DISSERTATION

AN EXAMINATINON AMONG CORRELATIONS OF BROAD AND NARROW MEASURES OF PREDICTORS AND CRITERIA: ACHIEVEMENT MOTIVATION AND WORK BEHAVIOR IN BRAZIL

Submitted by

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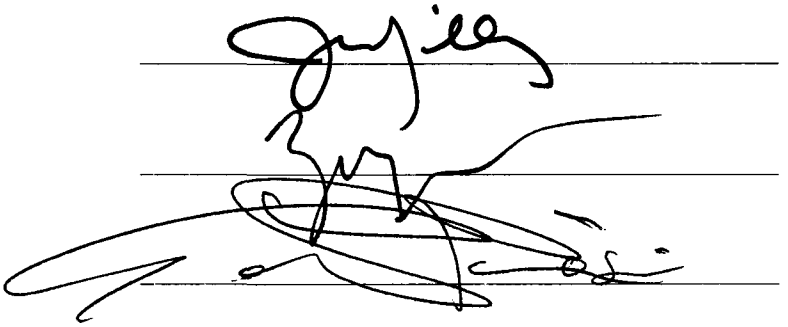
WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY MICHAEL JAMES POTEMRA ENTITLED AN EXAMINATION OF CORRELATIONS AMONG BROAD AND NARROW MEASURES OF PREDICTORS AND CRITERIA: ACHIEVEMENT MOTIVATION AND WORK BEHAVIOR IN BRAZIL BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work



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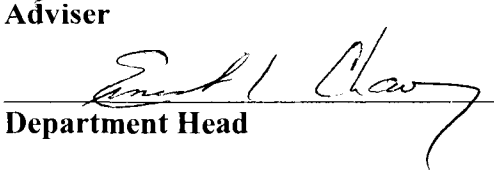

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ABSTRACT OF DISSERTATION

AN EXAMINATINON AMONG CORRELATIONS OF BROAD AND NARROW MEASURES OF PREDICTORS AND CRITERIA: ACHIEVEMENT MOTIVATION AND WORK BEHAVIOR IN BRAZIL

This study examined the proposition (Hogan & Holland, 2003) that predictive validity is maximized when the specificity of predictors and criteria is matched. This proposition was examined using the construct of achievement motivation at three levels of specificity in 74 Brazilian employees. Additionally, the criterion-related validity of achievement motivation was investigated at the same three levels. First, evidence of the Hogan and Holland (2003) proposition could not be obtained due to heterogeneity within groups of correlations. Second, criterion-related validity evidence was demonstrated for the achievement motivation facets of dominance, preference for difficult tasks, engagement, and pride in productivity. Limitations, directions for future research, and practical implications are discussed.

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An Examination of Correlations among Broad and Narrow Measures of Predictors and Criteria: Achievement Motivation and Work Behavior in Brazil

Does matching the level of specificity of predictor and criterion result in maximal criterion-related validity? There is an inevitable dilemma in research related to psychological testing. On one hand, the researcher would like to attain the highest degree of precision in measuring any one attribute and on the other hand, would like to understand the complexity of multiple related attributes (Cronbach, 1960; Guion & Gotter, 1965; Murphy, 1993). As a consequence, researchers and practitioners are inevitably faced with the choice of measuring a construct at the broad or narrow level.

Hogan and Holland (2003) reconciled more than a decade of research and debate focusing on the appropriate level of bandwidth and fidelity when using personality measures to predict work behavior. Some have argued that broad personality traits (e.g., global conscientiousness) should be used in occupational selection settings because the criteria of interest are broad (e.g., overall job performance; Ones & Viswesvaran, 1996), whereas, others have argued that narrow personality traits (e.g., the facets of conscientiousness) should be used because the criteria are multidimensional. Guided by a socioanalytic theory, Hogan and Holland (2003) demonstrated that the criterion-related validity of personality variables is maximized when a theoretically-guided matching of predictor and criterion levels is conducted such that narrow predictors are matched to narrow criteria, and broad predictors are matched to broad criteria.

The construct of achievement motivation may be a good test-bed for examining the effectiveness of matching breadth or narrowness because achievement motivation has been conceptualized and measured at different levels (Schuler, Thornton, Frintrup, &

Muller-Hanson, 2004). The Onion Model of achievement motivation (Schuler, 1998) offers a multi-level framework of the construct providing theoretical guidance for establishing links at each level. One purpose of the present study was to obtain empirical support for the Hogan and Holland (2003) proposition in the domain of achievement motivation.

Extensive international criterion-validation evidence exists for cognitive ability (Salgado, Anderson, Moscosco, Bertua, De Fruyt, & Rolland, 2003) and to a lesser extent for personality measures (Ghorpade, Hattrup, & Lackritz, 1997). However, criterion-related validity evidence for achievement motivation as a predictor of work behavior, particularly in countries outside the U.S., has accumulated to an even lesser extent. National values for effective work performance vary across countries and cultures (Hofstede, 1984; Schwartz & Bardi, 2001). Therefore, it should not be assumed that evidence of criterion-related validity obtained from U.S. samples may be generalized to samples from other countries and cultures where values differ significantly. Caligiuri (2006) recommends that cross-national criterion-validity evidence be gathered for measures used to predict work behavior prior to using them cross-nationally.

Workforce globalization and U.S. business investment and subsidiaries in third world countries (including Latin America) have largely increased in the recent decade. National development and industrial policy in Brazil currently places emphases on areas such as: general industrial promotion, national competitiveness, productivity, rural development, and institutional development (Font, 2003; See discussion in Potemra, 2007). Of particular relevance is the specific focus on occupational development, such as the strategic planning for education and job training, to increase the productivity of the

growing workforce. Demonstrating criterion-related validity evidence for measures useful in predicting work behaviors in Brazil may assist organization decisions makers in the selection, management, and evaluation of employees in the Brazilian workforce (Angelini, 1966; Ardila, 1993; Biaggio, 1978; Font, 2003; Peck, 1975; Rosen, 1961; Rotstein, 1996; Sanford, 1970). Therefore, another purpose of the present study was to assess the potential of achievement motivation to predict work behavior, and demonstrate criterion-related validity for a measure of achievement motivation.

Achievement Motivation

Murray (1938) originally defined need for achievement as "the desire or tendency to overcome obstacles, to exercise power, to strive to do something difficult as well and as quickly as possible." Achievement motivation has been found to play a role among individual differences in motivated behavior within several applied contexts such as school, sports, and work performance (Kanfer, 1990; Schuler et al., 2004). Motivation is a complex phenomenon and defined differently across researchers. However, all definitions of motivation share three elements in common: energy, direction, and persistence (Mitchell, 1987). Several lines of research related to achievement motivation have identified intermediating processes (e.g., cognitive and self-regulation) that explain the relationship between broad motives and work behavior (Atkinson, 1957; Bandura, 1986; Locke & Latham, 1990; Raynor, 1969; Vroom, 1964; Weiner, 1974).

Achievement motivation, like general motivation, is a complex construct. The Onion model (Schuler 1998) defines achievement motivation in terms of facets each on a continuum of proximity to behavior. According to the model, all facets of achievement motivation are subordinate to general personality constructs and each level can be

operationalized in behavioral terms. Core facets represent those aspects of achievement motivation most proximal to behavior (e.g., goal setting, persistence), followed by peripheral facets (e.g., independence, status orientation), and theoretical compounds (e.g., locus of control, attributional style) which consist of those facets that are most distal to behavior. Several studies have examined the factor structure of achievement motivation and have consistently found support for three broad factors (Byrne, Mueller-Hanson, Cardador, Thornton, Schuler, Frintrup, & Fox, 2004; Lanik, Thornton, & Hoskovoka, 2007; Potemra, 2007; Schuler et al., 2004; Sintek, 2005; Summers, 2007).

No studies to my knowledge have extended the Hogan and Holland (2003) proposition to the construct of achievement motivation. Furthermore, there is a lack of cross-national criterion-validity evidence for achievement motivation at the broad, factor, and facet levels, and as a consequence, limited cross-national use of achievement motivation measures. Therefore, the goals of the present study were to: a) extend the Hogan and Holland proposition for effectively matching broad, factor (mid), and facet (narrow) levels to the domain of achievement motivation, and b) examine the criterion-related validity of achievement motivation in a Brazilian sample at all three levels.

Motivational Theory and Work Behavior

Kanfer (1990) divided motivational theories related to work behavior into three broad classes: need-motive-value theories, cognitive choice theories, and self-regulation theories. Need-motive-value theories emphasize that individuals behave in pursuit of broad, high-level motives. These theories include: McClelland's theory of achievement motivation (McClelland, 1987), Murray's needs for achievement and infavoidence (Murray, 1938); Maslow's hierarchy of needs (Maslow, 1943), and Alderfer's three need

states (Alderfer, 1969). A basic weakness in each of these theories is the lack of power to predict individual behavioral differences in specific situations (i.e., work behavior). To address this weakness, cognitive-choice and self-regulation theories of motivation (more generally conceptualized as "process theories") have sought to explain the relationship between high order motives and behavior in terms of underlying individual cognitive and self-regulatory processes. Cognitive-choice theories emphasize the individual's expectancies and valences attributed to one engaging in specific behaviors in specific situations. These theories include: Atkinson's perceived value of success (Atkinson, 1957), Vroom's valence-instrumentality-expectancy theory (Vroom, 1964), Raynor's theory of future orientation (Raynor, 1969), and Weiner's attribution theory (Weiner, 1974). Self-regulation theories emphasize both covert and overt activities in the attainment of defined goals. These theories include goal-setting theory (Locke & Latham, 1990) and social-learning theory (Bandura, 1986).

Earlier need-motive-value theories generally focused on the prediction of work behavior from broad, high-order motives and the individual's unique dispositional motivational tendency to behave accordingly in specific situations (i.e., work settings) whereas process theories of motivation (cognitive and self-regulatory) have focused on internal processes and the individual's interpretation of situational factors. Process theories of motivation were thought to address the weaknesses of dispositional theories to better predict individual behavior in the workplace. However, Kanfer (1990) attributes the lack of predictive power of dispositional achievement motivation more to a lack of research aimed at understanding the construct (e.g., complexity). Process-oriented theories imply that the workplace environment may be modified in some way such that a

situation is created to elicit high achievement motivation from an employee (e.g., using goal-oriented development plans). However, organizational and situational constraints often exist that limit the extent to which organizational decision makers can alter the situation (Locke & Latham, 1990). Therefore, there has been renewed interest in achievement motivation as an individual-difference variable (Byrne et al., 2004; Schuler et al., 2004).

