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Development and Validation of an Explicit Aggressive Beliefs and Attitudes Scale

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This work outlines the development and validation of a new self-report measure that assesses explicit aggressive beliefs and attitudes within the normal adult population (using 7 samples, total $N = 3{,}533$). These explicit aggressive beliefs and attitudes are expected to reflect aggressive biases including hostile attribution, potency, retribution, victimization by powerful others, derogation of target, and social discounting. The resulting scale is reliable with a hierarchical 6-factor structure, and displays convergent and discriminant validity. Criterion-related validity studies indicate incremental effects over socially desirable response bias, related implicit and explicit aggression measures, and is predictive of self-reported and other-reported aggression-related behaviors.

Social-cognitive theory revolves around how people think and interpret their social world, and has become a dominant theoretical perspective for understanding how personality and individual differences are related to coherent patterns of human behavior (Dweck & Leggett, 1988; Fazio, Jackson, Dunton, & Williams, 1995; Greenwald & Banaji, 1995; Mischel & Shoda, 1995). The social-cognitive framework and related research has shown that both implicit social cognitions and explicit social cognitions are important for understanding how personality affects behavior (Bing, LeBreton, Davison, Migetz, & James, 2007; Frost, Ko, & James, 2007; Gawronski & Bodenhausen, 2006). Implicit and explicit social cognitions are theoretically, operationally, and empirically distinct, and serve as meaningful yet separate components of rudimentary personality structure: where implicit social cognitions refer to the effortless and automatic (i.e., unconscious) thoughts pertaining to an individual's beliefs, attitudes, and behaviors; and explicit social cognitions refer to corresponding introspective and controlled (i.e., conscious) thoughts pertaining to an individual's beliefs, attitudes, and behaviors (Greenwald & Banaji, 1995). Recent research has shown each to have unique and often interactive explanatory power through various mechanisms in a variety of basic and applied research settings (e.g., mediation, moderation, independent and additive coaction; see Bing, LeBreton, et al., 2007; Frost et al., 2007; Gawronski & Bodenhausen, 2006).

Because implicit social cognitions occur outside conscious awareness, scholars generally agree that this component of personality must be assessed through indirect methods (Fazio & Olson, 2003; Greenwald & Banaji, 1995; Karpinski & Hilton, 2001; Nosek, Greenwald, & Banaji, 2005). Traditionally, researchers and practitioners have assessed various implicit social cognitions via projective techniques such as the Thematic Apperception Test (Lilienfeld, Wood, & Garb, 2000) or Implicit Association Tests (Greenwald, McGhee, & Schwartz, 1998). More recently, James and colleagues (e.g., James, 1998; James & LeBreton, 2012; James & McIntyre, 2000; James et al., 2005) have developed a framework for the measurement of motive-based biases in reasoning and inference founded on conditional reasoning methods (the Conditional Reasoning Test [CRT]) and underlying cognitive biases; CRTs have been developed for the constructs of achievement motivation (CRT–AM) and aggression (CRT–A). The basic premise for conditional reasoning is that aggressive people, for example, often think of their actions as reasonable, whereas nonaggressive people do not see the same rationale (Baron & Richardson, 1994; Baumeister, Smart, & Boden, 1996). Therefore aggressive people will rely on implicit cognitive biases, which James and colleagues refer to as justification mechanisms, to rationalize or justify their behavior (i.e., because people are motivated to believe their actions are reasonable); thus reflecting the personality and underlying implicit social cognitions of the individual. The biases associated with aggression as summarized by James and colleagues (James, 1998; James & Mazerolle, 2002; James et al., 2005) are:

1. *Hostile attribution:* Tendency to see harmful intent in the actions of others (E. Anderson, 1994; Crick & Dodge, 1994; Tedeschi & Nesler, 1993; Toch, 1993).
2. *Potency:* Tendency to frame and reason using the contrast of strength versus weakness (E. Anderson, 1994; Gay, 1993; Millon, 1990).
3. *Retribution:* Tendency to confer logical priority to retaliation over reconciliation (Bradbury & Fincham, 1990; Dodge, 1986; Laursen & Collins, 1994).
4. *Victimization by powerful others:* Tendency to frame oneself as a victim and as being exploited by the powerful (Averill, 1993; Finnegan, 1997; Toch, 1993).

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5. *Derogation of target:* An attempt to make the target more deserving of aggression (James & Mazerolle, 2002; Wright & Mischel, 1987).
6. *Social discounting:* Tendency to call on socially unorthodox and antisocial beliefs to interpret and analyze social events and relationships (Finnegan, 1997; Millon, 1990).

Unlike implicit social cognitions, explicit social cognitions occur within conscious awareness and are easily accessed through introspection and direct methods (Greenwald & Banaji, 1995; McClelland, Koestner, & Weinberger, 1989), resulting in the near ubiquitous use of self-report questionnaires. Research has shown both implicit and explicit social cognitions are important for understanding how personality affects behavior and have unique and often interactive predictive power (e.g., Bing, LeBreton, et al., 2007, Bornstein, 2002; Winter, John, Stewart, Klohnen, & Duncan, 1998). Within the personality assessment for aggression literature, Frost et al. (2007) tested and found support for an integrative model (i.e., channeling hypothesis) of aggression using the CRT–A and the Angry Hostility Scale from the NEO Personality Inventory (Costa & McCrae, 1992). Similarly, Bing, Stewart, et al. (2007) provided and tested an integrative typology and found meaningful interactive effects between the CRT–A and several explicit aggressiveness measures (Angry Hostility scale from the NEO Personality Inventory, Form A of the Personality Research Form [PRF]; Jackson, 1968) in the prediction of multiple criteria including dishonesty, traffic violations, and organizational deviance.

Despite these significant theoretical advances and promising empirical findings, there is no existing measure of the explicit social cognitions associated with the six aggressive biases outlined by James and colleagues (James, 1998; James & Mazerolle, 2002; James et al., 2005). This is an important gap in the literature as researchers and practitioners must use existing personality questionnaires, such as the Angry Hostility scale from the NEO Personality Inventory or Form A of the PRF, as proxy measures for the explicit social cognitions associated with these six biases. Therefore the goal of this research is to develop and validate a multifactor self-report measure that can be used independently (for explicit assessment only) or in conjunction with the CRT–A (for joint implicit and explicit assessment) to more fully assess the aggressive biases of hostile attribution, potency, retribution, victimization by powerful others, derogation of target, and social discounting. Literature suggests that these aggressive biases are associated with corresponding and easily assessable explicit social cognitions through beliefs and attitudes expressed freely by aggressive people (Fazio et al., 1995; Gawronski & Bodenhausen, 2006; Greenwald & Banaji, 1995; Karpinski & Hilton, 2001), for which there are no existing self-report measures beyond that of hostility bias (cf. C. A. Anderson, Deuser, & DeNeve, 1995; Buss & Perry, 1992; Costa & McCrae, 1992). We believe such a measure will help reveal incremental explicit aggressive beliefs and attitudes (i.e., explicit social cognitions) that influence individual patterns of appraisals, attributions, and behavior across situations.

Scale Development and Validation

In generating and validating this scale, we followed procedures outlined in the scale development literature (e.g., Hinkin, 1998) commonly used in the psychological literature (e.g., Ferris, Brown, Berry, & Lian, 2008). We present the findings of this scale development in four phases: Phase 1 explains the item generation, item reduction, and scale development procedures; Phase 2 details the psychometric properties of the resultant scale; Phase 3 details convergent and discriminant validity; and Phase 4 details criterion-related validity evidence.

Phase 1: Item Generation and Reduction

Item Generation

Members of the scale development group, consisting of the two faculty and three doctoral student authors, independently and deductively developed items for the six aggressiveness factors outlined by James (1998; James, McIntyre, Glisson, Bowler, & Mitchell, 2004). Items were carefully crafted following guidelines for item generation that incorporated easy reading level, short direct statements, avoidance of words and phrases with multiple connotations, and minimal overlap across factors. The group then reviewed all generated items with a goal of retaining 15 items per factor for initial testing (see Hinkin, 1998). This goal was chosen because we aimed to develop a final scale of 30 items (five items for each of the six factors) that provides proper psychometric properties and relatively broad construct assessment, yet is short enough to use in basic and applied research settings. This process resulted in 97 items (15–17 items per factor).

