The Journal of Psychology, 2009, *143*(2), 117–132

Ways of Knowing and Willingness to Argue

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ABSTRACT. Willingness to argue is associated with higher level thinking. The authors tested the relation between ways of knowing—involving separate knowing (i.e., playing the devil's advocate) and connected knowing (i.e., empathic understanding)—and students' willingness to argue. Participants were 171 male and 231 female college undergraduates who completed assessments in ways of knowing and willingness to argue. Also, the participants defined the word *argument* in their own words. After the authors controlled for demographic variables, endorsement of separate knowing predicted willingness to argue. Students with high scores in separate knowing (objective, adversarial knowing) and connected knowing (subjective, empathic knowing) indicated more willingness to argue. Furthermore, these same students defined *argument* as a constructive form of communication. Students with low scores in separate knowing defined *argument* as an emotional battle with the goal of psychological harm. This negative perspective could be an impediment to engaging students in classroom debate and critical thinking.

Keywords: argumentative, epistemological beliefs, separate knowing, ways of knowing, willingness to argue

THE STUDY OF BELIEFS ABOUT the nature of knowledge and learning (i.e., epistemological beliefs) has taken a prominent role in educational and psychological research agendas in the past 16 years (Schommer-Aikins, 2004). Recently, researchers have studied the relation between students' epistemological beliefs and willingness to argue. Nussbaum and Bendixen (2003) found that the more students believed in simple knowledge and certain knowledge, the more likely they were to avoid argument. In the present study, we examined the relation between willingness to argue and an alternative set of beliefs. According to Belenky, Clinchy, Goldberger, and Tarule (1986), because ways of knowing involve epistemic and social elements—both of which are aspects of arguing—we specifically tested the relation between beliefs about ways of knowing and willingness to argue.

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In Infante and Rancer's (1996) framework, being argumentative is seen in a positive light. In this case, *to argue* means to build a cohesive, logical combination of ideas that justifies one's thinking. This logically built justification can serve to persuade others of one's line of thinking or to refute others' ideas. Argumentativeness is seen as a constructive form of communication or formal dissent. In contrast to this positive connotation of argumentativeness, verbal aggressiveness has a more negative connotation as an attack on the self-concepts of others to inflict psychological pain, embarrassment, or negative feelings. Verbal aggressiveness is a destructive form of communication.

Argumentativeness has been linked to many positive attributes. Supervisors who encourage employees to argue corporate issues are seen as giving employees a voice (Gorden, 1988). Researchers have found argumentative couples to have more marital satisfaction (Miller & Rogers, 1987). Argumentative couples may avoid family conflict, using argument in contrast to verbal aggression (Sabourin, Infante, & Rudd, 1993). In addition, argumentativeness is associated with authoritative parenting; parents discipline children with reason and emotional care. By contrast, authoritarian parents are more likely to display verbal aggression, dominating their children's thinking and behavior (Bayer & Cegala, 1992). Moreover, the mental activity needed for developing an argument encourages the constructive process of integrating ideas, processing information deeply, and thinking critically (Mongeau, 1989; Nussbaum, 2005; Sanders, Wiseman, & Gass, 1994). In addition, argumentativeness has been associated with need for cognition (Nussbaum). Argumentative reasoning is seen as an exemplar of real-world intelligence (Kuhn, 1992). Highly argumentative people engage in argument and will not consciously avoid argument (Infante & Rancer, 1996).

However, not everyone is willing to argue. According to Infante and Rancer (1996), some people engage in verbal aggression because they lack argumentative skills. Demographic variables are also related to argumentativeness. For example, men are more likely to be argumentative than are women (e.g., Infante & Wigley, 1986; Nicotera & Rancer, 1994). Women are more likely than men are to perceive an argument as combative and hostile than are men (Nicoreta & Rancer). Younger people are more argumentative than are older people (Schullery & Schullery, 2003). In addition, more educated people are more likely to be argumentative (Schullery & Schullery). Regional differences have been more difficult to discern. However, in one study in the United States, northerners displayed more argumentativeness than did midwesterners and southerners, at a level approaching significance (p = .057; Geddes, 1992, as cited in Infante & Rancer, 1996).

