letter words as they could from the string "LOOSE LIPS SINK SHIPS" (e.g. "SHE") and enter all generated words into a text box provided. Participants were instructed to separate words using commas. They were then asked to indicate how many words they were able to generate using a provided text box.

After this example anagram task, participants participated in a timed anagram task in which they had 3 minutes to generate as many 5-letter words from the string "BARACK OBAMA BEAT JOHN MCCAIN." (ex. "TRAIN"). Just like the example anagram task, participants were asked to list all of their generated words in a text box and indicate how many words they were able to generate. Following this task, participants were randomly divided into three manipulation groups: a competence-enhancement group, a competence-reduction group, and a control group. These groups were randomly assigned and were not related to the participant's anagram task performance.

Participants in the competence-enhancement group were presented with positive feedback regarding their performance in the timed anagram task while participants in the competence-reduction group were presented with negative feedback regarding their performance in the timed anagram task. Participants in the control group received feedback that indicated that their performance in the timed anagram task matched that of the average participant in a previous study. (See Appendix A for feedback prompts) Following this feedback, participants in all three manipulation groups were asked to evaluate a series of economic gambles to assess uncertainty preferences. These economic gambles consisted of eight risk-evaluation tasks and six ambiguity-evaluation tasks.

Risk Evaluation

Participants were presented with 8 risk-based economic gambles to evaluate. In each gamble, the participant was asked to select their preference between an option with certain probability of winning or a risky option with a given percent probability chance of winning. These gambles were adapted from Shane Frederick's (2005) study on cognitive reflection and decision-making. (See Appendix B for a full list of the presented gambles) Four of these gambles yield a higher expected utility when the risky prospect is chosen while the other four gambles yield a higher expected utility when the certain prospect is chosen.

Scoring

Risk scores were determined based on the number of times a participant indicated that they would prefer to bet on the risky option over the certain option. Scores ranged from 0-8, with a score of 0 indicating a participant that only selected certain options and a score of 8 representing a participant that only selected risky options.

Ambiguity Evaluation

Our methodology for assessing ambiguity preferences was adapted from Heath and Tversky's (1991) study on ambiguity and competence. Participants were first asked to evaluate the likelihood of six real-world events occurring (e.g. "It will rain three weeks from today in New York City") in terms of percent probability. They were then presented with six economic gambles and were asked for their betting preference between an ambiguous prospect they previously evaluated (e.g. "It will rain three weeks from today in NYC") or a chance lottery with a winning

probability equal to the probability they had previously provided. (See Appendix C for a full list of the events and gambles evaluated)

Scoring

Ambiguity scores were determined based on the number of times a participant indicated that they would prefer to bet on the event occurring (with ambiguous likelihood) over the chance lottery. Scores ranged from 0-6, with a score of 0 indicating a participant preferred to bet on the chance lotteries for all of the gambles and a score of score of 6 indicating a participant preferred to bet on events occurring for all of the gambles.

Controlling for Mood Effects

Previous literature has indicated that manipulating mood through affective stimuli can result in differential risk attitudes. (Johnson & Tversky, 1983; Yuen & Lee, 2003; Rubaltelli et al., 2010) Following the risk and ambiguity evaluations, all participants were administered an adapted version of the Positive and Negative Affect Schedule or PANAS (Watson et al., 1988) in order to determine whether or not differential risk and ambiguity preferences were mediated by mood effects (Appendix D). The PANAS Questionnaire typically asks participants to indicate the extent to which they feel certain emotions (both positive and negative) at the current moment as well as the extent to which they have felt them over the past week. However, for the context of our research, we only asked participants to indicate how they feel at the moment.

Scoring

See Appendix D for scoring guidelines for both positive and negative affect.

Hypotheses

H1: We predict that individuals within the competence-enhancement group will report significantly higher risk and ambiguity scores than those of both the control group and the competence-reduction group.

H2: We predict that individuals within the competence-reduction group will report significantly lower risk and ambiguity scores than both the control group and the competence-enhancement group.

H3: We predict that positive and negative affect scores evaluated using the PANAS questionnaire will not vary significantly among the three competence groups.

