Using the Conditional Reasoning Test for Aggression to Predict Corrective Action Requests in a Sample of Nuclear Power Plant Employees

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Using the Conditional Reasoning Test for Aggression to Predict Corrective Action Requests in a Sample of Nuclear Power Plant Employees

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SUMMARY

There have been a number of studies showing that the Conditional Reasoning Test for Aggression (CRT-A) is a valid measure of one's implicit preparedness to engage in activities that are intended to harm others. Few studies have examined the predictive power of subscales of the CRT-A. The purpose of this project is to examine the validity of the CRT-A and its subscales for predicting unnecessary corrective action requests filed in a sample of employees working in a nuclear power plant. Results indicate that the Powerlessness subscale differentiates employees who file unnecessary reports from employees who do not.

CHAPTER 1

INTRODUCTION

The Conditional Reasoning Test for Aggression

The Conditional Reasoning Test for Aggression (CRT-A; James & McIntyre, 2000) is designed to assess an individual's implicit preparedness to engage in behaviors intended to cause harm to others. Each CRT-A problem presents respondents with four response options. Two of these options are illogical, while the other two represent conflicting plausible logical inferences. The theory behind conditional reasoning (CR) states that respondents will choose logical response options that appeal to their personality-driven reasoning processes. By repeatedly relying on certain reasoning processes (formally called "justification mechanisms" (JMs); James, 1998), individuals will begin to view these forms of reasoning as logical, eventually leading to the reliance on these JMs to shape their thoughts and actions. The same JMs that steer individuals toward certain behaviors should also drive those individuals to respond either aggressively or non-aggressively to problems on the CRT-A. Problems on the CRT-A were designed to elicit responses indicative of reasoning based on common methods of justifying aggressive behaviors. These justifications include (but are not limited to) the belief that others are hostile, the belief that all interpersonal interactions are contests to establish dominance, and the belief that others are immoral and deserving of punishment (James & Mazerolle, 2002; James, McIntyre, Glisson, Bowler, & Mitchell, 2004; James et al., 2005).

James et al. (2005) reported the results of an exploratory principal components analysis (followed by oblique rotation) which supported the theory that CR responses reflect various JMs. The results indicate that five minimally related (inter-factor correlations range from .06 to .25)

factors underlie the CRT-A. Each of these factors corresponds to one of the JMs proposed in previous literature (see James, 1998; James & McIntyre, 2000), including Social Discounting Bias, Victimization by Powerful Others Bias, Retribution Bias, Hostile Attribution Bias, and Potency Bias. The Derogation of Target Bias is not represented in this factor structure, which is consistent with the fact that only one of the CRT-A problems is designed to appeal to individuals who use this JM. The reported α coefficients for the five factors are .87, .82, .81, .76, and .74, respectively (James et al., 2005). Each of these exceeds Nunnally's (1978) suggested .70 cutoff point for the reliability of measures used in the early stages of research. James et al. (2005) also concluded that CR is often shaped by multiple JMs because many CRT-A problems load on multiple factors. While these results have been updated by a more recent factor analysis (Ko, Thompson, & Roberts, 2008; discussed below), they serve as early evidence supporting both the complexity of the CR process and the theory that JMs shape the way in which people reason.

Although the CRT-A is a relatively new test, there have been many comments about the usefulness of the CR measurement technique in recent literature (Berry, Sackett, & Weimann, 2007a; Morgeson et al., 2007; Ones, Dilchert, Viswesvaran, & Judge, 2007; Landy, 2008; Kanfer, 2009). There seems to be a general consensus that CR represents an interesting new measurement technique which has demonstrated desirable psychometric properties, but that issues such as cost of development and test security may inhibit the widespread use of the technique.

One of the major strengths of the CRT-A is the fact that it relies on indirect measurement as opposed to the explicit and face-valid measurement traditionally used by self-report measures of personality. As a result, the CRT-A should not be as susceptible to problems that commonly plague self-report measures, such as inaccurate self-perception (Nisbett & Wilson, 1977;

McClelland, Koestner, & Weinberger, 1989; Haidt, 2001; Dunning, Heath, & Suls, 2004) or faking (Leary & Kowalski, 1990; Rosse, Stecher, Miller, & Levin, 1998; Ellingson, Sackett, & Hough, 1999; Snell, Sydell, & Lueke, 1999; Zickar & Robie, 1999; Morgeson et al., 2007). In fact, a recent study (Lebreton, Barksdale, Robin, & James, 2007) demonstrated that participants who are asked to provide socially desirable responses are unable to do so when they believe that the CRT-A is measuring logic. On the other hand, participants who knew the intent of the test were able to fake their responses in order to achieve a more socially desirable score. This should be considered evidence that the CRT-A, when given as intended, is not as easy to fake as traditional self-report personality measures. It should also serve as evidence in support of Robert Dipboye's concern regarding test security (see Morgeson et al., 2007).