Recently, researchers have examined students' epistemological beliefs in relation to willingness to argue (Nussbaum & Bendixen, 2003). In general, the study of students' beliefs about knowledge and learning (i.e., epistemological beliefs) had its distinct start with Perry's (1968) work. On the basis of interviews with undergraduate men attending Harvard University, Perry concluded that freshmen have a propensity to believe that knowledge is simple, certain,

and handed down by omniscient authority. However, Perry also concluded that seniors come to believe that knowledge is complex, changing, and derived from reason and evidence. Researchers have studied epistemological beliefs by either focusing on a specific dimension (e.g., justification of knowledge; Kitchener & King, 1989) or redefining epistemological beliefs as a set of relatively independent beliefs that have unique effects on learning (Schommer, 1990). The beliefs studied in our multidimensional conception of epistemological beliefs are the following: (a) structure of knowledge (from simple, isolated facts to complex, interwoven concepts), (b) stability of knowledge (from certain, unchanging knowledge to tentative, changing knowledge), (c) source of knowledge (from knowledge handed down by omniscient authority to knowledge derived from reason and evidence), (d) speed of learning (from quick or not-at-all to gradual), and (e) ability to learn (from fixed at birth to improvable).

Each belief or combination of beliefs is thought to affect learning differently (Schommer-Aikins, 2004). For example, the belief that knowledge is stable and unchanging is linked to the misinterpretation of tentative findings (Kardash & Scholes, 1996). The belief that knowledge is structured as isolated bits is linked to poor comprehension and poor metacomprehension of complex information (Schommer, Crouse, & Rhodes, 1992).

Nussbaum and Bendixen (2003) hypothesized that epistemological beliefs may also serve as an impetus or impediment to the willingness to argue. Their rationale for this hypothesis was that students with strong beliefs in simple knowledge may not value arguing because they do not value the development of a complex justification of knowledge. Alternatively, students with strong beliefs in omniscient authority may have such an unquestionable belief in experts that they would eagerly engage in argument to justify what they believe is true.

Nusssbaum and Bendixen (2003) examined the relation of epistemological beliefs—as well as need for cognition (i.e., propensity to enjoy deep thinking and challenging cognitive tasks) and extroverted personality traits—with willingness to argue. Using a measure that Infante and Rancer (1982) developed, Nussbaum and Bendixen used two scores to assess willingness to argue; namely, approach arguments and avoid arguments. They found that assertiveness predicted people's propensity to argue or avoid arguments in that assertive people were more likely to approach arguments and less likely to avoid them. People's need for cognition predicted their willingness to approach arguments, and their beliefs in simple and certain knowledge predicted their willingness to avoid arguments. Nussbaum and Bendixen offered two explanations for the relation between epistemological beliefs and students' willingness to argue. First, students with less mature beliefs (beliefs that do not support higher order thinking, such as belief in simple knowledge) show more epistemic doubt (Bendixen, 2002) and, therefore, may be less likely to argue. Second, because these students avoid arguments, they have fewer opportunities to experience them. These missed opportunities are also missed opportunities for epistemological belief development.

We tested another possible epistemic reason for why some people are more willing to argue than are others. We viewed argument as more than a cognitive activity; we viewed it as both a social and cognitive activity. The goal of argument is often to persuade or refute someone else by coherently justifying an idea. This form of communication emphasizes finding flaws in others' thinking and presenting opposing perspectives on the basis of rational, objective evidence. This propensity to focus on objective data and seek weaknesses in others' thinking is the foundation for what Belenky et al. (1986) and Clinchy (2002) referred to as *separate knowing.*

In the 1980s, in contrast to Perry's (1968) work conducted predominately on men, Belenky et al. (1986) began to uncover women's beliefs about knowledge. According to Belenky et al.'s findings, women have five different epistemic positions. Other researchers have continued to investigate and theorize about these epistemic positions among men and women (Clinchy, 2002; Galotti, Clinchy, Ainsworth, Lavin, & Mansfield, 1999). This more encompassing work has led to classifying the epistemic positions into either passive acceptance of knowledge or active construction of knowledge. The first three passive positions (i.e., silence, received knowing, subjectivism) were classified as preprocedural knowing; that is, these epistemic positions make higher level learning difficult because of an overreliance on authority (silence), a distrust of one's own thinking (received knowing), or an overreliance on one's own thinking (subjectivism). The last two actively constructive positions of ways of knowing (separate knowing and connected knowing) were classified as procedural knowing; that is, epistemic positions that support critical thinking. In addition, these last two positions, or ways of knowing, were of particular interest as we investigated their relations to willingness to argue.

