

2007

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FORMAL TRAINING, PERSONAL EXPERIENCE, AND THE ABILITY TO PREDICT RESEARCH FINDINGS IN SOCIAL PSYCHOLOGY

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Abstract

Researchers in the past have found that personal experience and formal training lead to better accuracy when predicting research outcomes in areas of psychology. Personal experience and formal training were compared in this study on the ability of students to predict research outcomes in social psychology. Students completed questionnaires that measured their social engagement (a proxy to personal experience), their academic history and status, and their knowledge of social psychological findings. Students with more psychology classes taken in college were better able to predict research outcomes ($r = .24$). Psychology majors knew more findings in social psychology than non-psychology majors ($d = .28$). Students with higher academic status were better able to correctly identify research findings ($\eta = .31$). Measures of personal experience (i.e., social engagement) did not predict accuracy in identifying correct research findings. Formal training was a better predictor of accuracy than personal experience. Students had the opportunity to change their misconceptions about the social world when they were taught research findings in the classroom. People might also learn about human social behavior vicariously or from small amounts of social interaction rather than from high amounts of social engagement.

Everyday, people are faced with making decisions in social situations. The social situations that require decisions are often unclear, there may be multiple options to choose from, and it may be difficult to

determine the best choice. Many researchers believe that the average person can make accurate decisions and accurate predictions within these social situations based on an understanding created from their experiences of everyday events (Anderson & Lindsay, 1998; Wegener & Petty, 1998). This understanding is called lay knowledge. Lay knowledge is the social knowledge gained from experiential learning during typical life events (Kruglanski, 1989). Many of these life events involve information about other people within a social context. People use this lay knowledge to create naïve theories.

Naïve theories are “knowledge structures with a causal or explanatory component” (Anderson & Lindsay, 1998, p.8). People use naïve theories to make predictions and to explain events. A woman, for example, may have been physically abused by a large man. She might also have known other women who have been abused by large men. She might begin to think that large men are abusive. This naïve theory might lead the woman to stay away from large men in order to avoid physical abuse. In this case the naïve theory was an adaptive strategy to keep the woman out of harm.

According to Anderson and Lindsay (1998), the causal links provided by naïve theories simplify social perception allowing for high levels of inferential accuracy. This simplification occurs because as people gather information, the new information is linked to existing knowledge stored in the brain. These links become organized, meaningful networks of information called schemas. People are able to later recall and use this information to predict and explain events (Bartlett, 1932).

According to Bartlett (1932), people compare new incoming information with existing schemas to create meaning. In his study, Bartlett had participants read unusual stories that contained information that was unfamiliar to most people. He found that when asked to recall the information from the story, participants recalled a changed and distorted version. The participants had attempted to link and use information that

they already knew to create meaning in the story, even though the information was not part of the story given to them.

An important component for determining accuracy, then, is knowledge and expertise. In a study by Chase and Simon (1973), novice and expert chess players were shown an incomplete chess game and then asked to recall the position of chess pieces. The experts, having an understanding of the rules and plays of the game, were able to recall the location of significantly more chess pieces than the novices. The experts were not, however, able to recall as many chess pieces when the pieces were placed randomly on the board. When the chess pieces were placed on the board according to the rules of the game, they were easier to remember because they provided more meaning to the expert chess player. When placed haphazardly, the pieces provided little meaning to either player. As people gain more knowledge and expertise about certain topics, they have more information to link with new, incoming information to create meaning.

Fiske, Kinder, and Larter (1983) examined this idea by identifying participants as experts or novices according to their political expertise. Later participants read a description of a little-known third world country. The description contained an equal number of attributes consistent with a communist or democratic government. The participants were also told that the country was democratic, communist, or undifferentiated. The researchers found that novices focused on information about the country that was consistent with the form of government that they were made to believe the country had. Experts, however, focused on both the consistent and inconsistent information about the country. The implication of this study is that experts have more complex knowledge structures and are able to process both consistent and inconsistent information. Novices, however, have less prior knowledge so they resort to using quick, superficial processing when making decisions.

Another important component for accurate decision-making involves how information is processed. According to Janis and Mann (1977), sound and rational decision-making occurs when the decision-maker searches diligently for relevant information, assimilates this information in an unbiased manner, and evaluates alternatives carefully before making a choice. In order to search for relevant information, assimilate the information properly, and evaluate alternatives before making decisions, a person must have the motivation and enough time to do so (Anderson & Lindsay, 1998).

Motivation can be influenced by individual differences in need for cognition. Need for cognition is the need or desire to learn and understand (Cacioppo & Petty, 1982). Researchers studying the need for cognition gave participants an easy number circling task that involved circling all 1s, 5s, and 7s (the simple task) or a harder number circling task that involved circling all the 3s, any 6 that preceded a 7, and every other 4 (the more complex task). All participants showed frustration at the task; however, those with low need for cognition showed more frustration. Participants with high need for cognition enjoyed the more complex task more than the participants with low need for cognition. This indicates that people with higher need for cognition are more likely to enjoy more complex tasks than people with low need for cognition. People with high need for cognition, then, would be more likely to thoroughly assess information before making a decision than people with low need for cognition because a comprehensive assessment of available information is a complex task requiring time, effort, and cognitive resources.

Need for closure also affects one's motivation to process additional information. People with high need for closure lack the motivation to pursue additional information before making a decision. Their priority is not to make a good decision but to make a decision as soon as possible. Those with low need for closure take the time to explore alternative or added information. Webster and

Kruglanski (1994), for example, presented participants with information about a job candidate. The participants were to form an impression of this candidate and judge the likelihood of his success on a job. Half of the participants read positive information before negative information, and the other half read negative information before positive information. Participants with high need for closure rated the job candidate more positively after hearing positive information first and more negatively after hearing negative information first. This indicates that the participants used the information that they read earlier in the sequence to make decisions rather than spend time understanding all of the information. These same participants requested fewer pages of information about the candidate, were more confident about their responses, and needed less time to make judgments. Those with high need for closure, thus, are more motivated to come to a quick decision rather than take the time to consider all available information.

Time is also an important factor in the decision-making process. According to Kruglanski and Freund (1983), when people are pressed for time they use primacy effects. Primacy effects exist when people base inferences on early information and are affected less by later information. Teachers grading writing assignments, for example, were more likely to use stereotypes about the writer in their evaluations when under time pressure than when given time to consider carefully their ratings. Time pressure and the need to make a quick decision, therefore, intensify the tendency to refrain from critically probing for an adequate solution or decision (Kruglanski & Freund, 1983).