Item Reduction: Item-Sort Task

To examine the substantive validity of the developed items we employed an item-sort task, as these procedures are recommended in the early stages of scale development to determine which items best capture the construct of interest (J. C. Anderson & Gerbing, 1991; Hinkin, 1998). Specifically, we calculated the proportion of substantive agreement (PSA) for each item. The PSA is calculated by n_c/N, where n_c represents the number of participants who assigned an item to its posited construct and N is the total number of participants.

Ten independent graduate students were recruited to participate in the item-sorting task, which is considered an appropriate sample size for this initial item reduction (J. C. Anderson & Gerbing, 1991; Ferris et al., 2008). We chose to utilize a graduate student sample given the complexity of the construct definitions. Each participant was given definitions of the aggressiveness factors and trained in the use of a rating form to sort the initial item pool into relevant categories. Based on the aggregate of the independent item-sort task, the majority of items achieved perfect PSA (1.00). However, given the preliminary nature of the item-sort task, and to ensure an adequate number of items were retained within each factor for further analysis, we utilized a PSA cutoff of .80. This is consistent with previous research (e.g., Ferris et al., 2008) as PSA coefficients are used in a comparative manner to retain a subset of items with the largest values (J. C. Anderson & Gerbing, 1991), and retaining items with PSA of .80 or greater helped balance substantive validity and scale economy in this particular situation. Items that did not meet this cutoff were eliminated from the item pool. This process resulted in a reduced set of 77 items (10–15 items per factor).

Item Reduction: Exploratory Factor Analysis

To further reduce the item pool and develop a parsimonious yet multidimensional measure we conducted exploratory factor analysis (EFA; see Hinkin, 1998). We conducted EFA on two data sets: The first data set contained participant responses to

the previously reduced 77 items; the second data set contained responses from an independent group of participants to 52 items, including the best functioning items from the first EFA as well as several newly written or revised items.

Participants and procedure. Undergraduate students from a large university in the southeastern United States participated in the scale development study in exchange for course extra credit. We collected useful data from 473 undergraduate students for initial scale development. An independent sample of 348 participants from the same university contributed to a second data set that was used for scale refinement. Demographic information indicated that participants were diverse (approximately 71% Hispanic, 11% White, 8% African American, and 3% Asian/Pacific Islander, 7% "other"), the majority were female (72%), and participants ranged in age from 16 to 54 ($M = 21.56$, $SD = 4.51$). These samples are appropriate for EFA given that individual differences are generally considered universal and have been shown to be largely stable during and after college (McCrae & Costa, 1997; Roberts & DelVecchio, 2000).

The initial item pool of 77 aggression items and standard demographic items was administered in an online format to the first group of participants. The second sample of participants was administered the best functioning items from the initial item pool as well as additional items that were newly generated or revised. The response scale for all aggression items followed a Likert-style format from 1 (*strongly disagree*) to 7 (*strongly agree*). Responses were carefully screened to eliminate those with obvious random response patterns and large amounts of missing data.

Analytic strategy and results. With the first data set we conducted exploratory principal axis factoring with oblique rotation and Kaiser normalization to determine if the six intended factors were represented in the item pool and, if so, which items were the best indicators of each. Initial eigenvalues indicated one primary component with many smaller components exceeding the 1.0 Kaiser criterion. However, because our aim was to develop a multidimensional scale of explicit aggressive beliefs and attitudes that would be made up of six theorized factors, we examined a rotated six-factor solution and possible reduced factor solutions (five, four, etc.) to aid in our selection of items. The six-factor solution was made up of four components easily interpretable as retribution, victimization, hostile attribution, and social discounting, plus one that consisted primarily of potency items, and one that was less interpretable; the five-factor solution showed the same four interpretable components and one consisting of primarily potency items; and with fewer factors each component become less interpretable. Thus, given the goals of the study, we chose the six-factor solution for item reduction.

Based on the .32 factor loading cutoff criteria recommendation of Tabachnick and Fidell (2001), we retained items that displayed high loadings on the intended factor with low cross-loadings. To further reduce items, we examined item characteristics including item distributions, interitem correlations, item redundancy, and coefficient alpha for each factor if items were deleted. This process resulted in the retaining of the best five retribution items, five victimization items, five hostile attribution items, and five social discounting items from the interpretable factors. These items yielded factor loadings on the intended factor of .45 or higher with relatively low cross-loadings (below .25). Additionally, we retained five potency items and two derogation of target items for revision. Following the item writing procedures outline earlier, we wrote 10 additional items for potency, 9 additional items for derogation of target, 4 additional items for social discounting, and 2 additional items for retribution, resulting in a total of 52 items for additional item reduction.

With the second data set the dimensionality of the 52 items was analyzed using principal axis factoring with oblique rotation and Kaiser normalization. Results suggested the presence of six factors that were easily interpretable as the proposed factors. To reduce these items into the desired multidimensional measure we selected the five best items per factor using the techniques already described. Thus the pool of 52 items was reduced to 30 items with five representing each of the six aggression factors. To ensure the stability of the factor structure and item loadings prior to confirmatory techniques, we followed the recommendation of Worthington and Whittaker (2006) and reexamined the reduced 30 items within the same data set. The six factors that formed the final scale accounted for 42.5% of the item variance. These factors, in order of variance accounted for in the items, were victimization by powerful others, derogation of target, retribution, hostile attribution, potency, and social discounting. Each item exhibited a loading of .40 or greater on its expected factor with cross-loadings of .20 or below. The resultant six-factor scale and loadings are presented in Table 1.

Phase 2: Psychometric Properties

The psychometric properties of the newly developed explicit aggressive beliefs and attitudes scale were examined in regard to factor structure and coefficient alpha reliability. Given the theoretical foundation and empirical development of the explicit aggressive beliefs and attitudes scale, we proposed and tested a hierarchical model in which a superordinate aggressive beliefs and attitudes construct affects the six factor-level constructs of hostile attribution, potency, retribution, victimization by powerful others, derogation of target, and social discounting.

Participants and Procedure

A third independent sample of undergraduate students from a large university in the southeastern United States participated in the study for extra credit. Participants took the survey online, which consisted of the 30-item explicit aggressive beliefs and attitudes scale developed in Phase 1 (see Table 1). We collected useful data on 930 participants. Demographic information indicated that the sample was diverse (approximately 65% Hispanic, 13% White, 8% African American, and 3% Asian/Pacific Islander, 12% "other") and ranged in age from 18 to 56 ($M = 21.02$, $SD = 3.96$). This sample is appropriate for confirmatory factor analysis (CFA) given that individual differences are generally considered universal and have been shown to be largely stable during and after college (McCrae & Costa, 1997; Roberts & DelVecchio, 2000).

Analytic Strategy and Results

CFA was performed to compare the fit of our hypothesized measurement model to several alternative plausible models to provide strong discriminant validity evidence among the six factors within the explicit aggressive beliefs and attitudes scale (Lance & Vandenberg, 2002). Specifically, we tested three models: a single-factor model in which all items loaded on a common latent construct; a six-factor model in which the six latent

TABLE 1.—Final scale items and principal axis factoring loadings.