A major weakness of the early approaches to studying achievement motivation as an individual difference variable has been the conceptualization of the construct as a single factor, limiting the power to predict individual behavior, particularly behavior in the workplace (e.g., work performance). Existing measures of achievement motivation such as the Motivational Trait Questionnaire (Heggestad & Kanfer, 2000), the Work Preference Inventory (Amabile, Hill, Hennessey, & Tighe, 1994), the Work Environment Preference Schedule (Gordon, 1973), and the Work Values Inventory (Super, 1970) aim to measure more than one facet, but still remain conceptually limited. The Achievement Motivation Inventory (Schuler et al., 2004) measures 17 facets of achievement motivation (see Table 1), is based on the complex onion model (Schuler, 1998), and was designed for use cross-nationally.

Previous work provides extensive cross-national support for a three factor structure of achievement motivation as measured by the AMI (see Figure 1; Byrne et al., 2004; Lanik & Thornton, 2007; Potemra, 2007; Schuler et al., 2004; Sintek, 2005; Summers, 2007). The factors have been labeled "ambition," "independence," and "task-related motivation." Evidence of structural equivalence for the three factor model has accumulated across samples of Brazilian, German, Israeli, Korean, and Singapore

nationals, when compared to U.S. nationals. These studies provide guidance for constructing a mid-level analysis such that a comparison can be made between each factor score on the predictor side and a corresponding mid-level composite on the criterion side. Table 2 provides a summary of each analytic level to be examined in the present study.

Broad versus Narrow Job Performance Criteria

I will first discuss broad versus narrow conceptualizations of job performance criteria to describe the complexity of the criterion domain. I will then discuss broad versus narrow predictors of job performance and present evidence from a variety of research streams supporting the proposition that predictive validity is maximized when the level of the predictor and level of criterion are matched.

Job performance is defined as the "total expected value to the organization of the discrete behavioral episodes that an individual carries out over a standard period of time" (Motowidlo, 2003, p. 39). At the broadest level, job performance has been conceptualized as a single general performance factor. Visewesvaran, Schmidt and Ones (1996, 2005) found evidence for the general performance factor based on high covariance between supervisory ratings of narrow job performance components (e.g., dimensions). A general performance factor provides a holistic judgment of an individuals' job performance and is commonly used in practice as the basis for personnel decision making (e.g., for promotions and terminations). Viswesvaran et al. (2005) argue that the general performance factor is only psychologically meaningful when the subordinate job component ratings are highly correlated.

Two models of job performance articulate the narrow components of the general performance factor. These include Campbell's (1990) behavioral dimensions and Borman and Motowidlo's (1993) task/contextual performance distinction. Campbell (1990) defined eight behavioral dimensions of job performance based on similarity of behaviors within each respective job performance dimension domain. Alternatively, Borman and Motowidlo's (1993) model is based on the reasons for the effects of work performance on organizational effectiveness (as opposed to being based solely on similarity of content; Motowidlo, Borman, & Schmit, 1997). Utilizing components of job performance is advantageous in situations where the objective is to identify specific behavioral traits that may be associated with specific performance components (Viswesvaran & Ones, 2000).

My intent in discussing these models of job performance is to describe the complexity of the criterion domain. It is advantageous to define the content domain of job performance criteria as completely as possible to develop precise measurement instruments and ensure maximal criterion-related validity (Hogan & Roberts, 1996). Viswesvaran and Ones (2000) advocate that components of job performance should be examined when one is interested in identifying specific behavioral traits that may be associated with such performance components. The present study will utilize achievement motivation work-behaviors as the criteria. Achievement motivation behaviors are specific behaviors at work that demonstrate each narrow trait of the construct. In the present study, work-related behaviors will be identified to represent each narrow facet, as measured by the AMI.

Broad versus Narrow Job Performance Predictors

Predictors of job performance are conceptualized (as constructs) and measured (as methods) at both the broad and narrow levels. Investigations related to the bandwidth/fidelity dilemma have focused on a variety of predictors of work performance including personality (Hogan & Roberts, 1996; Law, Wong & Song, 2004; Ones & Viswesvaran, 1996) cognitive ability (Lievens & Sackett, 2006; Murphy, Cronin & Tam, 1993), job satisfaction, and aspects of organizational climate. I will now discuss each of these key research areas.

Cognitive ability, as measured by paper-and-pencil cognitive ability tests, has been consistently found to be the best predictor of job performance (Murphy et al., 2003; Schmidt & Hunter, 1998). Furthermore, when the incremental validity of other types of selection measures assessing cognitive ability (e.g., situational judgment tests and integrity tests) are examined, the relative increments are marginal (Schmidt & Hunter, 1998). Collectively, these studies may lead to the conclusion that cognitive ability may be all that is needed to successfully predict job performance. However, Sternberg (1999) argued that so-called "g-ocentric" approaches to the study of intelligence and work behavior do not consider the complexity of cognitive ability and neglect other aspects of intelligence or important facets of intelligent behavior. Relevant to this discussion are those aspects potentially related to work behavior such as social intelligence (Flavell, Botkin, & Fye, 1968) or emotional intelligence (Goleman, 1996).

Based on Borman and Motowidlo's (1993) task/contextual performance model of job performance, behaviors such as cooperating with others and helping co-workers are important aspects of job performance and subsumed under the contextual domain. Both domains are similarly related to overall job performance (Motowidlo & Van Scotter,

1994). Drasgow (2003) further argues that contextual performance is intrinsically social in nature and draws on Borman and Motowidlo's (1997) argument that task and contextual performance will have different predictors. According to this argument, cognitive ability will have the highest relationship with task performance and ability variables that represent the social knowledge domain (such as social intelligence) will have the highest relationships with contextual performance.

Situational judgment tests (SJT), an alternative to paper-and-pencil cognitive ability tests, provide descriptions of relevant workplace scenarios and ask a respondent how he/she would respond if faced with that particular scenario (McDaniel & Nguyen, 2001). Chan and Schmitt (1997) conducted a study where two forms of a situational judgment test were developed, administered, and compared to a measure of cognitive ability: a paper-and-pencil version and a video-based version. The two SJT formats consisted of the exact same content. A high correlation with cognitive ability was reported for the paper-and-pencil SJT whereas a marginal near-zero correlation was reported for the video-based SJT. The authors concluded that the paper-and-pencil version is confounded with measures of "g" whereas the video-based version may represent a measure of social intelligence. Lievens and Sackett (2006) recently found that a video-based situational judgment test incrementally predicted interpersonally oriented criteria in comparison to a similar content-based paper-and-pencil situational judgment test with no differences in the face validity of either format. Consistent with my current discussion of broad versus narrow predictors, these studies obtained maximal validities after a matching of the level of predictors with the level of the criteria was conducted.

Personality variables have been found to be important predictors of job performance (Schmidt & Hunter, 1992). A variety of personality taxonomic structures exist in the literature today. However, the taxonomy of choice used as a basis for the prediction of job performance is the Big 5 (Barrick, Mount, & Judge, 2001; Costa & McCrae, 1988; Hough & Furnham, 2003). Of the five dimensions in the Big 5 model, conscientiousness has the highest correlations with job performance across a variety of occupational domains (Barrick & Mount, 1991). Hogan and Holland (2003) found that the validity estimates for the Big-5 personality dimensions progressively increase as job performance was assessed at narrower levels. Recent studies (e.g., Dudley, Orvis, Lebiecki, & Cortina, 2006; Roberts, Chernyshenko, Stark, & Goldberg, 2005), have investigated the incremental predictive validity of narrow facets of the Big-5 dimension of conscientiousness. The general conclusion is that narrow facets of conscientiousness provide incremental validity over the global trait when the objective is to predict narrow levels of the criterion (e.g., domains of job performance or specific work behaviors).

For added support of the Hogan and Holland (2003) proposition, I will now discuss two areas outside of selection settings where the concept can be applied: job attitudes and organizational climate. In social psychology, general social attitudes typically show weak correlations with specific behaviors (Fishbein & Ajzen, 1974) whereas more specific job attitudes show stronger relationships with job behaviors (e.g., job performance; Eagley & Chaiken, 1993). However, holding the level of job attitudes constant at the general level (e.g., general job satisfaction), the relationship with job behavior gets increasingly smaller as the specificity of the job behavior domain becomes increasingly specific (Roznowski & Hulin, 1992). Judge, Thoresen, Bono, and Patton

(2001) conducted a meta-analysis and found a significant correlation between job satisfaction and job performance (contrary to earlier meta analytic findings reporting no relationship; Iaffaldano & Muchinsky, 1985). The authors calculated composite job satisfaction scores by aggregating scores from facets of job satisfaction rather than from overall measures and concluded that their composite increased the strength of the relationship between job attitudes and job performance. These findings provide further support that developing increasingly construct-relevant predictor measures maximizes predictor-criterion validity. A future research goal in this area is to breakdown the job performance criterion space to understand if the appropriate matching of predictor/criterion levels results in higher validities of the job satisfaction-job performance relationship (Campbell, 1990).

Organizational climate is defined as perceptions of formal and informal polices, practices and procedures (Ostroff, Kinicki, & Tamkins, 2003). Early views of organizational climate conceptualized of the construct in terms of global perceptions (James & Jones, 1974). Over the years, it became understood that the construct of climate is multifaceted and hence, the number of dimensions grew very large (see discussion in Ostroff et al., 2003). Schnieder (1975) advocated that the molar climate construct is so multifaceted, that it is not very useful for predicting specific job behaviors, since relationships between molar climate and specific outcomes have been relatively small. Given the multifaceted nature of climate, Schneider (1990) proposed that climate research be focused on linking specific and strategic outcomes relevant to organizational effectiveness to corresponding climates for achieving those strategic outcomes in order to increase the predictor-criterion relationship between climate and job behavior.

Climate research has recently focused on matching the level of the predictor and criterion to maximize the predictive validity of the climate construct. Several strategic areas relevant to organizational effectiveness have been identified and a corresponding climate defined for the area (e.g., "climate-for" approach). To name a few, climates for safety (Zohar, 2000), customer service (Schnieder, 1990), and innovation (Klein & Sorra, 1996) have all been defined and linked to relevant level-matched criteria (safety behaviors, customer service behaviors, and innovative behaviors, etc.). Again, matching levels of predictors and criteria domains maximize criterion-related validities between climate and performance.