A number of studies have demonstrated the validity of the CRT-A for predicting aggressive behavior (see James et al., 2005). For example, a recent validity study by Frost, Ko, and James (2007) found that the CRT-A predicted overt aggression and obstructionism in intramural basketball games, but did not predict verbal hostility. Also, Russell and James (2008) found that the CRT-A predicted lying, cheating, and rule-breaking on an internet-based simulated math test.

Two recent meta-analyses were conducted on the CRT-A. Berry, Sackett, and Tobares (2007b) found that the CRT-A predicted job performance with a meta-analytic validity of .14 (N = 583, k = 4) and counterproductive work behaviors (CWB) with a meta-analytic validity of .15 (N = 3,004, k = 16). Minton and DeSimone (2009) recently presented the results of a more comprehensive meta-analysis of the CRT-A, reporting meta-analytic validities for predicting aggressive behaviors (r = .29, N = 1,312, k = 8), CWB (r = .27, N = 1,197, k = 8), job performance (r = -.18, N = 969, k = 6), and organizational citizenship behaviors (r = -.08, N =

623, k = 2). Neither meta-analysis employed corrections for restriction of range, predictor unreliability, or criterion unreliability. While each of these estimates are well below the mean validity of .44 reported in James et al. (2005), it should be noted that Minton and DeSimone (2009) reported a meta-analytic validity of .41 for predictive studies using objective criteria (N = 1,254, k = 9) and a large difference in meta-analytic validities between published (r = .35, N = 13, k = 1,895) and unpublished (r = .15, N = 1,762, k =10) samples. These results indicate that the CRT-A demonstrates excellent validity for predicting aggressive behavior in carefully conducted studies, but that the inclusion of lower-quality studies in meta-analyses may attenuate the estimated average validity of the measure. The differential validity of the CRT-A for predicting job performance and aggressive behaviors provides evidence supporting the construct validity of the measure. The CRT-A was intended to measure behavioral manifestations of aggression (James & McIntyre, 2000; James & Mazerolle, 2002; James et al., 2004; James et al., 2005). As a result, one would expect the CRT-A to have better validity for aggressive actions (such as CWBs) than for job performance. The results reported by Minton & DeSimone (2009) are consistent with this expectation.

Ko et al. (2008) reanalyzed the factor structure of the CRT-A using a larger sample. A principal components analysis of polychoric correlations between items revealed a structure containing three dominant dimensions of aggression. This analysis was followed by an obliquely-rotated factor analysis in which three factors were extracted. Items were then assigned to factors based on structure coefficients. The analysis suggested an eleven-item dimension called “External Controls,” a six-item dimension called “Internal Controls,” and a five-item dimension called “Powerlessness.” The External Controls dimension encompasses feelings such as victimization and exploitation by society or other individuals. The Internal Controls

dimension incorporates ideas such as potency, dominance, and retribution. Finally, the Powerlessness dimension comprises a sense of helplessness or lack of influence. The aforementioned JMs fit nicely within the framework of these three dimensions, indicating that the Ko et al. (2008) factor analysis provides a consistent, yet alternative explanation of the latent structure of the CRT-A.

Corrective Action Requests in a Nuclear Power Plant

This project attempts to determine the relationship between the CRT-A and the number of corrective action program action requests (CAPs) filed by each employee. According to the CAP Action Request Process (Xcel Energy, 2009), CAPs are intended to document and track problems in the plant, including "conditions adverse to quality, employee concerns, operability issues, functionality issues, and reportability issues" (p. 3). Additionally, the process document indicates that CAPs should be filed as follows:

> "All personnel are responsible for identifying and documenting problems, issues and concerns including conditions adverse to quality, failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances. Problems, issues and concerns are to be entered into the CAP process even if resolved at the time of identification in order to facilitate performance trending. (p. 5)."