Separate knowing and connected knowing entail social interaction in the process of comprehending and evaluating an assertion. Connected knowers put greater emphasis on empathy. They walk in another person's shoes or attempt to understand an assertion from someone else's perspective first. After this empathic perusal, these individuals then accept, reject, or modify the particular assertion. By contrast, separate knowers put greater emphasis on doubt. They play the devil's advocate by first questioning and challenging assertions. After this questioning perusal, these individuals accept, reject, or modify the assertions. Clinchy (2002) clarified these two ways of knowing with the following description: Separate and connected knowers exhibit objectivity but differently and separate knowers believe in separating the knower from the known to avoid "contamination" (p. 75). To avoid bias, they adopt procedures such as double blinding in conducting experiments and blind grading in assessing students' work. Connected knowers also attempt to suspend their own beliefs but, instead of adopting a neutral perspective, they adopt the perspective of the other. To them, objectivity is, for example, "When you're trying to help a friend decide whether to get an abortion, you have to forget what you think about abortion and see it from her point of view, given her assumptions"

(Clinchy, p. 75). Convinced that the knower and the known are inextricably related, connected knowers use the self to help them connect with the other.

Researchers who have examined the relation between ways of knowing and learning have provided three consistent results. First, ways of knowing are linked to approaches to game playing and learning. Connected knowers would play games more as cooperative rather than competitive partners (Galotti, Drebus, & Reimer, 2001). Men with a propensity for connected knowing would describe their approach to learning as emphasizing feeling and being open to others' points of views (Knight, Elfenbein, & Martin, 1997). Separate knowers are more likely to evaluate others when they work with partners (Galotti et al., 2001). Scores on connected knowing and separate knowing are independent of nonverbal intelligence tests, text recollection (Galotti et al., 1999), formal reasoning tests (Knight et al., 1997), and learning novel tasks in game situations (Galotti et al., 2001).

Second, researchers have theorized that both ways of knowing (i.e., connected, separate) support higher order thinking in that the most sophisticated learners are capable of using both ways of knowing (Clinchy, 2002; Galotti et al., 1999). The critical metacognitive component for these adaptive thinkers is knowing when to use which way of knowing or blending the ways of knowing. According to recent evidence, both ways of knowing are linked to higher levels of academic performance (Schommer-Aikins & Easter, 2006). Path analyses revealed that both separate knowing and connected knowing are directly linked to beliefs about speed of learning; that is, high scores on either way of knowing predicted belief in gradual learning. Subsequently, gradual learning had a direct effect on reading comprehension and classroom performance among college students. This evidence suggests that either way of knowing can achieve the same academic goal.

Third, although ways of knowing are gender related, such issues are complex and not yet fully understood. Women have a stronger propensity for connected knowing, whereas men have a stronger propensity for separate knowing (Clinchy, 2002). However, this finding should not be taken to the extreme. For example, Gallotti et al. (1999) reported that the two ways of knowing are gender related but not gender specific. Although men tend to have stronger beliefs in separate knowing and women tend to have stronger beliefs in connected knowing, both men and women are capable of believing in both ways of knowing. Ryan and David (2003) demonstrated this by assessing students' ways of knowing after engaging them in one of three conditions. Participants in the in-group condition were asked to list five groups of students that they belong to and then list what they have in common with these groups. Participants in the out-group condition were asked to list five groups that they did not belong to and then list things that differentiated themselves from these groups. Participants in the gender condition were asked to list gender differences that they would like to study and then list things that may cause gender differences. Ryan and David's results indicated that men and women would have higher scores for connected knowing (compared with scores for separate knowing)

when they are thinking about groups of people who are similar to themselves. Also, their results indicated that men and women would have higher scores for separate knowing when they are thinking about groups dissimilar to themselves. By contrast, when they are thinking about gender differences, women would have higher scores for connected knowing and men would have higher scores for separate knowing. This context-dependent finding indicates that gender differences should not be assumed.

The present research highlights the idea that these ways of knowing differ in how knowledge is socially constructed; that is, learning involves making sense of the world through experiences and interactions with others. It is likely that people's sense of the world would conflict with that of others. These social conflicts appear relevant to willingness to argue. We hypothesized that the more individuals believe in separate knowing, the more likely they would be willing to argue. Furthermore, the word *argument* would be interpreted to be a positive form of communication with an enjoyable give-and-take of ideas as opposed to a verbal form of aggression or personal attack.

Whether belief in connected knowing would necessarily lead to reticence for arguing is less clear. Researchers have suggested that connected knowing and separate knowing are not opposites. For example, Knight, Elfenbein, and Messina (1995) found that the correlation between separate knowing and connected knowing was close to zero. Although connected knowing correlated positively with perspective taking and empathy, separate knowing did not correlate negatively with these two variables. Knight et al. concluded that these two dimensions were orthogonal.