Final Scale Item	Factor Loadings					
	1	2	3	4	5	6
Victimization by powerful other bias items						
1. The wealthy capitalize on those who are less fortunate.	.90					
2. The rich get richer by taking advantage of the poor.	.72					
3. I believe that large corporations exploit their employees.	.53					
4. Big companies intentionally rip off customers.	.47					
5. Those in power stay in power by keeping others down.	.45					
Derogation of target bias items						
6. Some people are simply horrible human beings.		.82				
7. Some people are just bad people.		.50				
8. Some people are completely immoral.		.49				
9. There is not good in everyone.		.45				
10. In general, people are either good or evil.		.40				
Retribution bias items						
11. Getting back at others makes me feel better.			.76			
12. If someone disrespects me, I feel the need to get even.			.75			
13. People have the right to get revenge.			.75			
14. Revenge is sweet.			.74			
15. If I am betrayed then I have the right to retaliate.			.68			
Hostile attribution bias items						
16. People gain others' trust to betray them.				.72		
17. Friendliness is often a disguise for hostile intentions.				.60		
18. People are motivated by a desire to harm others.				.48		
19. People make friends in order to use them to get ahead in life.				.42		
20. People give bad advice for personal gain.				.41		
Potency bias items						
21. History is made through triumphs of the strong over the weak.					.61	
22. Life presents challenges that separate the weak from the strong.					.57	
23. I want to be stronger than others.					.57	
24. Only the strong survive.					.48	
25. It's important to establish who's boss.					.40	
Social discounting bias items						
26. Common sense overrides the need for rules.						.54
27. I only follow rules that I find important.						.54
28. People follow too many unnecessary rules.						.49
29. Laws are meant to be broken.						.47
30. Any social rule that gets in the way of personal expression is a bad rule.						.43

Note. Items were assed in a random order across all samples, but are presented here based on factor loadings. Factor loadings above .30 are presented. Recommended scale is a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

constructs were allowed to covary freely; and a hypothesized hierarchical model in which the superordinate aggressive beliefs and attitudes construct affects the six factor-level constructs. Following the recommendations of Hu and Bentler (1999), we used the maximum-likelihood-based standardized root mean squared residual (SRMR) and supplemented it with the root mean square error of approximation (RMSEA). We chose the

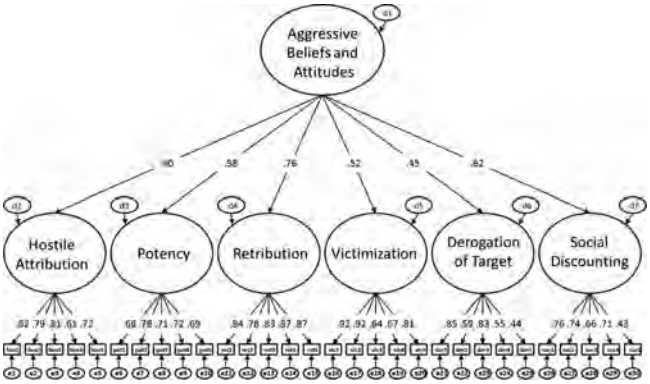

FIGURE 1.—Hypothesized hierarchical model and associated standardized regression weights.

supplemental RMSEA as it accounts for parsimony, as well as the ability for a confidence interval to be calculated around its value. The Hu and Bentler two-index presentation strategy states that an RMSEA of .06 or lower and an SRMR of .09 or lower suggests good model fit. Because models that differ in regard to the number of latent factors are not necessarily nested, we utilized the Akaike Information Criterion (AIC) index versus a χ^2 difference test to compare our CFA models.

Results of the CFAs indicated that the single-factor model in which all items loaded on a common latent construct did not fit the data well, $\chi^2(405, N = 930) = 8393.78$, $p < .001$, SRMR = .124, RMSEA = .146 (90% CI of RMSEA = [.143, .148]). We then tested the six-factor model in which the six latent constructs were allowed to covary freely. This model fit the data very well, $\chi^2(390, N = 930) = 1381.74$, $p < .001$, SRMR = .052, RMSEA = .052 (90% CI of RMSEA = [.049, .055]). Finally, we tested the hypothesized hierarchical model in which the superordinate aggressive beliefs and attitudes construct affects the six factor-level constructs. As expected, this model also fit the data very well, $\chi^2(399, N = 930) = 1399.14$, $p < .001$, SRMR = .050, RMSEA = .052 (90% CI of RMSEA = [.049, .055]). We then examined the AIC across the models tested, as well as a baseline independence model. The AIC displayed the following results: independence model = 14,926.46; one-factor model = 8,573.78; six-factor model = 1,591.74; hierarchical model = 1,591.14. Collectively these results suggest both the six-factor and hierarchical models fit the data well. However, considering that the hierarchical model possesses the strongest theoretical rationale and is more parsimonious with greater degrees of freedom, we found these results supportive of the a priori hierarchical model. Standardized regression weights for this model are presented in Figure 1. (Note: Factor-level item order follows the EFA loading order from Table 1.)

Coefficient alpha reliabilities were also examined at the factor and scale level. Reliabilities were moderately high at both the factor (hostility attribution = .86, potency = .84, retribution = .92, victimization = .90, derogation of target = .79, and social discounting = .79) and scale ($\alpha = .91$) levels.

PHASE 3: CONVERGENT AND DISCRIMINANT VALIDITY

To develop the nomological network around the newly developed explicit aggressive beliefs and attitudes scale, we examined convergent and discriminant validity with existing implicit and

explicit measures. Convergent validity represents the extent to which a scale is related to other measures of the same or similar constructs, whereas discriminant validity represents the extent to which a scale exhibits low or nonsignificant relationships with measures of dissimilar constructs (Campbell & Fiske, 1959; Hinkin, 1998). We propose that the explicit aggressive beliefs and attitudes scale will display convergent and discriminant validity with other measures of implicit and explicit aggression and the Five-factor model of personality (FFM; cf. Barlett & Anderson, 2012).

Although the theoretical overlap between existing explicit aggression measures and the explicit aggressive beliefs and attitudes scale is minimal, they should nonetheless tap into an overarching global "explicit aggression" construct. Accordingly, the explicit aggressive beliefs and attitudes scale should display medium to large positive relationships with other self-report explicit measures of aggression, such as the Aggression Questionnaire (Buss & Perry, 1992). Further, factor-level relationships should also display similar levels of convergence. As the Buss and Perry Aggression Questionnaire assesses more affective, hostile, and reactive forms of aggression (anger, hostility, and physical and verbal aggression), more reactive forms of explicit aggressive beliefs and attitudes, such as retribution, should display strong positive relationships with the Aggression Questionnaire. Similarly, hostile attribution should display a strong positive relationship with Buss and Perry's hostility factor. Meanwhile, the explicit aggressive beliefs and attitudes scale should display small positive relationships with implicit measures of aggression, such as the CRT–A (James & McIntyre, 2000). It is expected that this relationship will be positive, as both measures assess an individual's predisposition and readiness to aggress. However, this relationship is expected to be small in magnitude as they capture different aspects of personality, where the self-report measure assesses explicit social cognitions via beliefs and attitudes revolving around aggression, and the conditional reasoning test assesses implicit social cognitions via motive-based reasoning underlying aggression (Bing, LeBreton, et al., 2007; James & LeBreton, 2012). Indeed, it is generally well accepted that the implicit and explicit components of personality are often uncorrelated or low in magnitude (McClelland, 1985; McClelland et al., 1989).

In regard to the FFM, research has shown that trait aggression is related to but not redundant with the FFM, generally finding that agreeableness is most related to instrumental goal-oriented aggression, whereas emotional stability is most related to affective, hostile, and reactive aggression (Sharpe & Desai, 2001; Tremblay & Ewart, 2005). Accordingly, it is expected that the explicit aggressive beliefs and attitudes scale will be negatively related to agreeableness and emotional stability. However, we believe that the explicit aggressive beliefs and attitudes scale will display a smaller relationship with emotional stability than other self-report measures, such as Buss and Perry's (1992) Aggression Questionnaire, as the aggressive biases in which the explicit aggressive beliefs and attitudes scale was developed are less affectively driven. In addition, given the negative relationship between anger and conscientiousness, and hostility and conscientiousness (Ang et al., 2004; Gallo & Smith, 1998), it is expected that aggression and conscientiousness will display a small negative relationship. Finally, given the lack of theoretical justification and empirical evidence for relationships between aggression and extraversion or openness, it would be expected that these overall relationships will be null or near null (Ang et al., 2004).

Method

Participants and procedure. A fourth independent sample of undergraduate students from a large university in the southeastern United States participated in the study for extra credit. As the CRT–A must be administered in person, all surveys were administered in pencil-and-paper format. Each participant received a packet consisting of the surveys beginning with the CRT–A. The rationale for this order was to ensure that the CRT–A was first and participants were not primed by the items of the self-report aggression measures. On completion, responses were carefully screened to eliminate those with obvious random response patterns, large amounts of missing data, and numerous illogical responses to the conditional reasoning items, resulting in a usable sample of 406.The average participant was approximately 21 years old (ranging from 18–54 years of age), female (approximately 69%), and Hispanic (approximately 71% Hispanic, 15% White, 8% African American, 4% Asian/Pacific Islander, 2% "other"). This sample is appropriate to determine the nomological network around the newly developed aggressive beliefs and attitudes scale, in relation to other individual difference measures, as individual differences are generally considered universal and have been shown to be largely stable during and after college (McCrae & Costa, 1997; Roberts & DelVecchio, 2000).