Although CAPs are reported by all employees, each CAP is reviewed by a committee and assigned a severity level. The most severe CAPs are designated Level-A and the least severe CAPs are designated Level-D. According to the process document, Level-A CAPs include "significant issues adverse to quality, issues of significant regulatory concern or public interest, or issues with significant economic impact." Level-B CAPs "typically result in moderate impact to the plant and/or organization." Level-C CAPs "typically result in minor impact to the plant

and/or organization." Level-D CAPs include conditions "not adverse to quality that can be corrected with minimal, if any, evaluation through routine work activities, or that can be closed to actions taken or to trending" (p. 9).

The primary purpose of this project is to identify the individuals who are most likely to report CAPs that the company deems unnecessary. Bing, Stewart, Davison, Green, McIntyre, and James (2007) reanalyzed data from Susan Burrough's (2001) dissertation to examine the relationship between the CRT-A and grievances filed by hospital employees. The authors found that CRT-A scores were positively associated with grievances filed (r = .24). Bing et al. (2007) noted that "many complaints against organizations have a justifiable basis" but also that "filing a complaint against an organization can also be an indirect manifestation of aggression insofar as employees can construe illegitimate complaints as legitimate" (p. 738).

Some complaints filed against organizations are justified. Organizations are not infallible, and processes that allow employees to file complaints are generally intended to inform the organization of ways in which it can improve. It is important to note that many employees file complaints with the intent of improving the organization or correcting a mistake. These individuals do not intend to harm the organization, but instead wish to make the organization better.

Employees may abuse the system by filing complaints in order to harm the organization or draw attention to themselves. Employees who file insignificant complaints about the organization (through mechanisms such as grievances or CAPs) are aggressing, albeit indirectly, against the organization. Employees who report insignificant CAPs waste both time and resources, hindering the performance of the organization. Fortunately, CAP severity levels provide an indication of the importance of a reported problem. As a result, this project focuses on

Level-D CAPs. Hypothesis 1 represents a simple replication of the result reported in Bing et al. (2007).

Hypothesis One: *Scores on the CRT-A will be positively related to Level-D CAPs filed by employees*.

This project also aims to determine the validity of the three dimensions measured by subscales of the CRT-A. Of the three dimension subscales, the Powerlessness scale seems to be the most likely to correlate with CAPs filed. Aggressive individuals who feel helpless in an organization may seek ways to retaliate against the organization. Without direct power to influence the organization, these individuals may find alternative methods of aggressing. Since plant procedure explicitly states that everyone in the organization is allowed to file a CAP, these individuals may abuse the system by filing less significant CAPs in an effort to undermine the organization. Also, if the Powerlessness dimension is the most salient dimension for predicting insignificant CAPs, then the Powerlessness scale should predict Level-D CAPs better than it predicts other CAPs.

Hypothesis Two: *Scores on the Powerless dimension of the CRT-A will be positively related to Level-D CAPs filed by employees.*

Hypothesis Three: *There will be an interaction between CAP level and Powerlessness scores such that the relationship between Powerlessness and Level-D CAPs filed will be stronger than the relationship between Powerlessness scores and other CAPs filed.*

In addition to testing the hypotheses listed above, exploratory analyses will be conducted to determine the relationship between the other two dimensions and CAPs filed by employees. In addition, the five subscales suggested by the original factor analysis (see James et al., 2005) will be examined.

CHAPTER 2

METHOD

Participants

The original sample included 115 employees at a nuclear power plant located in the Midwestern United States. Participants were employees from various departments within the organization, including construction, facilities, instrumentation and controls, mechanical, and planning. In addition, a number of contractors working for the Day and Zimmerman Group were included in the sample. These contractors work exclusively at the Prairie Island plant and are expected to complete assignments and file CAPs as if they were Prairie Island employees.

Of the 115 participants, two (1.74%) were excluded because they did not provide consent. Therefore, the final sample included 113 participants. The 99 participants who reported age ranged from 26 to 62 years of age (with a mean of 45.83 years and standard deviation of 9.411 years). Of the 111 participants who reported gender, 102 (91.9%) were male. Of the 109 participants who reported highest level of education attained, 26 (23.9%) completed only high school, 62 (56.9%) completed some college, 11 (10.1%) earned a four-year degree, three (2.8%) completed some graduate studies, and seven (6.4%) earned a graduate degree.

Measures

This project is part of an ongoing data collection effort at the power plant. The larger project involves employees completing various measures over the course of three data collection periods. The first set of questionnaires was administered in June, 2009, and included the CRT-A as well as self-report measures of leader-member exchange, leader prototypicality, organizational identification, emotion attitude, intention attitude, and cognition attitude. In addition, each

participant was asked to name his or her supervisor. Supervisors who participated in the study were given the Conditional Reasoning Test for Leadership instead of the CRT-A. Demographic information was obtained in addition to the substantive measures. Dates and measures for the second and third data collection period have yet to be determined due to plant scheduling issues.