In summary, evidence has suggested that separate knowing may play an important role in willingness to argue. Separate knowers expect objectivity; they require others to make their case, and they serve as devil's advocates (Clinchy, 2002). It seems that these characteristics encourage argumentation and that separate knowers would define the word *argument* as a positive form of communication. Because connected knowing is not a direct opposite of separate knowing (Knight et al., 1995), it is less clear whether connected knowing is related to willingness to argue. However, because some individuals can endorse both ways of knowing, it is possible that people with a strong propensity toward separate knowing would be willing to argue regardless of whether they had a strong propensity toward connected knowing.

After controlling for demographic variables, we examined the relation between ways of knowing and willingness to argue. The primary hypothesis that we tested was that the more that students ascribe to separate knowing, the more likely they would be willing to argue. For completeness, we tested the less tenable hypothesis that the more that students believed in connected knowing, the less likely that they would be willing to argue. Also, we tested two other hypotheses: (a) Students with high scores in both connected knowing and separate knowing may be more willing to argue and (b) students with high scores

in both connected knowing and separate knowing may be more likely to define the word *argument* as a constructive form of communication.

Method

Participants

Participants were 408 students from two U.S. universities, one in the Midwest and the other on the West Coast. We solicited students from the academic fields of business, education, and liberal arts. They were offered extra credit to participate in the study. Gender distribution was fairly even with 43.4% (n = 177) men and 56.6% (n = 231) women. Their average age was 31.95 years (SD = 10.07 years). The majority of participants reported that they were European Americans (n = 275). Of the remaining participants, 42 reported Asian American, 21 reported African American, 15 reported Hispanic, 5 reported Native American, and 50 reported other. Because we allowed students to write in their ethnicity, the category of other varied widely and including the following: Indian (n = 8), Persian (n = 6), Filipino (n = 6), mixed (n = 4), Afghanistani (n = 2), Japanese American (n = 2), Turkish (n = 1), Palestinian (n = 1), Israeli (n = 1), Vietnamese (n = 1), Bosnian (n = 1), and Korean (n = 1). Also, 16 participants did not report their ethnicity. Of students, 62% had earned a bachelor's degree. In addition, 167 students were enrolled in business communication or business education undergraduate classes. The remaining students were enrolled in education or communication graduate-level classes. All participants completed an informed consent form.

Materials

Ways of knowing. We measured ways of knowing using the 20-item Attitude Toward Thinking and Learning (ATTLS) instrument (Gallotti et al., 1999), which generates two scores: one for separate knowing (10 items) and one for connected knowing (10 items). Using a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), students responded to items such as "I try to think with people instead of against them" and "I like playing the devil's advocate." Interitem correlations ranged from .77 for separate knowing to .83 for connected knowing. (See Galotti et al. for details of psychometric properties and instrument development.)

Willingness to argue. We measured students' willingness to argue using the Argumentativeness Scale (Infante & Rancer, 1982, 1996). This 20-item instrument generates two scores: avoid argument and approach argument. Using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), students responded to items such as "I consider an argument an exciting intellectual

challenge" and "I get an unpleasant feeling when I realize I am about to get into an argument." Interitem reliabilities ranged from .86 to .91 (for details of psychometric properties and instrument development, see Infante & Rancer, 1982).

Defining the word argument. To better understand what participants were thinking when they encountered the word *argument,* we asked them the following open-ended prompts: "When you hear the word *argument* without any particular context in mind, what does the word mean to you?" and "Please define the word *argument.* Then provide an example of what you mean by your definition of *argument*." After the participants wrote their spontaneous responses to the word *argument*, we then asked them, "How would you define a *good argument*?" We assumed students' spontaneous definition of the word *argument* reflected their default interpretation of the word. That is, we assumed that unless encouraged by the academic environment to think positively about the word *argument* when asked to debate or argue in the classroom, they would automatically use their spontaneous definition of argument.

Procedure

We prepared booklets that included the Argumentativeness Scale, ATTLS, demographic information, and open-ended questions on what the word *argument* meant to the participants. Three booklets were created, each varying the survey order. We arranged Booklet 1 in the following order: demographics, open-ended questions, ATTLS, and Argumentativeness Scale. We arranged Booklet 2 in the following order: Argumentativeness Scale, ATTLS, demographics, and open-ended questions. We arranged Booklet 3 in the following order: ATTLS, Argumentativeness Scale, demographics, and open-ended questions. This counterbalancing helped avoid an order effect. The booklets were nearly evenly distributed (Booklet 1 = 121; Booklet 2 = 138; Booklet 3 = 148). Subsequent analyses indicated that there was not an order effect on willingness to argue. We shared the premise, "We want to know what students really think to teach future teachers what students have on their mind." We included cooperation items throughout the survey (e.g., "Write 1 & 5 for this item") to detect any students who were completing the materials carelessly.