Measures.

Explicit Aggressive Beliefs and Attitudes: We used the 30-item explicit aggressive beliefs and attitudes scale developed in Phase 1 (see Table 1). The coefficient alpha reliability for the overall scale was .89.

Aggression Questionnaire: We used Buss and Perry's (1992) 29-item Aggression Questionnaire as a comparison scale of self-reported explicit trait aggression. This measure consists of four factors: anger, hostility, physical aggression, and verbal aggression. Each item was scored on a Likert-style scale ranging from 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*). Sample items from this measure include "I have trouble controlling my temper" (anger), "I wonder why sometimes I feel so bitter about things" (hostility), "Given enough provocation, I may hit another person" (physical aggression), and "I often find myself disagreeing with people" (verbal aggression). The coefficient alpha reliability for the overall scale was .89.

Conditional Reasoning Test–Aggression: The CRT–A (James & McIntyre, 2000) measures implicit aggression and is made up of 22 conditional reasoning problems, as well as three nonconditional reasoning problems to improve face validity. Each of the conditional reasoning items is based on one or more of the following six aggressive biases: hostile attribution, potency, retribution, victimization by powerful others, derogation of target, and social discounting.

Five-factor model: The FFM was assessed with the public domain International Personality Item Pool developed by Goldberg (2000). Each personality factor consisted of 10 items with a 5-point scale ranging from 1 (*very inaccurate*) to 5 (*very*

TABLE 2.—Descriptive statistics, correlations, and reliabilities for convergent and discriminant validity study.

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Five-factor model																				
1. Extraversion	3.37	.80	*.89*																	
2. Agreeableness	4.01	.55	.25***	*.77*																
3. Conscientiousness	3.59	.59	.07	.15**	*.76*															
4. Emotional Stability	3.24	.76	.13**	.07	.18***	*.86*														
5. Openness	3.84	.53	.21***	.18***	.21***	.14**	*.78*													
Existing aggression measures																				
6. Aggression Questionnaire	2.53	.64	.06	−.32***	−.19***	−.48***	−.03	*.89*												
7. Anger	2.31	.81	.05	−.23***	−.18***	−.58***	−.09	.81***	*.77*											
8. Hostility	2.62	.79	−.16**	−.24***	−.18***	−.49***	−.17**	.74***	.49***	*.77*										
9. Physical	2.32	.83	.12*	−.30***	−.14**	−.16**	.08	.80***	.52***	.36***	*.82*									
10. Verbal	3.06	.88	.20***	−.19***	−.06	−.27***	.10*	.73***	.53***	.40***	.47***	*.56*								
11. CRT	4.60[a]	2.22	.02	−.12*	−.01	−.02	−.03	.14***	.14***	.10*	.09	.09	—							
New aggressiveness measure																				
12. ABA	3.82	.79	.04	−.32***	−.16**	−.16**	−.02	.55***	.40***	.45***	.48***	.35***	.18***	*.89*						
13. Hostile attribution	2.89	1.06	−.04	−.28***	−.10	−.12*	−.06	.38***	.28***	.42***	.25***	.22***	.19***	.66***	*.73*					
14. Potency	4.59	1.11	.22***	−.13**	−.00	−.06	.04	.38***	.27***	.28***	.34***	.27***	.14**	.69***	.38***	*.73*				
15. Retribution	3.35	1.31	.04	−.35***	−.14**	−.18***	−.03	.53***	.39***	.39***	.51***	.30***	.06	.74***	.37***	.44***	*.86*			
16. Victimization	4.22	1.20	−.14**	−.18***	−.13**	−.10*	.01	.36***	.25***	.32***	.29***	.24***	.18**	.69***	.39***	.32***	.39***	*.81*		
17. Derogation of target	4.21	1.30	.04	−.19***	.01	−.10*	−.08	.28***	.22***	.24***	.24***	.14**	.12*	.67***	.33***	.38***	.39***	.32***	*.75*	
18. Social discounting	3.68	1.08	.04	−.14**	−.28***	−.05	.03	.30***	.22***	.19***	.27***	.25***	.06	.59***	.27***	.31***	.32***	.36***	.20***	*.66*

Note. $N = 406 – 404$. Cronbach's alpha coefficients are in shown italics and appear on the diagonal. CRT = Conditional Reasoning Test; ABA = Aggressive beliefs and attitudes. [a]Scores ranged from 0–12, where 0–2 represent low aggression, 3–7 represent moderate aggression, and 8 or more represent high aggression. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

accurate). Sample items are "I am the life of the party" (extraversion), "I feel others' emotions" (agreeableness), "I am always prepared" (conscientiousness), "I am relaxed most of the time" (emotional stability), and "I spend time reflecting on things" (openness). The coefficient alpha reliabilities ranged from .76 to .89.

Results

To examine convergent and discriminant validities of the newly developed explicit aggressive beliefs and attitudes measure, as compared to other implicit and explicit measures of aggression and the FFM, we calculated bivariate correlations (see Table 2). We examined each variable at the overall scale level, as well as the factor level, for the explicit aggressive beliefs and attitudes scale and the Aggression Questionnaire. In general, we base our discussion of results on Cohen's (1988) classification of correlation magnitudes (i.e., $\geq .50$ = large, $\geq .30$ = moderate, and $\geq .10$ = small).

As expected, the explicit aggressive beliefs and attitudes scale displayed strong convergent validity with the Aggression Questionnaire ($r = .55$, $p < .001$). Although this relationship was large in magnitude, it clearly does not indicate problematic scale redundancy with only 30% shared variance. Across the Aggression Questionnaire factors of anger, hostility, physical aggression, and verbal aggression, the explicit aggressive beliefs and attitudes scale displayed consistent positive relationships of moderate magnitude (ranging from $r = .35–.48$, $p < .001$). However, there was greater variability across the factors of the aggressive beliefs and attitudes scale (i.e., factors related to the Aggression Questionnaire differently). As expected, the more reactive retribution factor possessed the highest convergent validity with the overall Aggression Questionnaire scale ($r = .53$, $p < .001$), and across all factors of the Aggression Questionnaire except for hostility (ranging from $r = .30–.51$, $p < .001$), which converged more strongly with the hostility factor of the explicit aggressive beliefs and attitudes scale ($r = .42$, $p < .001$). Meanwhile, as expected, the explicit aggressive beliefs and attitudes scale displayed a small positive relationship with the CRT–A ($r = .18$, $p < .001$). At the factor level, hostile attribution ($r = .19$, $p < .001$) and victimization ($r = .18$, $p < .01$) possessed the strongest relationships with the CRT–A, whereas retribution and social discounting displayed nonsignificant relationships.

In regard to the FFM, and as expected, the explicit aggressive beliefs and attitudes scale displayed significant relationships with agreeableness ($r = –.32$, $p < .001$), emotional stability ($r = –.16$, $p < .01$), and conscientiousness ($r = –.16$, $p < .01$), and nonsignificant relationships with extraversion ($r = .04$, $p > .05$) and openness ($r = –.02$, $p > .05$) at the overall scale level. Additionally, these results mimic the overall results between the Buss and Perry (1992) Aggression Questionnaire and the FFM, with the exception of emotional stability. This is particularly interesting, as emotional stability is most related to affective, hostile, and reactive aggression (Sharpe & Desai, 2001; Tremblay & Ewart, 2005). Because the Aggression Questionnaire captures angry affect and hostility, as well as reactive physical and verbal aggression, it therefore shows significant overlap with emotional stability at both the overall scale ($r = –.48$, $p < .001$) and factor (e.g., $r = –.58$, $p < .001$ for anger) levels. However, it appears that the aggressive biases on which the explicit aggressive beliefs and attitudes scale is based are indeed

more cognitively than affectively driven and therefore the explicit aggressive beliefs and attitudes measure displays much smaller relationships with emotional stability.

