

This self-archived version is provided for scholarly purposes only. The correct reference for this article is as follows:

Rubin, M., Paolini, S., & Crisp, R. J. (2011). The relationship between the need for closure and deviant bias: An investigation of generality and process. *International Journal of Psychology*, 46, 206-213. doi: [10.1080/00207594.2010.537660](https://doi.org/10.1080/00207594.2010.537660)

This research was supported by the Australian Research Council's Discovery Project funding scheme (DP0556908). We are grateful to Jessica Beckerleg, Toni Lindsay, Abby Stokes, and Samantha Wilson for their assistance with data collection and coding.

Correspondence concerning this article should be addressed to Mark Rubin at the School of Psychology, the University of Newcastle, Callaghan, NSW 2308, Australia. Tel: +61 (0)2 4921 6706. Fax: +61 (0)2 4921 6980. E-mail: Mark.Rubin@newcastle.edu.au

Word Counts: Abstract: 209; Main text: 3,663; Footnotes: 0; References: 22 references (611 words); Tables: 1 (179 words); Figures: 1 (38 words); Total for main text + tables + figures + references: 4,491.

Abstract

The need for closure predicts an evaluative bias against people whose opinions or behaviors deviate from other members of their social groups (Doherty, K. T., 1998; Kruglanski, A. W., & Webster, D. M., 1991; Schimel, J., et al., 1999). In the present study, we investigated whether the relationship between the need for closure and deviant bias generalized to nonsocial stimuli, and we examined the process underlying this relationship. Sixty-one undergraduate students completed measures of the need for closure, the need for structure, intolerance for ambiguity, and the ability to be decisive and achieve cognitive structure. They then rated their liking for letters of the Latin alphabet (“A” & “B”) whose locations were consistent and inconsistent with relevant categories (“A circle” & “B circle”). Participants liked category-inconsistent letters less than category-consistent letters. Measures related to the need for structure and closed-mindedness correlated positively with this deviant bias, whereas measures related to the ability to be decisive and achieve cognitive structure did not. These results imply that the relationship between the need for closure and deviant bias is a relatively basic and pervasive effect that is not unique to social deviance and that is driven by the need for structure and closed-mindedness. Implications for social and nonsocial stimuli are discussed.

KEYWORDS: need for closure; need for structure; stereotype-inconsistent; deviant bias

The Relationship Between the Need for Closure and Deviant Bias:
An Investigation of Generality and Process

The need for closure represents “individuals’ desire for a firm answer to a question and an aversion toward ambiguity (Kruglanski & Webster, 1996, p. 264; see also Neuberg & Newsom, 1993; Webster, & Kruglanski, 1994). Webster and Kruglanski (1994) developed a Need for Closure scale that consists of five subscales, including the preference for predictability, closed-mindedness, preference for order, discomfort with ambiguity, and decisiveness. Notably, this scale measures an ability component as well as a need component, and this distinction between need and ability has caused serious debates about the structure and validity of the scale (Kruglanski, Atash, DeGrada, Mannetti, Pierro, & Webster, 1997; Neuberg et al., 1997). However, the work of Mannetti, Pierro, Kruglanski, Taris, and Bezinovic (2002) and Roets and Van Hiel (2007) have clarified this issue by demonstrating that the ability items are restricted to the Decisiveness subscale of the Need for Closure scale.

The need for closure has been found to predict relatively negative evaluations of people whose opinions or behaviors deviate from other people in their social groups (Doherty, 1998; Kruglanski & Webster, 1991; Schimel et al., 1999, Study 5). In the present research, we investigated whether the relationship between the need for closure and this deviant bias generalized to nonsocial stimuli. We also examined the process underlying this relationship by investigating the extent to which the need for structure, closed-mindedness, and the ability to be decisive predicted deviant bias.