I have presented evidence from a variety of research areas to support the argument that the predictive validity of a construct is maximized when the level of the predictor and level of criterion are matched. The Hogan and Holland (2003) proposition have not been directly applied to the domain of achievement motivation. As stated previously, one purpose of the present study was to examine empirical evidence related to the proposition in this domain.

Broad versus Narrow Traits of Achievement Motivation

According to Schuler et al. (2004) achievement motivation is a complex construct representing an individual's general orientation towards achievement or performance. A relatively narrow coverage of attributes comprising the achievement motivation construct has been a limitation of previous theories and measures. The broadest level represents an achievement motivation composite useful for indicating an individuals' general orientation toward achievement and performance across a number of subordinate factors and facets. This level is most consistent with the early unitary theoretical

conceptualizations of achievement motivation (e.g., Alderfer, 1969; Maslow, 1943; McClelland, 1987; Murray, 1938). At the mid level, factor score composites of intercorrelated groups of achievement motivation facets are useful for indicating an individuals' standing on meaningful clusters of achievement motivation facets. This level may be most consistent with recent, increasingly complex conceptualizations (e.g., Amabile, Hill, Hennessey, & Tighe, 1994; Gordon, 1973; Heggestad & Kanfer, 2000; Super, 1970). At the narrow level, facet scores are useful for predicting specific achievement motivation behaviors (e.g., work-related achievement motivation behaviors). As mentioned previously, specific behaviors demonstrating each narrow trait may be defined and linked to its appropriate trait based on the Onion Model. For example, respective work-related behaviors can be identified that demonstrate the narrow facet of status orientation.

I have argued that the approach of using broad traits to predict an overall job performance dimension is most useful when the goal is to predict at the broad domain level. However, this approach may obscure other important relationships between lower-order facets of broad traits and specific behaviors subsumed under the broader job performance domain. Again, referring back to Hogan and Holland's (2003) proposition that criterion-related validities should be highest when the level of the predictor (e.g., trait) and the criterion (e.g., job performance) are matched, it follows than that the matched predictor-criterion relationships at each level of specificity should be greater than the relationships of non-matched predictor-criterion relationships. For the purpose of this study, three levels of specificity in the measurement of both predictors (achievement motivation) and criteria (achievement motivation behavior at work) will be examined:

facet, factor, and composite. Therefore, my first set of hypotheses (H1a, H1b, H1c) are that the matched predictor-criterion relationships (e.g., when the levels of aggregation are matched) will be higher than the non-matched predictor-criterion relationships (e.g., when the levels of aggregation are unmatched)[1]. Specifically:

Hypothesis 1a: The average matched facet-facet relationship will be higher than the average of the non-matched facet-factor and facet-overall relationships

Hypothesis 1b: The average matched factor-factor relationship will be higher than the average of the non-matched factor-facet relationships and factor-composite relationships

Hypothesis 1c: The matched composite-composite relationship will be higher than the average of the non-matched composite-facet and composite-factor relationships

Research studies in the personality domain by Ashton, Jackson, Paunonen, Helms, and Rothstein (1995) and meta-analytic findings by Dudley et al. (2006) demonstrate that narrow facets of the Big 5 dimensions of conscientiousness and extraversion provide incremental predictive validity for specific job behaviors (depending on the behavior) over the global traits. Again, if I apply Hogan and Holland's (2003) proposition and consider these empirical findings, then among the matched relationship levels, the predictor-criterion relationship should increase as the specificity of the matched level increases. Therefore:

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[1] For these analyses, unmatched refers to unmatched levels of aggregation and not to unmatched conceptual content. For example, the average of the unmatched predictor criterion relationships in hypothesis 1a will consist of the average of the relationships between the facets and corresponding factors, as well as the relationships between the facets and composite.

Hypothesis 2: Among the three levels of matching, the average of the facet-facet relationships will be the greatest, followed by average of the factor-factor relationships, and the composite-composite relationship.

Finally, given defined sets of behaviors matched to the corresponding facet level of the predictor, and aggregate composites of behaviors to match the factor and general levels respectively, my final set of hypotheses (H3a, H3b, and H3c) are that each matched level of the predictor will be positively associated with the corresponding matched level of the criterion. Specifically:

Hypothesis 3a: Self-reports of facet perceptions will be positively related to supervisor's report of behaviors representative of the facet domain

Hypothesis 3b: Self-reports of factor composites will be positively related to supervisor's report of behaviors representative of the factor domain

Hypothesis 3c: Self-reports of global achievement motivation will be positively related to supervisor's report of behaviors related to global achievement motivation

Overview and objectives

There were two objectives of the present study. The first goal was to compare level-matched to non-level-matched correlations of predictors and criteria, and to compare correlations of matched predictors and criteria at three levels of specificity. This would demonstrate empirically that the broad/narrow hypothesis applies to the domain of achievement motivation. The second goal was to demonstrate criterion-related validity evidence for the facets, factors and composite of the AMI in a cross-national sample of Brazilians.

Method

Participants

The participants were employees (n = 74; ages 17-59) from four Brazilian organizations in the Sao Paulo metropolitan area. Forty-seven percent of the participants were male and fifty percent were female. Three percent did not report sex status. The entire sample resided in Brazil and reported Brazil as their country of origin. Twenty-eight percent of the participants reported an ethnicity of Caucasian, followed by eighteen percent who reported Hispanic, sixteen percent who reported Native American, ten percent who reported African American, and four percent who reported Asian American. Twenty-four percent did not report ethnicity status.

Procedure

The present study took place as part of a multi-national project aimed at investigating achievement motivation. For all studies in the large scale project, participants were recruited through collaborators in the various countries. An agreement was made between the author(s) and collaborator(s) in each host country whereby the author(s) would compare patterns of achievement motivation across cultural and national groups, and collaborators would arrange for groups in the host country to complete the AMI, other relevant questionnaires, and gather demographic information for each sample. The participants in the present study were recruited by the author's collaborators in Brazil. The collaborators arranged for the AMI to be administered to each participant and arranged for the Achievement Motivation Behavior Questionnaire (AMBQ) to be administered to each participant's direct supervisor who was familiar with the participant's day-to-day work behavior and performance. Prior to administering the AMI,

the English AMI was translated into Portuguese through a rigorous translation-back-translation methodology to ensure translation accuracy. This process was also part of the general agreement between the author(s) and collaborator(s) in order to ensure consistency and appropriate rigor in AMI translation across the large-scale project. First, the English AMI was translated to Portuguese by an individual whose native language was Portuguese (who also spoke English). Second, the translated Portuguese AMI was back-translated into English by another individual whose native language was English (and also spoke Portuguese) and had no knowledge of the original English AMI. Third, the back-translated English AMI was compared to the original English AMI and checked for accuracy by another individual whose native language was English (and did not speak Portuguese). Agreement among all parties constituted a complete translation.

Measures

All AMI items were administered to participants on one single paper and pencil questionnaire designed to be completed in sixty minutes. All Achievement Motivation Behavior items were administered to participants' direct supervisors on a separate single paper and pencil questionnaire designed to be completed in thirty minutes. Neither participants nor supervisors were permitted to view each others' responses on the questionnaires.

Achievement Motivation Inventory (AMI). This self-report measure assesses 17 facets of achievement motivation (see Table 1). Participants responded to a total of 170 items (10 items per facet) on a scale of (1) "does not apply at all" to (7) "applies fully." Observed facet scores for each participant were calculated by averaging all 10 items for

each facet after reverse scoring negatively worded items. Observed factor scores[2] for each participant were calculated by averaging all items of all facets comprising the factor after reverse scoring negatively worded items. Observed overall achievement motivation scores for each participant were calculated by averaging all 170 items of the AMI after reverse scoring negatively worded items. Reliabilities (coefficient α) have been previously established for the AMI (Schuler et al., 2004) and those for the present study are presented in Table 3 for the observed facet, factor, and overall AMI scales.

Achievement Motivation Behavior Questionnaire (AMBQ). This self-report measure was designed specifically for the present study and assesses work-related achievement motivation behaviors representative of each of the 17 facets (See Appendix A). The questionnaire was originally developed in the English language by members of the larger-scale research team in the U.S. (consisting of faculty and graduate students in Industrial/Organizational Psychology). The research team collectively brainstormed potential items, discussed, and came to agreement on those items that would be included on the final version. The final questionnaire contained 34 items (2 items per facet) assessing the frequency of achievement motivation behavior displayed by the participant on a typical day at work and was translated to the Portuguese language by the author's colleagues in Brazil.

Participants' direct supervisors responded to each of the 34 items on a frequency scale consisting of the following anchors on a continuum of least frequent to most

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[2] For the purpose of the mid-level analyses, facets with cross-loadings onto two factors were examined and included with other items subsumed under the factor for which the facet had the greatest loading based on the confirmatory factor analysis conducted in Potemra (2007). Confidence in success & dominance will be included with the items for factor 1, and eagerness to learn & goal-setting will be included with the items for factor 2.

frequent: "very rarely," "rarely," "sometimes," "often," "very often," and "always." For the analyses, the anchors were converted to a Likert-type scale in order to calculate meaningful work behavior scores. Scores of 1-6 were assigned to the anchors with the corresponding frequency (e.g., "very rarely" = 1, "always" = 6). Observed subordinate achievement motivation behavior scores for each of the 17 facets were calculated by averaging the two items for each facet. Observed subordinate achievement motivation behavior scores for each of the three factors were calculated by averaging the items corresponding to the AMI factor. Observed subordinate overall achievement motivation behavior scores were calculated by averaging all 34 items on the achievement motivation behavior questionnaire. Reliabilities (coefficient α) for observed facet behavior, factor behavior, and overall behavior scales are presented in Table 4.

Results

In the following sections, the results for some preliminary analyses are followed by analyses of the hypotheses.