At the factor level the explicit aggressive beliefs and attitudes scale and the FFM displayed some interesting relationships. First, retribution displayed the strongest relationships with agreeableness ($r = –.35$, $p < .001$) and emotional stability ($r = –.18$, $p < .001$). Given previous research linking agreeableness and emotional stability with aggression, and our findings between retribution and the Aggression Questionnaire, this convergent evidence seems appropriate. Second, we expected a small negative relationship between conscientiousness and the explicit aggressive beliefs and attitudes scale, which was supported. However, factor-level analyses indicate that this relationship is much stronger for social discounting ($r = –.28$, $p < .001$). Considering that conscientiousness could be conceptualized as socially constructed in that individuals who are conscientious display greater self-discipline, control, and impulse regulation, it seems appropriate that social discounting (e.g., dismissing social norms of the roles) displayed the strongest negative relationship. Third, although the relationship between the overall explicit aggressive beliefs and attitudes scale and extraversion was nonsignificant, the potency ($r = .22$, $p < .001$) and victimization ($r = –.14$, $p < .01$) factors displayed small significant relationships. Post-hoc, these relationships make sense. For example, individuals high in potency frame and reason through a prism of strength versus weakness. Thus they see the world and people (themselves and others) as being strong, assertive, and powerful or submissive, timid, and weak. In a quasi-parallel fashion, extroverts are known to be socially active and talkative, and they tend to assert themselves, whereas introverts tend to withdraw from social exchanges and spend time alone. Accordingly, it makes sense that there would be a positive relationship between potency and extraversion. Further, this relationship is similar to that of extraversion and the Aggression Questionnaire verbal factor ($r = .20$, $p < .001$), although potency from the explicit aggressive beliefs and attitudes scale and the verbal factor from the Aggression Questionnaire do not display unusually strong convergence ($r = .27$, $p < .001$). Finally, openness displayed nonsignificant relationships with every factor of the explicit aggressive beliefs and attitudes scale as expected.

PHASE 4: CRITERION-RELATED VALIDITY

Criterion-related validity is an important aspect of construct validity (Hinkin, 1998), and refers to the extent to which a measure is related to theoretically derived outcomes. Accordingly, this section provides a sequence of studies that examines the criterion-related validity of the newly developed measure. Considering the newly developed measure should tap into the explicit aggressive biases previously reviewed, it should predict aggression-related behaviors both independently and in conjunction with existing explicit measures that do not capture these explicit aggressive biases, as well as implicit motive-based measures that do. Thus this section examines (a) the positive incremental effects of the explicit aggressive beliefs and attitudes scale above and beyond several existing implicit and explicit measures of aggression and social desirability in relation to aggressive driving behavior, and (b) the positive relationships between the explicit aggressive beliefs and attitudes scale and interpersonal and organizational deviance.

Method

Participants and procedure.

Study 1: Participants from the convergent and discriminant validity study ($N = 406$) were invited to complete a follow-up survey online approximately 1 week after their initial participation. Additional data were collected on socially desirable response bias and aggressive driving behaviors (as described later). We received usable surveys from 205 individuals for an approximate response rate of 50%. Each participant in the follow-up study received nominal extra credit for an undergraduate psychology course. The subsample did not differ significantly from the full sample on the explicit aggressive beliefs and attitudes scale.

Study 2: Participants were recruited through Study Response, an online service that connects researchers to individuals willing to complete research surveys (cf. Judge, Ilies, & Scott, 2006; Piccolo & Colquitt, 2006). A link to an online survey was e-mailed to 550 employed individuals in the Study Response database. Data were collected on demographics, explicit aggressive beliefs and attitudes, and workplace deviance (as described later). We received 392 usable surveys for an overall response rate of 71%.The average participant was approximately 36 years of age and worked on average 41 hr per week. Approximately 54% of participants were female and 82% were White. Participants held job titles such as bartender, grocery clerk, librarian, nurse, office manager, paralegal, social worker, and teacher. Individuals received a $5 gift card to an online store for their participation.

Study 3: Participants were recruited using a peer-nomination web-based sampling methodology, similar to approaches used by Martins, Eddleston, and Veiga (2002) and Matthews, Kath, and Barnes-Farrell (2010). Information about the study was initially presented to students at a large southeastern U.S. university enrolled in advanced undergraduate psychology courses. Individuals were instructed to forward the study information to others who might qualify (an e-mail invitation was provided). To be eligible to participate, individuals were required to be 18 years of age or older, fluent in English, work at least 20 hr per week, and not identify themselves as a "college student." Participants meeting these requirements followed a hyperlink to an online survey. Data were collected on demographics, explicit aggressive beliefs and attitudes, and workplace deviance (as described later). Students received nominal course credit while the participants received no compensation. The final sample for the study consisted of 700 participants, with an average age of 29, and working an average of 36 hr per week. The sample was highly diverse, with 58% being female, and of the following ethnicities: 68% Hispanic, 17% White, 8% African American, 2% Asian/Pacific Islander, and 5% "other."

Study 4: Participants were recruited using a peer-nomination pencil-and-paper based sampling methodology, similar to that used in Matthews et al. (2010). Students enrolled in advanced undergraduate psychology courses at a large southeastern U.S. university assisted with the data collection process. Trained undergraduate student recruiters identified individuals they personally knew and invited them to participate. Participants were required to be 18 years of age or older, fluent

in English, work at least 20 hr per week, not identify themselves as a "college student," and be able to recruit a close personal friend or family member. Participants completed two surveys separated by approximately 3 weeks. During the second survey, participants were asked to provide a similar survey to a close personal friend or family member. Data were collected on demographics, explicit aggressive beliefs and attitudes, workplace deviance (self-report), and general interpersonal deviance (other report; as described later). All surveys were returned to the researchers in signed and sealed envelopes with participant contact information for follow-up data collection confirmation. Participants received no compensation. The final sample for the study consisted of 284 dyads, with the target participant (i.e., self-reported explicit aggressive beliefs and attitudes) having an average age of 35 and working full-time. The sample was highly diverse, with 57% being female, and including the following ethnicities: 74% Hispanic, 15% White, 6% African American, 1% Asian/Pacific Islander, and 4% "other."

Measures.

Explicit Aggressive Beliefs and Attitudes Scale: We used the 30-item explicit aggressive beliefs and attitudes scale developed in Phase 1 (see Table 1) in Studies 2, 3, and 4 (Time 1). The response scale for the aggression items followed a Likert-style format ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Coefficient alpha reliabilities for Studies 2, 3, and 4 (Time 1) were .95, .95, and .92.

Socially Desirable Response Bias: The Balanced Inventory of Desirable Responding (Paulhus, 1984, 1991) was used to detect socially desirable response bias in Study 1. This measure consists of 40 items that assess self-deception and impression management. Sample items include "I don't always know the reasons why I do the things I do" (self-deception) and "I don't gossip about other people's business" (impression management). Respondents were asked to rate their level of agreement on a 7-point scale ranging from 1 (*not true*) to 7 (*very true*). The coefficient alpha reliability for the overall scale in Study 1 was .86.

Aggressive Driving Behaviors: The Aggressive Driving Behavior Scale (Houston, Harris, & Norman, 2003) was used in Study 1. This measure consists of 11 items tapping into conflict and speeding behaviors such as horn honking, rude gestures, accelerating to prevent passing, and tailgating. A sample item is "Honk when another driver does something inappropriate." Participants rate the frequency with which they have engaged in behaviors over the past 6 months using a 6-point response scale ranging from 1 (*never*) to 6 (*always*). The coefficient alpha reliability in Study 1 was .84.

Interpersonal Deviance: Self-reported interpersonal deviance at work was assessed with seven items from Bennett and Robinson (2000). Other-reported interpersonal deviance was assessed by adapting these items to be more general by removing the concluding statement "at work" from each item. All items were assessed on a 5-point frequency scale from 1 (*never*) to 5 (*daily*). A sample self-report item is "Said something hurtful to someone at work," and a sample other-report item is "Said something hurtful to someone." Coefficient alpha reliabilities for the self-report scale in Studies 2, 3, and 4 (Time 2) were .97, .83, and .84, whereas the coefficient alpha reliability for the other-report scale in Study 4 (Time 2) was .84.

Organizational Deviance: Organizational deviance was assessed with 12 items from Bennett and Robinson (2000). All items were assessed on a 5-point frequency scale from 1 (*never*) to 5 (*daily*). A sample self-report item is "Intentionally worked slower than you could have worked." Coefficient alpha reliabilities in Studies 2, 3, and 4 (Time 2) were .96, .86, and .85.