The focal predictor of this project is the CRT-A. As previously described, the CRT-A is an indirect measure of aggression which assesses an individual's implicit tendency to reason in ways that rationalize aggressive behaviors. Each of the 22 problems appears to assess inductive reasoning. The KR-20 internal consistency reliability is .76, and the average validity for predicting behavioral manifestations of aggression is .29 (Minton & DeSimone, 2009).

The focal criterion measure of this project is the number of CAPs filed by each participant. This data was collected from company records, which included the total number of CAPs filed by each employee during the course of the 12-month period prior to data collection, as well as the severity level of each CAP filed over that period.

Procedure

The data collection took place in the power plant. Participants completed the study during a one-hour time period normally designated for a departmental meeting. The sample was split into four groups, each of which completed the set of measures in a different location. After a research assistant briefly explained the procedure and purpose of the study, participants were asked to complete a consent form. Once the consent forms were completed, the research assistant handed out the CRT-A and other questionnaires. Participants were allowed one hour to complete the tests.

CHAPTER 3

RESULTS

Data were recorded in Microsoft Excel and analyzed using Excel and SPSS. Excel and SPSS were also used to calculate descriptive statistics. Scores on the CRT-A ranged from zero to 13 (with a mean of 4.30 and standard deviation of 2.46). These results are similar to the results obtained using a composite sample of 5,238 participants across 20 studies, in which the scores ranged from zero to 14 (with a mean of 3.89 and a standard deviation of 2.19). Descriptive statistics for the CRT-A and its subscales can be found in Table 1. Correlations between the CRT-A and its subfactors can be found in Table 2.

Table 1

Descriptive Statistics for scores on the CRT-A and CRT-A Subscales

Scale	Minimum Score	Maximum Score	Average Score	Standard Deviation of Scores
CRT-A	0	13	4.30	2.46
Social Discounting	0	6	2.17	1.32
Victimization by Powerful Others	0	4	0.58	0.78
Retribution	0	3	0.59	0.74
Hostile Attribution	0	2	0.50	0.66
Potency	0	2	0.45	0.65
External Controls	0	7	1.74	1.53
Internal Controls	0	4	1.04	1.12
Powerlessness	0	4	1.51	0.90

Note. $N = 113$. CRT-A = Conditional Reasoning Test for Aggression.

Table 2

Correlations between the CRT-A and CRT-A Subscales

	CRT-A	JM1	JM2	JM3	JM4	JM5	D1	D2	D3
CRT-A	1								
JM1	0.68	1							
JM2	0.60	0.08	1						
JM3	0.56	0.11	0.39	1					
JM4	0.53	0.25	0.24	0.02	1				
JM5	0.51	0.09	0.22	0.29	0.15	1			
D1	0.82	0.54	0.68	0.24	0.67	0.25	1		
D2	0.67	0.12	0.38	0.83	0.10	0.78	0.30	1	
D3	0.50	0.80	-0.01	0.10	0.16	0.00	0.17	.07	1

Note. N = 113. CRT-A = Conditional Reasoning Test for Aggression. JM1 = Social Discounting Bias Subscale. JM2 = Victimization by Powerful Others Subscale. JM3 = Retribution Bias Subscale. JM4 = Hostile Attribution Bias Subscale. JM5 = Potency Bias Subscale. D1 = Externalizing Controls Subscale. D2 = Internalizing Controls Subscale. D3 = Powerlessness Subscale. Pearson coefficients were used for correlations between the CRT-A and its subscales.

During the year prior to data collection, 320 CAPs were filed by the participants. Of the 113 participants in the sample, 22 (19.5%) filed at least one CAP during the year prior to data collection. Considering only participants who filed at least one CAP, the number of CAPs filed ranged from one to 66 (with a mean of 14.55 and a standard deviation of 17.38). The majority of CAPs filed were classified as Level-C. Only one Level-A CAP was filed, 11 Level-B CAPs were filed, 296 Level-C CAPs were filed, and 12 Level-D CAPs were filed. Descriptive statistics for CAPs filed can be found in Table 3.