Preliminary Analyses

Means, standard deviations, alpha reliability estimates, and correlations between all facet, factor, and overall scores of the Achievement Motivation Inventory (AMI) are presented in Table 3. Brazilian workers reported the highest levels on the facets of pride in productivity ($M = 6.16$), internality ($M = 5.58$), and eagerness to learn ($M = 5.41$), and reported lower levels on the facets of flow ($M = 4.66$), dominance ($M = 4.57$), and competitiveness ($M = 3.78$). Many of the alpha reliability estimates obtained for the facets were less than acceptable (using the criterion of greater than 0.70; Nunnally & Bernstein, 1994). However, Schuler et al. (2004) established adequate test-retest

reliability for all 17 facets and advocated that test-retest stability provides better estimations of reliability for the AMI since some of the scales are designed to be more heterogeneous than other scales. The alpha reliability estimates obtained for the factors and composite scales all reached acceptable levels. These were expected to be higher because the factor and overall scales have more items.

The correlations among the facets ranged from -0.32 to 0.63 (only two were significantly negative) and the average correlation[3] between the facets was 0.28. This moderate average correlation and the fact that the highest correlation between the facets was 0.63 together indicate that the facets are largely unique in the criterion domain of work-related achievement motivation behavior. In all but one case, the correlations between each facet and the corresponding factor (e.g., confidence in success correlated 0.71 with factor 1) were higher than the correlations between the same facet and the non-corresponding factors (e.g., confidence in success correlated 0.57 with factor 2 and 0.17 with factor and 3). The exception was dominance (which correlated 0.60 with factor two and 0.57 with factor 1). This was not surprising since it was cross-loaded on factor 1 and 2 in the Byrne et al. (2004) model, whereas it was included only under factor 1 for the purpose of this analysis. This pattern of correlations between the facets and factors provides convergent and discriminant validity evidence.

Means, standard deviations, alpha reliability estimates, and correlations between all facet, factor, and overall scores of the Achievement Motivation Behavior Questionnaire (AMBQ) are presented in Table 4. Brazilian managers reported the highest levels of subordinate facet-related behavior on the facets of pride in productivity (M =

[3] All average correlations were calculated based on absolute values and after applying a transformation to Z scores (Fisher, 1925).

4.61), confidence in success ($M = 4.43$), and compensatory effort ($M = 4.31$), and reported lower levels on the facets of goal setting ($M = 3.37$), engagement ($M = 3.24$), and competition ($M = 3.13$). It is worth noting that pride in productivity received the highest mean ratings on both the AMI and the AMBQ. Many of the alpha reliability estimates obtained for the facet behavior scales were less than acceptable (criteria of greater than 0.70; Nunnally & Bernstein, 1994). However, the alpha reliability estimates obtained for the factor behavior scales and composite behavior scales all reached acceptable levels. Again, these were expected to be higher since the factor and overall scales had more items.

The correlations among the facet behavior scales ranged from -0.16 to 0.71 and the average correlation between the facets was 0.38. This moderate average correlation and the fact that the highest correlation between the facets was 0.71 together indicate that most of the facet behaviors are unique in the criterion domain of achievement motivation behavior. In all cases, the correlations between each facet behavior scale and the corresponding factor behavior scale (e.g., behaviors related to confidence in success correlated 0.76 with behaviors related to factor 1) were higher than the correlations between the same facet behavior scale and the non-corresponding factor behavior scales (e.g., behaviors related to confidence in success correlated 0.62 with behaviors related to factor 2 correlated 0.51 with behaviors related to and 3). This pattern of correlations between the facet behavior scales and factor behavior scales provides convergent and discriminant validity evidence.

Table 5 summarizes the relationships between each of the computed facet, factor, and composite scales on the AMI (predictor measures) and the computed facet behavior,

factor behavior, and composite behavior scales on the AMBQ (criterion measures). From mere inspection of this table, it should be noted that the correlations between the AMI facet scales and conceptually correspondent facet behavior scales range from -0.27 to 0.40. The fact that a portion of these correlations were zero or non-significant indicates that the facets are not interchangeable when predicting a variety of specific behaviors subsumed under the broader domain of achievement motivation.

Analyses of the Hypotheses

The first set of hypotheses predicted that the average matched predictor-criterion relationship would be stronger than the average non-matched predictor criterion relationship. Previous single sample studies assessing the appropriateness of matching the level of predictors and criteria have drawn conclusions based solely on inspection of correlations between matched and unmatched relationships (e.g., Ashton, 1998, Jenkins & Griffith, 2004). Using this framework, evidence of broad/narrow hypothesis may be demonstrated when a stronger relationship between the narrow predictor and the narrow criterion is observed, in comparison to the relationship between the same narrow predictor and the broader criterion. Given the large number of predictors and criteria assessed in the present study, the average correlation between each grouping of matched predictor/criterion relationships was compared to the average correlation between each grouping of unmatched predictor/criterion relationships.

In order to compare average correlations, two preliminary steps must be taken. First, an *r*-to-*z* transformation must be conducted on each *r*-value (raw correlation) in order to obtain a normally distributed grouping of transformed *z*-values (Fischer, 1925). The average transformed *z*-value must then be transformed back to an *r*-value (average

correlation). Second, in order to demonstrate homogeneity among each grouping of correlations for which an average correlation is calculated, a Q-test for homogeneity must be conducted on each grouping (Raghunathan, 2003). A non-significant Q statistic indicates a single grouping of correlations is homogeneous and the calculated average correlation is a useful representation of that sample of individual correlations to be compared. If non-significant Q statistics are observed across each grouping of individual correlations, then one may proceed to compare the average correlations of each grouping by inspection. To the author's knowledge, no significance test exists for comparing two or more average correlations when there is not a single common dependent variable among the grouping individual correlations.

For hypothesis 1a, the matched predictor-criterion relationships consisted of those correlations between AMI facet scales and the corresponding facet behavior scales (17 correlations averaged), and the unmatched predictor-criterion relationships consisted of those between the AMI facet scales and the corresponding factor behavior scales and composite scale (34 correlations averaged). Significant Q-statistics were obtained for both the matched grouping of predictor-criterion relationships ($Q = 168.77, p < 0.001$) and the unmatched grouping of predictor-criterion relationships ($Q = 388.64, p < 0.001$) . Therefore, the average correlations cannot be compared between these two groupings and hypothesis 1a was not supported. However, it is worth noting that the average matched facet-facet relationship ($M_r = 0.15$) was slightly higher than the average of the non-matched facet-factor and facet-overall relationships ($M_r = 0.13$). Despite heterogeneity among the groupings, the pattern of average correlations was in the expected direction.

For hypothesis 1b, the matched predictor-criterion relationships consisted of those between the AMI factor scales and the corresponding factor behavior scales (3 correlations averaged), and the unmatched predictor-criterion relationships consisted of those between the AMI factor scales and the corresponding facet behavior scales and overall scales (20 correlations averaged). Significant Q-statistics were obtained for both the matched grouping of predictor-criterion relationships ($Q = 57.26$, $p < 0.001$) and the unmatched grouping of predictor-criterion relationships ($Q = 1248.5$, $p < 0.001$). Therefore, the average correlations cannot be compared between these two groupings and hypothesis 1b was not supported. However, it is worth noting that the average matched factor-factor relationship ($M_r = 0.14$) was slightly higher than the average of the non-matched factor-facet and factor-overall relationships ($M_r = 0.12$). Despite heterogeneity among the groupings, the pattern of average correlations was in the expected direction.

For hypothesis 1c, the matched predictor-criterion relationship consisted of only the AMI composite scale (1 correlation), and the unmatched predictor-criterion relationships consisted of those between the AMI composite scale and those of the factor and facet behavioral scales (20 correlations averaged). A significant Q-statistic was obtained for the unmatched grouping of predictor-criterion relationships ($Q = 73.45$, $p < 0.001$). A Q-test was not conducted on the matched grouping, since it consisted of only a single correlation. Therefore, the average correlation of the unmatched predictor-criterion relationships cannot be used as a comparison, and hypothesis 1c was not supported. However, it is worth noting that the matched composite-composite relationship ($r = 0.18$) was slightly higher than the average of the non-matched composite-facet and composite-factor relationships ($M_r = 0.12$). Despite heterogeneity among the unmatched grouping,

the pattern was in the expected direction. Therefore, hypotheses 1a, 1b, and 1c respectively were not supported, despite slight patterns in the hypothesized directions.

The second hypothesis predicted that among the matched relationships, the predictor-criterion relationships would increase as the level of specificity of the matching increased. Previous single sample studies assessing the relationship of matched predictor-criterion relationships at different levels of specificity have drawn conclusions based on regression analyses (e.g., Roberts, et al., 2005). In this framework, the narrow criterion is first regressed onto the combination narrow predictor(s), and second regressed onto the broader predictor(s). Evidence that narrow predictors provide incremental validity over the broader predictor is then demonstrated when the multiple correlation is greater using the first set of predictors than using the second. Given both the large number of narrow predictors and the limited sample size in the present study, it was not feasible to evaluate hypothesis 2 using the regression framework. Therefore, to demonstrate evidence for hypothesis 2, the average correlations of each matched grouping were to be calculated and compared according to the steps previously discussed.

Unfortunately, significant Q-statistics were already obtained for the matched facet-facet grouping and the matched factor-factor groupings, indicating that the average correlations cannot be compared between these two groupings. Therefore, hypothesis 2 was not supported. The pattern of average correlations was in the opposite direction anticipated. However, it is worth noting that the average of the composite-composite relationship was the greatest ($r = 0.18$), followed by both the average of the factor-factor relationships ($M_r = 0.15$), and facet-facet relationships ($M_r = 0.15$), which did not differ from each other.

The third set of hypotheses aimed to examine the criterion-related validities of the facet, factor, and composite predictors to their conceptually correspondent criteria. First, self-reports of facet perceptions were significant and positively related to supervisors' reports of behaviors representative of the comparable facet domain for the facets of dominance ($r = 0.31$, $p < 0.01$), preference for difficult tasks ($r = 0.24$, $p < 0.05$), engagement ($r = 0.34$, $p < 0.01$), and pride in productivity ($r = 0.32$, $p < 0.01$). Second, contrary to expectations, self-reports of factor composites were not significantly related to supervisors' reports of behaviors representative of the broader factor domain for any of the factors. However, the relationships were all positive and in the direction expected (see Table 5). Third, also contrary to expectations, self-reports of global achievement motivation were not significantly related to supervisors' reports of behaviors representative of the broad overall achievement motivation domain ($r = 0.18$, p = ns). However the relationship was positive and in the direction expected. Therefore, hypotheses 3a was only partially supported. Hypotheses 3b and 3c were not supported.