Previous Research

In previous research, Kruglanski and Webster (1991) and Doherty (1998) manipulated the need for closure using time pressure or environmental noise and then measured evaluations of an opinion deviant during group discussions. In a high time pressure condition, the deviant expressed his or her opinion five minutes before a decision deadline, resulting in a high need for closure. In a low time pressure condition, the deviant expressed his or her opinion five minutes from the start of the discussion, resulting in a low need for closure. In a high environmental noise condition, the group discussion was conducted in the presence of a loud, active computer printer. In a low need for closure condition, the computer printer was inactive and silent. The researchers found consistent results across these diverse manipulations of the need for closure: High need for closure (i.e., high time pressure or loud environmental noise) caused negative evaluations of opinion deviants.

Schimel et al. (1999, Study 5) demonstrated that the relationship between the need for closure and deviant bias generalizes from manipulations of the need for closure and judgments of opinion deviants to measures of the need for closure and judgments of stereotype-inconsistent individuals. Participants began Schimel et al.’s research by completing the Need for Closure scale. Their mortality salience was then manipulated. In a high mortality salience condition, participants described their thoughts and feelings about their own death. In a low mortality salience condition, participants described their thoughts and feelings about watching television. They then evaluated a gay man based on a description of his personality, preferences, and lifestyle. In a stereotype-consistent condition, this description referred to a theatre major who liked to “visit art galleries, go to discos, and go shopping” (p. 919). In a stereotype-inconsistent condition, the description referred to an engineering major who liked to “restore old cars, play basketball, and lift weights” (p. 919). The researchers found that only people who scored relatively high on the need for closure scale and who had a salient sense of their mortality showed a significant evaluative bias against the stereotype-inconsistent gay man.

The Present Research

Investigating the Generality of the Relationship Between the Need for Closure and Deviant Bias

The present research had two aims. First, we wanted to extend previous research in this area by investigating whether the relationship between the need for closure and deviant bias generalizes to nonsocial stimuli. Previous research has demonstrated that the need for structure — a construct that is closely related to the need for closure, if not part of it (Neuberg, Judice, & West, 1997) — predicts the degree of structuring of nonsocial information, including furniture and colors (Neuberg & Newsom, 1993, Study 3). In addition, the need for structure predicts evaluations of apparently meaningless modern art (Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006). Furthermore, the need for closure is assumed to be a fundamental motivation that is not restricted to the social domain (Kruglanski, 2004). Consequently, we hypothesized that the need for closure would predict biased evaluations of deviant targets when those targets were represented by nonsocial stimuli. Evidence in support of this hypothesis would imply that the relationship between the need for closure and deviant bias is a relatively general, basic, and pervasive effect. In contrast, a lack of support for this hypothesis would imply that there is something special about social stimuli that is necessary for this relationship to occur.

To test this hypothesis, we asked participants to evaluate letters of the Latin alphabet (“A” & “B”) whose locations were consistent and inconsistent with relevant categories (“A circle” & “B circle”). We predicted that the need for closure would be positively related to an evaluative bias against letters that were located in inconsistent categories (e.g., the letter “A” located in the “B circle”).

Investigating the Process Underlying the Relationship Between the Need for Closure and Deviant Bias

Our second aim was to investigate the process underlying the relationship between the need for closure and deviant bias. According to Kruglanski and Webster (1991), people with a high need for closure react particularly negatively towards opinion deviants because opinion deviants undermine the ability of a group to reach quick and consensual decisions during problem-solving tasks. This explanation focuses on a particular dimension of the need for closure that relates to the ability to be decisive and achieve closure. However, the ability to be decisive cannot explain all cases in which the need for closure predicts deviant bias. In particular, it cannot explain this relationship in Schimmel et al.’s (1999) study because the stereotype-inconsistent gay man did not impede decision-making and there was no salient problem-solving task. Two alternative dimensions of the need for closure may help to explain Schimmel et al.’s findings.

First, people with a high need for closure may have reacted particularly negatively towards the stereotype-inconsistent man because he frustrated the need to maintain well-ordered and structured social categories. In this case, an aspect of need for closure that we refer to as the need for structure (Neuberg et al., 1997, p. 1401) may be related to the deviant bias.

