

Source Expertise as a Factor of Social Influence:  
Examining Judgment Conformity, Decision Confidence, and Source Trust

*by*

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### Abstract

The growth of social media and screen-to-screen interaction has prompted investigation into how social influence can persuade decision-makers without face-to-face interaction. Our research explores whether the reputation (Expert, Novice, or Neutral) of a fake, anonymous peer can change an individual's (1) judgment conformity, (2) decision confidence, or (3) trust in that peer. Eighty-eight university students answered 10 trivia questions, giving numerical estimations before and after viewing a fake peer's response. Participants rated their confidence in each estimate, and rated their trust towards the source after each question. Results found that (1) participants exposed to an Expert's opinion improve judgment accuracy through assimilation, but those influenced by a Novice worsen accuracy through reactance; (2) decision confidence ratings increase in all groups; (3) trust towards the Expert is significantly higher than both the Novice and Neutral peers. Associations are also explored between these three outcomes and the participants' personality traits and cultural orientations.

### Source Expertise as a Factor of Social Influence:

#### Examining Judgment Conformity, Decision Confidence, and Source Trust

The opinions and behaviours of the people with whom we surround ourselves have the ability to influence our decisions. Yet, contextual factors that may or may not be outside of our control can affect the direction and magnitude of this influence. Early research on social influence and decision-making studied tangible interactions between people as well as the perceived physical presence of others (Asch, 1951). The world today, however, is one where technology deeply embeds itself into daily life, so the context of social influence is shifting away from primarily requiring face-to-face interaction. People can now influence each other via screen-to-screen interaction, without any physical presence at all. Social media has become a hub for strategic marketing, inundating us with advertisements for celebrity-endorsed products and biased opinion-based articles. The problem of “fake news” is a growing issue, where social media users share misleading information and propaganda as a means to create doubt and drive web traffic for political or financial gain (Hunt, 2016). Fake news has brought to light valid concern about if and how anonymous people can influence each other’s decisions. The conversations regarding fake news, however, focus on emotionally charged or prominent issues. While everyone faces such issues during their lifetime, the effect of other people on an individual’s “simple” or “everyday” decisions is seen as uninteresting and trite. Yet as we have learned from the “foot-in-the-door” technique (Freedman & Fraser, 1966), the ability to successfully influence small, seemingly unimportant decisions can improve the likelihood of influencing larger, more important decisions later in time.

We believe that the reputation of the anonymous sources behind the screen that are displaying their beliefs can persuade people to change their cognitive and emotional responses to

small decisions. The most accurate responses to these decisions will be “ambiguous”, or difficult to discern, so a participant’s pre-existing biases about each decision’s subject matter will have less of an impact on the stability of their choices.

The aspect of reputation used in this study is source expertise, because the literature disputes the influence of experts on decision adjustment. For instance, some researchers believe that experts have the ability to improve judgment accuracy (Lee & Dry, 2006; Stallen, 2013), but others believe they hinder it (Lorenz, Rauhut, Schweitzer, & Helbing, 2011; Meshi, Biele, Korn, Heekeren, & Daunizeau, 2012). While decision accuracy is important, these studies did not associate changes in accuracy to social persuasion. Organizations with vested interest in ubiquitous decisions, such as democratic votes, rely on the power of social persuasion to achieve their own agenda. The ability to influence one person can theoretically change the decision outcome for an entire group, rendering the decision accuracy ultimately redundant. The *change* in decision is what produces the consequences, but accuracy is an excellent method for pinpointing exactly the direction and magnitude of these changes.

The emotional response to expertise is also complicated. Confidence is a popular variable of analysis in decision-making research, but literature about how expertise acts as a factor predicting change in confidence is difficult to find. For uncertain decisions where the user has little expertise, they may rely on someone else to give cues about which alternative to choose. Relying on others helps alleviate the responsibility of consequences, and confidence is an important predictor of the stability of choice (Meunier & Rule, 1967). Many studies look at the effects of varying confidence within the expert or non-expert source, but not in the decision-maker (Snizek & Van Swol, 2001). Alternatively, they look at both the expertise and

confidence of the decision-maker (Teichmann, 2011). Our contribution separates the two constructs, exploring changes in confidence due to the manipulation of source expertise.

One way to understand if a source is believable is to examine the participants' ratings of trust towards the source. Most studies treat source expertise as a discrete variable where people labelled as knowledgeable experts or disreputable novices form two opposing categories. The research on these categories agrees that decision-makers trust expert advice more than novice advice (DeBono & Harnish, 1988; Bohner & Wänke, 2002; Klucharev, Hytönen, Rijpkema, Smidts, & Fernández, 2008). We propose that these studies ignored a third category, and that is the inclusion of neutral sources that are neither experts nor novices. The vast majority of people that individuals consult for daily decisions do not possess a discernable weighted reputation of expertise. While one would not expect an anonymous, neutral source to have any effect on conformity, confidence, or trust, there lies a critical and untapped potential for persuasion.

Three general hypotheses explore the relationship between source expertise as a factor of conformity, change in decision confidence, and source trust. The first is that people exposed to an expert's opinion will change their responses to become more similar to the source, but people exposed to a novice's opinion will become more different. The second is that people exposed to an expert's opinion will become more confident, but those exposed to a novice's opinion will become less confident. The third is that people will trust the expert most, but trust the novice least.

### **Social Influence**

Persuasion research encompasses the principle of social influence, where one's emotions, beliefs, or actions conform to the expectations of another person. Deutsch & Gerard (1955) described the two prevalent cognitive motivations for conforming, which are *normative social*

*influence* and *informational social influence*. Normative social influence occurs out of the conformer's needs of likeability and acceptance, conforming as a means to please other people. Informational social influence, or *social proof*, relies on a need to be correct. In ambiguous situations, the conformer will pay heightened attention to external cues that may indicate the correct behaviour because they believe that others hold accurate judgments (Aronson, Wilson, & Akert, 2005). Furthermore, when given ambiguous messages, people who interact with knowledgeable sources feel more positive about the source and its messages (Chaiken & Maheswaran, 1994). Due to the difficult nature of the questions administered in this study, as well as the absence of face-to-face social contact with the influencing source, this study will lend its results to an informational point-of-view.

Social proof does not necessarily require face-to-face interaction, either. It can occur even when the source of information is anonymous. In a 3 x 3 factorial design regarding one's perceptions of a source based on attitude similarity, Posavac and Pasko (1971) manipulated the amount and similarity of attitudes given by an anonymous stranger. Participants rated their confidence in evaluations of the stranger's attitudes, and the results showed that increasing the amount of attitudes presented made the participants view the source more favourably. This evaluation, however, became more positive as similarity between the source and participant grew. In this study, participants will likely feel indifferent towards all three sources, but the frequency of source opinions provided as well as the participants' desire for information will inflate their ratings of trust.

Contrary to Posavac and Pasko's finding, Lowry (1973) found that source-audience similarity does not contribute to a shift in opinion. Lowry described three different subtypes of similarity that are linked to attitude change. The first, demographic similarity, refers to visual



source attributes such as height, age, and ethnicity. The second, attitudinal similarity, describes the congruence of source-audience beliefs that are separate from the source's message. The third, situational similarity, is the general relationship between a source and its audience. By manipulating the source-audience similarity, Lowry found that the source deemed the least similar across all three dimensions was actually the most favourably perceived. Should these results stand, ratings of source trust may still be higher across all sources due to the difficult nature of the trivia questions and the likelihood that initial responses will be inaccurate.

In an online study, Zhu and Huberman (2014) used a two-alternative forced-choice (2AFC) repeated-measures design to examine changes in personal preferences for photographs after the acquisition of other peoples' preferences. They wanted to know if by manipulating the levels of agreement or opposition, people would reverse their original choices. The results show that regardless of the similarity between source and audience beliefs, others' opinions have a significant effect in swaying people to change their choices, and the effect becomes more pronounced if there is a delay between the first and second decisions. Zhu and Huberman's study did use a time pressure during each decision, but this study does not. Our results will indicate if an absence of time pressure will yield lower effects of external preference on internal preference change.

### **Source Credibility**

*Source credibility theory* describes how the perception of a source's reputation can affect the persuasiveness of the source's message, regardless of the format through which the message is given (Hovland & Weiss, 1951; Lowry, Wilson, & Haig, 2013). Audiences use a variety of external cues when assessing the credibility of a source, such as the communicator's motives, believability, or trustworthiness. Early credibility research did not control for these differences

between sources (Kelman & Hovland, 1953), and it is possible that message recipients weigh some factors as more important than other factors.

If warned that a source's motive is to persuade them, people are more likely to reject the message (Petty & Cacioppo, 1979). After people make an initial choice or decision, they become primed to defend their points of view (Nickerson, 1998). If there is no reason to doubt their initial decisions, such as an opposing voice or contrary evidence, then it is likely that no attitude change will occur. Attitudes held with certainty are less susceptible to change (Kiesler, 1971) than attitudes held with doubt (Tormala & Rucker, 2007). When two people disagree, they may feel compelled to change their opinions as a means of maintaining confidence and esteem (Cialdini & Goldstein, 2004). Having participants complete a cognitively easy task away from physical source interaction could yield high levels of decision confidence but little decision change. One goal of this study is to induce attitude change via conformity, so this study will attempt to create initial doubt by having participants respond to difficult general knowledge questions.