Results

In Study 1 we examined the incremental effects of the explicit aggressive beliefs and attitudes scale. As this was our initial step in displaying criterion-related validity, we chose aggressive driving behaviors because (a) the majority of the participants from that study were likely to commute to campus daily, and (b) the metropolitan area in which they live is known for its high rate of aggressive driving. Accordingly, driving behaviors should provide an aggression-related criterion likely to have a desirable base rate and distribution of occurrences. Further, this is particularly relevant for most U.S. adults as transportation incidents make up approximately 41% of all fatal occupation injuries (U.S. Department of Labor, 2012).

Multiple regression analysis examined the incremental effect of the explicit aggressive beliefs and attitudes scale on aggressive driving behaviors (see Table 3). The explicit aggressive beliefs and attitudes scale displayed significant incremental effects on the criterion ($\beta = .19$, $p < .05$). This relationship is above and beyond demographic characteristics of age and gender, the social desirable response biases of self-deception and

TABLE 3.—Multiple regression analysis examining incremental effects on aggressive driving behavior in criterion-related validity Study 1.

Ordered Predictors	Step 1	Step 2	Step 3	ΔR^2	Ordered Predictors	Step 1	Step 2	Step 3	ΔR^2
1. Age	−.10	−.10	−.08	.10***	1. Age	−.10	−.08	−.08	.10***
Gender	−.02	−.02	.02		Gender	−.02	.01	.02	
Self-deception	.05	.05	.06		Self-deception	.05	.06	.06	
Impression management	−.34***	−.28**	−.26**		Impression management	−.34***	−.25**	−.26**	
2. Aggression Questionnaire		.23**	.14	.04**	2. Aggression Questionnaire		.14	.14	.06***
Conditional Reasoning Test		.04	.03		Aggressive beliefs and attitudes		.19*	.19*	
3. Aggressive beliefs and attitudes			.19*	.02*	3. Conditional Reasoning Test			.03	.00

Note. $N = 205$.
* $p < .05$. ** $p < .01$. *** $p < .001$.

impression management, and existing implicit (CRT–A) and explicit measures (Aggression Questionnaire) of aggression. It might be important to note that impression management was also significantly related to the criterion ($\beta = -.26$, $p < .01$); however, the explicit aggressive beliefs and attitudes scale was incrementally predictive above social desirability bias. Also of interest is that the explicit aggressive beliefs and attitudes measure at Step 3 made the previously significant beta for the explicit Aggression Questionnaire nonsignificant, suggesting the explicit aggressive beliefs and attitudes scale is the better predictor with this particular criterion. For comparison, we also examined the incremental effect of the corresponding implicit CRT–A above and beyond demographic characteristics of age and gender, the social desirable response biases of self-deception and impression management, the explicit Aggression Questionnaire, and our new explicit measure of aggressiveness. The CRT–A did not display significant incremental effects on the criterion ($\beta = .03$, $p > .05$). Further, with all seven variables in the regression equation, only impression management and the explicit aggressive beliefs and attitudes scale were significant predictors.

Next we examined relationships between the explicit aggressive beliefs and attitudes scale and workplace deviance in two independent working samples (see Table 4). The aggressive beliefs and attitudes scale was significantly related to interpersonal deviance (Study 2, $r = .50$, $p < .001$; Study 3, $r = .39$, $p < .001$) and organizational deviance (Study 2, $r = .48$, $p < .001$; Study 3, $r = .41$, $p < .001$) in both samples. Additionally, all factors were significantly related to workplace deviance in the expected direction, with correlations ranging from $r = .21$ to .55 ($p < .001$) for interpersonal deviance and $r = .20$ to .53 ($p < .001$) for organizational deviance.

In a final step to provide criterion-related validity evidence, we examined the explicit aggressive beliefs and attitudes scale in relation to self-reported and other-reported deviance with the predictor and criterion separated by approximately 3 weeks (see Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). As reported in Table 5, the explicit aggressive beliefs and attitudes scale from Time 1 was significantly related to self-reported workplace interpersonal deviance ($r = .23$, $p < .001$) and organizational deviance ($r = .26$, $p < .001$) at Time 2. All factors displayed significant relationships except for hostile attribution with interpersonal deviance and derogation of target with organizational deviance. Similarly, the explicit aggressive beliefs and attitudes scale from Time 1 was significantly related to other-reported general interpersonal deviance ($r = .23$, $p < .001$) at Time 2. All facets displayed significant relationships except for hostile attribution, which is similar to the self-report relationships. Additionally, it is important to note that the relationships between the explicit aggressive beliefs and attitudes scale from Time 1 and self-reported and other-reported interpersonal deviance at Time 2 were similar in magnitude at both the overall scale and factor levels, although self-reported and other-reported interpersonal deviance at Time 2 were only moderately related ($r = .40$, $p < .001$).

General Discussion

The purpose of this study was to create a reliable and valid multifactor self-report measure that taps into the explicit social cognitions and biases expressed freely by aggressive people (Fazio et al., 1995; Gawronski & Bodenhausen, 2006; Greenwald & Banaji, 1995; Karpinski & Hilton, 2001). These aggressive biases, which are associated with easily assessable explicit aggressive beliefs and attitudes, include hostile attribution, potency, retribution, victimization by powerful others, derogation of target, and social discounting. Through the use of seven samples (total $N = 3{,}533$) we deductively developed and validated the first self-report measure to capture these explicit aggressive beliefs and attitudes, which can be used independently (for explicit assessment only) or in conjunction with the CRT–A (for joint implicit and explicit assessment) to more fully assess aggressiveness. A hierarchical six-factor structure was supported. Convergent and discriminant validity were provided showing expected relationships with the FFM of personality, the explicit Aggression Questionnaire, and the implicit CRT–A. In the four criterion-related validity studies we found incremental effects on aggressive behaviors above and beyond socially desirable response bias and related implicit and explicit aggression measures, and significant and meaningful relationships with workplace deviance. Additionally, we found predictive validity evidence for both self-reported and other-reported interpersonal deviance. Collectively, these results provide strong initial support for the newly developed explicit aggressive beliefs and attitudes scale.

TABLE 4.—Descriptive statistics, correlations, and reliabilities for criterion-related validity Studies 2 and 3.

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9
Workplace deviance											
1. Interpersonal deviance	1.48 (1.82)	.81 (.97)	*.97 (.83)*	.65***	.39***	.26***	.33***	.38***	.35***	.31***	.28***
2. Organizational deviance	1.57 (1.71)	.78 (.79)	.91***	*.96 (.86)*	.41***	.28***	.32***	.39***	.37***	.28***	.35***
New aggressiveness measure											
3. Aggressive beliefs and attitudes	3.82 (3.52)	1.06 (1.09)	.50***	.48***	*.95 (.95)*	.81***	.80***	.80***	.83***	.81***	.81***
4. Hostile attribution	3.28 (2.80)	1.42 (1.16)	.53***	.48***	.85***	*.90 (.82)*	.57***	.58***	.63***	.60***	.59***
5. Potency	4.43 (4.37)	1.09 (1.33)	.26***	.26***	.78***	.56***	*.78 (.80)*	.58***	.58***	.59***	.59***
6. Retribution	3.34 (2.95)	1.49 (1.40)	.50***	.50***	.85***	.69***	.59***	*.92 (.90)*	.55***	.55***	.59***
7. Victimization	4.07 (3.74)	1.39 (1.48)	.31***	.32***	.81***	.63***	.55***	.61***	*.90 (.88)*	.60***	.63***
8. Derogation of target	4.47 (4.01)	1.22 (1.40)	.21***	.20***	.67***	.43***	.59***	.46***	.47***	*.80 (.81)*	.56***
9. Social discounting	3.37 (3.27)	1.26 (1.30)	.55***	.53***	.83***	.76***	.55***	.70***	.60***	.37***	*.84 (.82)*

Note. Study 2 $N = 392$; Study 3 $N = 700$. Study 2 data are outside of the parentheses and below the diagonal; Study 3 data are inside of the parentheses and above the diagonal. Cronbach's alpha coefficients are shown in italics and appear on the diagonal.

***$p < .001$.

TABLE 5.—Descriptive statistics, correlations, and reliabilities for criterion-related validity Study 4.

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
Interpersonal deviance (O-R)												
1. Interpersonal deviance	2.16	1.11	*.84*									
Workplace deviance (S-R)												
2. Interpersonal deviance	1.90	1.05	.40***	*.84*								
3. Organizational deviance	1.71	.79	.32***	.51***	*.85*							
New aggressiveness measure												
4. Aggressive beliefs and attitudes	3.70	.97	.23***	.23***	.26***	*.92*						
5. Hostile attribution	2.88	1.12	.11	.12	.21***	.76***	*.75*					
6. Potency	4.56	1.26	.16**	.16**	.15*	.76***	.43***	*.77*				
7. Retribution	2.98	1.30	.18**	.14*	.24***	.77***	.53***	.51***	*.83*			
8. Victimization	4.00	1.41	.24***	.20**	.24***	.79***	.51***	.53***	.51***	*.83*		
9. Derogation of target	4.25	1.27	.13*	.15*	.06	.72***	.52***	.49***	.39***	.46***	*.73*	
10. Social discounting	3.51	1.26	.24***	.27***	.29***	.79***	.53***	.52***	.55***	.57***	.44***	*.76*

Note. $N = 284$–278. O-R = other report; S-R = self-report. Cronbach's alpha coefficients are shown in italics and appear on the diagonal.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Limitations

As with any study, there are a few limitations that should be acknowledged in this work. One potential limitation is that data were collected using a series of self-report questionnaires. However, our intention was to develop and validate a self-report measure of the explicit beliefs and attitudes held by aggressive people, thus we relied exclusively on self-report data for aggressiveness. It is important to note that relying on self-report data makes this study potentially vulnerable to the effects of common-method variance (CMV), such as the inflation of correlations and regression coefficients. In an effort to combat CMV, we showed incremental effects above and beyond socially desirable response bias in Study 1, collected predictor and criterion data in two separate waves in Study 1 and 4, and collected other-report criterion data in Study 4 (see Podsakoff et al., 2003). Further, potential inflation of relationships due to CMV might not have been a pervasive problem in the cross-sectional data as many of the nonproposed relationships exhibited nonsignificant correlations. For example, Study 1 contained several nonsignificant relationships between personality variables (e.g., agreeableness and emotional stability at Time 1). These results suggest that CMV did not necessarily inflate our observed correlations.

An additional limitation involves our testing of seemingly causal relationships though the use of correlational data. This means that the displayed relationships suggest plausible explanations for the observed patterns of covariance (James, Mulaik, & Brett, 1982), and the absence of a proper experimental design prevents us from testing true causal relationships. However, the purpose of this study was to develop a valid measure of explicit aggressive beliefs and attitudes. Accordingly, the lack of truly causal relationships is less of a concern as criterion-related validity is indicated through relationships with theoretically derived criteria. Accordingly, whether aggression is an antecedent, mediator, or consequence, criterion-related validity is established through patterns of covariance. Nonetheless, future research could seek to establish if the general structure implied in this work is consistent with a truly causal model by structuring studies and collecting data to satisfy the requisite conditions for causal inference (see James et al., 1982).

Practical Implications and Future Directions

The practical implications for self-report explicit aggressiveness measures, such as the one developed here, are vast. One example in the applied psychology field is the use and application of such measures within the workplace. As suggested in Bing, LeBreton, et al. (2007), the integrative use of implicit and explicit measures and subsequent application of knowledge about employee aggressiveness can be directed toward selection decisions, with additional uses in work team composition, team member training, and executive coaching. More comprehensive understanding of the implicit and explicit processes underlying aggressive behaviors could be especially useful for training design, particularly suggesting effective components and approaches to incorporate in team-building, conflict resolution, and coaching efforts. Another potential use of the identification of aggressive individuals is for the effective routing of aggression to beneficial purposes. Training personnel to better understand and comprehend aggressive behavior (self and others) could be particularly useful for service sectors (e.g., police officers). More generally, this positive approach might provide a good complement to the difficult-to-achieve deselection and retraining of individuals with inherent aggressive tendencies. The usefulness of aggression-relevant information in organizations will depend greatly on identifying the network of related constructs and outcomes as well as developing process-based interventions. To build such a knowledge base around aggression in the workplace, it will be necessary to identify effective procedures for measuring the subtleties of aggression.

As it was beyond the scope of this work, future research could more thoroughly clarify the theoretical and empirical relationships between aggressive predispositions (e.g., explicit beliefs and attitudes, implicit motive-based reasoning) and "aggressive" organizational behaviors (e.g., abusive supervision, workplace bullying, workplace incivility). Although recent research has made significant advancements in our understanding of aggressive workplace behaviors (e.g., Bowling & Beehr, 2006; Tepper, 2007), much more clarity is needed to fully understand the complexities of these constructs and measures (cf. Hershcovis, 2011). For example, future research could explore the process in which explicit aggressive beliefs and attitudes influence

organizational behaviors (cf. Frost et al., 2007). Similarly, the newly developed explicit aggressive beliefs and attitudes scale should not be seen as a replacement to existing measures of aggression, but as a complement to current measurement and theory (e.g., used in conjunction with the CRT–A; cf. Frost et al., 2007). Accordingly, future research should further clarify the integrative processes through which aggressiveness influences outcomes.

Conclusions

We believe our newly developed scale is a reliable and valid self-report measure that taps into the explicit social cognitions and biases expressed freely by aggressive people. Preliminary evidence indicates that conceptual and empirical redundancy with existing implicit and explicit measures is minimal. Criterion-related validity evidence suggests that the explicit aggressive beliefs and attitudes scale is incrementally and meaningfully predictive of a number of organizational and nonorganizational outcomes. These findings support the utility of the 30-item measure, as well as the individual five-item factor-level measures. We feel these measures can be used in conjunction with current and future measures to better explain complex deviant behaviors in a number of contexts.

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REFERENCES

Anderson, C. A., Deuser, W. E., & DeNeve, K. M. (1995). Hot temperatures, hostile affect, hostile cognition and arousal: Tests of a general model of affective aggression. *Personality and Social Psychology Bulletin, 21*, 434–448.

Anderson, E. (1994, May). The code of the streets. *The Atlantic Monthly*, 81–94.

Anderson, J. C., & Gerbing, D. W. (1991). Predicting the performance of measures in a confirmatory factor analysis with a pretest assessment of their substantive validities. *Journal of Applied Psychology, 76*, 732–740.

Ang, R. P., Ng, A. K., Wong, S. S., Lee, B. O., Oei, T. P., & Leng, V. (2004). Relationship between big five traits and aggression: A comparison between undergraduates from Australia and Singapore. *Journal of Psychology in Chinese Societies, 5*, 291–305.

Averill, J. R. (1993). Illusions of anger. In R. B. Felson & J. T. Tedeschi (Eds.), *Aggression and violence: Social interactionist perspectives* (pp. 171–192). Washington, DC: American Psychological Association.

Barlett, C. P., & Anderson, C. A. (2012). Direct and indirect relations between the Big 5 personality traits and aggressive and violent behavior. *Personality and Individual Differences, 52*, 870–875. doi: 10.1016/j.paid.2012.01.029

Baron, R. A., & Richardson, D. (1994). *Human aggression.* New York, NY: Plenum.

Baumeister, R., Smart, L., & Boden, J. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review, 103*, 5–33.

Bennett, R. J., & Robinson, S. L. (2000). Development of a measure of workplace deviance. *Journal of Applied Psychology, 85*, 349–360.

Bing, M. N., LeBreton, J. M., Davison, H. K., Migetz, D. Z., & James, L. R. (2007). Integrating implicit and explicit social cognitions for enhanced personality assessment: A general framework for choosing measurement and statistical methods. *Organizational Research Methods, 10*, 346–389.

Bing, M. N., Stewart, S. M., Davison, H. K., Green, P. D., McIntyre, M. D., & James, L. R. (2007). An integrative typology of personality assessment for aggression: Implications for predicting counterproductive workplace behavior. *Journal of Applied Psychology, 92*, 722–744.

Bornstein, R. F. (2002). A process dissociation approach to objective–projective test score interrelationships. *Journal of Personality Assessment, 78*, 47–68.