Discussion

Two goals were put forth in the present study. The first goal was to compare correlations of predictors and criteria at three levels of specificity. Due to heterogeneity among the groupings of correlations at each of the levels, relevant comparisons between the groupings could not be conducted. Therefore, empirical evidence of the Hogan and Holland (2003) proposition for matching levels of achievement motivation predictors and criteria was not demonstrated. The second goal was to demonstrate criterion-related validity for the facets, factors, and composite of the AMI in a cross-national sample of Brazilians. Criterion-related validity evidence was obtained for the facets of dominance,

preference for difficult tasks, engagement, and pride in productivity. Additionally, initial evidence of convergent and discriminant validity of both the Achievement Motivation Inventory (AMI) and Achievement Motivation Behavior Questionnaire (AMBQ) was demonstrated.

Achievement Motivation and the Broad/Narrow Hypothesis

When measuring any single attribute (or group of attributes), researchers and practitioners seek to obtain the highest degree of measurement precision possible (Cronbach, 1960; Guion & Gotter, 1965; Murphy, 1993). Therefore, the ideal measurement of human behavior would be theory driven and based on well defined constructs (e.g., achievement motivation) and criteria (e.g., achievement motivation behaviors in the workplace), in order to maximize precision of the instrument. Hogan and Holland (2003) advocated that a theoretically-based matching of the level of predictors and criteria would ensure maximal criterion-related validity between the two. The Onion Model (Schuler, 1998) provided theoretical guidance for appropriately matching the levels of the achievement motivation construct. The present study failed to demonstrate homogeneity among groupings of correlations and thus, systematic comparison of matched and unmatched predictors could not be accomplished. These findings neither support nor refute the Hogan and Holland (2003) proposition. There are two potential conclusions regarding the broad/narrow proposition that may be drawn from the pattern of findings observed.

One possible conclusion that can be drawn from the observed pattern of findings is that the level of achievement motivation predictors and criteria actually results in maximal criterion-related validities and support for this proposition was not detected in

the present study. Despite the fact that the patterns of average correlations indicated support for the Hogan and Holland (2003) proposition, this conclusion cannot be drawn due to heterogeneity of groupings of correlations. Methodologically, the relatively small sample and/or the poor criterion measure reliabilities offer one explanation to explain the heterogeneity observed among the correlations in each of the groupings. Using a larger sample and/or more reliable criteria may increase the homogeneity between the individual correlations and permit a test of the broad/narrow proposition.

Perhaps another explanation to explain the heterogeneity among the correlation groupings was the large number of individual correlations included in most of the groupings. As discussed previously, the Onion Model provided the theoretical guidance for matching levels of predictors and criteria, but also suggests that the facets can each be placed on a continuum of proximity to behavior. Similarly, Heggestad and Kanfer (2000) distinguish between motivational traits and motivational skills. Motivational traits represent dispositional characteristics whereas motivational skills have been found to be influenced by certain personality characteristics (e.g., neuroticism (Kanfer, Ackerman, & Heggestad, 1996) and have a direct impact on behavior (e.g., mediate the relationship between motivational or personality traits and behavior). Heterogeneity among the correlations, particularly at the facet level, may have been a consequence of an ineffective grouping of the matched (and consequently unmatched) narrow predictors. For example, following this logic, the observed facet-level predictor-criterion relationships among those facets more proximal to behavior should have been higher than those facets less proximal to behavior. If these facets were identified and grouped separately, greater homogeneity among the individual correlations in the smaller

groupings might then be observed, and thereby permit a test of the broad/narrow proposition.

Another possible conclusion that may be drawn from the observed pattern of findings is that matching the level of predictors and criteria in the domain of achievement motivation does not result in maximal criterion-related validity, namely when the narrow level is conceptualized as 17 separate facets. It may be the case that 17 facets may be more than necessary to adequately capture the construct (no studies to the author's knowledge have explored the item-level factor structure of the AMI), thus explaining the observed heterogeneity in individual correlations. A less complex conceptualization of achievement motivation may provide more appropriate guidance for testing the Hogan and Holland (2003) proposition. A smaller number of facets may lead to greater homogeneity among the narrow grouping, thus permitting a test of the broad/narrow proposition.

Taken together, the findings reinforce the proposition that a single factor conceptualization (e.g., McClelland, 1987) does not adequately capture the complexities of achievement motivation. The Onion model (Schuler, 1998) offers one framework to better understand the complexities of the construct and its relationship with specific, work-related behavior. The Onion model appropriately conceptualizes of the construct at the narrow (facet) levels. However, it does not specify the exact number of facets subsumed under the broader construct. The findings from the present study indicate that prior to making the comparisons necessary to demonstrate support for the Hogan and Holland (2003) proposition: a) the 17 facets should be grouped according to proximity to

behavior, or b) a number of facets smaller than 17 should be considered as narrow traits of the broader construct.

Criterion-related Validity of Achievement Motivation

Potemra (2007) previously demonstrated cross-national measurement equivalence of the AMI between U.S. and Brazilian samples. However, Caligiuri (2006) recommends that in addition to demonstrating cross-national measurement equivalence, cross-national criterion-validity evidence be obtained prior to using any measure to predict work behavior in other countries. The present study obtained significant criterion related-validity estimates for the facets of dominance, preference for difficult tasks, engagement, and pride in productivity. Given the large number of relationships analyzed in the present study, perhaps the correlations occurred by chance alone and/or may be the result of type I error. Thus, the findings might not be interpreted to be informative relationships. However, when integrated with previous research (Potemra, 2007), the likelihood that the meaningfulness of a subset of significant relationships in the present study increases.

In addition to demonstrating measurement equivalence of the AMI, Potemra (2007) conducted observed and latent mean score difference tests on the facets of achievement motivation between the U.S. and Brazilian national samples. Specific hypotheses were developed a-priori for those facets believed to be important in Brazilian culture, based on an analysis of Brazilian culture, values, and national policy. The author hypothesized that Brazilians would report higher levels of achievement motivation on the facets of pride in productivity, status orientation, fearlessness, and confidence in success than US nationals. Observed score difference tests were conducted on all facets and the latent mean score difference tests were conducted on only those facets where differences

between the two national samples were hypothesized. The observed and latent difference score analyses supported the hypotheses for the facets of pride in productivity, status orientation, and fearlessness. Of particular relevance is the finding in Potemra (2007) that pride in productivity was first hypothesized and then actually found to be reported at higher levels by Brazilian nationals at both the observed and latent score levels. In the present study, a significant criterion-related validity estimate was obtained for pride in productivity (see Table 6).

Taken together, the results of both studies may demonstrate the importance of pride in productivity in Brazilian culture, reflecting the general collectivist orientation of Brazilian nationals (Bontempo, Lobel, & Triandis, 1990; Gouveia, Albuquerque, Clemente, & Espinoza, 2002; Hofstede, 1984). For example, a large portion of work in Brazil is completed within family business establishments. Therefore, Brazilians may derive much pride in doing work within family businesses because producing high quality end-products will ultimately contribute to the prestige of the family's name and reputation within the community. These integrated findings help refute the argument that the significant validity estimate obtained in the present study is only a product of chance or type I error and demonstrate that the facet of pride in productivity is, indeed, important in Brazilian culture and work behavior.

In Potemra (2007), hypotheses were not specifically formulated for the facets of preference for difficult tasks and engagement. However, observed score differences on both facets were obtained such that Brazilian nationals reported higher levels than U.S. nationals. Again, these findings help to support the argument that chance or type I error may not be the appropriate interpretation for the significant validity estimates obtained in

the present study for these facets, thereby demonstrating their importance in the prediction of work behavior in Brazil.

Limitations and Directions for Future Research

As always, the present study has limitations to be discussed. First, whereas the alpha reliability estimates for the factor and overall scores achieved acceptable levels (Nunnally & Bernstein, 1994) on both measures, they were relatively low for the facet scales, particularly those scales on the Achievement Motivation Behavior Questionnaire. This may be cause for failure to obtain the higher facet-facet correlations necessary to permit stronger conclusions. Despite this constraint, the predictor-criterion relationships can still be considered conservative relationships than what may have been had the alpha reliability estimates been higher (since low alpha reliability estimates will reduce the likelihood of finding relationships with other variables).

The low alpha reliability estimates is likely due to the fact that only two items per facet were included in the Achievement Motivation Behavior Questionnaire. Therefore, one avenue for future research would be to increase the number of items representing each facet on the AMBQ to obtain more acceptable reliability levels.

Second, despite the fact that partial support for hypothesis 3 was obtained (for four facets), there were a portion of significant correlations between certain facets and the corresponding behaviors of non-matched facet dimensions (e.g., the perception of my level on preference for difficult tasks significantly correlated with my supervisors perception of my behavior on the confidence in success facet; see Table 5). It is likely that a portion of the managers' behavioral ratings between the separate dimensions were biased by halo error. This means that the manager had formed an overall impression of

the subordinate and this impression led to greater similarity between ratings for each of the dimensions. The halo bias may have inflated correlations between some of the facets with behavior scales from other facet domains.

Some precaution was taken to reduce halo error, such as defining each facet-level criterion in specific behavioral terms. However, future research should take greater measures in order to reduce halo bias among the criterion ratings. For example, this could easily be accomplished by providing the rating managers with a brief frame-of-reference training session (Schleicher, Day, Mayes, & Riggio, 2002) with components such as a) educating on the definitions of each of the facets of achievement motivation, and b) practicing identifying behaviors appropriate to each dimension. Evidence in the area of behavioral assessment has found that providing raters with this type of training can reduce common rater biases, such as halo.

Third, the sample of Brazilian nationals in present study was relatively small, thereby limiting the extent to which the inferences in the present study can be generalized to the broader Brazilian population (and general population). Additionally, the participants in the present study were virtually all educated and resided in the urban sectors. Despite the limited sample size and demographics, the present study did find some positive findings that warrant further exploration. Therefore, future research aimed at generalizing the findings to the Brazilian population should both focus on obtaining a larger sample size representative of both the urban and rural sectors. It may also be fruitful to understand the potential variations in the prediction of achievement motivation behavior across different groups within the same country.