While credibility relies upon five distinct dimensions (McCroskey & Jenson, 1975), this study will focus on the dimension of *source competence*, specifically source expertise. Credibility research historically applies to the legal system, where expert testimonials can affect critical juror decisions (Kovera, Gresham, Borgida, Gray, & Regan, 1997). This research typically involves face-to-face interaction, where a speaker addresses the audience and attempts to persuade people through physical and verbal cues such as tone of voice, temperament, and extroversion. This study, however, will focus on how screen-to-screen interaction affects the perception of an anonymous source's credibility.

A benefit of having the source be anonymous is that research has already shown that recognizing a source boosts perceived credibility. There are logical motives for why companies use celebrity spokespeople or why politicians share advertisements on various media outlets. Early research about the persuasive ability of celebrity endorsers had mixed results (Stallen, 2013). Most agreed that the celebrity's familiarity had greater effects on attitude change than did unknown endorsers (Kamins, Brand, Hoeks, & Moe, 1989). Rossiter and Smidts (2012) suggested that these differences in results stem from studies not taking into account the perceived expertise of the source. They believed that consumers would be persuaded only if the endorser appeared to possess knowledge or experience with the product he or she was supporting. Their hypothesis was supported by a neuroimaging study that found exposure to an expert celebrity endorsing a product that matched its reputation (e.g. André Agassi promoting sportswear) produced positive effects on memory and purchase intention, but exposure to a non-expert (e.g. André Agassi promoting alcoholic beverages) did not (Klucharev et al, 2008).

Aside from familiarity, physical similarities between the source and audience can produce these same positive effects by altering the perception of reputation (Lowry, 1973). In this study, all group conditions will receive the same basic information about their sources, and this information will be similar to participants only on education and geographic location. By eliminating the physical persona of the source in the current study, the source's reputation should affect participants more than its familiarity or similarity.

### **Elaboration Likelihood Model**

Petty & Cacioppo's *elaboration-likelihood model* (ELM) was a breakthrough model in persuasion research (1986). It described how duration of thinking and degree of motivation mediated how different variables could affect attitudes. The ELM is one of many dual-process

theories that create two distinct categories of judgments, requiring either deliberate or instinctual responses (Strack & Deutsch, 2006). According to the ELM, should the situation merit deep, logical thinking and high motivation, enduring persuasion will occur via the *central route*. If the decision is not complex and the individual is less motivated, situational cues such as source reputation and attractiveness will induce persuasion via the *peripheral route*. This study applies to the peripheral route, where students will perform a difficult, but not paramount, cognitive task. They will also have only two external cues to aid in their decision, which is the numerical response of another student with a weighted reputation. Aside from our curiosity regarding screen-to-screen social influence, another reason the sources in this study do not have physical personas is that the effects of source physical features may confound results in the dependent variables. By taking a peripheral approach, we expect and desire for participants to use the cues we provide them for their decision-making processes. By having the sources physically present or represented by photographs instead, personal attractiveness preferences could influence participants' decisions (Norman, 1976).

### **Heuristic-Systematic Model**

Chaiken, Liberman, and Eagly's (1989) *heuristic-systematic model* (HSM) describes how the persuasive ability of experts might stem from our use of mental shortcuts for more efficient cognitive processing. Heuristics form from implicit biases based on experiences or learned expectations. As confidence in a source increases, so do feelings of trust (Keller et al., 2011). Klucharev's neuroimaging study (2008) found that experts, specifically, induce feelings of trust, and that the brain assesses source expertise quickly and without explicit endorsement. Society portrays experts as being more knowledgeable, trustworthy, and authoritative than laypeople or non-experts, contributing to the creation of the heuristic that "experts are correct". This belief is

not always true, yet people are more interested in what experts say than what non-experts say (Heesacker, Petty, & Cacioppo, 1983).

An interesting study by Priester and Petty (1995) hypothesized that this interest is a result of perceived trustworthiness. They separately examined the factors of source expertise and trustworthiness by manipulating levels of each, and an expert or non-expert who was viewed as either trustworthy or untrustworthy influenced participants. They found that exposure to an untrustworthy expert fostered doubt, so people thought longer about the situation and the expert's messages. Experts are not typically associated with lack of trustworthiness, so this condition challenged participants' pre-existing biases. The researchers also found that if both the expert and non-expert had trustworthy reputations, people favoured the expert's message more than the non-expert's message. The current study explores if the participants' post-treatment ratings of trust towards their respective sources supports this match of expert to high trust and novice to low trust.

Early research hypothesized that it was not the expertise but only the trustworthiness of the source that contributes to its persuasiveness (Hovland & Mandell, 1952). By manipulating the trustworthiness of the source and keeping the level of expertise unchanged, they found no significant differences in resulting attitude changes. We believe that expertise does play a key role in attitude change, but that source trustworthiness can affect the degree of the resulting change. It would be interesting to see whether, in Hovland and Mandell's study, the manipulated level of source trustworthiness matched the participants' perceptions of the source's trustworthiness. A mismatch in the perceptions and source characters could affect the influence of reputation and explain why no significant results occurred. The HSM supports that a source's label of expertise evokes participants' preconceived biases about the label. Perhaps trust is not a

single predictor of attitude change, but instead it is an emotive response to the source's expertise. A positive relationship may still exist between peoples' feelings of trust and changes in attitude if both are dependent upon expertise.

A difficulty with biases is that the participants must not be aware of them during the tasks, or they may attempt to compensate for their biases by altering their judgments. A study by Petty, Wegener, and White (1998) found that individuals told to ignore their biases towards a source rated a dislikable source as being more favourable than a likable source. Their results suggest that the participants overcorrected their judgments to compensate for their bias towards the dislikable source. Participants in this study will not be explicitly aware of their biases, but it is likely that the reputation of the expert and novice sources in this study will prompt their use.

According to the HSM, confidence plays a vital role in the frequency of heuristic use. An individual with low confidence in a decision is less likely to rely on heuristics, instead opting to scrutinize and deeply think about the decision. If their decision confidence is high, or it is equal to their desired level of confidence, then they are more likely to rely on heuristics.

### **Self-Validation Hypothesis**

The role of confidence in decision-making also relates to what Petty, Briñol, and Tormala called the *self-validation hypothesis* (2002). It states that one's thoughts alone are not enough to induce conformity. Rather, conformity depends upon the individual's level of confidence in those thoughts. We expect that the poor reputation of the novice source coupled with the novice giving the correct responses will make participants question their initial beliefs, especially if their response matches that of the novice. Questioning one's beliefs creates doubt, and as a result, participants exposed to a novice's opinions will likely become less confident in their judgments.

Research by Bochner and Insko (1966) suggests that attitude shifts in message recipients further relies upon the strength of the source's message advocacy. They gave participants information about the recommended amount of nightly sleep, and this message came from either an expert physiologist or a novice charity director. Both sources were trustworthy, and both gave the audience identical messages. They found that when the expert championed its message conformity increased, even if the source and audience held initially different opinions. When the novice heavily advocated its message, less attitude change occurred as the difference between novice and audience beliefs grew. Due to the ambiguity of the cognitive task used in the current study, participants' initial ratings of decision confidence should be low, and different from the sources' estimates. We expect that parallel to Bocher and Insko, our participants will conform more to the high-expertise source than to the novice or neutral sources.

### **Pluralistic Ignorance Theory**

Individual levels of confidence may contribute to conformity, as supported by the *pluralistic ignorance theory* (Katz, 1931). Here, individuals with low confidence or decision hesitancy perceive themselves as individuated from their in-group. They incorrectly assume that their peers' beliefs differ from their own. A desire for others to not view them as sole non-conformists compels these individuals to adopt similar attitudes to the people around them. As confidence decreases, the potential for social influence increases (Wang, Huang, & Sun, 2014). This finding agrees with the belief that as confidence increases in one's knowledge or ability, attitude change is minimal due to a lack of reliance on others for information (Cottam, Preston, Mastors, & Dietz, 2015). Nonetheless, individuals with high confidence do have the potential to be persuaded by other's opinions, as seen in Asch's hallmark line-discrimination task of normative social influence (1951). In a task with blatantly correct responses, most participants

conformed at least once to the beliefs of others when their own responses became the clear minority. In a modified version of the Asch's study (1996), Baron, Vandello, Brunzman, and Miller found that even in ambiguous situations individuals are more likely to conform to the opinions of others. Furthermore, Festinger's theory of *cognitive dissonance* (1957) illustrates how having a different attitude than the norm may encourage an individual to adjust his or her own attitude to match that of the majority. Attitude adjustment reduces the discomfort elicited by attitudinal inconsistencies between the individual and the group. Thus, attitude and behaviour do not always match.

## **Method**

### **Participants**

Eighty-eight participants were 16 male and 72 female undergraduate students aged 18 to 54 ( $M=21.67$  years,  $SD=5.97$  years) enrolled at Saint Mary's University. The majority were Caucasian (70.45%), however one quarter of subjects identified as South Asian (6.82%), Arab (5.68%), Black (5.68%), or Chinese (5.68%). The remaining five participants identified as other minority groups. Over a three-week period, undergraduate students were recruited to partake in the study via SONA, an online forum where students registered in applicable psychology courses can volunteer to participate in institutional research studies. In exchange for their time, the students receive mandatory or optional course credit. The study was completed online as a text-based questionnaire using Qualtrics, an encrypted online data collection and analysis software.