Lay knowledge, experiential knowledge, and naïve theories are ways that people gain social knowledge through experience and their environment. Naïve theories can be created from direct or indirect learning. Direct learning occurs when a person learns from his or her own experiences. Personal experience with someone from another race, for example, can create naïve theories about how people of that

race behave. Indirect learning, however, occurs when a person learns vicariously from others. Naïve theories about people of other races may be created by watching the news or listening to others' opinions about people of that race (Anderson & Lindsay, 1998).

According to Gilovich (1985), firsthand or direct information can be more accurate than secondhand information. In this study participants watched a video clip of a person instructed to describe a bad deed that he or she had committed in the past. Participants were to rate their impression of the person and then to retell the situation on a video-tape for another participant to watch. Participants who had watched the original video had less negative impressions of the person than the participants who watched the second video. The first participants took the situation and the person into account when forming their impressions. When retelling the situation, however, the first participants focused highly on the person's characteristics and minimized the situation. Members of the second group were exposed to limited information, thus, forming more extreme impressions about the person than the first group.

Although naïve theories can be formed or used incorrectly, people are still highly accurate when making decisions. Because people are able to gain social knowledge from everyday experience, researchers argue that the information being researched and taught within the field of psychology (the study of the mind and behavior) is commonsense or lay knowledge (Furnham, 1983). According to Gordon, Kleiman, and Hanie (1978), common sense is "A homespun awareness resulting from everyday experience, as opposed to the knowledge acquired from formal training in a technical philosophy." (p. 894). Formal training in psychology, therefore, may not provide students with much more knowledge about people than they already have from their own personal experience.

Personal Experience

To investigate this theory, researchers in personality, social, and developmental psychology tested whether people with little to no formal training are able to accurately predict research findings (Barnett, 1986, Barnett 1988, and Levenson & Ebling, 2003; Richard et. al., 2001). A true/false test was created for each study. Half of the questions on a test were true research findings from that field, the other half were foils (i.e., opposite statements or research outcomes that were not supported by research in the field).

Participants were to indicate whether each statement on the test was true or false based on their current knowledge of the subject. Participants for each of these studies were mostly from introductory psychology courses with participants in the personality and developmental psychology studies ranging from high school students to undergraduate members of the Psi Chi psychology academic honor society.

Researchers in all three areas (personality, social, and developmental psychology) found that participants were able to accurately predict research findings above 50% or chance level. Participants in the personality study accurately identified an average of 76% of the research findings from the Personality Research Test (PRT). Participants in the social psychology study accurately identified an average of 68% of 398 social psychological research findings established by research reviews. Participants in the developmental psychology study accurately identified an average of 76% of research findings on the Childhood and Adolescence Research Test (CART). Each result indicates that people with little to no formal training in personality, social, and developmental psychology can accurately (although not perfectly) predict the results of research by what the researchers deem is common sense.

Researchers in educational psychology, industrial-organizational psychology, and marital relationships (Wong, 1995; Gordon et.al., 1978; Levenson & Ebling, 2003) found that formal training in

these areas did not contribute much if any knowledge to the field. The researchers studying educational psychology created five questionnaire forms using research findings from teaching and educational psychology. Each questionnaire was used to determine participants' indication of perceived obviousness of research findings on teaching. The forms differed, however, because participants with Form A were to select which research finding they believed was accurate from two opposing findings, not to determine if a finding was true or false. They were also to indicate how obvious the finding was. Participants were not able to consistently distinguish actual findings from opposites. Thus, research in teaching is not as obvious as research in other fields of psychology. Further analysis also indicates that participants with more experience with teaching and educational psychology were not able to accurately predict the research findings any more often than less experienced and less trained participants.

Gordon et al. (1978) used a similar questionnaire created from research results in industrial-organizational psychology. Students chose the correct research finding an average of 72% of the time. This result is over chance level (50%), indicating that research in I/O psychology is commonsense. Older participants and those with more managerial experience scored higher on the exam when formal training was held constant. This indicates that those with more experience know more of the research findings in I/O psychology than those who were formally trained in the field.

Finally, Levenson and Ebling's (2003) compared participants untrained in marriage (newlyweds, married, or divorced) to participants trained in marriage (marital researchers, clinical psychology graduate students, undergraduates, marital therapists, marital researchers, and pastoral counselors) on their ability to make accurate judgments about marital satisfaction. The results indicated that there was no overall difference between groups on accuracy. The more that understanding marriage had a high personal

meaning to an individual, however, the more accurate that individual was in predicting marital satisfaction in couples.

Formal Training

Although these studies show that much of what is researched in personality, social, and developmental psychology is commonsense, the results in some studies indicate that formal training is still important (e.g., Barnett, 1986; Barnett, 1988). These studies compared the results of participants with differing levels of education. Results in both studies show that participants in general psychology courses were more accurate when predicting research findings than participants in high school. Participants in honors general psychology courses were more accurate than participants in the general psychology courses. Undergraduate members of general academic honor societies were more accurate than participants in the honors general psychology courses and so on. The results indicate that formal training in psychology does enhance a person's knowledge of the subject.

Current Study

The purpose of the current study, therefore, is to use a measure of personal experience and a measure of formal training to determine which source of learning is a better indicator of the ability to accurately predict research findings in social psychology. Based on previous research, a larger correlation is expected between participant's degree of personal experience and ability to accurately predict research findings in social psychology than between participant's degree of formal training and ability to accurately predict research findings in social psychology. This hypothesis is based on the prior evidence that participants' personal experience seems a better indicator than formal training on ability to accurately predict research findings. Although similar studies have addressed these two issues separately, no study to date has addressed these issues within the same sample of participants.

Method

Participants

Sixty-three male and 164 female undergraduate students ages 18-62 from a midsized southern university participated in a study comparing the impact of personal experience and formal training on the ability to predict research findings in social psychology. Participants chose to participate in the study by signing an appointment sheet posted in the psychology department. Participants had a variety of studies to choose from, and instructors gave course credit for participating. A majority (69.2%) of the participants were Caucasian, 12.8% were African American, 5.7% were Hispanic, 4.0% were Asian/Pacific Islander, 3.1% were Middle Eastern, 1.8% were multiracial and 3.5% were from other ethnic backgrounds.

The researcher informed each participant that he or she had a right to discontinue the study at any time. Each participant was also informed that his or her responses were to remain anonymous. Participants signed a written consent form agreeing that they understood their rights and would participate. Participants were treated ethically throughout the study.

Materials

Materials included a questionnaire presenting research findings in social psychology, a personal experience (social engagement) questionnaire, a need for cognition scale, a need for closure scale, and a formal training questionnaire.