Results

The mean risk and ambiguity scores for each condition (control, competence-reduction, and competence-enhancement) are provided in Table 1 and are illustrated with standard errors in Figures 1 and 2.

		N	Mean Score
Risk Score	Control	47	2.60
	Reduction	48	2.27
	Enhancement	41	2.73
	Total	136	2.52
Ambiguity Score	Control	47	1.98
	Reduction	48	2.54
	Enhancement	41	2.07
	Total	136	2.21

Table 1. Mean risk and ambiguity scores for each competence group.

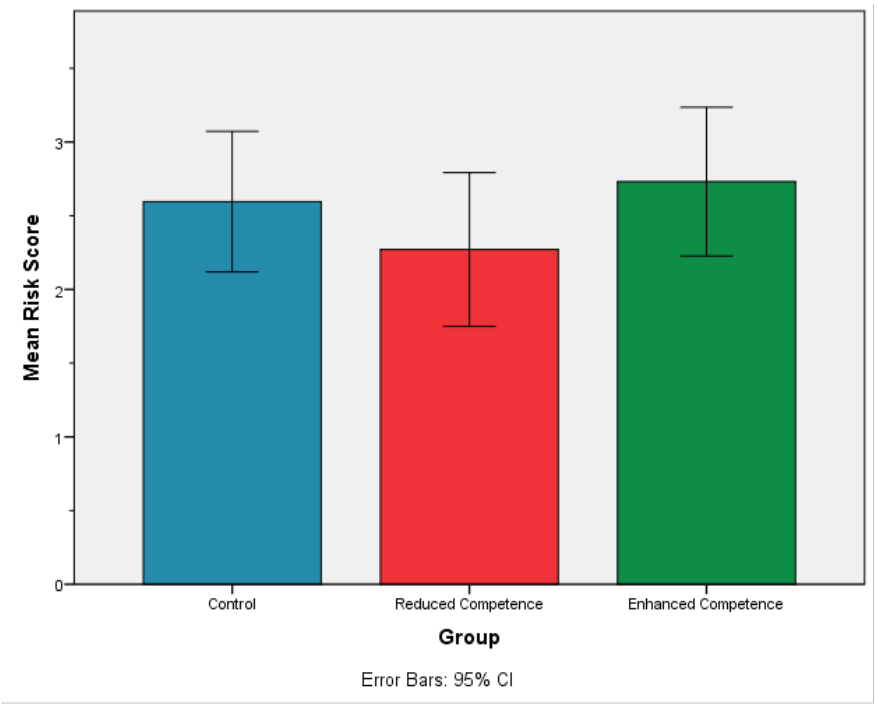

Figure 1. Mean risk scores for each competence group. Error bars show SE mean.

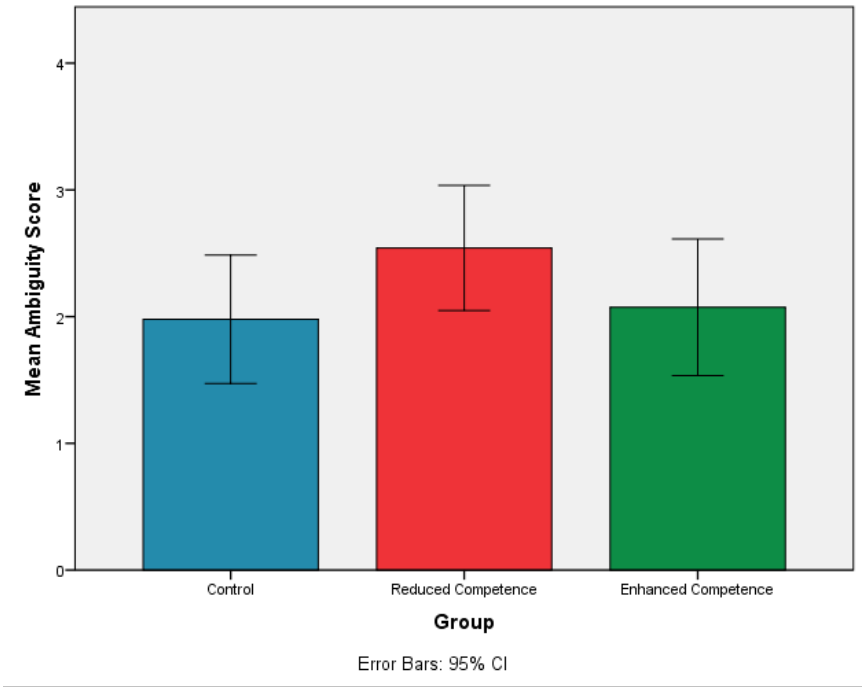

Figure 2. Mean ambiguity scores for each competence group. Error bars show SE mean.

To test H1 and H2, we ran two individual, one-way analyses of variance (ANOVA) calculated on the participants' risk and ambiguity scores. For both risk and ambiguity, the ANOVAs resulted in insignificant results: $F(2,133) = 0.902$, $p = 0.408$ for risk scores and $F(2,133) = 1.461$, $p = 0.236$ for ambiguity scores. The mean positive and negative affect scores for each condition are provided in Table 2.

		N	Mean Score
Positive Affect	Control	47	31.1064
	Reduction	48	32.0833
	Enhancement	41	31.8049
	Total	136	31.6618
Negative Affect	Control	47	15.1702
	Reduction	48	16.0625
	Enhancement	41	13.2195
	Total	136	14.8971

Table 2. Mean positive and negative affect scores for each competence group.

To test H3, we ran two ANOVAs calculated on the participants' positive and negative affect scores. For both positive and negative affect, the ANOVAs resulted in insignificant results: $F(2,133) = 0.156$, $p = 0.856$ for positive affect and $F(2,133) = 1.475$, $p = 0.232$ for negative affect.

Section 5: Discussion

Our study failed to demonstrate differential risk and ambiguity preferences when general competence was manipulated. We attempted to manipulate general competence among participants by providing either positive or negative feedback regarding their performance on an anagram task. Despite this manipulation, mean risk and ambiguity scores among competence groups did not vary significantly. Thus, H1 and H2 were not supported. This result can be interpreted as evidence that the effects of competence manipulations are not generalizable, or that

our methodology was not able to elicit competence effects strong enough to generate significantly different uncertainty preferences. One possible limitation of our methodology is that our positive and negative feedback prompts may not have generated changes in a participant's perceived general competence when his or her indicated word total was low.

Positive and negative feedback following the anagram task consisted of a general classification of their performance: "Excellent" or "Poor," as well as a comparison between the participant's generated word total and an "average participant's" generated word total. For the positive feedback group, we presented a downward comparison, telling the participant that the "average participant" generated half as many words as they did. For the negative feedback group, we presented an upward comparison, telling the participant that the "average participant" generated 1.5 times the number of words the participant generated. In both cases, if the participant generated a very low number of words (e.g. 2) these downward and upward comparisons would not appear too significant (i.e. a participant that generated 2 words would be told that the average participant generated either 1 word or 3 words.) It is possible that the small magnitude of difference between the participant's generated word total and the "average participant's" generated word total failed to impact the participant's general sense of competence.

Our analysis of PANAS scores across competency groups revealed that positive and negative affect scores did not vary significantly across competence groups, supporting H3. However, these scores were recorded in order to determine whether or not changes in uncertainty preferences were attributable to mood effects. Because risk and ambiguity scores did not vary significantly either, this finding provides little additional insight in our discussion of general competence and uncertainty preferences.

While our study failed to support our argument that manipulations to general competence influence uncertainty preferences in unrelated domains, we believe our study has provided a foundation on which future research can expand upon. Previous to our investigation, no other research has examined the role of perceived general competence on uncertainty preferences. Also, no other research has attempted to determine whether competence exists as a global construct (influencing behavior across domains) or a compartmentalized one (influence limited to domain-related tasks).

Future Directions

While the present investigation failed to provide evidence that perceived competence is a general construct, the absence of evidence does not necessarily indicate evidence of absence. Future research should continue to investigate whether manipulations in competence influence behavior in domains distinct from the manipulations. Possible methods of manipulation could involve altering individuals' perceptions of their physical ability and then observing their patterns of choice in questionnaires unrelated to physical activity. If future research also fails to provide significant evidence backing our global perspective of competence, it may be that perceived competence exists as a compartmentalized construct. If this is the case, our understanding of competence will be greatly enhanced. Additionally, methodologies used to encourage or discourage certain behaviors using competence manipulations should focus only on manipulating perceived competence related to the target behavior.

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Appendix A

Prompt for competence-enhancement group:

> **You generated (*number of generated words participant indicated*) words.**
>
> **Your performance has been categorized as: Excellent**
>
> **A previous study has found that the average participant generated (*number of generated words participant indicated x 0.5*) words.**

Prompt for competence-reduction group:

> **You generated (*number of generated words participant indicated*) words.**
>
> **Your performance has been categorized as: Poor**
>
> **A previous study has found that the average participant generated (*number of generated words participant indicated x 1.5*) words out of a total of 504 possible five-letter words.**

Prompt for control group:

> **You generated (*number of generated words participant indicated*) words.**
>
> **A previous study has found that the average participant generated (number of generated words participant indicated) words.**

Appendix B

Evaluate each set of prospects and select the option that you would choose:

1. $1,000 for sure OR a 90% chance of $5,000
2. $100 for sure OR a 90% chance of $500
3. $1,000 for sure OR a 75% chance of $4,000
4. $100 for sure OR a 75% chance of $200
5. $100 for sure OR a 25% chance of $200
6. $100 for sure OR a 25% chance of $300
7. $5 for sure OR a 4% chance of $80
8. $5 for sure OR a 1% chance of $80

Appendix C

Evaluate (to the best of your ability) the probability (in %) that the following events will occur:

1. It will rain three weeks from today in New York City.
2. The NASDAQ composite will end next quarter higher than last quarter.
3. The New England Patriots will win their first home game of the season.
4. Ted Cruz will win the Republican Nomination for President.
5. The vacant seat on the US Supreme Court will be filled before the end of Obama's presidency.
6. The Golden State Warriors will win the NBA championship this season.

Ambiguity-based Gambles:

Which of the following options would you prefer to bet on?

1. It will rain three weeks from today in New York City OR a chance lottery with (*% likelihood provided by participant*)% probability of winning.

2. The NASDAQ composite will end next quarter higher than last quarter OR a chance lottery with (*% likelihood provided by participant*)% probability of winning.

3. The New England Patriots will win their first home game of the season OR a chance lottery with (*% likelihood provided by participant*)% probability of winning.

4. Ted Cruz will win the Republican Nomination for President OR a chance lottery with (*% likelihood provided by participant*)% probability of winning.

5. The vacant seat on the US Supreme Court will be filled before the end of Obama's presidency OR a chance lottery with (*% likelihood provided by participant*)% probability of winning.

6. The Golden State Warriors will win the NBA championship this season OR a chance lottery with (*% likelihood provided by participant*)% probability of winning.

Appendix D

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988)
PANAS Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. Indicate to what extent you feel this way right now, that is, at the present moment

1 = Very Slightly or Not at All
2 = A Little
3 = Moderately
4 = Quite a Bit
5 = Extremely

_____ 1. Interested	_____ 11. Guilty
_____ 2. Irritable	_____ 12. Determined
_____ 3. Distressed	_____ 13. Scared
_____ 4. Alert	_____ 14. Attentive
_____ 5. Excited	_____ 15. Hostile
_____ 6. Ashamed	_____ 16. Jittery
_____ 7. Upset	_____ 17. Enthusiastic
_____ 8. Inspired	_____ 18. Active
_____ 9. Strong	_____ 19. Proud
_____ 10. Nervous	_____ 20. Afraid

(Positive Affect Score: Add the scores on items 1, 4, 5, 8, 9, 12, 14, 17, 18, and 19. Scores can range from 10 – 50, with higher scores representing higher levels of positive affect.)

(Negative Affect Score: Add the scores on items 2, 3, 6, 7, 10, 11, 13, 15, 16, and 20. Scores can range from 10 – 50, with higher scores representing higher levels of negative affect.)