Results

Scores for Willingness to Argue and Ways of Knowing

We calculated scores for willingness to argue using Infante and Rancer's (1996) specification. When interest is in argumentativeness in general, Infante and Rancer recommended reverse scoring the avoidance items and summing all items to develop a willingness to argue score. Hence, the higher scores indicate a greater willingness to argue. In the present study, Cronbach's alphas (inter-item reliabilities) for components of the willingness to argue score were .86

for approach argument and .87 for avoid argument. The zero-order correlation between approach argument and avoid argument was –.62. Interitem reliability for the overall willingness to argue scores used in these analyses was strong (M = 61.81, SD = 11.94, Cronbach's α = .91)

Scores for the connected knowing (M = 51.51, SD = 8.66) and separate knowing (M = 43.23, SD = 8.68) were calculated with Galotti et al.'s (1999) specifications, which involved summing items for each respective way of knowing. In the present study, the interitem reliability for these measures was .76 for separate knowing and .82 for connected knowing. Table 1 shows the zero-order correlations among all variables. Data in Table 1 indicate that separate knowers—and to a lesser degree, connected knowers and students from the West Coast of the United States—were more willing to argue. The one significant negative correlation with willingness to argue indicates that younger students were more willing to argue.

Predicting Willingness to Argue

To test the hypothesis that ways of knowing predict willingness to argue, we conducted a regression after converting scores for willingness to argue and ways of knowing to z scores. We entered two blocks of variables in a predetermined order. To control for demographic variables known to predict willingness to argue, the first block of variables to enter the equation included the demographic variables of age, gender, year in school, and geographical region (Midwest vs. West Coast). The second block of variables to enter the equation included scores for connected knowing and separate knowing. The only variables that were significant at the .05 level in each block tested were allowed to enter the equation.

Three demographic variables and one way of knowing predicted the variable willingness to argue. West Coast students, men, and younger students were more likely to argue. In addition, the more students believed in separate knowing, the more likely they were to argue. A total of 26% of the variance was accounted for; separate knowing accounted for 18% of that variance. Table 2 shows a summary of this regression analysis.

TABLE 1. Zero-Order Correlations Among Key Variables in the Regression

Variable	1	2	3	4
1. Willingness to argue	—			
2. Connected knowing	.16	—		
3. Separate knowing	.48	–.29	—	
4. Age	–.16	–.02	.06	—

Note. Correlations of .10 or greater are significant at the .05 level.

To test the hypothesis that students endorsing both ways of knowing may be more likely to argue, compared with other students, we conducted a two-way analysis of covariance (ANCOVA). To ensure strong beliefs, we first identified students who scored in the top third or bottom third in each way of knowing. Thus, the independent variables were separate knowing (high vs. low) and connected knowing (high vs. low). Demographic variables served as covariates and willingness to argue served as the dependent variable. There was a significant main effect for separate knowing, $F(1, 194) = 39.49$, $p < .001$, $M\ SE = 0.88$, $\eta^2 = .17$. There was a significant interaction effect, $F(1, 194) = 4.06$, $p < .05$, $M\ SE = 0.88$, $\eta^2 = .02$. Follow-up post hoc Tukey tests indicated that the students with high scores in both connected knowing and separate knowing were more willing to argue, compared with students with low scores for both ways of knowing or students with a high score for connected knowing and a low score for separate knowing. Table 3 shows descriptive statistics from this analysis.

Defining Argument *With Open-Ended Responses*

We gathered qualitative data to help us understand what participants meant when they had extreme scores for either approaching or avoiding arguments. We wanted to know their interpretations of the word *argument*. This qualitative data was an alternative measure of willingness to argue that could either confirm or deny the previous set of findings. We selected 20 participants with the highest approach scores and another 20 students with the lowest approach scores, all of whom had written a response to the following prompt: "When you hear the word *argument* without any particular context in mind, what does the word mean? Please define it. Then provide an example of what you mean by your definition of argument." We conducted the same selection process with the 20 highest avoid scores and 20 lowest avoid scores. We selected a total of 62 participants because 28 students had both a high avoid score and low approach score and vice versa.