The research findings questionnaire was created by Richard et al. (2001). It consisted of social psychological findings published in meta-analyses (quantitative research reviews). Statements were of the broadest conclusions reached in the meta-analysis and were worded in everyday language. An example of a research finding from a meta-analysis reviewing 31 studies measuring the relationship between personality characteristics and persuasiveness reads: "Persuasive fear appeals induce behavior change." Another example of a research finding from a meta-analysis

reviewing 13 studies measuring the relationship between rewards and productivity reads: “External rewards increase productivity.” A stratified random sample of 100 findings was collected from 398 meta-analytic findings within 18 social psychological topics (e.g., Aggression, Attitudes, Social Influence, etc.), which served as the strata. A foil (or opposite finding) was created for each of these findings. The research finding that “women are more sensitive than men to facial cues,” for example, would read, “men are more sensitive than women to facial cues.” About half of the statements in each set of findings on the questionnaire were research findings whereas the other half of the statements were foils of other research findings.

Participants were instructed via computer that they were to read a series of statements. Some of the statements were research findings discovered by social psychologists whereas other statements were foils. Participants were to indicate on a computer (by pressing designated keys on a computer keyboard) whether each statement was or was not a social psychological research finding. The percentage of correctly identified research findings was computed as well as the percentage of correctly identified foils for each participant. This percentage was used to estimate each participant’s ability to accurately identify research findings in social psychology and served as a measure of knowledge about human social behavior.

Personal experience was defined in terms of participants’ level of social engagement. Social engagement is how much time participants spend interacting with others. A social isolation scale and a social integration scale were used to determine each participant’s degree of social engagement. The social isolation scale was used to determine each participant’s lack of socialization (Dean, 1961). If people are isolated, they are not interacting with others. Therefore, the chances of them learning from their personal experiences through social interactions have been reduced. The social integration scale was used to determine how

integrated the participants are into society. The more socially integrated participants are, the more socially active they are, and thus there is a better chance that the participants will have learned from these social interactions.

The social isolation scale consisted of nine questions such as “Sometimes I feel all alone in the world” and “I don’t get invited out by friends as often as I’d really like” (Klemmack, Carlson, & Edwards, 1974). Five of the nine items were positive (e.g. “People are naturally friendly and helpful”) whereas four were negative (e.g., “Sometimes I feel all alone in the world”). The answer choices for each of the nine questions were indicated on a 5-point Likert-type scale (with 1 suggesting the statement is *Not at all true of me* and 5 suggesting the statement was *Very much true of me*). Each statement was presented via a computer, and the participants indicated their response to the items by pressing the corresponding keys on a computer keyboard.

The researchers scored the Social Isolation scale by reverse scoring the appropriate items and summing the scores for each participant over all statements. The maximum possible score, thus, was 45 and the lowest possible score was 5. The higher the score a participant received, the more socially isolated the participant. Dean (1961) reported a Spearman-Brown split-half reliability of .84 for the Social Isolation scale. A test of validity indicated that social isolation is correlated with (yet independent of) Powerlessness and Normlessness, two components of alienation.

The other component the researchers used to determine each participant’s degree of personal experience was the Social Integration Scale. According to Kunovich and Hodson (1999), Social Integration provides a buffer for social isolation and alienation. The social integration scale contains three parts: the presence of organizational memberships (e.g., political party, church organization, etc.), the frequency of social activities (e.g., going on a trip, attending social events, etc.), and maintaining close personal relationships (e.g., visiting friends, conversing with family

members). The researchers used the seven question organizational membership portion, a modified version of the social activities scale, and the four item close personal relationships portion.

Participants were informed via computer that they were to read a series of statements. For the first portion (organizational membership), participants were to answer yes or no to each question. A final score was created by a total percentage of yes answers. Participants were to answer the second portion of the statements (frequency of social activity) by indicating how often they participated in each activity (*never, monthly, weekly*). The three options are assigned 1-3 respectively. A final score for this portion was created by summing the number of *never*'s, *monthly*'s, and *weekly*'s chosen over all items. Higher scores indicate higher social integration.

The final portion regarding close personal relationships contained questions in which the participant indicated how often he or she seeks interaction with friends and relatives (1 = *never*, 2 = *monthly*, 3 = *weekly*). A score was totaled for this portion by summing all of the items. Higher scores indicate higher social integration. The social activities scale has demonstrated adequate internal consistency (Cronbach's $\alpha = .76$; Kunovich & Hodson, 1999).

Cacioppo, Petty, and Kao's (1984) measure of need for cognition was used to determine each participant's motivation to exert cognitive effort. This scale consisted of eighteen items (e.g., "Thinking is not my idea of fun"). Participants were to indicate the degree of agreement or disagreement to each statement based on a -4 to +4 Likert-type scale. (+4 suggesting "very strong agreement" and -4 suggesting "very strong disagreement.") Each statement was presented via a computer, and the participants indicated their response to the items by pressing the corresponding keys on a computer keyboard.

The researchers scored the need for cognition scale by reverse scoring the appropriate items and summing the scores for each participant over all statements. The

maximum possible score, therefore, was 72 and the lowest possible score was -72. The higher the score a participant received, the higher the participant's need for cognition. Cacioppo et al. (1984) reported a Spearman-Brown split-half reliability of .87 for the need for cognition scale. A test of validity indicated that the need for cognition scale discriminated between groups known to differ in need for cognition; university faculty members and assembly line workers. Another test of validity indicated that need for cognition is correlated with (yet independent of) cognitive style. There is also no significant correlation between need for cognition and test anxiety.

Webster and Kruglanski's (1994) need for closure scale was used to determine each participant's need to come to a decision. The scale consisted of forty-two items (e.g., "I don't like situations that are uncertain."). Subjects responded to these items on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Fifteen items are reverse scored. The total need for closure score is a sum of all items (after reverse scoring). Higher scores indicate higher need for closure. The need for closure scale has demonstrated high internal consistency (Cronbach's $\alpha = .84$) and high test-retest reliability ($r = .86$).

A final ten question scale was created by the current researchers to determine each participant's amount of formal training in psychology (e.g., "How many psychology courses have you completed in college so far?"). Three questions determined the status and field of study of the participants (e.g., "What is your current academic status?"). Three questions determined the number of classes each participant had taken in psychology (e.g., "How many Psychology courses did you complete in High School?"). Three more questions assessed the success the participants had in the courses and in school (e.g., "What is your overall GPA?"). A final question evaluated the number of psychology courses each participant was taking at the time of the study.