Second, people with a high need for closure may have reacted particularly negatively towards the stereotype-inconsistent man because the inconsistency between his sexuality and his behavior forced them to consider multiple contrasting dimensions during their evaluation. In this case, an aspect of the need for closure called closed-mindedness may be related to the deviant bias. Consistent with this explanation, Brandt and Reyna (2010, Study 2) found that closed-mindedness mediated the relationship between religious fundamentalism and prejudice towards groups that violate religious values and beliefs.

In the present nonsocial research paradigm, participants were not asked to engage in any explicit decision-making task in order to solve a particular problem. Instead, they made

evaluative judgments of category-consistent and category-inconsistent stimuli. Consequently, we hypothesized that the ability to be decisive would not represent a significant explanatory variable in this paradigm. Instead, the need for structure and closed-mindedness should predict deviant bias because category-inconsistent stimuli threaten the need for categorical structure and present contrasting dimensions as the basis for evaluation.

To test this second hypothesis, we used measures of the ability to be decisive, the need for structure, and closed-mindedness to predict deviant bias. In particular, following previous researchers (Bar-Tal, 1994; Neuberg et al., 1997; Roets & Van Hiel, 2007), we used the Decisiveness subscale of the Need for Closure scale and the Ability to Achieve Cognitive Structure scale (Bar-Tal, 1994) to measure the ability to be decisive. Following Neuberg et al. (1997) and Webster and Kruglanski (1994), we measured the need for structure using the Preference for Predictability, Preference for Order, and Discomfort with Ambiguity subscales of the Need for Closure scale (Webster & Kruglanski, 1994) as well as the Need for Cognitive Structure scale (Bar-Tal, 1994), the Personal Need for Structure scale (Neuberg & Newsom, 1993), and the Intolerance for Ambiguity scale (Budner, 1962). Finally, we measured closed-mindedness using the Closed-Mindedness subscale of the Need for Closure scale. We predicted that neither of the ability to be decisive measures would predict deviant bias and that only the need for structure and closed-mindedness measures would predict this bias.

Method

Participants

Participants were 61 first-year psychology undergraduate students (8 men, 51 women, 2 missing responses), aged 18 to 48 years ($M = 21.36$), from an Australian university. Participants received course credit in exchange for their participation.

Procedure

Psychometric scales. Participants began the research by completing five psychometric scales that are related to the need for closure: the Need for Closure Scale (Webster & Kruglanski, 1994), the Need for Cognitive Structure scale (Bar-Tal, 1994), the Personal Need for Structure scale (Thompson et al., 1989, cited in Neuberg & Newsom, 1993), the Intolerance for Ambiguity Test (Budner, 1962), and the Ability to Achieve Cognitive Structure scale (Bar-Tal, 1994). Participants responded to the items in the psychometric scales using a 7-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*). We counterbalanced the order of presentation of the five scales.

Measure of deviant bias. Participants then completed a questionnaire that included a diagram on each page (Figure 1). The diagram consisted of two circles labelled “A circle” and “B circle”. Inside the A circle, there were 6 or 7 “A” letters (category-consistent letters) and one “B” letter (category-inconsistent letters). Inside the B circle, there were 6 or 7 “B” letters (category-consistent letters) and one “A” letter (category-inconsistent letters).

-- Insert Figure 1 here --

On each page of their questionnaire, participants wrote down how much they liked or disliked a letter that was indicated by a line and rating box. Participants made their ratings on a 5-point Likert-type scale (1 = *I dislike the item a lot*, 5 = *I like the item a lot*). We instructed participants that they could use whatever criteria that they liked in order to make their judgments. Participants rated four category-consistent letters and four category-inconsistent letters on eight pages of their questionnaire. These pages were presented in a single randomized order for all participants. Participants also rated letters that were located outside of both circles. These extracategory letters were used to test a separate hypothesis that we do not discuss in this article.