After selecting the 62 participants, we then examined the written protocols looking for patterns without knowledge of the participants' score on willingness to argue. We searched for evidence of two connotative patterns regarding

TABLE 2. Summary of Regression for Variables Predicting Willingness to Argue

Predictor	*b*	β	ΔR^2	ΔF	*p*
Region	.46	.21	.04	17.18	.001
Gender	–.38	–.18	.03	13.98	.001
Age	–.01	–.12	.01	5.97	.015
Separate knowing	.44	–.44	.18	97.25	.001

TABLE 3. Willingness to Argue Scores Depending on Students' Ways of Knowing

Category	Raw *z*	*SD*	Adj. *z*
High separate			
High connected[a]	.51	1.06	.49
Low connected	.62	0.76	.57
Low separate			
High connected	–.30	0.96	–.15
Low connected	–.65	0.96	–.65

[a]Significantly different ($p < .05$) than the low-separate, low-connected and low-separate, high-connected groups.

argument: as verbal aggression and constructive form of communication. The operational definition of *verbal aggression* was the presence of one or more words such as *anger*, *confrontation*, *fight*, *heated disagreement*, or *negative connotation.* The operational definition of *constructive communication* was the absence of these negative emotional terms and the inclusion of words such as *exchange of ideas*, *defense of opinion*, or *discussion*. The following are verbatim examples of protocols suggesting that the word *argument* elicits verbal aggression: (a) "disagreeing about a subject, probably heated"; (b) "anger between two or more people over differing opinions"; (c) "fights, high blood pressure, tension, anger"; (d) "negative conflict"; (e) "I think of verbally fighting. It is a very strong word."

The following are verbatim examples of protocols that suggest the word *argument* elicits a constructive form of communication: (a) "a position on an issue or question"; (b) "exchange of ideas"; (c) "debates, two or more sides being presented"; (d) "I define *argument* as a 'lively discussion'"; (e) "defending a particular point of view."

The first author and a student assistant rated the protocols independently. There was 94% agreement. Differences were resolved with discussion. After classifying written responses as either verbal aggression or constructive communication, we examined the relation between argument definition (verbal aggression vs. constructive communication) and willingness to argue by conducting an ANCOVA. Demographic variables of gender, age, and geographical region served as covariates. Argument definition served as the independent variable, and willingness to argue served as the dependent variable. Argument definition was significant, $F(1, 44) = 50.37$, $p < .001$, $M\ SE = 1.32$, $\eta^2 = .53$. Gender was also significant, $F(1, 44) = 11.53$, $p < .001$, $M\ SE = 1.32$, $\eta^2 = .21$. Students who described argument as a constructive form of communication had higher willingness to argue scores (raw $M = 1.37$, $SD = 1.32$, adj. $M = 1.39$) than did students who described argument as verbal aggression (raw $M = –0.99$, $SD = 1.35$, adj. $M = –1.00$).

In the sampling of protocols that we analyzed for a spontaneous definition of the word *argument*, the definitions were consistent. Students steadfastly provided either a negative or positive connotation. However, when provided with a follow-up prompt to "define a good argument," all except 3 students generated a positive definition of argument.

Our final question was "Do students' interpretations of the word *argument* relate to their ways of knowing?" We conducted a one-way multivariate ANCOVA with demographic variables as covariates, argument definition as the independent variable, and ways of knowing scores as the dependent variables. The multivariate statistic was significant for argument definition: Wilks's λ, $F(2, 42) = 16.01$, $p < .001$, $\eta^2 = .43$, and for gender, $F(2, 42) = 4.41$, $p < .05$, $\eta^2 = .17$. Follow-up univariate analyses indicated a significant effect for both separate knowing, $F(1, 43) = 32.22$, $p < .001$, $M\ SE = 1.02$, $\eta^2 = .43$; and connected knowing, $F(1, 43) = 6.48$, $p < .05$, $M\ SE = 1.33$, $\eta^2 = .13$. Students who interpreted the word *argument* as constructive communication had higher scores for separate knowing (raw $M = 0.93$, $SD = 0.94$, adj. $M = 0.94$) and connected knowing (raw $M = 0.38$, $SD = 1.10$, adj. $M = 0.40$) compared with students who interpreted the word *argument* as verbal aggression (separate knowing: raw $M = –0.75$, $SD = 1.12$, adj. $M = –0.76$; connected knowing: raw $M = –0.46$ $SD = 1.16$, adj. $M = –0.48$).

Covariate analysis allowed us to remove differences because of the covariates: in this case, demographic variables. The remaining independent variables were then tested. The raw and adjusted means are the means before and after the covariates have been entered into the analysis, respectively. As previously indicated, there was little difference in the raw and adjusted means. This suggests that the influence of the demographic variables on the dependent variables did not subsume the influence of the independent variables on dependent variables.

Discussion

The main finding of our study reveals that separate knowing predicts willingness to argue. The more that students agreed with separate knowing, the more willing they were to argue. We found this after controlling for demographic variables known to be linked to willingness to argue. Apparently, believing one should initially doubt and question information also encourages one to willingly engage in discussion that requires justifying one's own thinking to others.