Fourth, whereas extensive research has consistently pointed to a three factor structure of the AMI, use of the limited sample did not permit an analysis of the factor structure of the criterion measure. Therefore, the decision as to how to group the factor and facet level criterion variables were based only on an assumed link between the predictor and corresponding criteria, and not on a more rigorous factor analysis of achievement motivation work behavior. Again, larger samples should be obtained in order to validate the characteristics and the appropriate number of factors and/or facets on the criterion measure.

Finally, whereas the criterion measured work-place behavior, the specific domain of the criterion measure is limited to achievement motivation behaviors, and does not necessarily capture those work behaviors identified by traditional job performance models (Borman & Motowidlo, 1993; Campbell, 1990). Therefore, another fruitful avenue of future research would be to compare correlations of AMI overall, factor, and facet predictors to multi-level criterion measures defined according to an existing job performance model, such as the Task/Contextual job performance distinctions. Roberts et al. (2005) investigated correlations of narrow traits of conscientiousness with practical job behaviors such as drug abuse, work dedication, and preventative health behaviors. Future work with the AMI should compare correlations using these practical types of job behavior as criteria.

Practical Implications and Conclusion

The results of the present study point to some important practical implications. First, narrow achievement motivation traits are useful in predicting specific work-related achievement motivation behaviors. Based on the theoretical guidance from the Onion

Model (Shuler, 1998), the present study provided evidence that specific facets of achievement motivation, as measured by the AMI, predict corresponding work behaviors in the criterion space.

Second, a complex structure of achievement motivation provides one framework to understand the cross-cultural variations in relationship strength between narrow facets and important work-related performance outcomes (e.g., work-related achievement motivation behavior) in different countries. Brazilian economic policy currently emphasizes increased economic competitiveness, national stability, and global presence (Font, 2003). Of key relevance is the specific focus of this policy on occupational development such as formal education and job training for more Brazilians to ultimately increase the productivity of the growing workforce.

Findings from the present study may point to the unique motivational aspects of work-life for Brazilians. For example, pride in productivity may be more important than other aspects of achievement motivation in judgments of work-related achievement motivation behavior by Brazilian managers. Evidence from performance appraisal research associated with the observation classification of behavior indicates that humans can accurately classify human behavior into separate categories (e.g., identify specific pride in productivity behaviors) and make accurate judgments based on the category of behavior being observed (e.g., judge the frequency of pride in productivity behavior in the workplace; Nathan & Lord, 1983). Pride in productivity may be a relatively meaningful category of human behavior for Brazilians to make judgments about work-related behavior. The results of present study also suggest that engagement, dominance, and preference for difficult tasks may be meaningful categories of human behavior in

Brazilian culture. Future international empirical evidence assessing the validity of lower order facets of achievement motivation will provide clearer indications of which facets may be useful for personnel judgments (e.g., selection, performance appraisal) in other cultures, such that culturally-meaningful facets are the basis for such judgments.

The present study sought to provide empirical support for: a) the Hogan and Holland (2003) proposition for matching predictors and criteria in the domain of achievement motivation, and b) the AMI to predict specific work behaviors. Whereas additional support for the Hogan and Holland (2003) proposition was not obtained, initial cross-national criterion-related validity evidence for the AMI was demonstrated. Given the increasing trend toward workforce globalization, the accumulation of cross-national research will inform future national development initiatives and foster effective personnel practices in other nations.

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Table 1

AMI Facet Definitions with Sample Items

AMI Facet	Brief defintion and sample item
Compensatory Effort	Willingness to expend extra effort to avoid failing at a work task, even if this effort results in over-preparation. *So that I will not be subject to criticism, I prefer to double my effort*
Competitiveness	Motivation derived from competing. A desire to be better and faster than others. *It annoys me when others perform better than I do*
Confidence in Success	Confidence in achieving success even when there are obstacles to overcome. *Even when faced with a difficult task, I always expect to achieve my goal*
Dominance	Need to exercise power and influence over others; tendency to take initiative and to have control over activities. *I like to decide what others should do*
Eagerness to Learn	Desire and willingness to spend a lot of time enlarging one's knowledge for knowledge sake. *When I see or hear something new, I try to retain as much as possible*
Engagement	Desire to be regularly engaged in activity, usually work related; uncomfortable if nothing to do for long periods. *Others say that I work a lot more than necessary*
Fearlessness	Lack of fear of failing at difficult tasks; not nervous about performing in public or under time-pressure. *When faced with a new job or task, I am often afraid of doing something wrong* (RS)
Flexibility	Willingness to accept change and the enjoyment of challenging new tasks. *I am open to everything new*
Flow	Ability to concentrate on something for a long time without being distracted by situational influences; tend to become lost to the outside world when absorbed in a task. *When I am busy with something interesting, I can forget the world about me*
Goal Setting	Tendency to set high goals and make long term plans for achieving these goals. *Generally I am not satisfied for long with something I have succeeded in doing, but instead I ry to do an even better job the next time*
Independence	Tendency to take responsibility for one's own actions; would rather make own decisions than take direction from others. *When performing a difficult task, I prefer sharing the responsibility with others rather than bearing it alone* (RS)
Internality	The belief that one's successes and failures are due to internal causes rather than to situational variables. *The extent of one's professional success depends a good deal on luck* (RS)
Persistence	Willingness to exert large amounts of effort over long periods of time to reach a goal. *When I am determined to do something, and I don't succeed, then I do everything I can to still accomplish it*
Preference for Difficult Tasks	Tendency to seek out challenging rather than easy tasks; desire to seek greater challenges once a difficult task is done. *When I have a difficult task, I like to work on it for a long period of time*
Pride in Productivity	Sense of enjoyment and accomplishment derived from doing one's best at work. *It makes me proud and happy to have mastered a difficult task*
Self-control	Ability to delay gratification and to organize oneself and one's work; a form of self-discipline. *I frequently put off until tomorrow things that I should do today* (RS)
Status Orientation	Desire to attain high status in one's personal life and to progress professionally. *I know exactly what professional position I would like to hold in five years*

Note. Italicized sentence represents a sample item from the scale. RS=reverse scored. From "Measuring achievement motivation: tests of equivalency for English, German, and Israeli versions of the achievement motivation inventory," by Z. S. Byrne, R. A. Mueller-Hanson, J. M. Cardador, G. C. Thornton III, H. Schuler, A. Frintrup, and S. Fox, 2004, *Personality and Individual Differences, 37*, p. 206. Copyright 2003 by Elseveier Ltd. Reprinted with permission.

Table 2

Broad and Narrow Traits of Achievement Motivation

Level of Specificity	Measurement	Background	Interpretation
Broad Level	AMI Total score composite	Unitary theoretical conceptualizations (e.g., McClelland, 1987)	General orientation toward achievement and performance
Mid Level	AMI Factor score composite	Increasingly complex conceptualizations (e.g., Amabile et al., 1994)	Standing on meaningful clusters of achievement motivation clusters
Narrow Level	AMI Facet score composite	Onion model conceptualization (e.g., Schuler, 1998)	Standing on specific facets of achievement motivation

Table 3

Descriptive Statistics, Alpha Reliability Estimates, and Correlations of the Achievement Motivation Inventory Scales

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Confidence in Success	5.37	0.62	0.69																				
2 Dominance	4.57	0.76	**0.48**	0.62																			
3 Fearlessness	4.87	0.86	0.20	0.06	0.73																		
4 Flexibility	5.17	0.62	**0.49**	0.21	**0.45**	0.55																	
5 Independence	4.81	0.65	0.19	0.18	0.17	0.11	0.44																
6 Pref for Diff Tasks	5.23	0.61	**0.44**	0.20	**0.34**	**0.49**	0.23	0.49															
7 Factor 1	5.00	0.43	**0.71**	**0.57**	**0.63**	**0.71**	**0.49**	**0.69**	0.82														
8 Compensatory Effort	5.04	0.85	**0.28**	**0.31**	**-0.32**	0.17	-0.02	0.18	0.13	0.75													
9 Competitiveness	3.78	0.93	**0.29**	**0.54**	**-0.23**	0.05	**0.25**	0.06	**0.24**	**0.32**	0.69												
10 Eagerness to Learn	5.41	0.66	**0.39**	**0.40**	**0.32**	**0.38**	**0.36**	**0.41**	**0.59**	0.21	0.16	0.57											
11 Engagement	4.69	0.87	**0.37**	**0.37**	-0.14	0.12	0.11	0.14	**0.24**	**0.33**	**0.34**	**0.26**	0.69										
12 Flow	4.66	0.71	**0.37**	**0.57**	-0.19	0.15	0.12	0.11	**0.28**	**0.40**	**0.37**	**0.27**	**0.44**	0.57									
13 Goal Setting	5.01	0.65	**0.60**	0.21	0.13	**0.39**	0.14	**0.29**	**0.44**	**0.36**	0.17	**0.53**	**0.41**	**0.25**	0.57								
14 Pride in Productivity	6.16	0.52	**0.36**	**0.42**	-0.01	**0.26**	**0.26**	**0.31**	**0.40**	**0.48**	**0.23**	**0.61**	**0.29**	**0.42**	**0.50**	0.64							
15 Status Orientation	5.26	0.80	**0.40**	**0.32**	-0.09	0.23	0.12	0.16	**0.28**	**0.48**	**0.32**	**0.34**	**0.31**	**0.29**	**0.46**	**0.63**	0.77						
16 Factor 2	5.00	0.49	**0.57**	**0.60**	-0.13	**0.31**	**0.24**	**0.29**	**0.47**	**0.69**	**0.59**	**0.59**	**0.66**	**0.65**	**0.67**	**0.74**	**0.72**	0.89					
17 Internality	5.58	0.74	-0.02	-0.13	**0.26**	0.20	**0.34**	**0.37**	**0.26**	-0.17	-0.10	**0.40**	-0.17	-0.14	0.08	**0.24**	0.07	0.01	0.66				
18 Persistence	5.29	0.70	**0.26**	0.11	**0.48**	**0.50**	**0.43**	**0.41**	**0.58**	0.05	0.04	**0.39**	-0.04	0.14	**0.24**	0.18	-0.06	0.15	**0.25**	0.63			
19 Self-Control	5.21	0.76	0.14	-0.13	**0.40**	**0.35**	**0.26**	**0.27**	**0.34**	0.14	-0.17	**0.31**	-0.09	-0.10	0.18	0.20	0.14	0.09	0.23	**0.59**	0.63		
20 Factor 3	5.36	0.55	0.17	-0.07	**0.50**	**0.46**	**0.45**	**0.46**	**0.52**	0.01	-0.10	**0.48**	-0.13	-0.05	0.22	**0.28**	0.07	0.11	**0.65**	**0.80**	**0.81**	0.78	
21 AMI Total	5.07	0.37	**0.68**	**0.59**	**0.30**	**0.60**	**0.47**	**0.58**	**0.83**	**0.49**	**0.44**	**0.73**	**0.47**	**0.51**	**0.65**	**0.70**	**0.58**	**0.84**	**0.28**	**0.54**	**0.40**	**0.54**	0.91

Note. Significant correlations are boldfaced. $r < 0.23, p =$ ns; $0.23 \geq r < 0.30, p < 0.05$; $r \geq 0.30, p < 0.01$.