The purpose of the formal training questionnaire was to measure the amount of formal education each participant had in psychology. The questionnaire also measured how well each participant completed the psychology classes already taken. Both are used as an indicator of formal knowledge received through classroom instruction.

Procedure

Each student was greeted by a male or female researcher and seated in a small computer classroom with no more than seven other participants. Each person was seated in front of a single computer. The researcher explained to the participants that the purpose of the study was to examine the influence personal experience and formal training have on people's ability to predict research findings in social psychology. The researcher explained to the participants that they would be completing five surveys on the computer. The researcher explained the basic instructions on how to use the computer and how to respond to the surveys. The participants were also told by the researcher to remain seated until all surveys were completed by all participants.

Students completed the research findings questionnaire first, then the personal experience questionnaire, the need for cognition questionnaire, and the need for closure questionnaire in random order. The final survey presented was the formal training questionnaire. Once all surveys were completed, the researcher answered any questions the participants had. The participants were then dismissed by the researcher.

Results

The current study employed a quasi-experimental design. Each participant completed a research findings questionnaire, four social engagement questionnaires, a series of formal training questions, a need for cognition questionnaire, and a need for closure questionnaire. Each participant's answers were combined into a total score for each questionnaire whereas the answers for each of the formal training questions

remained separate. The researchers first calculated the reliability and validity of each measure. The researchers then compared the results from the personal experience, need for closure, and need for cognition scales to the results from the research findings questionnaire. Results from each of the formal training questions were also compared to the results of the research findings questionnaire.

There were a total of 227 participants, however, several datum were omitted from the study. The entire set of data from one participant was omitted because the person responded (T/F) to the statements in less than 500 ms on 36% of trials. This pattern of data indicates that the person was most likely guessing because the person would have had insufficient time to read the statements. Another person indicated that he or she had taken twenty psychology classes in high school. This is very unlikely and it is probable that the student reported the number of credit hours taken instead of the number of classes. This information was considered invalid and was omitted from the analyses. Aside from these two restrictions, each analysis contained the maximum amount of data available. The Type I error rate was set to .05 for each comparison.

Reliability and Validity of Measures.

Participants' responses to the social psychological findings questionnaire measured general knowledge of social behavior. Participants with high scores on this measure were able to accurately identify true research findings about human social behavior from foils related to human social behavior. Participants with high scores were also able to accurately identify false research findings. Participants judged 100 research findings (50 were true and 50 were false). A total score (with a maximum score of 1.0) was computed representing the proportion of findings correctly identified as *true* or *false* by the participant. A preliminary split-half reliability analysis of the measure estimated the reliability as relatively low (Spearman-Brown Coefficient = .55).

The researchers considered that several of the research findings used in the measure may be ambiguous to participants. According to Cohen (1992), research outcomes that have an effect size (a standardized mean difference, d) of .30 are “observable to the naked eye” (p.156). Therefore, associations of social behaviors supported by research that have effect magnitudes considerably less than .30 may be so subtle as to be observed only with difficulty by the average person. The true/false answers to these findings provided by the participants could be potential guesses. The researchers decided to eliminate the research findings that had a magnitude of less than .30 minus a .15 confidence interval. The .15 confidence interval represents the average variability of research outcomes in social psychology (see Richard, et al., 2003). The confidence interval was used to account for variations in the effect magnitude of studies that provided the reported magnitude for each finding. There was a positive but non-significant relationship between the effect size magnitude and the accuracy with which participants correctly identified the findings as findings and the foils as foils [$r(98) = .13$, $p = .21$] suggesting that accuracy in judging findings may have been somewhat related, although not significantly related, to the magnitude of the effect being judged. As a result, 12 findings and their foils were eliminated from the questionnaire. Examples of these findings were: “People are aggressive when they are hot” ($M_r = .03$), “Girls who are reared in father-absent homes are non-feminine” ($M_r = .01$), and “Subliminal advertising increases sales” ($M_r = .001$). A new split-half reliability analysis of the social psychological findings measure revealed that, without the ambiguous findings, the estimate of reliability was within an acceptable range, Spearman-Brown Coefficient = .65.

The social engagement measures consisted of four separate questionnaires: social activity, close relationship, social isolation, and organizational membership. Participants’ responses to the social activity

scale measured frequency of involvement in social events. Responses to the close relationship scale measured frequency of involvement in close relationships. Responses to the social isolation scale measured frequency of isolation from social activity. Responses to the organizational membership questionnaire measured involvement in organizations. A Cronbach’s α coefficient was calculated to determine the internal consistency of each measure. The reliability estimates (Cronbach’s α) for the social activity measure, the close relationship scale, and the social isolation scale were .73, .68, and .53, respectively, with the social isolation scale demonstrating low reliability. The organization measure was excluded from the remaining analyses because estimates of internal consistency were considerably low, Cronbach’s $\alpha = .28$.

The three social engagement measures, the social activity scale, social isolation scale (which represents the opposite of social engagement), and close relationship scale, were all correlated with one another. The social activity scale was positively correlated with the close relationship scale, $r(227) = .393$, $p < .0005$, and negatively correlated with the social isolation scale, $r(227) = -.230$, $p < .0005$. The close relationship scale was negatively correlated with the social isolation scale, $r(227) = -.203$, $p < .0005$. These correlations indicate that each scale measured unique constructs that were conceptually related to each other. In this study, the construct represented by the relationship between each of the scales was defined as “social engagement.”

The Need for Cognition scale (Cacioppo, Petty, & Kao, 1984) measured participants’ need to learn and understand information. The Cognitive Closure measure (Webster & Kruglanski, 1994) was used to determine participants’ need to reach an answer, any answer, in order to avoid confusion or ambiguity. Cronbach’s α was used to determine the internal consistency of the measure. The reliability of need for cognition and cognitive closure measures

were both estimated to be moderate, Cronbach's $\alpha = .87$; Cronbach's $\alpha = .79$. The two measures were negatively correlated, $r(227) = -.257, p < .0005$, indicating that the two measures are distinct yet conceptually related.

Primary Analyses

Formal training. Each participant's scores on each measure of formal training were also compared to that participant's accuracy in judging social psychological research findings. Several measures of formal training were used: academic status, major status, number of classes, class grades, and GPA.

Academic status. It was hypothesized that participants' accuracy rates would increase as their academic status increased. A one-way ANOVA compared each participant's academic status to that participant's ability to predict research findings. Participants' accuracy in judging research findings increased as their academic status increased, $F(5,220) = 4.51, p = .001$. Post hoc tests revealed that graduate students were significantly more accurate than

freshmen, sophomores, juniors, and seniors in judging social psychological research findings (see Figure 1).