We eliminated the potential confound between target type and target characteristics by counterbalancing the specific target letters that we used to represent category-consistent

and category-inconsistent targets. So, for example, even if for some reason participants perceived the letter “A” to be more positive than the letter “B”, the fact that we represented category-consistent and category-inconsistent stimuli using “A” and “B” letters an equal number of times meant that valence differences between specific stimuli (“A”/“B”) could not account for evaluative differences between stimulus types (category-consistent/category-inconsistent). Note that this counterbalancing precluded the influence of letter-specific valence effects such as contrast effects (Schwarz & Bless, 1992; Sherif & Hovland, 1961) and the effects of category-based expectancy violations (e.g., Jussim, Coleman, & Lerch, 1987).

Perceived awareness of the research hypothesis. We considered the possibility that implicit demand characteristics in our research design might cue participants to the hypothesis of a positive relationship between the need for closure and evaluations of category-inconsistent stimuli. In this case, participants might respond in a way that they believe would confirm the perceived hypothesis in order to be “good” participants and not “ruin” the research (Orne, 1962). In order to test this demand characteristics explanation, we asked participants to respond to two statements that measured their perceived awareness of the research hypothesis (PARH; Rubin, Paolini, & Crisp, 2010). The PARH statements were (1) “I wasn’t sure what the researchers were trying to demonstrate in this research” and (2) “I was unclear about exactly what the researchers were aiming to prove in this research”. Participants responded to each PARH statement using a 7-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*). Participants also responded to three open-ended questions that asked them to describe (a) what information they had heard about the research from previous participants, (b) what the research was trying to show and how it was trying to show it, and (c) what suspicions or doubts they had about the research.

Results

In her postexperimental comments, one participant suggested that the more spontaneous people were, the more they would like letters that did not fit in with the average. A second participant did not complete a substantial portion of the research questionnaire. We excluded the data from these two participants from our analyses.

After we reverse scored appropriate items, each of the psychometric scales had acceptable internal consistency (see Table 1). Consequently, we averaged scores to create single scores for each scale and each Need for Closure subscale.

-- Insert Table 1 here --

An alpha level of .05 was used as the criteria for statistical significance in all analyses. As shown in Table 1, there were significant, large, positive correlations between many of the psychometric scales. Consistent with previous research (e.g., Neuberg et al., 1997; Webster & Kruglanski, 1994), these correlations confirmed the convergent validity between these measures. Notably, however, the Decisiveness subscale and the Ability to Achieve Cognitive Structure scale had mainly nonsignificant relationships with the other scales. Again, this evidence is consistent with previous research (e.g., Bar-Tal, Kishon-Rabin, & Tabak, 1997; Neuberg et al., 1997), and it confirms that these measures assess a substantially separate aspect of the closure construct (Roets & Van Hiel, 2007). Consistent with the assumption that these scales both measured the ability to be decisive, the largest correlation that they obtained was with one another, $r(59) = .66, p < .001$.

In order to investigate deviant bias, we computed mean evaluation ratings for each target type (category-consistent/category-inconsistent). We then performed a paired samples t test on this data using target type as the independent variable. Participants rated category-consistent letters ($M = 3.45, SD = .70$) significantly more positively than category-inconsistent letters ($M = 3.01, SD = .96$), $t(58) = 2.57, p = .013, \eta^2 = .10$. In other words, participants showed a significant bias against deviant stimuli.

We subtracted evaluations of category-inconsistent letters from evaluations of category-consistent letters in order to form an index of deviant bias in which positive values represented a bias in favor of category-consistent letters and against category-inconsistent letters. As shown in Table 1, this index of deviant bias had significant, medium-sized, positive correlations with all of the psychometric scales (r s ranged from .30 to .42) apart from the Decisiveness subscale, $r(59) = .09$, $p = .522$, and the Ability to Achieve Cognitive Structure subscale, $r(59) = .07$, $p = .590$.