A qualitative analysis of CAPs was conducted in an effort to justify the idea that Level-D CAPs differ from other CAPs in content. Although an independent committee at the plant classifies the CAPs by severity (which is determined by importance and urgency), there is no extant rating system for aggressive content. In order to further justify the hypothesis that Level-D CAPs contain more aggressive content than other CAPs, a subject matter expert (SME) familiar with the plant was asked to classify a subset of the CAPs by aggressive content in the CAP description. This SME has participated in the CAP program and has had experience both writing and resolving CAPs in the past. The qualitative analysis revealed that blatant aggressive content was found in a small number of CAPs, regardless of severity level. Deliberate belittlement of other people, departments, efforts, or equipment was considered blatantly aggressive. For example, one CAP contains the following recommendation: “abandon the futile efforts to maintain the dataliner that is only marginally helpful. This is the second time this ‘repair’ has entered the system.”

Table 3

Descriptive Statistics for CAPs Filed by Nuclear Power Plant Employees

CAP Level	Number of Participants who Filed	Minimum Filed	Maximum Filed	Average Number Filed	Standard Deviation of Number Filed
Level-A CAPs	1	0	1	.01	.094
Level-B CAPs	6	0	4	.10	.499
Level-C CAPs	21	0	57	2.54	8.47
Level-D CAPs	5	0	5	.11	.618
Total CAPs	22	0	66	2.83	9.49

Note. N = 113. CAPs = Corrective Action Procedures.

Passive aggression, on the other hand, was found more often in Level-D CAPs than in Level-B or Level-C CAPs. Specifically, Level-D CAPs were more likely to contain content relating to insufficient resources, inefficient practices, or repeated failed attempts to successfully resolve an issue in the past. For example, one CAP states the following:

> "[R]outine tasks such as cleaning restroom, lunchrooms, records rooms, removing trash, & recycling may not be accomplished prior to the weekend. This puts a strain on a group that already has challenged resources due to diminished numbers of employees, vacation, supporting fire watch 24/7 in the relay room and trying to cover other scheduled activities and emergent pop-up work."

Another CAP states that "the outage unit [processes] that depend on plant conditions need to be controlled on the outage schedule so that the site is not taking [performance] hits for self-caused plant conditions during an outage."

A third passive-aggressive CAP states the following:

> "[R]epeated requests to [management] to provide this training has been ongoing since November of 2007 with no success. This issue was also addressed by bargaining until at the recent labor management meeting as a concern. This was again communicated to [management] with no success. It should also be noted that it was recommended that [personnel] could have been provided this training with the [red tape]."

As seen above, passive aggressive CAPs often convey frustration with current practices rather than substantive problems or ideas for improvement.

The results of this qualitative analysis are consistent with hypotheses two and three in that a person who feels powerless may inappropriately use the CAP system as a means of exerting influence. Many of the passive aggressive CAPs contain indirect attempts to influence a

process, person, or department through inappropriate use of the CAP system. The higher frequency of Level-D CAPs classified as passive aggressive is consistent with the hypothesized relationship between Powerlessness and Level-D CAPs.

Due to the low number of Level-D CAPs filed by the participants, the criterion was dichotomized so that participants who did not file a Level-D CAP were assigned a score of zero and participants who filed a Level-D CAP were assigned a score of one. Gender, age, and level of education were examined as potential demographic confounds. None of these potential confounds were significantly related to the independent or dependent variables examined in this study.

Hypotheses one and two were tested using biserial correlations due to the underlying continuous nature of CAPs filed as well as the uneven split between participants who did and did not file at least one CAP. Hypothesis three was tested using a comparison of correlations from dependent samples (Steiger, 1980; formula 7, p. 246).

Hypothesis one predicts a positive relationship between CRT-A scores and Level-D CAPs filed by employees. The biserial correlation between CRT-A scores and dichotomized Level-D CAPs was .020 (ns). Therefore, hypothesis one is not supported by this data.

Hypothesis two predicts a positive relationship between Powerlessness scores and Level-D CAPs filed by employees. The biserial correlation between CRT-A scores and dichotomized levl-D CAPs was .265 ($p < .05$). This evidence supports the positive relationship between Powerlessness scores and Level-D CAPs filed.

Hypothesis three predicts that the relationship between Powerlessness scores and CAPs filed would differ based on whether the CAPs filed were Level-D CAPs or other CAPs. The Steiger (1980) comparison yielded a *t*-value of 1.932 ($p = .056$). The marginal statistical

significance of this comparison indicates weak support for hypothesis three. Correlations between the CRT-A, CRT-A subfactors, Level-D CAPs, and other CAPs can be found in Table 4.