### **Procedure**

At the beginning of the experiment, participants completed a brief demographic questionnaire requesting information regarding age, gender, ethnic background, current level of education, major, and average grade. Then we randomly assigned students to one of three



experimental condition groups based on the level of expertise of a source of knowledge. This source was an imaginary student from a fake American research study who, participants were told, was either the best (“Expert” condition,  $n=24$ ), worst (“Novice” condition,  $n=32$ ), or simply another (“Neutral” condition,  $n=32$ ) guesser from that study. Using a repeated-measures design, participants estimated the numerical responses to 10 general knowledge questions spanning different topics (see Appendix A). The questions ranged in difficulty, an example of an easy question being “In total, how many dots are on a standard die?” and a difficult question being “What is the distance (in kilometres) between the earth and the moon?” Participants gave two responses to each trivia question, one before and one after they received the response of the source. All responses provided by the sources were the true answers to each question, so no difference existed between the three conditions except for the participants’ beliefs (Stallen, Smidts, & Sanfey, 2013; Meshi et al., 2012). For each question, participants rated how accurate ( $0 = \text{Not at all accurate}$ ,  $10 = \text{Completely accurate}$ ) they believed each of their responses was, and this perceived accuracy was used to infer each individual’s level of decision confidence. They also rated how accurate they believed their source’s responses were, and these ratings were used to infer source trust. Including personality questionnaires (below), total participation time was approximately 30 minutes, and all participants were awarded 1.0 bonus point towards their applicable psychology class.

### **Trait Scales**

The goal of this study is for people to change behaviour as the result of an external manipulation, so it is important that internal factors do not confound these changes.

Five personality questionnaires were selected to ensure that the experimental groups were not significantly different on personality traits shown to be associated with conformity,

confidence, or trust. These scales were: the Judgment Self-Doubt Scale (Mirels, Greblo, & Dean, 2002), the General and Knowledge-Based subscales of the Trust Scale (Yamagishi & Yamagishi, 1994), the Individuation Scale (Maslach, Stapp, & Santee, 1985), the Revised Self-Monitoring Scale (Lennox & Wolfe, 1984), and the Culture Orientation (HVIC) Scale (Triandis & Gelfand, 1998). Each participant received a mean score ranging between 1.0 and 7.0, per scale. For the HVIC scale, each participant received four mean scores.

**Judgment Self-Doubt Scale.** The 19-item Judgment Self-Doubt Scale (JSDS) by Mirels et al. (2002) was administered using a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*), where items 14 and 18 were reverse-scored (see Appendix B). The JSDS helped gauge if participants had generally higher levels of uncertainty in their decisions. Past research has found that high self-doubt predicts low judgment confidence regarding ambiguous stimuli (Mirels et al., 2002). They found that people are more confident in others' judgments than in their own, likely due to discomfort felt from ambiguity and fears of negative evaluation. Notably, a study by Woodman, Akehurst, Hardy, and Beattie (2010) found that low self-doubt relates to higher accuracy. Therefore, we expect that high self-doubt scores relate negatively to both confidence scores and to accuracy.

**Trust Scale.** A 10-item scale (see Appendix C) examined participants' levels of trust, where trust is defined as an interpretation of another's traits and intentions. Participants rated items on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*) taken from the General (items 1 to 6) and Knowledge-Based (items 7 to 10) subscales of the Yamagishi and Yamagishi Trust Scale (1994). Items targeted external motives, internal traits, and mutual relationship strength as determinants of trust towards other people. The researchers previously found that people with high trust are likely to cooperate with others, so we expect that trust

positively relates to judgment accuracy. A study by Keller et al. (2011) also showed that confidence is positively associated with trust towards others, so it is likely that a positive correlation will be found between trust scale scores or *T2* trust ratings with *T2* confidence ratings.

**Individuation Scale.** Participants completed the 12-item Individuation Scale by Maslach, Stapp, and Santee (1985), which examined participants' needs to be unique and different or distinguishable from other people. Items in this scale reflect one's will to be publicly differentiated in situations requiring greater confidence, such as public speaking, acting as a leader, and taking a controversial stance (see Appendix D). They rated each item on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

People who behave differently than members of a uniform group are seen as more confident in nature, having the ability to withstand social pressure to conform (Santee & Maslach, 1982; Maslach et al., 1987, 1992). In this study, we expect that a positive relationship exists where highly confident individuals are also highly individuated.

Highly individuated people are more likely to react away from the opinions of others (Ajzen & Fishbein, 1980; Wang et al., 2014). It is important that no group is more or less individuated than another, lest false conformity effects may be found. A small sex difference was found in Maslach et al.'s original sample and in later research (Barbaranelli, Caprara, & Maslach, 1997), where men were more individuated than women. This study's sample will support or refute the relationship between gender and individuation. Due to the nature of this sample being predominantly female, only weak assumptions are made regarding true gender differences, should they exist.

**Revised Self-Monitoring Scale.** The 13-item Revised Self-Monitoring Scale (RSMS) by Lennox and Wolfe (1984) had participants respond to situations that reflected their abilities to modify self-presentation and be sensitive to the expressive behaviours of others (see Appendix E). For instance, participants were asked if they could easily manipulate their expressions, emotions, and behaviours to suit a specific context, and if they could correctly interpret the motives of others. Items 4 and 6 were reverse-scored, and participants rated the extent to which they agreed with each statement using a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Self-monitoring is an important recipient variable that affects persuasion (Snyder & DeBono, 1985). Self-monitoring and individuation are closely linked in that both constructs involve a personal concern for outward appearances and impression management (Barbaranelli et al., 1997). High self-monitors tend to be apprehensive and less confident in decision-making situations, which is why they often change their behaviour to become more similar to other people (Lennox & Wolfe, 1984; Barbaranelli et al., 1997). Highly individuated people, however, become more different. In this study, it is expected that self-monitoring will be negatively related to individuation and confidence, but positively related to accuracy. Research examining the direction of the relationships between self-monitoring and confidence or accuracy is contradictory (Lennox & Wolfe, 1984; Cutler & Wolfe, 1989), so this experiment contributes to the literature regarding these variables.

**Culture Orientation Scale.** The 16-item Culture Orientation (HVIC) scale by Triandis and Gelfand (1998) examines how people see their place and role in society (see Appendix F). Individualism and collectivism are not discrete characteristics, but points on a continuum of possibilities (Triandis, 1995; Peetz, 2010). Four categories emerge from this view, describing

horizontal individualism (HI), vertical individualism (VI), horizontal collectivism (HC), and vertical collectivism (VC). Participants accumulate a score for each category, and these will be analyzed similarly to how Triandis and Gelfand conducted their analyses.

Collectivist cultures value their members behaving in ways that benefit the group. Collectivism promotes cooperation (Peetz, 2010), so we expect that collectivist scores will be positively associated with accuracy. Conversely, individualist cultures view each person as working towards his or her own respective goals, valuing independence rather than interdependence. It is expected that individualist scores will be negatively related to accuracy, as it involves relying on the other student's response very little, or not at all. People who are in the "horizontal" categories value equality and are likely to conform to the source. Those categorized as "vertical" value hierarchy, and may react from the source or leave their response unchanged. Combining this information, HI or VI participants should have little change to accuracy due to a lack of in-group allegiance, and HC or VC participants should boost accuracy by a desire to conform to the source.

Each of the four categories in the HVIC scale had four items representing it. Items 1, 5, 9, and 13 corresponded to the HI category; items 2, 6, 10, and 14 corresponded to the VI category; items 3, 7, 11, and 15 corresponded to the HC category; and items 4, 8, 12, and 16 corresponded to the VC category. Participants rated each item on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*). To accommodate the context of the sample, items 2, 3, and 7 were adjusted slightly to reflect a University setting rather than that of a workplace or career setting.