We also conducted a series of multiple regressions in which we included measures of the ability to be decisive, the need for structure, and closed-mindedness as simultaneous predictors of the deviant bias. The Closed-Mindedness and Preference for Order subscales and the Need for Structure scale emerged as significant predictors in these analyses.

To investigate the potential influence of demand characteristics, we examined the data from the two PARH items. These items had acceptable internal consistency ($\alpha = .83$), and so we reversed-scored them and computed their average in order to produce a PARH index in which the higher the score, the more participants believed that they were aware of the research hypothesis. A one sample t test showed that participants' mean PARH score was significantly lower than the scale's midpoint of 4.00 ($M = 3.12$, $SD = 1.42$), $t(58) = -4.75$, $p < .001$, indicating that they "partially disagreed" that they were aware of the research hypothesis.

As shown in Table 1, the PARH index did not correlate significantly with deviant bias or any of the scores from the psychometric scales, with the exception of the Closed-Mindedness subscale. More importantly, the significant correlations between the scores from the psychometric scales and deviant bias remained significant after controlling for PARH scores in partial correlation analyses ($ps \leq .034$).

Discussion

Consistent with predictions, scores from measures that are related to the need for structure and closed-mindedness showed a significant positive relationship with biased evaluations of nonsocial category-inconsistent stimuli. A number of points confirm that this relationship represented a genuine psychological effect rather than an artefact caused by implicit demand characteristics. First, we excluded any participants from our statistical analyses whose postexperimental comments indicated an awareness of the research hypothesis. Second, only 1 out of 61 participants reported any awareness of the research hypothesis, suggesting that the hypothesis was neither obvious nor widely accessible in our sample. Third, data from the PARH scale showed that participants significantly disagreed that they were aware of the research hypothesis. Fourth, participants' PARH scores did not correlate significantly with their scores on almost all of the psychometric scales or the deviant bias. Fifth, the significant correlations between the scales and the category-consistency bias remained significant after controlling for PARH scores in partial correlation analyses.

The Generality of the Relationship Between the Need for Closure and Deviant Bias

Previous research has found that the need for structure predicts the structuring and evaluation of nonsocial stimuli (Landau et al., 2006; Neuberg & Newsom, 1993, Study 3). The present research builds on this previous research by providing the first evidence that the need for closure and structure predicts a bias against deviant, category-inconsistent targets that are represented by nonsocial stimuli. This evidence has both theoretical and practical implications.

Theoretically, the present research findings imply that parallel findings in the social domain (e.g., Schimel et al., 1999, Study 5) may represent part of a more general, basic, and pervasive effect that extends to nonsocial stimuli. Hence, there does not appear to be anything special about social stimuli that is necessary for the relationship between need for closure and

deviant bias to occur; an equivalent relationship can occur when the stimuli are not social in nature.

Practically, our results imply that the relationship between the need for closure and deviant bias should occur in a broad range of different situations. We consider some examples in relation to both nonsocial and social stimuli below.

Considering nonsocial stimuli first, many consumer products have been financially unsuccessful because the manufacturing brand name was associated with products from other, often inconsistent categories. Notable examples include Smith and Wesson mountain bikes, Coors Rocky Mountain spring water, Colgate food products, Frito Lay lemonade, Bic underwear, and Harley Davidson perfume (Walletpop, 2010). Based on the present research findings, people with a high need for closure are likely to have the strongest negative reactions to these category-inconsistent products.

Turning to social stimuli, future research might profit from examining the relationship between the need for closure and evaluations of migrants, because migrants are social stimuli that have moved from a consistent category location (e.g., an Australian in Australia) to an inconsistent category location (e.g., an Australian in the USA).

The Process Underlying the Relationship Between the Need for Closure and Deviant Bias

The present research also identified the particular dimensions of the need for closure that are responsible for its relationship with deviant bias. Consistent with predictions, deviant bias was significantly associated with measures that are related to the need for structure (e.g., preference for order and predictability, dislike of ambiguity) and closed-mindedness and unrelated to measures of the ability to be decisive and achieve closure.