Although the focus of the present study was on ways of knowing, the links between demographic variables and willingness to argue were consistent with past literature. Consistent with Nicotera and Rancer's (1994) findings of gender differences, male students were more willing to argue than were female students. Consistent with Infante and Rancer's (1996) report of regional differences, students from the West Coast were more willing to argue than were students from the Midwest. Consistent with Schullery and Schullery's (2003) findings of

age differences, younger students were more willing to argue than were older students. The finding that connected knowing did not predict less willingness to argue is noteworthy. In these analyses, this is the first indication that separate knowing and connected knowing are not direct opposites. Another indication of this orthogonality is the weak negative correlation between separate knowing and connected knowing, shown in Table 1. This correlation suggests that these ways of knowing reflect unique aspects of communication and learning. Hence, the notion that separate knowing and connected knowing are not direct opposites remains tenable (Ryan & David, 2003).

The next question to consider is whether having high scores in separate knowing and connected knowing would relate to a greater likelihood of willingness to argue. Results indicated that when students had high scores in connected knowing and separate knowing, they had significantly higher scores in willingness to argue. These results are consistent with other researchers' assertions that people can endorse both forms of knowing (Nussbaum, 2005; Sanders et al., 1994). More is revealed from the qualitative analysis.

We asked students to define the word *argument* with the first definition that came to mind. Simply, what was their default definition of the word *argument*? Students who defined the word as a constructive form of communication were more willing to argue compared with students who defined *argument* as verbal aggression. This finding suggests at least one reason that students do not wish to argue is because they view it as an emotional confrontation with the goal to cause psychological harm. Furthermore, these students were likely to have high scores in both separate knowing and connected knowing. Again, the analysis suggests that both forms of knowing support higher order thinking. In essence, connected knowing does not necessarily deter a person from arguing.

We did not address the relation between ways of knowing and the skill to argue. This association is an important issue for future research. Endorsing both ways of knowing may be helpful in the skill of argument. Separate knowing encourages one to distance oneself from what is being studied and to look for weakness in others' claims. By contrast, if one is trying to refute someone else's argument and persuade him or her of something else, it seems important to understand the other person's argument and perspective (connected knowing) to develop a convincing justification in response.

Those people who do not endorse separate knowing may be unwilling to argue because they see argument as a destructive form of communication. It is possible that previous experiences in the classroom or at home may also instill this negative interpretation of argument. For example, researchers have linked ways of knowing to parenting styles (Knight et al., 2000). A mother's authoritative parenting style was positively associated with connected knowing. A father's authoritarian parenting style was negatively associated with separate knowing, among men only. Among women only, a father's permissive parenting style was positively associated with separate knowing. Although the explanation for these relations is

not well established, Knight et al. speculated that sons and daughters may learn from an authoritative mother to be open-minded and empathic. Daughters whose fathers are less controlling (permissive) may be more likely to challenge and doubt others. Further research is needed to determine how familial relationships relate to ways of knowing and argument. Relationships with siblings and elders may be involved in students' ways of knowing and argumentativeness in adulthood. In the future, researchers may wish to conduct interviews with students who have a strong negative interpretation of argument to glean past experiences that contribute to this view.

This work has important educational implications. Because argument is associated with higher level thinking (Kuhn, 1992), encouraging students to debate and justify their reasoning is appropriate. Teaching and engaging in classroom activities that support separate knowing may encourage a willingness to argue, because critical thinking would be understood to be an appropriate way to understand and seek credibility of knowledge. Encouraging classroom engagement in separate knowing and connected knowing may help students perceive argument as a constructive form of communication.

AUTHOR NOTES

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REFERENCES

Bayer, C. L., & Cegala, D. J. (1992). Trait verbal aggressiveness and argumentativeness: Relations with parenting style. *Western Journal of Communication, 56,* 301–310.

Belenky, M. F., Clinchy, B. M., Goldberger, N. R., & Tarule, J. M. (1986). *Women's ways of knowing.* New York: Basic Books.

Bendixen, L. D. (2002). A process model of epistemic change. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 191–208). Mahwah, NJ: Erlbaum.

Clinchy, B. (2002). Revisiting Women's ways of knowing. In B. K. Hofer & P. R. Pintrich (Ed.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 63–87). Mahwah, NJ: Erlbaum.

Galotti, K. M., Clinchy, M. B., Ainsworth, K. H., Lavin, B., & Mansfield, A. F. (1999). A new way of assessing ways of knowing: The attitudes toward thinking and learning survey (ATTLS). *Sex Roles, 40,* 745–766.

Galotti, K. M., Drebus, D. W., & Reimer, R. L. (2001). Ways of knowing and learning styles: Learning MAGIC with a partner. *Sex Roles, 44,* 419–436.