## Results

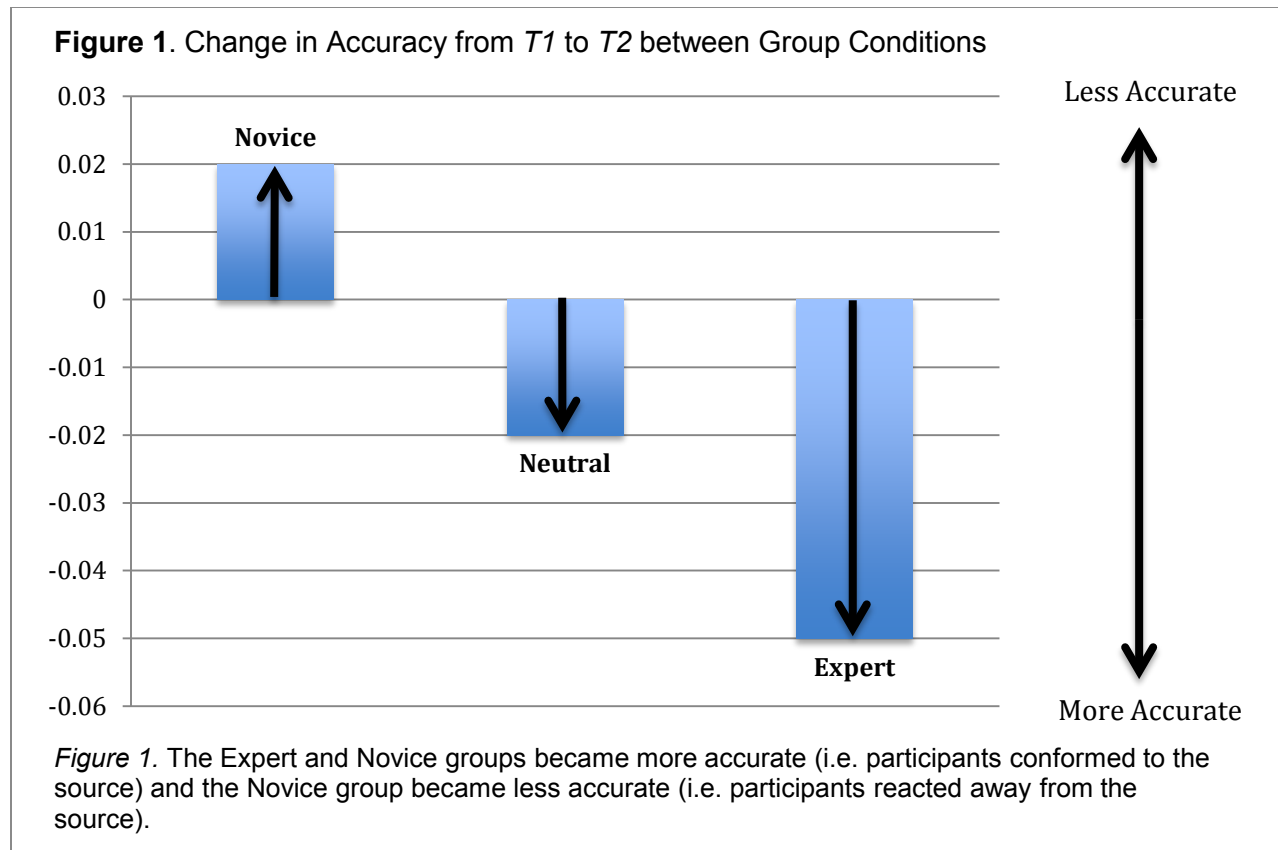
### Conformity

As the sources in this study always gave the true answer to any trivia question, we used participants' changes in estimate accuracy to infer changes in conformity. Participants would unknowingly become more accurate by assimilating to their respective source's correct estimate, but less accurate by reacting away from it (Frager, 1970). Due to the variety of the trivia questions administered during the experiment, raw estimates ranged from 1 to 400,000,000,000 across all 10 questions. Z-scores require comparing raw scores to a population mean, but in this sample, the mean of all scores is not a valid representation of the data. Rather, we calculated accuracy within each of the 10 trivia questions, so the standardized scores are comparable to one another.

To measure conformity via changes in accuracy for the initial (*T1*) and post-treatment (*T2*) responses across all trivia questions, we used two sets of *root-mean-square deviations* (RMSD; Chai & Draxler, 2014). These values were normalized by dividing them by the difference between the maximum and minimum estimates, per question. Normalized RMSD values range between 0 and 1, where a value of 0 represents a perfectly accurate estimate, and a value of 1 represents the least accurate estimate. Note that in all further comparisons between groups, we used Scheffé post hoc analyses to accommodate the unequal sample sizes among the three experimental groups.

It is possible that certain individuals could possess more knowledge about a specific trivia question's subject matter. Participants with more knowledge about the trivia questions may feel more confident in their initial decisions, and are therefore unlikely to change their responses. This could skew the accuracy scores within a group, and confound outcomes in the dependent

variables. One signal of a group having higher than average knowledge of the trivia questions would be a higher mean accuracy score at *T1*. We performed a one-way analysis of variance (ANOVA) to compare the group means of *T1* estimate accuracy, concluding that no group performed more or less accurately at *T1* than another,  $F(2, 85) = .04, p > .05$ . Figure 1 visualizes the changes in accuracy from *T1* to *T2* between groups. We conducted paired sample t-tests (see Table 1) to examine differences in mean estimate accuracy before and after source exposure, within each group condition. Results showed a moderate to large effect (Cohen, 1977) of Group on change in accuracy within the expert condition. These participants improved accuracy significantly from *T1* ( $M = .08$ ) to *T2* ( $M = .03$ ). A moderate to large effect of Group also occurred for those exposed to a Neutral source's opinion, who improved accuracy significantly from *T1* ( $M = .07$ ) to *T2* ( $M = .05$ ). Conversely, only a small effect occurred for those participants exposed to the opinion of a Novice. They became less accurate from *T1* ( $M = .07$ ) to *T2* ( $M = .09$ ), but not to a significant extent.



A one-way analysis of variance (ANOVA) compared the differences in mean accuracy of post-treatment responses among the three groups. Scheffé post hoc analyses concluded that the  $T2$  estimates in the Novice condition were significantly less accurate than both the  $T2$  estimates in the Expert condition,  $p < .001$ , and Neutral  $T2$  condition,  $p = .007$ . However, there was no significant difference in  $T2$  estimate accuracy between the Expert and Neutral groups.

Participants in both improved the accuracy of their responses to a similar extent.

### Decision Confidence

Confidence ratings in each estimate are inferred from each participant's rating of perceived judgment accuracy (Blanton, Pelham, DeHart, & Carvallo, 2001). These ratings range from 0 to 10.0, where a higher confidence rating represents greater perceived accuracy in the



participant's own response. Each group condition has two mean ratings of confidence, one for the initial (*T1*) estimates and one for the post-treatment (*T2*) estimates.

While this experiment relies on changes in confidence occurring due to an external manipulation, it is possible that one group of individuals could be naturally more or less confident in their beliefs than another. A one-way ANOVA comparing the mean initial ratings of confidence between groups concluded that no one group's mean rating of *T1* estimates was more or less confident than another,  $F(2,85) = .21, p > .05$ .