The accuracy rates of graduate students were not significantly different from post-baccalaureate students. There was also a significant linear trend, with accuracy in judging research findings increasing as a student's academic status increases, $F(1,196) = 17.83, p < .0005$. This result was consistent with the hypothesis that accuracy rates would increase as academic status increases.

Number of classes. It was hypothesized that participants' accuracy in judging research findings would increase as the number of psychology classes participants completed increased. The number of psychology classes participants had in college was positively correlated with the ability to predict research outcomes, $r(208) = .24, p = .001$. The more psychology classes participants had in college, therefore, the more accurate they were when predicting research outcomes. This result supports the hypothesis that accuracy rates would increase as the number of psychology classes participants had in college increased.

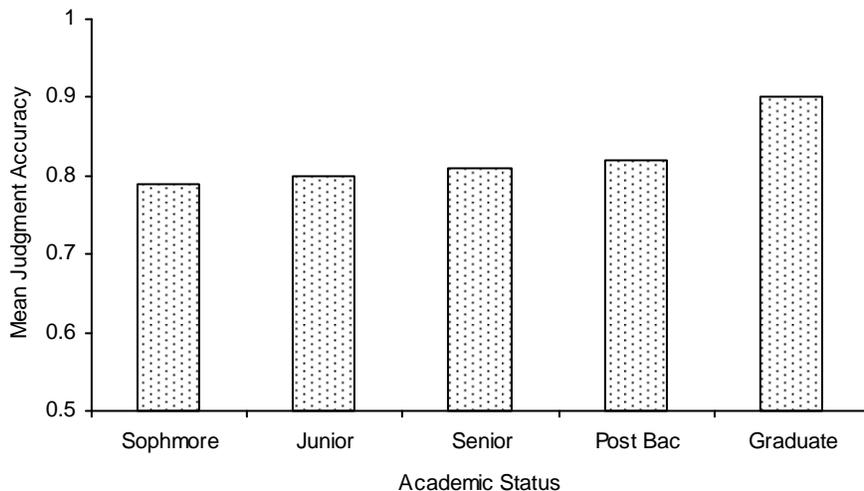


Figure 1. Mean accuracy in judging social psychology research findings for students with varying academic backgrounds.

It was hypothesized that participants' ability to predict research findings in social psychology would also increase as the total number of classes that related to social psychology participants completed in college increased. The total number of classes each participant reported having that related to social psychology was positively correlated with the ability to predict research outcomes in social psychology, $r(217) = .13, p = .05$. The more classes dealing with social psychology a person had, the more accurately they predicted findings. This result supports the hypothesis that accuracy rates would increase as the total number of classes dealing with social psychology increased.

Class grades. It was hypothesized that participants' ability to predict research findings in social psychology would increase as participants' class grades increased. A one-way ANOVA compared participants' grades in psychology classes and their ability to predict research findings. This initial analysis indicated that participants who were more accurate in judging research findings in social psychology had higher grades in psychology classes, $F(3, 222) = 3.64, p = .01$. Bonferroni's post hoc test of multiple comparisons revealed that participants who received an A average grade in psychology classes were more accurate than participants who received a C average grade ($p = .02$). A clear lack of a linear trend, however, did not support the hypothesis that accuracy would increase as grades in psychology classes increase, although some differences were observed (see Table 1 for means).

It was hypothesized that participants' accuracy rates would increase as their grades in classes related to social psychology increased. A one-way ANOVA was used to compare participants' grades in classes relating to social psychology to their accuracy rates on the social psychological findings questionnaire. Participants who made higher grades in classes related to social psychology were not more accurate than participants who made lower grades in classes related to social psychology, $F(3, 222) = .87, p = .46$. This

result does not support the hypothesis that accuracy rates would increase as grades in classes related to social psychology increase.

Table 1

Mean Accuracy Rates for Students Who Reported Average Grades in Psychology Classes

<u>Grade</u>	<u>Mean Accuracy</u>	<u>SD</u>
A	.81	.07
B	.80	.06
C	.77	.06
D	.86	.05

Grade point average (GPA). It was hypothesized that participants' accuracy rates would increase as their grade point average (GPA) increased. A one-way ANOVA was used to compare participants' GPA to their ability to predict research findings. Participants' accuracy in predicting research outcomes was not dependant on their GPA, $F(4,221) = 1.84, p = .12$. This result does not support the hypothesis that accuracy rates would increase as participants' GPA increases.

Major status. It was hypothesized that psychology majors would be more accurate than non-psychology majors on the ability to predict research findings. A one-way ANOVA was conducted to compare participants' major status and their ability to predict research findings. Psychology majors were more accurate than non-psychology majors when judging research findings in social psychology, $t(224) = -2.08, p = .04$. This result supports the hypothesis that psychology majors would be more accurate when predicting research findings than non-majors.

Personal experience (social engagement). It was hypothesized that participants' personal experience (defined as the degree of social engagement) would be a better predictor of accuracy than their formal

training. Each participant's scores on the social activity scale, close personal relationship scale, and social isolation scale were compared to the same participant's accuracy in identifying true social psychological research findings as true and false social psychological research findings as false. The social activity scale, close personal relationship scale and social isolation scale were not significantly related to accuracy, $r(224) = -.06, -.06, \text{ and } .05$, respectively, all $ps \geq .34$. Contrary to the hypothesis, measures of social engagement did not predict accuracy in identifying research outcomes in social psychology.

A Comparison

An interpretation of the primary analyses was that the amount of formal training a participant had received was a better predictor of accuracy in judging research outcomes than was the extent of that participant's social engagement (or the amount of personal experience with human social behavior). The researchers determined that further analyses might provide a modification to this conclusion. The researchers determined that participants with minimal formal training (no more than one psychology class in college) were significantly more accurate than chance when identifying true and false research findings, $t(54) = 34.19, p < .0005$. This was also true for students who indicated that they had taken no psychology classes (although they were currently enrolled in their first psychology class), $t(27) = 27.70, p < .0005$. Students with minimal or no formal training in psychology, therefore, can accurately identify true from false statements about human social behavior.

The researchers also determined that participants with high levels of formal training (graduate students and students who had completed at least ten psychology classes in college) were significantly more accurate when predicting research findings than participants with minimal or no formal training, $t(59) = -4.76, p < .0005$. Overall, the difference in accuracy between participants with higher and lower levels of formal

training, $d = 1.91$, was smaller than the difference in accuracy between participants with lower levels of formal training and guessing, $d = 4.65$. This indicates that the gains in participants' accuracy attributable to formal training are small relative to what students had already accumulated before that formal training began.