The present research does not refute the potential influence of either the ability or the need to be decisive when deviants threaten quick decision-making. Hence, the ability or need to be decisive may be associated with bias against opinion deviants during a group problem-solving task (Kruglanski & Webster, 1991). However, clear evidence of this relationship has yet to be established.

Future research should investigate the extent to which the ability and need for decisiveness, structure, and closed-mindedness operate in different situations. For example, in Kruglanski and Webster's (1991) research, opinion deviates may have evoked negative reactions not only because they undermined the ability of the group to reach a quick solution to a problem, but also because they threatened the group's social categorical structure and brought up contrasting options for consideration.

Limitations and Directions for Future Research

We should note four limitations of our research that may provide the impetus for future research in this area. First, we did not demonstrate that the need for closure predicted deviant bias using social stimuli in the present research. Future research would profit from demonstrating both social and nonsocial effects within the same study.

Second, our particular operationalization of deviant stimuli included a prescriptive component in the form of labels that identified each category as either an "A circle" or a "B circle". This approach produced a rather explicit form of deviance that may have augmented our effects. Future research should investigate whether similar effects are apparent when this prescriptive component is absent from the research stimuli.

Third, contrary to Schimel et al. (1999, Study 5), we did not manipulate mortality salience in the present research. Our results indicate that mortality salience is not necessary in order for the need for closure to predict deviant bias using nonsocial stimuli. Nonetheless, based on Schimel et al.'s evidence and more recent work by Landau et al. (2006), future research in this area should investigate the potential moderating effect of mortality salience.

Fourth, although we measured the ability to be decisive in the present research, we did not measure the need to be decisive. Hence, we cannot rule out the possibility that the need for decisiveness predicts deviant bias. Future research can investigate this issue using Roets and Van Hiel's (2007) new set of items for the Decisiveness scale.

References

- Bar-Tal, Y. (1994). The effect on mundane decision-making of the need and ability to achieve cognitive structure. *European Journal of Personality*, 8, 45-58.
- Bar-Tal, Y., Kishon-Rabin, L., & Tabak, N. (1997). The effect of need and ability to achieve cognitive structuring on cognitive structuring. *Journal of Personality and Social Psychology*, 73, 1158-1176.
- Brandt, M. J., & Reyna, C. (2010). The role of prejudice and the need for closure in religious fundamentalism. *Personality and Social Psychology Bulletin*, 36, 715-725.
- Budner, S. (1962). Intolerance for ambiguity as a personality variable. *Journal of Personality*, 30, 29-50.
- Doherty, K. T. (1998). A mind of her own: Effects of need for closure and gender on reactions to nonconformity. *Sex Roles*, 38, 801-819.
- Jussim, L., Coleman, L. M., & Lerch, L. (1987). The nature of stereotypes: A comparison and integration of three theories. *Journal of Personality and Social Psychology*, 52, 536-546.
- Kruglanski, A. W. (2004). *The psychology of closed mindedness*. New York: Psychology Press.
- Kruglanski, A. W., Atash, M. N., DeGrada, E., Mannetti, L., Pierro, A., & Webster, D. M. (1997). Psychological theory testing versus psychometric nay-saying: Comment on Neuberg et al.'s (1997) critique of the Need for Closure Scale. *Journal of Personality and Social Psychology*, 73, 1005-1016.
- Kruglanski, A. W., & Webster, D. M. (1991). Group members' reactions to opinion deviates and conformists at varying degrees of proximity to decision deadline and of environmental noise. *Journal of Personality and Social Psychology*, 61, 212-225.
- Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing". *Psychological Review*, 103, 263-283.
- Landau, M. J., Greenberg, J., Solomon, S., Pyszczynski, T., & Martens, A. (2006). Windows into nothingness: Terror management, meaninglessness, and negative reactions to modern art. *Journal of Personality and Social Psychology*, 90, 879-892.
- Mannetti, L., Pierro, A., Kruglanski, A., Taris, T., & Bezinovic, P. (2002). A cross-cultural study of the Need for Cognitive Closure Scale: Comparing its structure in Croatia, Italy, USA and The Netherlands. *British Journal of Social Psychology*, 41, 139-156.
- Neuberg, S. L., Judice, T. N., & West, S. G. (1997). What the Need for Closure Scale measures and what it does not: Toward differentiating among related epistemic motives. *Journal of Personality and Social Psychology*, 72, 1396-1412.
- Neuberg, S. L., & Newsom, J. T. (1993). Personal need for structure: Individual differences in the desire for simple structure. *Journal of Personality and Social Psychology*, 65, 113-131.
- Orne, M. (1962). On the social psychology of the psychology experiment: With particular reference to demand characteristics and their implications. *American Psychologist*, 17, 776-783.
- Roets, A., & Van Hiel, A. (2007). Separating ability from need: Clarifying the dimensional structure of the Need for Closure scale. *Personality and Social Psychology Bulletin*, 33, 266-280.
- Rubin, M., Paolini, S., & Crisp, R. J. (2010). A processing fluency explanation of bias against migrants. *Journal of Experimental Social Psychology*, 46, 21-28.
- Schimmel, J., Simon, L., Greenberg, J., Pyszczynski, T., Solomon, S., Waxmonsky, J., & Arndt, J. (1999). Stereotypes and terror management: Evidence that mortality salience enhances stereotypic thinking and preferences. *Journal of Personality and Social Psychology*, 77, 905-926.

- Schwarz, N., & Bless, H. (1992). Constructing reality and its alternatives: An inclusion/exclusion model of assimilation and contrast effects in social judgment. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgments* (pp. 217-245). Hillsdale, NJ: Lawrence Erlbaum.
- Sherif, M., & Hovland, C. I. (1961). *Social judgment: Assimilation and contrast effects in communication and attitude change*. New Haven, CT: Yale University Press.
- Walletpop. (2010, August). *Top 25 biggest product flops of all time*. Retrieved from <http://www.walletpop.com/specials/top-25-biggest-product-flops-of-all-time/>
- Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology*, 67, 1049-1062.

Table 1

Cronbach Alpha Values and Correlation Coefficients

Measure	Cronbach alpha	1	2	3	4	5	6	7	8	9	10	11
1. Deviant bias	—	—										
2. Need for Closure	.86	.42**	—									
3. Preference for predictability	.79	.32*	.79**	—								
4. Closed-mindedness	.61	.34**	.60**	.47**	—							
5. Preference for order	.80	.35**	.83**	.59**	.23	—						
6. Discomfort with ambiguity	.61	.30*	.64**	.59**	.34*	.39**	—					
7. Decisiveness	.75	.09	.33*	-.09	.14	.29*	-.26*	—				
8. Need for Cognitive Structure	.84	.35*	.66**	.60**	.46**	.45**	.75**	-.12	—			
9. Personal Need for Structure	.83	.37**	.76**	.85**	.32*	.66**	.63**	-.09	.69**	—		
10. Intolerance for Ambiguity	.75	.32*	.57**	.48**	.56**	.41**	.38**	.13	.57**	.52**	—	
11. AACS	.78	.07	.13	-.13	.08	.16	-.33*	.66**	-.07	-.06	.15	—
12. PARH	.83	.16	.09	.13	.28*	-.12	.21	-.09	.20	.11	.21	.08

Note. Variables 3, 4, 5, 6, and 7 are subscales of the Need for Closure scale. AACS = Ability to Achieve Cognitive Structure. PARH = Perceived Awareness of the Research Hypothesis.

* $p < .05$. ** $p < .01$.

Figure Captions

Figure 1. Example of a diagram that required the evaluation of a category-consistent letter