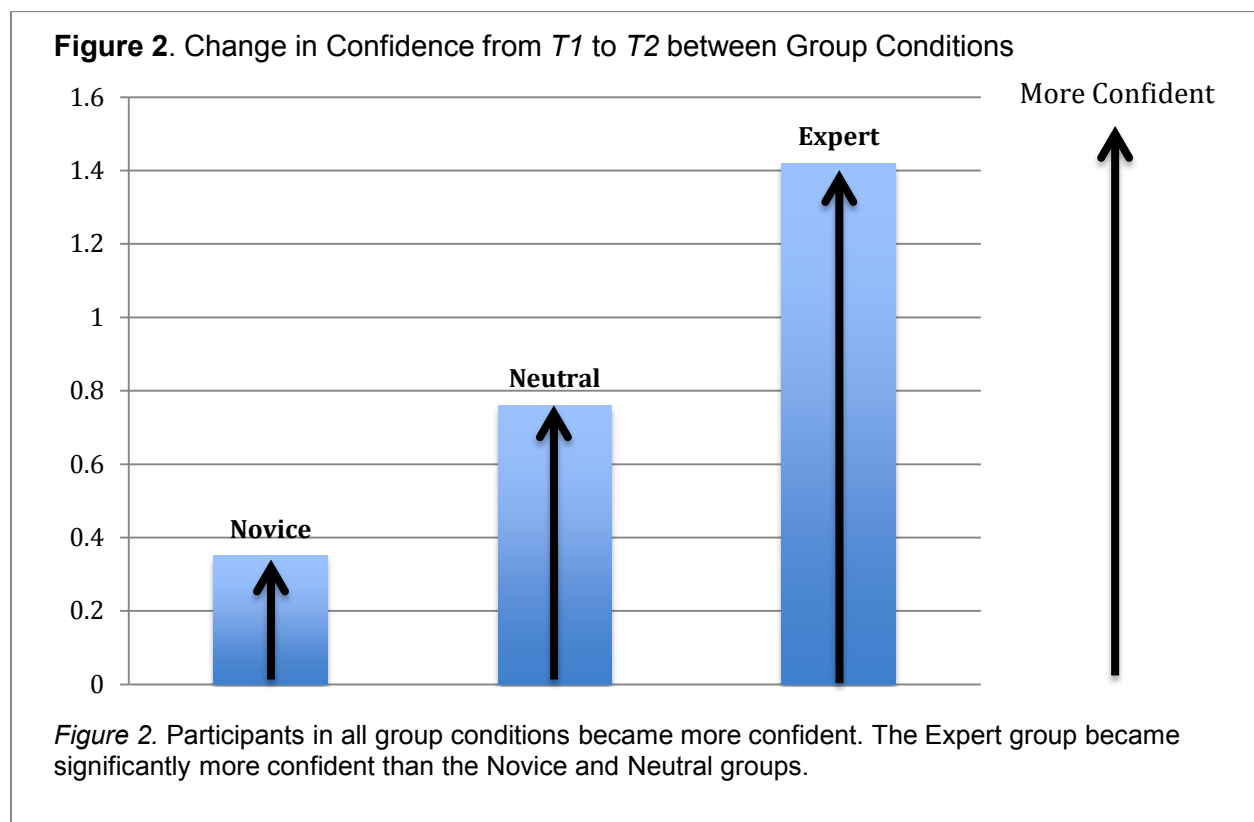


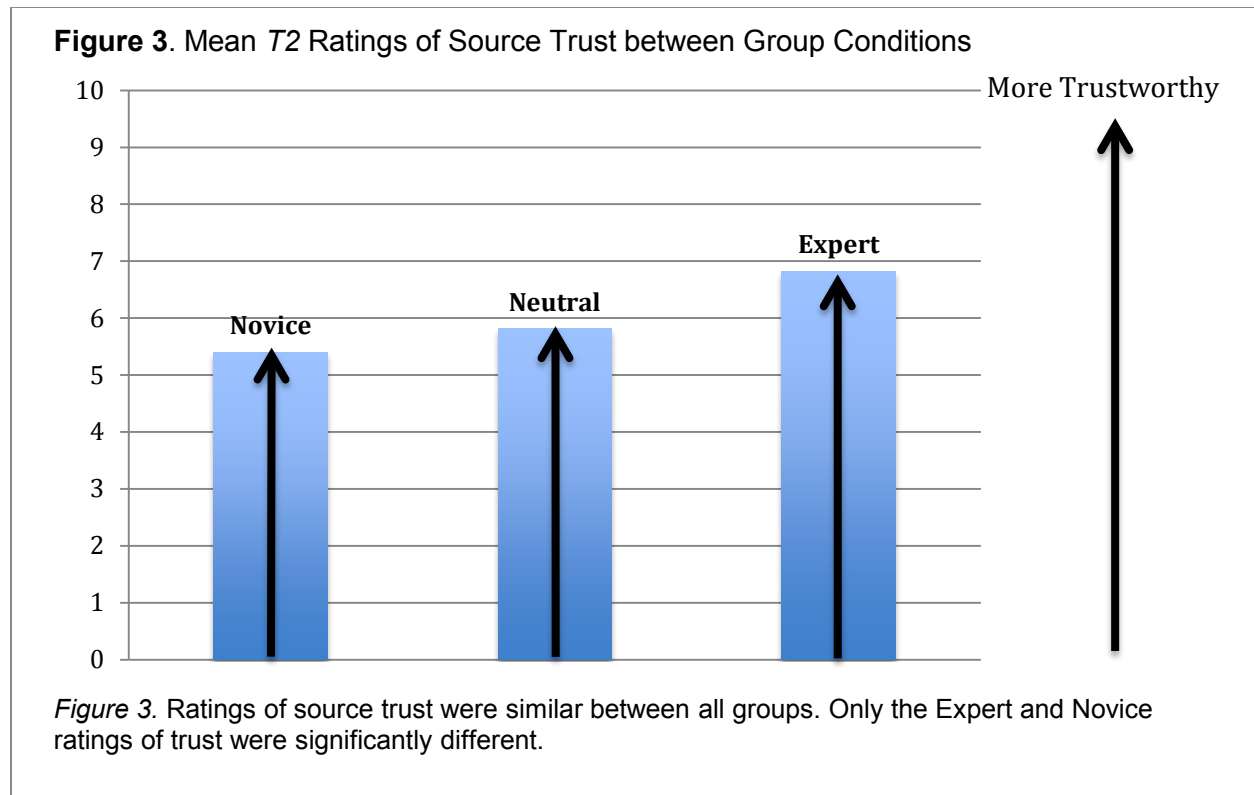
Figure 2 visualizes the changes in accuracy from *T1* to *T2* between groups. We conducted paired sample t-tests (see Table 2) to examine differences in mean confidence ratings before and after source exposure, within each group condition. Results showed a large effect of Group on change in confidence within the Expert condition, where participants became significantly more confident from *T1* ( $M = 5.43$ ) to *T2* ( $M = 6.85$ ). A moderate effect occurred

for those exposed to a Neutral source's opinion, their confidence improving significantly from *T1* ( $M = 5.15$ ) to *T2* ( $M = 5.91$ ). Conversely, a near-zero effect occurred for those participants exposed to the opinion of a Novice. They became more confident from *T1* ( $M = 5.26$ ) to *T2* ( $M = 5.61$ ), but not to a significant extent.

Finally, a one-way ANOVA compared the differences in mean confidence of post-treatment responses among the three groups. Scheffé post hoc analyses concluded that the *T2* ratings of decision confidence in the Novice group were significantly lower than the Expert group *T2* ratings,  $p = .031$ , but not the Neutral group *T2* mean confidence ratings. Furthermore, no differences existed between the Expert group and Neutral group *T2* mean confidence ratings. Overall, mean confidence ratings after source exposure were similar for all three groups. The difference between *T2* confidence ratings between the Expert and Novice groups, however, was large enough to be honestly and significantly different.

### **Source Trust**

Ratings of trust towards the source (see Figure 3) were inferred from the participants' ratings of source estimate accuracy, which were given after each participant received the source's estimate and gave his or her respective *T2* estimate. These ratings ranged from 0 to 10.0, where a higher rating represented greater source trust. Three mean ratings of trust were calculated, one per group condition.



A one-way ANOVA compared differences in ratings of source trust towards among the Expert ( $M = 6.82$ ), Novice ( $M = 5.40$ ), and Neutral ( $M = 5.81$ ) group conditions. A significant effect of Group on source trust was found,  $F(2, 85) = 6.13, p = .003$ . Scheffé post hoc analyses concluded that only the Expert and Novice conditions had significantly different mean ratings of trust towards the source,  $p = .004$ . Further investigation found a moderate effect of Group on trust across all participants,  $\eta_p^2 = .126$ , accounting for approximately 13% of the variance within these conditions.

While the Novice condition had the lowest mean rating of post-treatment trust, it was not statistically significantly different from the mean of the Neutral condition. There was also no difference in mean trust ratings between the Expert and Neutral group conditions, but it is interesting to note that it was close to the boundary of being so, where  $p = .053$ . Power for the effect of Group was observed at  $\beta = .878$ , so it is unlikely that the means in these conditions

would be significantly different in similar typical samples. Nonetheless, it is an interesting relationship to explore in future research.

### **Gender**

Due to the nature of the available population, the majority of participants in this sample were female. Due to random assignment, the Novice and Neutral groups also had twice as many males as the Expert group. While random assignment equally disperses population traits among all treatment conditions, a disproportionate amount of males in one group could yield exaggerated gender effects. To explore this possibility within our hypotheses, independent t-tests compared mean changes in accuracy, mean changes in decision confidence, and mean ratings of *T2* source trust within each group and between genders (see Table 3).

**Conformity.** While both males and females in the Expert and Neutral conditions mimicked their group trends of improving accuracy, the Novice group showed gender differences. Males in the Novice group became more accurate ( $M = -.04$ ), but females ( $M = .04$ ) became less accurate, contributing to the Novice group trend of becoming less accurate overall. Independent t-tests found no significant gender differences for mean changes in accuracy within all three group conditions,  $p > .05$ . A univariate ANOVA found no main effects of Group or Gender on change in accuracy, but there was a significant Group x Gender interaction,  $F(2, 82) = 3.65, p = .03$ . Further analyses found a simple effect of being female,  $F(2, 82) = 11.15, p < .001$ .

**Decision Confidence.** Both males and females improved confidence in all three groups, supporting the overall group trends for improving confidence. Independent t-tests found no significant gender differences for mean changes in confidence within all three groups,  $p > .05$ . A univariate ANOVA concluded that there were no main effects or interactions between Group or Gender. Further analyses found a simple effect of being female,  $F(2, 82) = 5.85, p = .004$ .

**Source Trust.** In the Expert and Neutral groups, males trusted the source less than the females, but the opposite was true for the Novice group. Independent t-tests found no significant gender differences for mean source trust within all three group conditions,  $p > .05$ . A univariate ANOVA concluded that there were no main effects of or interactions between group and gender. Further analyses found a simple effect of being female,  $F(2, 82) = 7.31, p = .001$ .

### **Gender and Personality Traits**

Table 4 shows relationships between mean scores of self-doubt, trust towards others, individuation, self-monitoring, or categories of cultural orientation with change in accuracy, change in confidence, or source trust. Gender or group differences between mean scores, if present, are also noted.

**Judgment Self-Doubt.** Bivariate correlations found that scores on the JSDS related negatively to change in accuracy, but related positively both to change in confidence and to source trust. Women ( $M = 4.21, SD = 1.111$ ) had higher self-doubt scores than men ( $M = 3.42, SD = 1.230$ ),  $t(86) = -2.53, p = .013$ .

**Individuation.** Individuation related positively with change in accuracy. Gender differences occurred where men ( $M = 4.61, SD = 1.280$ ) were more individuated than women ( $M = 3.79, SD = 1.366$ ),  $t(86) = 2.20, p = .031$ .

**Trust, Self-Monitoring, Cultural Orientation.** No significant relationships occurred between trust and self-monitoring with any of the dependent variables, and no differences occurred between fixed factors. Regression analyses found no predictive value between the four subsets of the culture orientation with the dependent variables. Furthermore, no significant correlations existed between the four categories and dependent variables, neither overall nor filtering by group condition.

**Trait relationships.** Individuation related negatively to judgment self-doubt, but related positively to self-monitoring. Trust correlated with both categories of collectivism, but not with individualism. Horizontal collectivism also related negatively to JSDS scores and positively to RSMS scores.

### Discussion

Our first hypothesis stated that participants exposed to an expert's opinion would become more similar to the source's opinion, but participants exposed to a novice's opinion would become more different. We represented measurements of opinion change using participants' changes in estimate accuracy before and after receiving the estimate of an expert, novice, or neutral source. Results showed that people influenced by an expert became significantly more accurate by selecting an estimate that was more similar to the source. This supports Cialdini's finding that expert authorities are indeed a key to persuasion (2001). People influenced by a novice, however, became more different but not to a significant extent. Therefore, our first hypothesis is partially supported.

Our second hypothesis stated that participants exposed to an expert's opinion would become more confident, but participants exposed to a novice's opinion would become less confident. Results showed that people influenced by an expert became significantly more confident. People influenced by a novice became more confident as well, but not to a significant extent. Therefore, our second hypothesis is partially supported.

Our third hypothesis stated that participants exposed to an expert would trust their source most, but participants exposed to a novice would trust their source least. Results showed that participants trusted the expert most and the novice least, and these two mean ratings were significantly different. Therefore, our third hypothesis is fully supported.

### **Source Neutrality**

The purpose of including a neutral source in our manipulation was for it to have little to no effect on dependent variable outcomes. For that reason, we did not refer to it in our hypotheses. The results of the neutral source, however, are some of the most interesting. Exposure to a neutral source's opinion mimicked the pattern of results in the Expert group. Participants exposed to a neutral source conformed and boosted confidence significantly, just not to the magnitude of the expert group. Interestingly, participants trusted the neutral source just as much as the expert. The screen-to-screen persuasion that occurred has implications in our increasingly technological world, and may direct future research to investigate this "anti-social" social influence.

Out of all three groups, the neutral source was likely the one that participants related to best. Most studies do not look at the effects of a "neutral" person when considering reputation. Usually they refer to sources at either end of some continuum. Our neutral source is an example of a member of one's in-group, so literature about peers and in-group members should apply.

This finding nicely supports the *social proof* principle that in uncertain situations, people are more likely to conform if they see the source as similar to themselves (Burger, Messian, Patel, del Prado, & Anderson, 2004). Parallel to the requirements for social proof to apply, this study's task used ambiguous knowledge questions, and the neutral source was another student from a geographically similar country. Future work could manipulate task ambiguity and source-audience similarity, to test the boundaries required for social proof to occur.

### **Heuristics**

It would be interesting to investigate how the effects of expert and neutral entities work in harmony with each other, and if these effects can fluctuate based on attitude similarity. All

information provided by the three sources in this study was completely accurate, so it is possible that the students found some questions easier than others. Regardless of expertise, the similarity between the source and participant's response could then lead to adjustments in confidence, conformity, and trust. If a participant had more knowledge about the trivia questions and gave highly accurate estimates, then the opinion difference between source and participants would have been low. When given accurate advice by an expert and opinion difference is low, we use that advice more than when we receive accurate advice by a novice (Meshi et al., 2012). Furthermore, different emotions arise when we receive information from a novice with completely accurate advice, especially if we are initially certain in our response.

As the only difference across group conditions was the source's label, we believe that our study supports Chaiken et al.'s *heuristic systematic model* (1989). While this study did not have a time pressure or incentive, participants answered all 10 trivia questions fairly quickly, and likely used mental shortcuts based on implicit biases to overcome the question difficulty. Just as we have heuristics that enforce the belief that experts are typically correct (Heesacker et al., 1983), we have heuristics that novices are typically inaccurate. Participants likely used the expected outcomes of these heuristics to evaluate the responses of the expert and novice, respectively. Our results support that the expected association between the source labels and perceived credibility match. People conformed to the expert because they expected it had accurate information, but they were largely unaffected by the non-expert due to its poor reputation.

The next step in this research is to look closer at expert, novice, and neutral sources giving both accurate and inaccurate information and examining if the trends found in this study



still stand. We expect that if the novice gave inaccurate advice, participants would experience greater decision adjustments and a lesser likelihood to conform.

### **Conformity**

While the literature disputes the influence of experts on decision adjustment, our results supports the popular conclusion that experts can improve judgment accuracy (Lee & Dry, 2006; Stallen, 2013). Our findings may apply to a rising branch of research called *neuroeconomics*, which seeks to understand the biological responses to decision-making (Loewenstein & Cohen, 2008). Studies interested in neuroeconomics and social decision-making may monitor a participant's brain activity during face-to-face or screen-to-screen social interactions. Multiple studies have found that the striatum becomes activated in cooperative situations, such as during the *prisoner's dilemma* and other trust games (Stallen, 2013). For instance, Delgado et al. (2005) found that when a participant was given the moral characters of a partner, partners who were morally good or morally bad reduced striatal activity, but the neutral partner had no effect. This study encourages cooperation, so future work on this study could incorporate monitoring brain activity as people receive source information and as they decide to assimilate, react, or do nothing as a result of that information.

**Attitude Similarity.** Zhu & Huberman found that source-audience attitudinal similarity had a significant effect on conformity. Their use of a time pressure may explain why their results differ from those of Lowry (1973). Our study did not use a time pressure, so future analyses will examine the numerical similarity between our participants' and sources' *T1* responses to see if attitudinal similarity indeed relates to changes in conformity. The results of those analyses will add to this continuing dispute.

Analyses of attitude similarity, however, may be limited. This study had some trivia questions that were easier than others, so it is possible that attitude similarity increased towards cessation of the study. Future trials should account for order effects, or perform manipulation checks ensuring true ambiguity of the cognitive task.

Bochner and Insko (1966) said that advocacy for one's belief is what causes conformity to experts and the lack of conformity to novices, regardless of attitude similarity. Our study did not use advocacy, yet the results still support the researchers' findings. Future analyses will examine conformity as a function of attitude similarity to see if the relationship still stands, for it may be the source label in Bocher and Insko's study that had the greatest effect on their results. Overall, we would examine if effects can be isolated by controlling for different combinations of levels of attitude similarity and source expertise.

### **Confidence**

Results of this study contribute to the literature on source expertise as a predictor of confidence. It supports Posavac & Pasko's (1971) finding that social proof can occur screen-to-screen and that frequent exposure to attitudes yields higher confidence. One reason that confidence levels improved across all group conditions may be what Zajonc (1968) called the *mere exposure effect*. The mere exposure effect describes how attitudes towards a stimulus will become more positive simply due to the repeated exposure to it.

In this study, mean *T1* confidence ratings across all three groups hovered just above 5.0/10, so only slightly more than chance. It is then likely that the trivia questions used in this study were considered difficult enough that participants did not hold them with great certainty, supporting Tormala and Rucker's (2007) conclusion that attitudes held with doubt are more

susceptible to change. It also provides overall support for Petty, Briñol, and Tormala's *self-validation hypothesis* that confidence and conformity can improve separately.

According to Wang et al. (2014), there is a negative relationship between confidence and social influence. Our study appears to support that, as across all groups there was a negative correlation between change in confidence and change in conformity,  $r = -.49, p < .001$ . Using a general confidence scale, Keller et al. (2011) also found that confidence is negatively associated with agreeableness. Agreeable people are more likely to cooperate with the source's opinions, and this contributes an explanation of why this negative relationship between confidence and conformity exists.

Further investigation found that this relationship was significant only in the novice condition,  $r = -.63, p < .001$ . This suggests that being influenced by a non-expert heightens confidence in peoples' own beliefs, therefore they conform very little or not at all. This may explain why our results only partially support Baron et al.'s (1996) finding that people are more likely to conform in ambiguous situations, as this was not true of people exposed to a non-expert.

### **Trust**

Overall, participants did trust all three sources, giving them ratings greater than 5.0/10. This supports Priester and Petty's (1995) finding that trustworthy experts are more influential than trustworthy non-experts. It further supports the literature that decision-makers trust expert advice more than novice advice (DeBono & Harnish, 1988; Bohner & Wanke, 2002), but it adds the finding that decision-makers trust neutral advice just as highly.

An important limitation in our study, however, is the measurement of source trust. We measured trust once per trial, after each reception of the source estimate. Ideally, we would have had a baseline rating of trust to control that no group was initially more trusting than the others

were. Future replications should get ratings of trust at *T1* and *T2*, and the change from *T1* to *T2* would lend a much better understanding of the effects of source expertise on perceptions of trust.

### **Personality Traits**

The following results of the five personality trait scales give insight for future research. These traits have been previously examined in decision-making within social contexts, but their application to the influence of source expertise is less understood.

**Judgment Self-Doubt.** Overall, we expected that judgment self-doubt would relate negatively to both accuracy and confidence. We predicted a negative relationship between JSDS scores and accuracy due to past findings by Woodman et al. (2010). Our study supported their finding, as JSDS scores related negatively to changes in accuracy, and therefore changes in conformity, from *T1* to *T2*. This relationship was true within each group as well.

We predicted a negative relationship between judgment self-doubt and change in confidence because Mirels et al. (2002) found that high self-doubt predicts low judgment confidence given ambiguous stimuli. Our study appears to partially refute that finding, as overall we found a significant positive relationship between JSDS scores and confidence change. This relationship, however, was significant only in the novice group,  $r = .35$ ,  $p = .047$ . Perhaps high self-doubters boosted confidence in the presence of a non-expert because of their desire to be similar to others, regardless of source. Our sample's gender proportions may also explain this specific relationship. Women had higher self-doubt scores than men, and a simple effect of being female contributed to the overall improvements in confidence and accuracy. Further research should explore gender differences in self-doubt and confidence or accuracy using a more representative sample.

Our results also appear to partially refute Mirels et al.'s (1998) finding that people are more confident in other's judgments than in their own. Comparing all *T2* confidence ratings in participants' own responses to *T2* ratings of trust in source, self-confidence ( $M = 6.06$ ,  $SD = 1.760$ ) was marginally higher than trust ( $M = 5.94$ ,  $SD = 1.605$ ). A paired sample *t*-test found that these ratings were not significantly different. Overall, decision confidence improved from *T1* to *T2* in response to each source. One could argue that Mirels et al.'s finding is best suited to situations where the source has no weighted reputation, as our study found the smallest difference in self-confidence and trust towards the neutral source. Interestingly, while our participants rated their own *T2* accuracy higher than the expert's estimate accuracy, the expert had the greatest effect on conformity.

**Trust.** Yamagishi and Yamagishi (1994) previously found that people with high trust scores are more likely to cooperate with others, so we predicted that trust would be positively related to change in accuracy from *T1* to *T2*, and therefore to conformity. Our results lend no support to this conclusion, as we found only a small, non-significant correlation between trust scores and change in accuracy.

Keller et al. (2011) also found that confidence and trust towards others are positively related, so we predicted a positive relationship between *T2* source trust ratings and *T2* confidence ratings, as well as between *T2* confidence ratings and trust scale scores. We found that a non-significant positive correlation occurred between trust scale scores and *T2* decision confidence. Interestingly, decision confidence at *T2* was positively and significantly related to source trust at *T2*,  $r = .68$ ,  $p < .001$ . This difference suggests that the interpretation of trust in the Trust Scale differs from our interpretation of source trust. Our definition of source trust described participants' perceptions of source accuracy, whereas the Trust Scale described trust as

describing perceptions of source trait and intention. Future research could explore new representations of trust across different types of decisions.

**Individuation.** Due to previous findings that we tend to view highly individuated people as confident in nature (Santee & Maslach, 1982; Maslach, Santee, & Richard, 1987), we expected that individuation would relate positively to change in confidence. That is, highly individuated people would become more confident from *T1* to *T2*. Overall results showed a negative, non-significant relationship between individuation and change in confidence,  $p = .054$ . Further investigation showed that this relationship was actually highly significant in the neutral group,  $r = -.51$ ,  $p = .003$ . Perhaps the presence of a peer instead of someone with high or low expertise affects our confidence due to greater perceived similarity between source and audience.

Previous research has also found that highly individuated people are likely to react away from the opinions of others (Ajzen & Fishbein, 1980; Wang et al., 2014), so we expected a negative relationship to exist between individuation and change in accuracy. Our sample refuted this relationship, instead yielding a significant positive relationship between individuation scale scores and changes in accuracy. The few men in our sample scored significantly higher on individuation than women, and were the only gender to improve accuracy across all groups. It is interesting to note, however, that only in the novice group did men improve their accuracy to a greater magnitude than women did. We explain these results by the negative relationship between judgment self-doubt and individuation. Men were more individuated, and a positive relationship exists between individuation and change in accuracy. Therefore, one would expect men to become more accurate in this sample. Women were more self-doubtful, and a negative relationship exists between judgment self-doubt and change in accuracy. Therefore, one would

expect women to become less accurate in this sample. It appears that self-doubt fostered more opinion change.

**Self-Monitoring.** While highly individuated people typically react away from others, high self-monitors tend to be more apprehensive and conform to others' beliefs. Therefore, we expected a negative relationship to exist between RSMS scores and both individuation (Barbaranelli et al., 1997) and confidence. Furthermore, we predicted a positive relationship between RSMS scores and change in accuracy. (Lennox & Wolfe, 1984). None of these predictions were either supported or refuted, except that we refuted the relationship between self-monitoring and individuation by finding a positive correlation between the two.

Maslach et al.'s Individuation scale (1985) focused on participants' needs to be publicly differentiated from other people, such as in situations requiring public speaking or performing. Lennox and Wolfe's revision of the Self-Monitoring scale (1984) focused on participants' abilities to manipulate their behaviour and sensitivity to others. The former is focused on external traits, the latter on internal traits.

Due to refuted relationships found regarding individuation, we believe that Maslach et al.'s scale is not necessarily a valid measure of individuation for our specific study. All tasks in this study were completed privately, and participants did not interact with one another. Public displays of individuation were not required, so perhaps a scale suited to private displays of individuation would be a better choice for this study.

**Cultural Orientation.** Peetz (2010) said that collectivism promotes cooperation, so we predicted that the two collectivist categories, HC and VC, would be positively related to change in accuracy. Conversely, as individualism promotes individuality we predicted that the two individualist categories, HI and VI, would be negatively related to change in accuracy.

Regression analyses concluded that no HVIC scale category predicted change in accuracy, and bivariate correlations found no relationships between HVIC scale categories and change in accuracy. Interestingly, the two collectivist categories were positively related with trust scores. Perhaps a need for equality and cooperation creates a self-fulfilling prophecy of sorts. By coupling a desire for trust between in-group members with a need for cooperation, conformity fosters trust towards others. Future research could investigate whether collectivist societies are more trusting than individualist societies, manipulating the importance of the decisions made.

Furthermore, we found that HC scores negatively relate to JSDS scores, and that JSDS scores positively relate to change in confidence. If “horizontal” categories value cooperation (Triandis & Gelfand, 1998), they will experience less doubt about conforming to the beliefs of others. Their low doubt then contributes to their boost in confidence after viewing the source’s responses, as they have fulfilled those innate needs to be similar to other people. Future work should investigate the personality characteristics of HVIC categories within homogeneous groups, and could explain trends in decision-making at the cross-cultural level.

### **Conclusion**

Source expertise has the capacity to induce changes in our cognitive and emotional responses to ambiguous decisions, without the source being physically present. The ability to influence decisions at the individual level is well sought by areas of work dedicated to marketing, advertising, and general persuasion. The results of this study suggest that the mere application of a label, a title indicating an individual’s expertise, has the power to influence people’s decisions due to their preconceived notions of that label. It shows us that it takes very little to influence people in situations of uncertainty. In a society where “fake news” is dispersed throughout the media, there should be public awareness regarding the validity of the message we



receive, and from whom. While this study shows that experts have the ability to influence our choices, more importantly it shows us that neutral, anonymous peers have that same ability. Factoring in the positive ratings of trust towards the neutral source, it appears that when we receive someone else's opinion, we assume to some degree that they know what they are talking about. This has important implications in contemporary decision-making research as the majority of people we interact with in-person and online are neutral, anonymous peers. We are better at noticing these people in small decisions, but in critical decisions they are overlooked, and therefore we must take heed.

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Table 1

*Changes in Accuracy from T1 to T2 per Group Condition*

Group	Time 1		Time 2		<i>t</i> (31)	95% CI		Cohen's d
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>LL</i>	<i>UL</i>	
Expert	0.08	0.07	0.03	0.04	2.68*	0.01	0.07	0.75
Novice	0.07	0.04	0.09	0.08	-1.48	-0.05	0.01	0.35
Neutral	0.07	0.04	0.05	0.03	3.67**	0.01	0.04	0.68

*Note.* CI = confidence interval; LL = lower limit; UL = upper limit. *df* = 23 for the Expert condition.

\**p* < .05, \*\**p* < .001

Table 2

*Changes in Confidence from T1 to T2 per Group Condition*

Group	Time 1		Time 2		<i>t</i> (31)	95% CI		Cohen's d
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>LL</i>	<i>UL</i>	
Expert	5.43	1.71	6.85	1.53	-4.11**	-2.13	-0.70	0.89
Novice	5.26	1.78	5.61	2.11	-1.74	-0.76	0.06	0.18
Neutral	5.15	1.43	5.91	1.35	-5.28**	-1.05	-0.47	0.56

*Note.* CI = confidence interval; LL = lower limit; UL = upper limit. *df* = 23 for the Expert condition.

\*\**p* < .001

Table 3

*Independent Samples t-test Results for Dependent Variables by Group and Gender*

Group	Change in Accuracy		Change in Confidence		Source Trust	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Expert	-0.04	0.07	1.42	1.69	6.82	1.56
Males	-0.02	0.02	1.50	1.30	5.57	2.01
Females	-0.04	0.08	1.40	1.76	7.00	1.45
Novice	0.02	0.08	0.35	1.13	5.40	1.86
Males	<b>-0.04</b>	0.09	0.95	1.44	5.76	2.07
Females	<b>0.04</b>	0.08	0.18	1.01	5.30	1.84
Neutral	-0.02	0.04	0.76	0.81	5.81	1.02
Males	-0.02	0.03	0.34	0.77	5.75	1.46
Females	-0.03	0.04	0.86	0.81	5.82	0.93

*Note.*  $N = 88$ .  $n_{\text{Expert}} = 24$  (3 males, 21 females);  $n_{\text{Novice}} = 32$  (7 males, 25 females);  $n_{\text{Neutral}} = 32$  (6 males, 26 females). Dependent variable trends within genders matched overall group trends, except for the Novice group where the males became more accurate (i.e. they conformed to the source), but females became less accurate (i.e. they reacted away from the source).

Table 4

*Bivariate Correlations among Trait Scales and Dependent Variables across all Participants*

Measure	1	2	3	4	<i>Change in Accuracy</i>	<i>Change in Confidence</i>	<i>Source Trust</i>
1. JSD	–	-.44***	-.17	-.14	-.23*	.21*	.21*
2. Individuation		–	-.05	.33**	.24*	-.21	-.13
3. Trust			–	-.01	.05	-.18	.16
4. RSMS				–	.07	.13	.14
5. HC	-.31**	.18	.37***	.22*	.05	-.01	.17
6. HI	.02	.02	.05	.02	.04	-.13	-.06
7. VC	.02	.10	.27*	.10	.03	.01	.03
8. VI	.05	.17	-.17	.13	-.05	.16	<.01

*Note.* JSD = judgment self-doubt; RSMS = self-monitoring; HC = horizontal collectivism; HI = horizontal individualism; VC = vertical collectivism; VI = vertical individualism. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

## Appendix A

## General Knowledge Trivia Questions Completed by Participants

Question	Source's (Correct) Response
1. In total, how many black and white keys are on a standard piano?	88
2. What is the distance (in km) between the earth and the moon?	384,400
3. How tall (in feet) is the world's tallest building?	2,722
4. What is the weight (in grams) of a Rio 2016 Olympic Gold Medal?	500
5. How many bones are there in the adult human body?	206
6. In total, how many syllables are in a Japanese Haiku poem?	17
7. In a game of chess, how many game-pieces does each player start with?	16
8. In total, how many dots are on a standard die? ("Die" is the singular of "dice")	21
9. How many holes are played in a standard round of golf?	18
10. How many prime numbers are there between 2 and 20? (Prime numbers are whole numbers that are divisible only by 1 and itself)	8

*Note.* Participants responded to each question consecutively, viewing only one question at a time.

## Appendix B

## Judgment Self-Doubt Scale

“To what extent do you agree or disagree with the following statements?”  
(1 = Strongly disagree, 7 = Strongly agree)

Item	Rating						
1. I have difficulty making decisions.	1	2	3	4	5	6	7
2. I have a tendency to change my mind according to the last opinion I hear.	1	2	3	4	5	6	7
3. After deciding something, I tend to worry about whether my decision was wrong.	1	2	3	4	5	6	7
4. I frequently find myself afraid of not doing the right thing.	1	2	3	4	5	6	7
5. I often have the sense that others know better than I do.	1	2	3	4	5	6	7
6. Often I put off making decisions	1	2	3	4	5	6	7
7. I often don't trust myself to make the right decision.	1	2	3	4	5	6	7
8. I often trust the judgment of others more than my own	1	2	3	4	5	6	7
9. My judgments about situations often turn out to be mistaken.	1	2	3	4	5	6	7
10. I often worry about a decision I made will have bad consequences.	1	2	3	4	5	6	7
11. In making a decision, I often tire myself out by switching back and forth from one conclusion to another.	1	2	3	4	5	6	7
12. I am inclined to have trouble knowing where to stand on an issue.	1	2	3	4	5	6	7
13. When making a decision, I often feel confused because I have trouble keeping all relevant factors in mind.	1	2	3	4	5	6	7
14. In almost all situations I am confident of my ability to make the right choices. *	1	2	3	4	5	6	7
15. I often don't know what to feel or believe.	1	2	3	4	5	6	7
16. I wish I were more confident in my opinions.	1	2	3	4	5	6	7
17. Many times I don't know what to do next.	1	2	3	4	5	6	7
18. I have a great deal of confidence in my opinions. *	1	2	3	4	5	6	7
19. Frequently, I doubt my ability to make sound judgments.	1	2	3	4	5	6	7

Note. \* Item is reverse-scored. Adapted from “Judgmental Self-Doubt: Belief about one's Judgmental Prowess,” by H. L. Mirels, P. Greblo, & J. B. Dean, 2002, *Personality and Individual Differences*, 33, p.741.

## Appendix C

## Trust Scale

“To what extent do you agree or disagree with the following statements?”  
(1 = Strongly disagree, 7 = Strongly agree)

Item	Rating						
1. Most people are basically honest.	1	2	3	4	5	6	7
2. Most people are trustworthy.	1	2	3	4	5	6	7
3. Most people are basically good and kind.	1	2	3	4	5	6	7
4. Most people are trustful of each other.	1	2	3	4	5	6	7
5. I am trustful.	1	2	3	4	5	6	7
6. Most people will respond in kind when they are trusted by others.	1	2	3	4	5	6	7
7. I trust a person I know well more than one whom I don't know.	1	2	3	4	5	6	7
8. Whatever work I have to perform, I feel more secure when I work with someone I know well than someone I don't know.	1	2	3	4	5	6	7
9. Generally, a person with whom you have had a longer relationship is likely to help you when you need it.	1	2	3	4	5	6	7
10. The people I trust are those with whom I have had long-lasting relationships.	1	2	3	4	5	6	7

*Note.* Adapted from “Trust and Commitment in the United States and Japan,” by T. Yamagishi and M. Yamagishi, 1994, *Motivation and Emotion*, 18, p.129.

## Appendix D

## Individuation Scale

“In general, are you willing to...”  
(1 = Strongly disagree, 7 = Strongly agree)

Item	Rating						
1. Give a lecture to a large audience.	1	2	3	4	5	6	7
2. Raise your hand to ask a question in a meeting or lecture.	1	2	3	4	5	6	7
3. Volunteer to head a committee for a group of people you do not know very well.	1	2	3	4	5	6	7
4. Tell a person you like him/her.	1	2	3	4	5	6	7
5. Publicly challenge a speaker whose position clashes with your own.	1	2	3	4	5	6	7
6. Accept a nomination to be leader of a group.	1	2	3	4	5	6	7
7. Present a personal opinion, on a controversial issue, to a group of strangers.	1	2	3	4	5	6	7
8. When asked to introduce yourself, say something more about yourself than just your name and occupation.	1	2	3	4	5	6	7
9. Give an informal talk in front of a small group of classmates and colleagues.	1	2	3	4	5	6	7
10. Speak up about your ideas even though you are uncertain of whether you are correct.	1	2	3	4	5	6	7
11. Perform on a stage before a large audience.	1	2	3	4	5	6	7
12. Give your opinion on a controversial issue, even though no one has asked for it.	1	2	3	4	5	6	7

*Note.* Adapted from “Individuation: Conceptual Analysis and Assessment,” by C. Maslach, J. Stapp, & R. Santee, 1985, *Journal of Personality and Social Psychology*, 49, p.729.

## Appendix E

## Revised Self-Monitoring Scale

“To what extent do you agree or disagree with the following statements?”  
(1 = Strongly disagree, 7 = Strongly agree)

Item	Rating						
1. In social situations, I have the ability to alter my behaviour if I feel that something else is called for.	1	2	3	4	5	6	7
2. I have the ability to control the way I come across to people, depending on the impression I wish to give them.	1	2	3	4	5	6	7
3. When I feel that the image I am portraying isn't working, I can readily change I to something that does.	1	2	3	4	5	6	7
4. I have trouble changing my behaviour to suit different people and different situations. *	1	2	3	4	5	6	7
5. I have found that I can adjust my behaviour to meet the requirements of any situation I find myself in.	1	2	3	4	5	6	7
6. Even when it might be to my advantage, I have difficulty putting up a good front. *	1	2	3	4	5	6	7
7. Once I know what a situation calls for, it's easy for me to regulate my actions accordingly.	1	2	3	4	5	6	7
8. I am often able to read people's true emotions correctly through their eyes.	1	2	3	4	5	6	7
9. In conversations, I am sensitive to even the slightest change in the facial expression of the person I'm conversing with.	1	2	3	4	5	6	7
10. My powers of intuition are quite good when it comes to understanding others' emotions.	1	2	3	4	5	6	7
11. I can usually tell when others consider a joke to be in bad taste, even though they may laugh convincingly.	1	2	3	4	5	6	7
12. I can usually tell when I've said something inappropriate by reading it in the listener's eyes.	1	2	3	4	5	6	7
13. If someone is lying to me, I usually know it at once from that person's manner of expression.	1	2	3	4	5	6	7

Note. \* Item was reverse-scored. Adapted from “Revision of the Self-Monitoring Scale,” by R. Lennox and R. Wolfe, 1984, *Journal of Personality and Social Psychology*, 46, p.1349.



## Appendix F

## HVIC (Horizontal/Vertical Individualism/Collectivism) Scale

“To what extent do you agree or disagree with the following statements?”  
(1 = Strongly disagree, 7 = Strongly agree)

Item	Rating						
1. I'd rather depend on myself than others.	1	2	3	4	5	6	7
2. It is important that I do my work better than others.**	1	2	3	4	5	6	7
3. If a classmate gets a prize, I would feel proud.**	1	2	3	4	5	6	7
4. Parents and children must stay together as much as possible.	1	2	3	4	5	6	7
5. I rely on myself most of the time; I rarely rely on others.	1	2	3	4	5	6	7
6. Winning is everything.	1	2	3	4	5	6	7
7. The well-being of my classmates is important to me.**	1	2	3	4	5	6	7
8. It is my duty to take care of my family, even when I have to sacrifice what I want.	1	2	3	4	5	6	7
9. I often do “my own thing.”	1	2	3	4	5	6	7
10. Competition is the law of nature.	1	2	3	4	5	6	7
11. To me, pleasure is spending time with others.	1	2	3	4	5	6	7
12. Family members should stick together, no matter what sacrifices are required.	1	2	3	4	5	6	7
13. My personal identity, independent of others, is very important to me.	1	2	3	4	5	6	7
14. When another person does better than I do, I get tense and aroused.	1	2	3	4	5	6	7
15. I feel good when I cooperate with others.	1	2	3	4	5	6	7
16. It is important to me that I respect the decisions made by my groups.	1	2	3	4	5	6	7

Note. \*\* Item was adjusted to reflect a university setting. Adapted from “Converging Measurement of Horizontal and Vertical Individualism and Collectivism,” by H. C. Triandis and M. J. Gelfand, 1998, *Journal of Personality and Social Psychology*, 74, p.118.