Bowling, N. A., & Beehr, T. A. (2006). Workplace harassment from the victim's perspective: A theoretical model and meta-analysis. *Journal of Applied Psychology, 91*, 998–1012.

Bradbury, T. N., & Fincham, F. D. (1990). Attributions in marriage: Review and critique. *Psychological Bulletin, 107*, 3–33.

Buss, A. H., & Perry, M. (1992). The Aggression Questionnaire. *Journal of Personality and Social Psychology, 63*, 452–459.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait–multimethod matrix. *Psychological Bulletin, 56*, 81–105.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Mahwah, NJ: Erlbaum.

Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory and NEO Five-Factor Inventory professional manual*. Odessa, FL: Psychological Assessment Resources.

Crick, N., & Dodge, K. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*, 74–101.

Dodge, K. A. (1986).A social information processing model of social competence in children. In M. Perlmutter (Ed.), *The Minnesota symposium on child psychology* (Vol. 18, pp. 77–125). Hillsdale, NJ: Erlbaum.

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*, 256–273.

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Attitudes and social cognition. *Journal of Personality and Social Psychology, 69*, 1013–1027.

Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology, 54*, 297–327.

Ferris, D. L., Brown, D. J., Berry, J. W., & Lian, H. (2008). The development and validation of the workplace ostracism scale. *Journal of Applied Psychology, 93*, 1348–1366.

Finnegan, W. (1997, December). The unwanted. *The New Yorker*, 61–78.

Frost, B. C., Ko, C. H. E., & James, L. R. (2007). Implicit and explicit personality: A test of a channeling hypothesis for aggressive behavior. *Journal of Applied Psychology, 92*, 1299–1319.

Gallo, L. C., & Smith, T. W. (1998). Construct validation of health-relevant personality traits: Interpersonal circumplex and five-factor model analyses of the Aggression Questionnaire. *International Journal of Behavioral Medicine, 5*, 129–147.

Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in evaluation: An integrative review of implicit and explicit attitude change. *Psychological Bulletin, 132*, 692–731.

Gay, P. (1993). *The cultivation of hatred.* New York, NY: Norton.

Goldberg, L. R. (2000). *International Personality Item Pool*. Retrieved from http://www.ipip.org

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102*, 4–27.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*, 1464–1480.

Hershcovis, M. S. (2011). Incivility, social undermining, bullying . . . oh my! A call to reconcile constructs within workplace aggression research. *Journal of Organizational Behavior, 32*, 499–519.

Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods, 1*, 104–121.

Houston, J. M., Harris, P. B., & Norman, M. (2003). The Aggressive Driving Behavior Scale: Developing a self-report measure of unsafe driving practices. *North American Journal of Psychology, 5*, 269–278.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structural analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.

Jackson, D. N. (1968). *Personality Research Form: Form A.* Port Huron, MI: Research Psychologists Press.

James, L. R. (1998). Measurement of personality via conditional reasoning. *Organizational Research Methods*, *1*, 131–163.

James, L. R., & LeBreton, J. M. (2012). *Assessing the implicit personality through conditional reasoning*. Washington, DC: American Psychological Association.

James, L. R., & Mazerolle, M. D. (2002). *Personality at work*. Thousand Oaks, CA: Sage.

James, L. R., & McIntyre, M. D. (2000). *Conditional reasoning test of aggression: Test manual*. Knoxville, TN: Innovative Assessment Technology.

James, L. R., McIntyre, M. D., Glisson, C. A., Bowler, J. L., & Mitchell, T. R. (2004). The conditional reasoning measurement system for aggression: An overview. *Human Performance*, *17*, 271–295.

James, L. R., McIntyre, M. D., Glisson, C. A., Green, P. D., Patton, T. W., LeBreton, J. M., . . . Williams, L. J. (2005). A conditional reasoning measure for aggression. *Organizational Research Methods*, *8*, 69–99.

James, L. R., Mulaik, S. S., & Brett, J. M. (1982). Mediators, moderators, and tests for mediation. *Journal of Applied Psychology*, *69*, 307–321.

Judge, T. A., Ilies, R., & Scott, B. A. (2006). Work–family conflict and emotions: Effects at work and at home. *Personnel Psychology*, *59*, 779–814.

Karpinski, A., & Hilton, J. L. (2001). Attitudes and implicit association test. *Journal of Personality and Social Psychology*, *81*, 774–788.

Lance, C. E., & Vandenberg, R. J. (2002). Confirmatory factor analysis. In F. Drasgow & N. Schmitt (Eds.), *Measuring and analyzing behavior in organizations: Advances in measurement and data analysis* (pp. 221–254). San Francisco, CA: Jossey-Bass.

Laursen, B., & Collins, W. A. (1994). Interpersonal conflict during adolescence. *Psychological Bulletin*, *115*, 197–209.

Lilienfeld, S. O., Wood, J. M., & Garb, H. N. (2000). The scientific status of projective techniques. *Psychological Science in the Public Interest*, *1*, 27–66.

Martins, L. L., Eddleston, K. A., &Veiga, J. F. (2002). Moderators of the relationship between work–family conflict and career satisfaction. *Academy of Management Journal*, *45*, 399–409.

Matthews, R. A., Kath, L. M., & Barnes-Farrell, J. L. (2010). Short, valid, predictive measures of work–family interference. *Journal of Occupational Health Psychology*, *15*, 75–90.

McClelland, D. C. (1985). How motives, skills, and values determine what people do. *American Psychologist*, *40*, 812–825.

McClelland, D. C., Koestner, R., & Weinberger, J. (1989). How do self-attributed and implicit motives differ? *Psychological Review*, *96*, 690–702.

McCrae, R. R., & Costa, P. T., Jr. (1997). Personality trait structure as a human universal. *American Psychologist*, *52*, 509–516.

Millon, T. (1990). The disorders of personality. In L. A. Pervin (Ed.), *Handbook of personality theory and research* (pp. 339–370). New York, NY: Guilford.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, *102*, 246–268.

Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2005). Understanding and using the implicit association test: II. Method and construct validity. *Personality and Social Psychology Bulletin*, *31*, 166–180.

Paulhus, D. L. (1984). Two-component model of socially desirable responding. *Journal of Personality and Social Psychology*, *46*, 598–609.

Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 17–59). San Diego, CA: Academic.

Piccolo, R. F., & Colquitt, J. A. (2006). Transformational leadership and job behaviors: The mediating role of job characteristics. *Academy of Management Journal*, *49*, 327–340.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*, 879–903.

Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin*, *126*, 3–25.

Sharpe, J. P., & Desai, S. (2001). The revised NEO Personality Inventory and the MMPI–2 psychopathology five in the prediction of aggression. *Personality and Individual Differences*, *31*, 505–518.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. Boston, MA: Allyn & Bacon.

Tedeschi, J. T., & Nesler, M. S. (1993). Grievances: Development and reactions. In R. B. Felson & J. T. Tedeschi (Eds.), *Aggression and violence: Social interactionist perspectives* (pp. 13–46). Washington, DC: American Psychological Association.

Tepper, B. J. (2007). Abusive supervision in work organizations: Review, synthesis, and research agenda. *Journal of Management*, *33*, 261–289.

Toch, H. (1993). Good violence and bad violence: Self-presentations of aggressors through accounts and war stories. In R. B. Felson & J. T. Tedeschi (Eds.), *Aggression and violence: Social interactionist perspectives* (pp. 193–206). Washington, DC: American Psychological Association.

Tremblay, P. F., & Ewart, L. A. 2005. The Buss and Perry Aggression Questionnaire and its relations to values, the Big Five, provoking hypothetical situations, alcohol consumption patterns, and alcohol expectancies. *Personality and Individual Differences*, *38*, 337–346.

U.S. Department of Labor (2012). *National census of fatal occupational injuries in 2011* (USDL-12-1888). Retrieved from http://www.bls.gov/news.release/pdf/cfoi.pdf

Winter, D. G., John, O. P., Stewart, A. J., Klohnen, E. C., & Duncan, L. E. (1998). Traits and motives: Toward an integration of two traditions in personality research. *Psychological Review*, *105*, 230–250.

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist*, *34*, 806–838.

Wright, J. C., & Mischel, W. (1987). A conditional approach to dispositional constructs: The local predictability of social behavior. *Journal of Personality and Social Psychology*, *53*, 1159–1177.