Secondary Analyses

Need for cognition. The Need for Cognition Scale and Need for Closure Scales were used to determine the relationship between participants' cognitive motivation and their accuracy in judging research findings. The Need for Cognition Scale (Cacioppo & Petty, 1982) measured participants need to learn, understand, and spend time thinking about information. It was hypothesized that participants with high need for cognition would take more time when reading and answering the social psychological findings questionnaire and would therefore be more accurate when judging the research findings. Need for Cognition scores were correlated with accuracy rates in judging research findings. As participants' need for cognition increased, their ability to accurately predict research findings also increased, $r(226) = .15, p = .03$.

Need for closure. The Need for Closure Scale (Webster & Kruglanski, 1994) measured participants need or motivation to come to a decision quickly rather than suspend judgment and think critically about the evidence. It was expected that participants high in need for closure would spend less time reading and answering the social psychological findings questionnaire and would therefore be less accurate when judging the research findings. Need for Closure scores were not highly correlated with accuracy rates in judging research findings. Participants' need for closure did not affect their ability to accurately predict research findings, $r(226) = .05, p = .50$.

Specific topics. The social psychological questionnaire was comprised of research findings that were grouped into 18 broad topics within social psychology (e.g., aggression, health psychology, relationships, etc.) by Richard, et. al. (2001). Participants may know more about some of these topics than others from their experiences within certain topics. A prison guard working with dangerous criminals, for example, might know more about aggression than health psychology or helping behavior. It was expected, then, that participants' accuracy in judging research findings would be higher for some topics than others. A repeated-measures ANOVA was conducted to compare each participant's accuracy in judging research findings on 10 of the 18 different topics. Each of the 10 selected topics had a sufficient number of findings per participant (i.e., at least six findings) in order to compute a reliable mean. Table 2 lists the topics included in this analysis. Participants' predicted research findings in some topics more accurately than in others, $F(9, 1017) = 10.64, p < .0005$ (see Table 2 for means).

In particular, participants were most accurate when predicting research findings about aggression ($M = .81$) and health psychology ($M = .80$). Participants were least accurate when predicting research findings about personality ($M = .68$) and attitudes ($M = .67$). Subsequent within-subjects contrast analyses revealed that participants' accuracy rates for aggression and health psychology were significantly higher than their accuracy rates for the remaining eight topics, $p < .05$. Participants' accuracy rates for predicting research findings in the topics of personality and attitudes were significantly lower than their accuracy rates for the remaining eight topics, $p < .05$. This finding supported the hypothesis that participants' accuracy in judging research findings would be higher for some topics than others.

The different topics in social psychology were also correlated with age, need for cognition, need for closure, the social activity scale, close personal relationship scale, social isolation scale, and the number of classes in

college. There was a weak association between age and the topics of law and nonverbal behavior. Participants who were older were better able to predict research findings within the topic of law, $r(114) = .18, p = .05$. Older participants were also better able to predict research findings within the topic of nonverbal behavior than younger participants, $r(114) = -.18, p = .05$. There was a weak association between need for cognition and the ability to predict research findings within the topic of relationships. As participants' need for cognition increased, their ability to accurately predict research findings within the topic of relationships also increased, $r(114) = .19, p = .05$. Additionally, as participants completed more psychology classes in college, they were more accurate when predicting research findings within the topics of health, helping behavior, personality, and relationships, $r(114) = .22, .21, .22, .30$, respectively; all $ps < .05$.

Table 2

Mean Accuracy Rates for Findings from Social Psychological Topics

<i>Topic</i>	<i>Mean Accuracy</i>	<i>SD</i>
Aggression	.81	.16
Health	.80	.18
Influence	.75	.18
Relationships	.74	.18
Helping Behavior	.73	.15
Nonverbal	.72	.18
Groups	.72	.72
Law	.68	.68
Personality	.68	.14
Attitudes	.67	.15

Discussion

Many researchers believe that people can make accurate decisions and accurate predictions within social situations based on social knowledge gained from experiential learning, or lay knowledge (Kruglanski, 1989). People use lay knowledge to create

theories that are used to explain the causes of events and to make decisions (Anderson & Lindsay, 1998).

Researchers in educational psychology, industrial-organizational psychology, and marital relationships (Wong, 1995; Gordon et.al., 1978; Levenson & Ebling, 2003), for example, found that formal training in these areas did not contribute much, if any, knowledge to the fields. Participants with more knowledge of research in teaching and educational psychology, for example, were not able to accurately predict research findings any more often than less experienced and less trained participants.

Researchers in personality, social, and developmental psychology (Barnett, 1986; Barnett 1988; Levenson & Ebling, 2003; Richard et. al., 2001), however, found that personal experience and formal training both contributed to knowledge within these fields. Participants with higher levels of formal training were more accurate than participants with lower levels of formal training, with all participants more accurate than chance responding.

The researchers in personality, social, and developmental psychology concluded that the knowledge needed to be able to predict greater than 50 percent of the research findings is from everyday or personal experience. The researchers did not include a measure of personal experience to determine if and how this experience would correlate with the ability to predict research findings. The purpose of this study was to include a measure of personal experience (social engagement) to determine whether or not personal experience or formal training is a better predictor of social knowledge. The measures used were a social psychological questionnaire composed of consistently supported research findings in social psychology, a measure of formal training, and a personal experience measure that measured "social engagement." The social psychological questionnaire was intended to be a measure of social knowledge and the personal experience measure was intended to be a measure of participants' social activity.

The hypothesis was that personal experience would be a better predictor of social knowledge than formal training within this study because there was a large amount of evidence indicating that the knowledge of information within the fields of personality, social, developmental, educational, and industrial/organizational psychology, as well as studies of marital relationships, was from personal experience within these fields. Formal training, however, was still expected to be correlated with accuracy rates in the current study because higher levels of formal training were found to enhance knowledge in personality, social, and developmental psychology. The researchers expected personal experience to be correlated with accuracy rates regardless of level of formal training.

We found, however, that a person's level of personal experience or "social engagement" was not correlated with how accurately they were able to identify research findings in social psychology. Accuracy rates were better predicted by measures of that student's formal training, such as their academic status and having taken an increased number of psychology classes dealing with social psychology.

Formal Training

The current study compared the accuracy rates of freshman, sophomore, junior, senior, post baccalaureate, and graduate students. In previous research, Barnett (1986; 1988) concluded that, although much of what is researched in personality, social, and developmental psychology is commonsense, formal training is still important. The studies conducted by Barnett compared the accuracy rates for high school, general psychology, honors general psychology, and general academic honor societies students. In each study, including the current study, as participants' increased in academic status, their ability to predict research findings accurately also increased.

An explanation for why participants are able to predict more research findings as their academic statuses increase is that as

students increase in academic status, they are exposed to more information within their field of interest. Freshman and sophomore students, for example, usually take general education courses such as Biology and English. At the university where the current study was conducted, students must declare a major by their junior year. The junior and senior years are spent exposed to more knowledge about a specific field. This concentrated focus on psychology for juniors and seniors who are psychology majors presents students with more detailed information about psychology during these years. For students to enter and succeed in graduate school, they must have high grades. In order to obtain high grades, students must study and remember more discipline-specific information. As students increase in academic status, then, they are exposed to more information about psychology. This increased amount of information leads students to be more accurate when predicting research findings in social psychology.

People often make decisions using naïve theories that were created from experiential learning. Although people are usually relatively accurate, they often create incorrect or biased theories about the social world. Like naïve theories, scientists conduct research to create generalizations about the world and specific events. Researchers, however, attempt to limit biased and incorrect information and to increase accuracy (Perrez, 1991). This might explain why participants with higher levels of formal training in psychology were more accurate when predicting research findings in social psychology. Students taking psychology classes learn what researchers have found to be true about the world. As participants increased in academic status, became psychology majors, and took more psychology classes, they were presented information regarding their social world about which they might have had limited exposure to or about which they had formed an incorrect naïve theory. By exposing students to new information, psychology classes might challenge them to consider their own

assumptions and generalizations and to correct any false theories they may have.

In a study by Kowalski (2004), introductory psychology students were each given a true/false test that assessed psychological misconceptions. The test was administered at the beginning of the introductory psychology course and then again after 12 weeks. The researchers found that the students had significantly more questions correct on the true/false test when it was administered after 12 weeks (posttest) than they had at the beginning of the course. The implication of this finding is that students enter psychology classes with many misconceptions or false beliefs. Many of these beliefs, however, are corrected as the students are exposed to psychological information during the courses. The researchers also found that students who perform at higher levels (e.g., high grade point averages) and who think critically leave the introductory classes with fewer misconceptions.

Personal Experience

Although many of the aspects of the formal training measure were expected to be positively correlated with accuracy rates, the researchers believed that personal experience would be a better predictor of accuracy. To further support this assumption, the researchers found that the difference in accuracy between participants with higher and lower levels of formal training was smaller than the difference in accuracy between participants with lower levels of formal training and guessing. This indicates that much of participants' gains in accuracy are due to previous knowledge and that formal training contributes a relatively modest amount to improving this accuracy. The measure of personal experience used in this study, however, did not correlate with the ability to correctly identify research findings in social psychology as expected. This indicates that the measure of personal experience used in this study, social engagement, is not a predictor of social knowledge.

An explanation for this finding is that the “social engagement” measure might not be a good measure of how people acquire social knowledge. The researchers believed that people would learn the most social information by interacting with others. This social interaction would allow for an exchange of information between people that would be considered “lay knowledge.” People may use other methods besides social interaction, however, to obtain social knowledge.

According to Bandura (1977), people can gain social knowledge from *watching* other people. This is called observational or vicarious learning. People with limited social activity or interactions might still have a great bit of social knowledge gained from studying others’ actions. While sitting in a park reading, doing work at an office, or eating lunch alone, people might still be aware of what is going on around them. They are still able to make note of others’ actions and formulate naïve theories about the social world.

People may also learn vicariously from watching television or playing video games. According to Lachlan, Smith, and Tamborini (2005), for example, video game players are highly likely to learn aggression from violent video games when the characters in the games are seen as highly attractive and similar to the self. This result was considered in the frame of the social cognitive theory which states that people imitate characters that they find attractive. The participants in the current study may have gained equal or more social information from relating to characters in video games, on television, and in other media sources than from actual social interactions. Participants may have used this information to complete the social psychological questionnaire.

Other researchers have studied the effects of mass media on adolescent identity formation. Adolescents specifically learn a great deal about gender roles from the media. Both girls and boys use forms of media such as television for gender knowledge while girls in particular use magazines to learn about

males and relationships. Adolescents use this knowledge to create sexual and romantic scripts that may be used immediately or stored for later use in relationships (Arnett, 1995). A possible gender script that people could learn from the media is that boys are more aggressive than girls. If participants with little direct experience with aggressive males or non-aggressive females learned this script from the media, they might be more likely to answer true to a question on the social psychological research finding questionnaire that states, “Men are more aggressive than women.”

Vicarious learning, then, is an additional option for learning social information separate from social engagement. It is also possible that vicarious learning and social engagement can occur simultaneously or interact. What is learned vicariously, for example, can be acted out during social interactions or stored for later use. Often behaviors that are acted out are regulated by others within the person’s social realm (Arnett, 1995). If the behaviors are inappropriate and the person is reprimanded, the behaviors may not continue. If the person is not reprimanded for inappropriate behaviors or if the behaviors are actually appropriate, then the chances of the behaviors continuing are greater. A person’s social network, then, can be an important factor in determining what to believe is appropriate from media sources. If a person does not have an attentive social network to help regulate behaviors or if the person stores the information learned from media sources without acting it out, what they think is true about the social world may be construed from the rest of society (Arnett). These misconceptions might lead to inaccuracy on the social psychological questionnaire.

Another explanation for why there the social engagement measure was not related to accuracy rates is that people sometimes only need a small portion of information about others to make judgments. In a study by Ambady and Rosenthal (1993), for example, teachers were rated on several personality characteristics by people that they have

known for a while (principals and students) and by complete strangers. The strangers' ratings were highly accurate predictors of the ratings made by the people that had many interactions with the teachers. Participants were also no more accurate when they watched 30 seconds of video clips than when they watched 6 seconds of video clips. People, then, may gain just as much social knowledge from small amounts of experience as it is possible to gain from larger amounts of experience.

It would be difficult, then, to determine exactly how and in what situations people learn certain social information. A person may have learned that "men are more aggressive than women" from watching others, playing video games, or watching television. They may have learned the information from someone telling them that "men are more aggressive than women". They may also have learned the information from the classroom. Social learning may occur from several different sources with no one particular source being the most important.

Another explanation for the lack of relationship between the personal experience measure and the social psychological findings questionnaire might be related to the setting in which the participants were tested. According to Tulving and Thomson (1973), the retrieval of a piece of information from memory depends on the presence of retrieval cues that match with some aspect of the stored piece of information. Recalling a word from a list of words, for example, might be easier if the person is presented with another word from the same list. One type of retrieval cue is the context that information is learned in. Godden and Baddeley (1975), for example, found that people are better able to remember information when they are in the same context that they were in when the information was learned. In particular, Godden and Baddeley found that divers recalled more words from a word list learned underwater when they were underwater than when they were on land. Participants who learned the word list on land recalled more words when on land than in water.

Applying context-dependent memory to the current study, participants were to make judgments about social research outcomes in a laboratory at an academic institution. It may be that this academic setting was a cue that led participants to recall the information that they had learned in a similar academic setting as opposed to during social activities. Participants were also presented with statements and asked to respond true or false. Responding to such statements is a task similar to test taking methods presented in the classroom. This also might have contributed to the access of information learned in a similar setting.

When asked about their participation in social activities, it may have been more difficult for participants to recall how often they participated in these activities while sitting in an academic setting. It might have been much easier, however, to recall information for the formal training questionnaire because participants were in a formal training atmosphere. The experimental setting may have been more similar to a university classroom than a typical social setting.

In order to determine the context effects of this study, future studies might present the research findings in a more social context. Participants could watch skits portraying a true or false research finding with the intention of answering whether or not the scenario presented in the skit is true or false for most situations (e.g., a clip showing a man being aggressive or a clip showing a woman being aggressive). This social context idea is similar to a measure called the Interpersonal Perception Task (IPT) that is used to evaluate participants' sensitivity to nonverbal and verbal cues (Costanzo & Archer, 1989 as cited in Ambady, Hallahan, & Rosenthal, 1995). This measure is specifically used to determine how well people can predict others' personality attributes from verbal and nonverbal behavior. The IPT measure consists of 30, 60-90 second videotaped scenes of naturalistic behavior (e.g., kinship, lies, competition, status, and intimacy) with each scene

followed by a question regarding the scene that has an objectively correct answer. Participants in future studies could be presented with a measure similar to the IPT or, instead of videotaped scenes, the social psychological findings could be presented in written scenarios.

Social Knowledge Specificity

Another explanation for the lack of an observed relationship between social engagement and social knowledge is that the social engagement measure and the social psychological questionnaire may be too broad. The research findings on the questionnaire were taken from 18 different social topics. The social engagement measure was a general measure of social engagement. In reality, participants may know more about certain social topics than others. For example, a person working as a security guard at a prison may know more about aggression than someone working behind a desk at a quiet office. This increased knowledge about a topic might lead participants to be more accurate when predicting research findings about that specific topic. In support of this idea, several researchers have found that participants with greater knowledge about a topic are better able to recall information related to that topic and are better able to process information about that topic (Chase & Simon, 1973; Fiske, Kinder, & Larter, 1983).

The researchers found that, as a whole, participants did know more about certain topics than others. Particularly, participants knew the most about aggression and health, both important topics for human survival. When correlated with formal training and social engagement, it was determined that participants who had completed more psychology classes in college were more accurate when predicting research findings on health, helping behavior, personality, and relationships. This indicates that out of the ten social psychological topics, participants were the most accurate when answering true or false questions about health, helping behavior, personality, and relationships from their psychology classes.

To explain this finding, participants may have taken more psychology classes that dealt with health, helping behavior, personality, and relationships (e.g., Theories of Personality, Social Psychology, Stress Management etc.) and less psychology classes that dealt with other topics like experimental methods (e.g., Psychological Testing, Foundations of Experimental Analysis of Behavior, etc.). At the university in which this study was conducted, participants seeking a degree in Psychology are required to take at least five foundation courses which include the choices of Theories of Personality and Social Psychology. Students are also required to take at least three elective courses which include the choice of taking Stress Management. Further analyses would be required to find out exactly which classes deal with the topics of health, helping behavior, personality, and relationships, the percentage of students that took these classes, and whether or not these students are more accurate when predicting research findings in health, helping behavior, personality, and relationships than students with no exposure to the topics.

Participants' level of social engagement did not influence their accuracy when predicting research findings within specific social psychological topics. The social engagement measure was a broad measure of social activity whereas each topic on the psychological findings questionnaire was a specific measure of knowledge about that topic. Future studies should use a personal experience measure that relates directly to a specific topic. For example, the research findings and the personal experience measure could focus solely on aggression. This would better determine if participants with experience within a certain topic of social psychology (e.g., aggressive social behavior) are more accurate when predicting research findings within that same topic (e.g., aggression) than participants with less experience.

It is possible, too, that the social psychological questionnaire is not a good measure of "social knowledge." Scientific

research is an attempt to eliminate biases. The research findings used in the social psychological questionnaire were consistently supported findings from meta-analytic studies in the field. The social psychological questionnaire, then, is a collection of unbiased truths about social knowledge. Because people do not create perfect theories about the social world, it is expected that they would have some biases in their assumptions about human social behavior. Participants would not score exceptionally high on a true/false test comprised of unbiased statements unless they have been exposed to the unbiased research findings taught in the classroom. This might explain why participants with higher levels of formal training in psychology were more accurate when predicting the social psychological research findings.

A more accurate measure of “social knowledge” could be created by collecting consistently supported ideas about the social world created by people, not science. The ideas included in the new measure of social knowledge would include both correct and incorrect assumptions about the world. These ideas would be a more accurate reflection of what people truly believe about the social world rather than what people believe about scientific research outcomes.

Conclusion

The purpose of this study was to determine whether formal training or personal experience is a better predictor of the ability to correctly identify research findings in social psychology. In this study, (and similar to others) participants correctly identified greater than 50 percent of the research findings presented to them as true or false regardless of their level of formal training. This indicates that people know psychological information without it being taught to them in a classroom. The personal experience measure of social engagement was intended to be a measure one’s level of personal experience with human social behavior. Participants’ levels of social engagement, however, were not correlated with their ability to accurately predict research findings.

As participants’ levels of formal training increased, however, they were more accurate when predicting the social psychological research findings. In particular, as participants completed more psychology classes in college, they were more accurate when predicting research findings within the topics of health, helping behavior, personality, and relationships.

It was also determined that the difference in accuracy between participants with lower levels of formal training and guessing was larger than the difference in accuracy between participants with higher and lower levels of formal training. This indicates that formal training contributes very little to increased accuracy and that most of participants’ accuracy comes from previous knowledge. It was concluded, then, that although participants’ amount of social engagement did not predict accuracy, people still learn social knowledge through some non-academic form, perhaps by personal or vicarious experience.

Like previous studies, this study indicates that people know quite a bit of psychological information regardless of formal training. In particular, this study indicates that social engagement is not necessarily how this information is learned. More research would need to be conducted using different measures of personal experience to accurately test the role of personal experience in the development of lay theories.

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