Exploratory analyses were also conducted to determine if any of the other CRT-A factors were related to Level-D CAPs. The other two dimensions suggested by Ko et al. (2008) did not have statistically significant correlations with Level-D CAPs. Of the five original factors of the CRT-A (suggested in James et al., 2005), two had statistically significant correlations with Level-D CAPs. The first was the Social Discounting Bias subscale ($r = .234$, $p < .05$). This relationship is unsurprising considering the fact that this subscale contains every item in the Powerlessness subscale as well as three additional items.

A more surprising finding was the negative biserial correlation between the Victimization by Powerful Others subscale and Level-D CAPs ($r = -.242$, $p < .05$). Despite having similar names, the Powerlessness subscale and Victimization by Powerful Others subscale share no items, correlate only -.011 (ns), and predict Level-D CAPs almost equally well, but in opposite directions.

Table 4

Biserial Correlations of the CRT-A and its Subscales with Level-D and Non-Level-D CAPs

Scale	Correlation with Level-D CAPs	Correlation with Non-Level-D CAPs
CRT-A	0.02	0.03
Social Discounting	0.23	-0.03
Victimization by Powerful Others	-0.24	0.01
Retribution	0.00	-0.04
Hostile Attribution	-0.08	0.07
Potency	-0.04	0.11
External Controls	-0.11	-0.01
Internal Controls	-0.02	0.04
Powerlessness	0.27	0.02

Note. N = 113. CRT-A = Conditional Reasoning Test for Aggression.

CHAPTER 4

DISCUSSION

The results of this study provide preliminary evidence in support of using subscales of the CRT-A to differentially predict criteria. Although there is no statistical support for a relationship between the CRT-A as a whole and Level-D CAPs, there is a positive relationship between the Powerlessness subscale and Level-D CAPs. Additional analyses reveal that neither the Externalizing Controls subscale nor the Internalizing Controls subscale is statistically related to Level-D CAPs. As a result, it is plausible that the three subscales of the CRT-A (suggested by Ko et al., 2008) could be used to predict different criteria in future studies. Further research should examine differential prediction patterns in an effort to better determine the nature of each of these subscales.

The Powerlessness scale predicts Level-D CAPs marginally better than it predicts CAPs of other severity levels. This is consistent with the finding from the qualitative analysis that Level-D CAPs contain more passive aggressive content than other CAPs.

It should be noted that the Social Discounting Bias subscale also displays a statistically significant positive relationship with Level-D CAPs filed. This result is unsurprising given the high correlation between this subscale and the Powerlessness subscale (r = .80) and the fact that the two subscales share items. One of the most interesting exploratory findings is the statistically significant negative relationship between the Victimization by Powerful Others subscale and Level-D CAPs, especially given the small relationship between that subscale and the Powerless subscale (r = -.01). Future research should further examine the relationships between CRT-A subscales.

This study had many limitations. First, the small sample size limits the power of the reported analyses. The nature of the sample makes data collection difficult. The research team was fortunate to lose only two participants due to lack of consent and even more fortunate that no one was eliminated due to missing or illogical response patterns. It may be possible to increase the sample size in future data collection efforts.

Another limitation involves the demographic characteristics of this sample. Although the sample is more diverse in age than samples found in many psychological studies, it is less diverse in gender. Additionally, the fact that less than 20% of the sample reported completing a four-year degree may indicate a lack of diversity in educational level. These characteristics make it difficult to generalize these results beyond specific populations (e.g. power plant employees or manufacturing employees).

Finally, this study is limited by the fact that there were very few Level-D CAPs reported in the year prior to data collection. While it is good for the organization that the participants filed so few insignificant CAPs during the 12-month period, this limited the statistical analyses that were possible. The low range of Level-D CAPs filed per person required dichotomization of the criterion variable, resulting in the conclusion that Powerlessness scores are related to the decision to file an insignificant CAP as opposed to the number of insignificant CAPs filed. Additionally, the discrepancy between the number of participants who filed a Level-D CAP and the number who did not would have substantially influenced the point-biserial correlation coefficient, necessitating the use of biserial coefficients instead.

Despite the limitations of this study, a number of important findings emerge. First, the findings suggest that the subscales of the CRT-A may differentially predict criteria. In addition, the subscales may predict criteria even when the entire test fails to do so. This study also

demonstrated that Powerlessness may predict indirect aggressive actions such as wasting time and resources through abusing a company program.

Different forms of aggressive action may be predicted by the Externalizing Controls, Internalizing Controls, and Powerlessness subscales. Future research should focus on differential prediction using the subscales of the CRT-A.

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