Table 4

Descriptive Statistics, Alpha Reliability Estimates, and Correlations of the Achievement Motivation Behavior Questionnaire Scales

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Confidence in Success	4.43	0.90	0.67																				
2 Dominance	3.39	1.12	**0.38**	0.84																			
3 Fearlessness	4.28	0.77	**0.47**	**0.26**	0.03																		
4 Flexibility	4.26	1.14	**0.45**	0.07	**0.59**	0.83																	
5 Independence	4.05	0.86	**0.54**	**0.51**	**0.33**	**0.37**	0.29																
6 Pref for Diff Tasks	3.94	0.96	**0.54**	**0.50**	**0.61**	**0.52**	**0.55**	0.69															
7 Factor 1	4.06	0.70	**0.76**	**0.64**	**0.72**	**0.69**	**0.75**	**0.85**	0.85														
8 Compensatory Effort	4.31	0.88	**0.51**	0.21	**0.33**	**0.49**	**0.32**	**0.48**	**0.53**	0.39													
9 Competitiveness	3.13	0.91	**0.25**	**0.29**	-0.06	-0.05	0.10	0.12	0.15	0.01	0.49												
10 Eagerness to Learn	4.20	0.96	**0.59**	**0.27**	**0.62**	**0.67**	**0.48**	**0.71**	**0.76**	**0.53**	**0.24**	0.65											
11 Engagement	3.24	1.18	0.20	0.17	0.06	**0.25**	**0.30**	**0.35**	**0.31**	**0.41**	0.16	**0.34**	0.59										
12 Flow	3.76	0.94	**0.31**	-0.10	0.21	**0.39**	**0.29**	**0.24**	**0.30**	**0.51**	-0.02	**0.37**	**0.39**	0.27									
13 Goal Setting	3.37	0.88	**0.40**	0.06	**0.47**	**0.49**	**0.36**	**0.55**	**0.52**	**0.38**	0.04	**0.60**	**0.33**	**0.41**	0.64								
14 Pride in Productivity	4.61	0.94	**0.48**	0.11	**0.51**	**0.70**	**0.34**	**0.61**	**0.62**	**0.53**	-0.03	**0.68**	**0.24**	**0.36**	**0.47**	0.61							
15 Status Orientation	3.84	1.21	**0.48**	**0.38**	**0.38**	**0.25**	0.15	**0.65**	**0.52**	**0.27**	**0.32**	**0.53**	0.16	0.18	**0.50**	**0.37**	0.81						
16 Factor 2	3.81	0.64	**0.62**	**0.28**	**0.48**	**0.61**	**0.45**	**0.73**	**0.72**	**0.69**	**0.34**	**0.83**	**0.61**	**0.61**	**0.72**	**0.69**	**0.67**	0.84					
17 Internality	4.05	1.03	**0.54**	**0.43**	**0.27**	**0.33**	**0.69**	**0.50**	**0.62**	**0.33**	0.21	**0.50**	**0.32**	**0.35**	**0.29**	**0.41**	0.21	**0.50**	0.68				
18 Persistence	3.99	0.96	**0.41**	0.11	**0.33**	**0.43**	**0.57**	**0.50**	**0.53**	**0.37**	0.15	**0.46**	**0.50**	**0.51**	**0.48**	**0.57**	0.19	**0.62**	**0.61**	0.50			
19 Self-Control	4.30	1.02	**0.26**	0.02	**0.47**	**0.45**	**0.24**	**0.44**	**0.42**	**0.47**	-0.16	**0.49**	0.15	**0.56**	**0.47**	**0.58**	**0.27**	**0.54**	**0.23**	**0.45**	0.67		
20 Factor 3	4.11	0.79	**0.51**	**0.24**	**0.45**	**0.51**	**0.63**	**0.61**	**0.67**	**0.49**	0.08	**0.62**	**0.41**	**0.60**	**0.52**	**0.66**	**0.29**	**0.70**	**0.78**	**0.87**	**0.71**	0.75	
21 AMI Total	3.95	0.62	**0.72**	**0.44**	**0.63**	**0.69**	**0.66**	**0.83**	**0.90**	**0.66**	**0.24**	**0.84**	**0.51**	**0.55**	**0.67**	**0.74**	**0.60**	**0.93**	**0.67**	**0.71**	**0.59**	**0.83**	0.92

Note. Significant correlations are boldfaced. $r < 0.23, p =$ ns; $0.23 \geq r < 0.30, p < 0.05$; $r \geq 0.30, p < 0.01$.

Table 5

Correlations between Achievement Motivation Inventory and Achievement Motivation Behavior Questionnaire Scales

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1 Confidence in Success	0.00	0.15	0.08	-0.09	0.06	0.14	0.07	-0.03	0.22	0.04	-0.02	-0.12	0.08	0.01	0.19	0.08	-0.01	-0.04	-0.02	-0.03	0.06
2 Dominance	0.12	**0.31**	-0.02	0.07	**0.40**	0.17	**0.24**	0.09	0.08	0.04	0.09	-0.01	0.17	0.00	0.10	0.11	**0.32**	0.15	-0.02	0.19	0.19
3 Fearlessness	0.11	0.05	0.02	-0.05	0.00	-0.06	0.01	-0.14	-0.20	-0.12	-0.19	-0.18	-0.01	0.00	0.01	-0.16	-0.07	-0.06	-0.08	-0.09	-0.09
4 Flexibility	0.04	0.12	0.22	0.02	0.12	0.12	0.14	-0.15	-0.01	0.15	-0.10	-0.05	0.16	0.02	0.15	0.04	0.01	-0.02	0.00	0.00	0.07
5 Independence	0.15	0.08	0.01	0.06	0.22	-0.10	0.10	0.08	-0.01	0.07	-0.06	0.08	-0.06	0.07	-0.18	-0.01	0.13	0.04	0.08	0.11	0.06
6 Pref for Diff Tasks	**0.23**	0.11	0.20	0.18	**0.27**	**0.24**	**0.28**	0.01	0.06	0.21	-0.06	0.01	0.05	0.13	0.20	0.12	0.18	0.10	0.01	0.12	0.20
7 Factor 1	0.17	0.22	0.13	0.04	**0.28**	0.13	0.22	-0.04	0.02	0.08	-0.09	-0.08	0.10	0.06	0.12	0.03	0.15	0.04	-0.01	0.07	0.12
8 Compensatory Effort	-0.22	-0.17	-0.16	0.02	0.05	-0.02	-0.11	-0.07	0.06	-0.05	0.09	0.14	-0.02	-0.02	-0.20	-0.02	0.12	0.10	0.00	0.09	-0.03
9 Compentition	-0.01	0.14	0.08	0.12	**0.24**	0.08	0.15	-0.04	-0.01	-0.03	0.00	0.04	0.14	0.06	-0.03	0.02	0.21	0.09	0.05	0.15	0.10
10 Eagerness to Learn	0.17	0.12	0.07	0.08	0.22	**0.23**	0.20	0.08	-0.05	0.21	0.07	0.21	**0.23**	**0.28**	**0.25**	**0.25**	0.22	**0.24**	0.17	**0.27**	**0.26**
11 Engagement	0.09	0.16	0.00	0.18	0.10	**0.23**	0.18	0.15	**0.30**	**0.24**	**0.34**	0.18	0.16	0.14	0.20	**0.34**	0.09	0.22	0.07	0.16	**0.27**
12 Flow	-0.02	0.14	-0.01	0.05	**0.23**	0.07	0.11	0.10	0.11	0.08	0.12	0.04	0.06	0.00	-0.09	0.08	0.20	0.06	-0.08	0.07	0.10
13 Goal Setting	-0.12	-0.07	0.06	-0.01	-0.15	0.15	-0.03	-0.03	-0.05	0.10	0.10	0.08	0.18	0.12	0.23	0.15	-0.12	-0.02	0.09	-0.02	0.06
14 Pride in Productivity	0.01	0.11	0.11	0.15	**0.23**	0.17	0.18	0.07	-0.05	0.22	0.05	0.15	0.17	**0.32**	0.06	0.19	0.21	0.23	0.21	**0.27**	0.22
15 Status Orientation	0.01	0.14	0.05	0.07	0.14	0.11	0.12	-0.03	0.08	0.02	-0.05	0.03	0.10	0.18	0.11	0.08	0.07	0.14	0.10	0.14	0.12
16 Factor 2	-0.02	0.11	0.03	0.13	0.20	0.19	0.15	0.04	0.09	0.13	0.14	0.16	0.18	0.18	0.09	0.20	0.19	0.20	0.10	0.21	0.20
17 Internality	0.14	0.11	0.16	0.18	0.18	**0.26**	**0.24**	0.08	-0.12	0.22	0.00	0.06	0.16	0.20	0.17	0.15	0.16	0.14	0.10	0.17	0.21
18 Persistence	0.03	-0.07	0.11	-0.03	0.06	-0.12	-0.02	-0.15	-0.03	0.04	**-0.27**	-0.15	-0.08	-0.09	-0.14	-0.18	-0.09	-0.18	-0.02	-0.12	-0.12
19 Self-control	0.00	-0.11	0.15	0.02	0.05	-0.10	-0.01	-0.08	-0.07	0.07	**-0.25**	0.01	-0.11	0.04	-0.13	-0.11	-0.13	-0.02	0.13	-0.01	-0.06
20 Factor 3	0.08	-0.03	0.18	0.08	0.13	0.02	0.09	-0.06	-0.10	0.15	**-0.23**	-0.03	-0.01	0.07	-0.04	-0.06	-0.02	-0.02	0.10	0.02	0.01
21 AMI Total	0.08	0.15	0.12	0.12	**0.27**	0.17	0.20	-0.01	0.04	0.16	-0.01	0.06	0.15	0.15	0.09	0.12	0.17	0.13	0.08	0.16	0.18

Note. AMI scales are along the vertical (left-hand column) and corresponding behavior scales are along the horizontal (across the top). Significant correlations are boldfaced. $r < 0.23, p$ = ns; $0.23 \geq r < 0.28, p < 0.05$; $r \geq 0.28, p < 0.01$.