Gorden, W. I. (1988). Range of employee voice. *Employee Responsibilities and Rights Journal, 1,* 283–299.

Infante, D. A., & Rancer, A. S. (1982). A conceptualization and measure of argumentativeness. *Journal of Personality Assessment, 46,* 72–80.

Infante, D. A., & Rancer, A. S. (1996). Argumentativeness and verbal aggressiveness: A review of recent theory and research. In B. R. Burleson (Ed.), *Communication yearbook* (Vol. 19, pp. 319–351). Thousand Oaks, CA: Sage.

Infante, D. A., & Wigley, C. J. (1986). Verbal aggressiveness: An interpersonal model and measure. *Communication Monographs, 53,* 61–69.

Kardash, C. M., & Scholes, R. J. (1996). Effects of preexisting beliefs, epistemological beliefs, and need for cognition on interpretation of controversial issues. *Journal of Educational Psychology, 88,* 260–271.

Kitchener, K. S., & King, P. M. (1989). The reflective judgement model: Ten years of research. In M. L. Commons, C. Armon, L. Kohlberg, F. A. Richards, T. A. Grotzer, & J. D. Sinnot (Eds.), *Adult development 2: Models and methods in the study of adolescent and adult thought* (pp. 63–78). New York: Praeger.

Knight, K. H., Elfenbein, Capozzi, L., Eason, H. A., Bernardo, M. F., & Ferus, K. S. (2000). Relationship of connected and separate knowing to parental style and birth order. *Sex Roles, 43,* 229–240.

Knight, K. H., Elfenbein, M. H., & Martin, M. B. (1997). Relationship of connected and separate knowing to the Learning Styles of Kolb, formal reasoning, and intelligence. *Sex Roles, 37,* 401–414.

Knight, K. H., Elfenbein, M. H., & Messina, J. A. (1995). A preliminary scale to measure connected and separate knowing: The Knowing Styles Inventory. *Sex Roles, 33,* 499–513.

Kuhn, D. (1992). Thinking as argument. *Harvard Educational Review, 62,* 155–178.

Miller, F. E., & Rogers, L. E. (1987). Relational dimensions of interpersonal dynamics. In M. E. Roloff & G. R. Miller (Eds.), *Interpersonal processes: New directions in communication research* (pp. 117–139). Newbury Park, CA: Sage.

Mongeau, P. A. (1989). Individual differences as moderators of persuasive message processing and attitude–behavior relations. *Communication Research Reports, 6,* 1–6.

Nicotera, A. M., & Rancer, A. S. (1994). The influence of sex on self-perceptions and social stereotyping of aggressive communication predispositions. *Western Journal of Communication, 58,* 283–307.

Nussbaum, E. M. (2005). The effect of goal instructions and need for cognition on interactive argument. *Contemporary Educational Psychology, 30,* 286–313.

Nussbaum, E. M., & Bendixen, L. D. (2003). Approaching and avoiding arguments: The role of epistemological beliefs, need for cognition, and extraverted personality traits. *Contemporary Educational Psychology, 28,* 573–595.

Perry, W. (1968). *Forms of ethical and intellectual development in the college years.* New York: Holt, Rinehart, & Winston.

Ryan, M. K., & David, B. (2003). Gender differences in ways of knowing: The context dependence of the Attitudes Toward Thinking and Learning Survey. *Sex Roles, 49,* 693–699.

Sabourin, T. C., Infante, D. A., & Rudd, J. E. (1993). Verbal aggression in marriages: A comparison of violent, distressed but nonviolent, and nondistressed couples. *Human Communication Research, 20,* 245–267.

Sanders, J. A., Wiseman, R. L., & Gass, R. H. (1994). Does teaching argumentation facilitate critical thinking? *Communcation Reports, 7,* 27–35.

Schommer-Aikins, M. (2004). Explaining the epistemological belief system: Introducing the embedded systemic model and coordinated research approach. *Educational Psychologist, 39,* 19–29.

Schommer-Aikins, M., & Easter, M. (2006). Ways of knowing and epistemological beliefs combined effect on academic performance. *Educational Psychologist, 26,* 411–423.

Schommer, M. (1990). The effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology, 82,* 498–504.
Schommer, M., Crouse, A., & Rhodes, N. (1992). Epistemological beliefs and mathematical text comprehension: Believing it is simple does not make it so. *Journal of Educational Psychology, 84,* 435–443.
Schullery, N. M., & Schullery, S. E. (2003). Relationship of argumentativeness to age and higher education. *Western Journal of Communication, 67,* 207–223.

Original manuscript received July 23, 2007
Final version accepted March 5, 2008