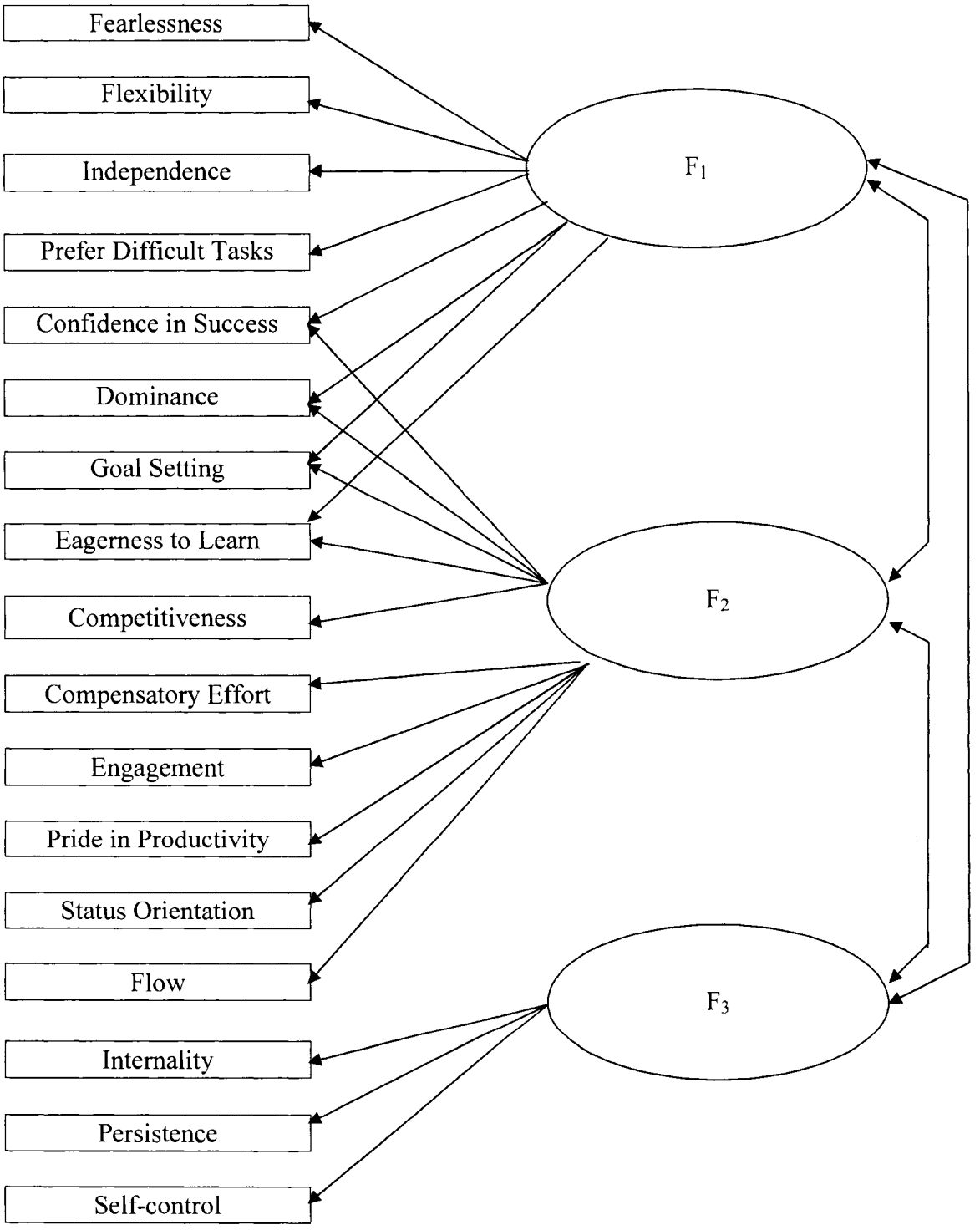
Table 6

Comparison of Criterion-related Validity Findings with Findings from Potemra (2007)

AMI Facet	Significant Criterion-related Validity in Present Study	Observed Score Difference in Potemra (2007)	Latent Mean Difference in Potemra (2007)
Pride in Productivity	Yes	Yes	Yes
Preference for Difficult Tasks	Yes	Yes	Not tested
Engagement	Yes	Yes	Not tested
Dominance	Yes	No	Not tested

Note. "Yes" indicates that Brazilian nationals reported higher facet levels than U.S. nationals. "No" indicates that there were no cross-national differences in reports of facet levels between the two national samples. "Not tested" indicates that the analysis was not conducted.

Figure 1. Three-Factor Model. From "Measuring achievement motivation: tests of equivalency for English, German, and Israeli versions of the achievement motivation inventory," by Z. S. Byrne, R. A. Mueller-Hanson, J. M. Cardador, G. C. Thornton III, H. Schuler, A. Frintrup, and S. Fox, 2004, *Personality and Individual Differences, 37*, p. 211. Copyright 2003 by Elseveier Ltd. Reprinted with permission.



Appendix A: Achievement Motivation Behavior Questionnaire

Description of Your Subordinate's Work Behavior

Subordinate's name _____ Your name: _____
Subordinate's job/position _____ Date _____

Please give a description of this subordinate's work behavior by reading each question and marking the answer that best describes the person work behavior on a regular, everyday work day. Think about how the person behaves on a typical day.

This information will not be seen by the subordinate or anyone else in the organization. The information will go a research team outside your organization. No one but the researchers will see the information. After the researchers match the information you provide with other information about this individual, names will NOT be used. At that point, no names will be included in any reports. Your description of the employee will be destroyed.

For this research study to be useful, we need your honest description of the work behavior of this subordinate. Thank you in advance for your cooperation.

When you have completed your description, please place this questionnaire in an envelope and return the envelope to the person whose name is at the bottom of this form.

Read each question and mark the answer that describes this person's typical, everyday behavior on the job.

1. How frequently does this person expend extra effort to accomplish difficult tasks?	Very rarely	Rarely	Sometimes	Often	Very often	Always
2. How frequently does this person compete with others at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
3. How frequently does this person demonstrate confidence, even when faced with a difficult task?	Very rarely	Rarely	Sometimes	Often	Very often	Always
4. How frequently does this person strive to have influence over others at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
5. How frequently does this person spend time enlarging his/her knowledge at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
6. How frequently does this person work for long hours without taking a break?	Very rarely	Rarely	Sometimes	Often	Very often	Always
7. How frequently does this person show nervousness about work performance?	Very rarely	Rarely	Sometimes	Often	Very often	Always
8. How frequently does this person does this person show	Very rarely	Rarely	Sometimes	Often	Very often	Always

willingness to accept changes in work tasks?						
9. How frequently does this person concentrate on something at work for a long time without being distracted?	Very rarely	Rarely	Sometimes	Often	Very often	Always
10. How frequently does this person set long term goals and plans at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
11. How frequently does this person take responsibility for his/her own actions at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
12. How frequently does this person show that he/she believes that his/her success at work is due to his/her abilities?	Very rarely	Rarely	Sometimes	Often	Very often	Always
13. How frequently does this person exert large amounts of effort over long periods of time to reach goals at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
14. How frequently does this person seek out challenging rather than easy tasks?	Very rarely	Rarely	Sometimes	Often	Very often	Always
15. How frequently does this person show enjoyment and a sense of accomplishment from doing his/her work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
16. How frequently is this person organized and self-disciplined at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
17. How frequently does this person exhibit a desire to attain a high status in the organization and to progress professionally?	Very rarely	Rarely	Sometimes	Often	Very often	Always
18. How frequently does this person display thorough preparation at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
19. How frequently does this person show a desire to be faster or better than others at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
20. How frequently does this person show that he/she is convinced he/she can accomplish things professionally?	Very rarely	Rarely	Sometimes	Often	Very often	Always
21. How frequently does this person try to take leadership over others?	Very rarely	Rarely	Sometimes	Often	Very often	Always
22. How frequently does this person display interest in learning new things on the job, even if there is no external reward?	Very rarely	Rarely	Sometimes	Often	Very often	Always
23. How frequently does this person neglect other aspects of life to get work done?	Very rarely	Rarely	Sometimes	Often	Very often	Always
24. How frequently does this	Very				Very	

person seek new and different tasks at work?	rarely	Rarely	Sometimes	Often	often	Always
25. How frequently does this person demonstrate his/her ability to adapt to new work situations?	Very rarely	Rarely	Sometimes	Often	Very often	Always
26. How frequently does this person get totally absorbed in work activities and block out the outside world?	Very rarely	Rarely	Sometimes	Often	Very often	Always
27. How frequently does this person display both high standards for him/herself at work and make long term plans to reach these standards?	Very rarely	Rarely	Sometimes	Often	Very often	Always
28. How frequently does this person display a preference to make his/her own decisions at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
29. How frequently does this person exhibit a belief that work outcomes are a result of one's own actions and efforts?	Very rarely	Rarely	Sometimes	Often	Very often	Always
30. How frequently does this person persist at the task over a long period of time?	Very rarely	Rarely	Sometimes	Often	Very often	Always
31. How frequently does this person seek greater challenges after completing a difficult task at work?	Very rarely	Rarely	Sometimes	Often	Very often	Always
32. How frequently does this person exhibit high satisfaction when he/she has improved performance?	Very rarely	Rarely	Sometimes	Often	Very often	Always
33. How frequently does this person show that he/she can concentrate on getting a task done now rather than putting is off until tomorrow?	Very rarely	Rarely	Sometimes	Often	Very often	Always
34. How frequently does this person exhibit a desire to achieve an important position in his/her community and in life?	Very rarely	Rarely	Sometimes	Often	Very often	Always

Thank you for your cooperation. Please place this questionnaire in the envelope and deliver it to: