

The Re-Assessment of the Australian Perceived Discrimination Scale: Confirmatory Factor Analysis Testing and Between Scale Comparisons

Gawaian Bodkin-Andrews, Rhonda G. Craven, Herbert W. Marsh and Andrew Martin
Self-concept Enhancement and Learning Facilitation (SELF) Research Centre, University of Western Sydney, NSW, Australia

With the recent formulation of a three factor Perceived Discrimination Scale (PDS) by Bodkin-Andrews, Craven and Marsh (2004) revealing an unacceptably high correlation between individual and institutional discrimination factors; this paper will present a rationale for a new two-factor understanding of perceived discrimination that will consist of measures of perceived discrimination at the individual (e.g. name calling) and macro (e.g. wider social attitudes) levels. Thirdly, by including the Personal/Group Discrimination Scale (PGDS) by Operario and Fiske (2001), an opportunity will be provided to examine the external validity of the PDS in comparison to a previously utilized discrimination measure. Finally, what relation perceived discrimination might have with multiple motivational constructs, as captured by Martin's (2004) Student Motivation and Engagement Scale (SMES) will be examined. It is hoped that the re-development of this scale will provide a robust measure for future perceived discrimination research within the Australian educational setting.

Allport (1954, p. 4) defined prejudice as "an antipathy based upon a faulty and inflexible generalization. It may be felt or expressed. It may be directed toward a group as a whole, or toward an individual because he is a member of that group". A logical consequence of prejudicial attitudes is the resulting interpersonal phenomenon of discrimination; a process by which individuals, who acting on their prejudicial values and/or ignorance, initiate either blatant or subtle behaviours that unfairly target another individual not belonging to the prejudicial person's self-reference group (Allport, 1954; Stangor, 2000). This definition of discrimination captures a critical distinction that has become apparent within more recently published psychological literature, that is, individuals who acting out their discriminative attributions and individuals who are the target of such discriminative attributions (as is the focus of this paper). Although some authors have claimed there is a lapse in research examining the unique perceptions and experiences of those targeted with discrimination (Fischer & Shaw, 1999; Major, Gramzow, et al., 2002; Meyer, 2003), there has been a recent upsurgeance in literature capturing themes such as stereotype threat (Steele, 1997), perceptions of discrimination (Essed, 1991; Landrine & Klonoff, 1996; Utsey & Pomterotto, 1996), implicit self-stereotyping (Levy 1996; Wheeler & Petty 2001) and internalised racism (Watts-Jones, 2002). Focussing on perceptions of discrimination, a term coined largely due to the subjective nature of what constitutes discrimination itself, one must note that such perceptions are a subjective interpretation of behaviour or events as being discriminatory towards oneself or one's reference group. This is regardless of whether the discriminatory instance is overt, subtle, or even a misinterpretation of intent. Research in perceptions of discrimination has contributed extensively to the understanding of differing perspectives of what Branscombe, Schmitt and Harvey (1999, p. 135) label the 'relative powerless', and that the inability to obtain consistent empirical findings both within and between varying minority groups highlight the complexity inherent within such research. Based on the inconsistencies within the current perceived discrimination research, this paper shall attempt to identify a valid perceived discrimination scale by reformulating the PDS by Bodkin-Andrews, Craven and Marsh (2004), and comparing it to a strong motivation scale in the SMES (Martin, 2004). From this research foundation, it is hoped that some clarification will be obtained as to the detrimental nature of perceiving discrimination against oneself and one's reference group.

Previous complexities in the existing research can be attributed to not only by the varying identities of targets of discrimination, but also by the myriad of outcomes that have been thought to emerge as a consequence of experiencing such stressful interactions. For example, research has examined the effect of discrimination on quality of life and various stress indicators (Casper, 2003; Corning, 2002; Fischer & Shaw, 1999; Klornoff, Landrine & Ullman, 1999; Noh & Sellers & Shelton, 2003; Szalacha, Erkut, et al., 2003; Thompson Sanders, 2002; Utsey & Ponterotto, 1996; Utsey, Chae, Brown & Kelly, 2002; Utsey, Pain, Jackson & Jones, 2002) various measures of individual and collective self esteem and identity (Barry & Grilo, 2003; Fischer & Shaw, 1999; Szalacha, Erkut, et al., 2003; Utsey et al., 2002; Verkuyten, 1998), coping strategies (Foster, 2000; Mellor, 2004; Verkuyten & Brug, 2003) and physiological responses (Brondolo, Rieppi, Kelly & Gerin, 2003). What is notable about a good portion of this research is the

surprisingly weak and non-significant effects that have been reported. These results may be attributed to poor theoretical conceptualisations of outcome or mediating measures and/or insufficient use of psychometrically sound discrimination measures. This is especially apparent with the popular use of general self-esteem inventories rather than more specific multi-dimensional self-measures. That is, general measures such as the Rosenberg Self-Esteem Scale (1954) based on solely unidimensional conceptions of self-concept may not be sensitive enough to capture the true relation discrimination may have with differing levels of an individual's self-understanding. As a result, this lack of understanding of the structure of self-notions is problematic (Craven & Marsh, 1997) and any conclusions drawn between discrimination and the general self-esteem should be considered tentatively at best. This criticism of using general self-esteem measures within perceived discrimination research is indirectly supported by a list of contradicting results ranging from significantly negative relations between self-esteem and discrimination measures (Cassidy, O'Connor, Howe & Warden, 2004; Moradi & Hasan, 2004), null relations (e.g. Branscombe, Schmitt & Harvey, 1999; Corning, 2002; Fischer & Shaw, 1999; Szalacha et al., 2003), and even positive relations between self-esteem and discrimination measures (Barry & Grillo, 2003; Romero & Roberts, 2003).

The seemingly perplexing results of Barry and Grillo (2003) and Romero and Roberts (2003), who both found significant correlations revealing that as levels of reported discriminative stress increased, so did participants' levels of general self-esteem, do at least have some theoretical justification. On the surface these results contradict more traditional reasoning suggesting that an individual's level of self-esteem should be inversely related to the degree to which the individual's group is discriminated against (Major & O'Brien, 2005; Crocker & Major, 1989). However, recent theoretical developments suggest that the positive relation between general self-esteem measures and perceived discrimination measures is theoretically justified in that targets of discrimination may be attributing negative feedback more as a characteristic of the prejudiced person, thus protecting the self (Major & O'Brien, 2005). In other words, "minority members may have developed... the strategy of discounting negative feedback from... majority group members and attributing it to prejudice as a means of coping and sustaining their self-esteem" (Dion, 2001, p. 3). Some empirical evidence supports this reasoning, for example, Major, Quinton and Schmader (2003) found that after being given negative feedback in a creative task, female participants' post-experimental self-esteem was significantly higher when they were given a cue suggesting that the male judge was overtly discriminative against women (i.e. participants were told by a confederate that 'The evaluator is totally prejudiced. He never picks a girl... he always picks a guy') as opposed to participants given no discriminative cues or ambiguously discriminative cues (i.e. 'the guy doing the evaluating totally grades guys and girls differently'). Although compelling, some caution should be made towards wholly accepting the self-sustaining effects of attributions of discrimination. Firstly, Major et al. (2003) also report findings suggesting that the more highly identified participants were with their gender identity, the more likely they would attribute their results as being due to discrimination, implying that the self-enhancing effects of discrimination are more due to protective properties of identity than discrimination per se. Additionally, although only alluded to by Major et al., Szalacha, Erkut, et al. (2003) stress the need to distinguish between experimental and self-report perceived discrimination research. Specifically, a general trend can be observed in published research whereby studies using self-reported discrimination measures tend to show more detrimental relations between discrimination and psychological processing. On the other hand, in experimental research where participants are subjected to specific discriminative events, the self-protective mechanism of attributing discrimination tends to buffer or enhance self-esteem. Szalacha, Erkut, et al., suggest that these differential results are due to the type of discrimination reported, that is although experimental manipulations of discrimination are one-off events, self-report measures of discrimination may tap more cumulative discriminative experiences over a life-time, thus highlighting the long term effects of being targeted with discrimination.

A final criticism that can be directed at the self-protective nature of attributions of discrimination hypothesis was alluded to earlier, and that is the use of general self-esteem measures that may produce misleading results. More precisely, considering growing recognition of the importance of understanding the multi-dimensionality of self-related measures (e.g. Marsh, 1990; Shavelson et al., 1976), such general measures of self-esteem may not be sensitive enough to pick up the true effects of perceived discrimination. This limitation is indirectly supported by a list of studies that have found that perceptions of discrimination do have detrimental relations with measures of group worth and group-esteem (e.g. Barry & Grilo, 2003; Corning, 2002; Leonardelli & Tormalla, 2003; Szalacha, Erkut, et al., 2003; Verkuyten, 1998) and a positive relation with various other symptomatic variables (where perceptions of discrimination increase as

symptoms increase); such as depression (Cassidy, O'Connor, Howe & Warden, 2004; Klonoff, et al., 1999; Noh & Kaspar, 2003), anxiety (Cassidy et al., 2004; Sellers & Shelton, 2003; Klonoff, et al., 1999) and somatization (Klonoff, et al., 1999). To acknowledge the harmful relation perceptions of discrimination share with various negative symptoms, yet also argue that discrimination may not adversely affect one facet of a person's multi-dimensional self, could be seen as a contradicting assumption. This could also downplay the effects discrimination may have on various other performance outcomes, such as school success.

Although current research is largely inadequate in addressing the effect discrimination may have on one's self-perceptions, a small number of studies have emerged which have produced some theoretically important findings highlighting what could well be one of the most damaging psychological effects of perceived discrimination. That effect being discrimination's relation with longer-term motivational tendencies. One of the initial studies to highlight the detrimental relations between discrimination and motivation can be found in a longitudinal analysis conducted by Thompson Sanders (1996), who found a difference between short-term intrusive patterns and longer-term avoidance patterns in response to self-reported experiences of discrimination. Specifically, it was found that African American participants' responses to perceived discrimination were both intrusive and avoidance orientated, yet the results suggested that although avoidance symptoms remained stable in comparison to the severity of discrimination reported, intrusive symptoms increased as the severity of discrimination increased. Of greater significance though, was the finding that avoidance symptoms increased over time, whereas intrusive symptoms decreased. The allusion that longer term, and possibly more permanent effects of discrimination may result in avoidance orientated behaviours such as 'behavioural inhibition', 'emotional numbness' and 'denial', could prove to be of significance in attempting to fully understand the influence discrimination may have on the disadvantaged status of minority groups around the world. This is especially noteworthy considering patterns of 'disidentification' in settings such as academia (Crocker & Major, 1989; Osborne, 1997; Parente, Craven & Munns, 2003; Rahman, 2003; Verkuyten & Brug, 2003).

In addition to the findings of Thompson Sanders (1996), a recent study set in the Netherlands by Verkuyten and Brug (2003) found that for minority students of Surinamese, Turkish and Moroccan backgrounds, perceived discrimination significantly contributed to academic disengagement independent of educational performance and diagnosticity of educational feedback. Again the powerful influence of perceived discrimination was observed not in short-term reactive responses, but longer-term avoidance orientated behaviour that could have dire consequences in placing a ceiling on future levels of motivation and achievement within the educational setting. Finally, although correlational in nature, a study by Wong, Eccles and Sameroff (2003) found a number of statistically significant relations between experiences of discrimination and various motivational variables amongst a strong sample of African American and Caucasian junior high school students. Specifically, perceived discrimination emanating from peers and teachers was found to be negatively related to students' importance and value placed on school, beliefs about their academic competency, parental reports of their academic engagement in school, personal self-esteem and student's and parental reports of their academic resiliency. The same perceptions of discrimination were found to have positive relations with engagement in problem behaviours, both student and parental reports of depressive symptoms and anger frequency. The implications of Wong et al.'s (2003) findings suggest the need for a greater understanding of the longer-term impact of perceptions of discrimination amongst minority school students. Although all of the above studies reported findings of considerable theoretical importance, from a quantitative perspective, numerous limitations are apparent. Firstly, the Wong et al. (2003) study did not report an adequately psychometrically tested discrimination measure. Both the Thompson Sanders (1996) and Verkuyten and Brug (2003) studies contained overly simplistic (a maximum of two items) measures of perceived discrimination, hence failing to address the possible multi-dimensional nature of discrimination as reported by other researchers (Allport, 1954; Klonoff, Landrine & Ullman, 1999; Sanson, Augoustinos, et al., 1998; Utsey & Ponterotto, 1996). A limitation acknowledged by Verkuyten & Brug (2003, p. 198) who suggested that, "future studies could try to develop and use more elaborate and reliable measures".

A pre-existing attempt to quantitatively measure the multi-dimensional nature of perceptions of discrimination can be found in the 46-item, Index of Race Related Stress (IRRS - Utsey & Ponterotto, 1996) This discrimination measure was designed to capture four separate factors of cultural, institutional, individual and collective discrimination, yet despite the seemingly sound theory behind the IRRS, the scale itself largely failed to meet the necessary goodness of fit criteria (Utsey & Ponterotto, 1996; see also Utsey

1999) with the Goodness of Fit Index (GFI) reaching .78, the Adjusted GFI reaching .76, the relative non-centrality index (RNI) reaching .80 and the root mean square residual (RMSR) being .08. A subsequent shortened (3 factors, 22-items) version of the IRRS (IRRS-B – Utsey, 1999) improved considerably on the goodness of fit criteria (GFI = .92, AGFI = .88, RNI = .94, RMSR = .05), thus possibly providing a stronger platform for future perceived discrimination research. Unfortunately, the specific wording of the scale may be considered unsuitable for the adolescent population with items being considerably negative in their wording (e.g. reporting of violent crimes), thus raising ethical difficulties in accessing adolescent populations. In addition, the items could also be considered too long and complicated for some students' attention spans and are specific to events in the USA (e.g. "You notice that when Black people are killed by the police, the media informs the public of the victim's criminal record or negative information in their background, suggesting they got what they deserved").

A recent pilot analysis by Bodkin-Andrews, Craven and Marsh (2004) has produced a less intrusive perceived discrimination scale that was specifically designed for the adolescent population. Theoretically structured on the detailed work and recommendations of an Australian Psychological Society position paper on racism and prejudice (Sanson et al., 1998), this scale was initially designed to comprise three subscales measuring individual, institutional and macro levels of discrimination. Briefly, Bodkin-Andrews et al. (2004) identified individual discrimination as involving direct experiences of discriminative behaviour emanating from inter-personal experiences (e.g. name-calling). The institutional level of discrimination signifies discriminative events that occur within varying institutions and professions (e.g. in this instance school authorities). Discrimination at the macro level signifies more general discriminative attitudes and attributions located within wider national bodies such as politicians, the media and even general public opinion. Unlike previously formulated perceived discrimination measures, the PDS was specifically designed to capture the multi-dimensional nature of discrimination with both positively and negatively worded items. Also with the simpler wording of each item, and an emphasis on schooling experiences within the institutional subscale, the scale seemed ideal for secondary school students. Using 1st year psychology participants to answer the scale according to their previous experiences within the secondary schooling system, Confirmatory Factor Analysis (CFA) was conducted on their responses and a 12-item scale was produced with sound goodness of fit criteria (Tucker-Lewis Index (TLI) = .99, RNI = .95, RMSEA = .033). Yet a closer analysis of the inter-factor correlations revealed that that individual and institutional subscales were highly correlated ($r = .88$), suggesting they were measuring highly similar constructs and weakening the theoretical foundation behind the scales factor structure.

The present investigation involves a re-development and analysis of the Perceived Discrimination Scale (PDS) so that it comprises only the individual and macro factors. The theoretical justification behind this change is two-fold. Firstly, considering that a large portion of an adolescent's life is centred within the school environment, then logically the majority of non-family interpersonal relations should be with fellow adolescents from the school environment (e.g. peers). With this possibility in mind, it is not particularly surprising that the individual and institutional factors were so highly correlated. Secondly, consistent with previous perceived discrimination research, the individual/macro factor distinction falls neatly within the theoretical framework of Personal/Group Discrimination Discrepancy models. The foundation of this model stems from the understanding that children from ethnic minority groups become aware of their group's stigmatised status from early childhood and onwards (Clark, 1955), but in coming to understand this status, minority group members may attempt to minimize or even deny the personal impact of discrimination. Based on this discrepancy between the acceptance of one's group's stigmatised status and minimization of one's own discriminative experiences, the group/discrimination discrepancy forms whereby "members of disenfranchised groups are less likely to perceive being discriminated against *personally*, although they report that the group to which they belong is a frequent target of discrimination (Szalacha, Erkut, et al., 2001, p. 419). Based on this theoretical reasoning the construct validity of the reformulated PDS can be tested by observing the differences between the individual and macro factors. That is the macro factor should score relatively higher than the individual factor due to the specific items captured within each factor, whereby macro discrimination targets discrimination aimed at a participant's ethnic group, and individual discrimination targets the participants themselves.

Although this paper is primarily directed at confirming the reliability and factor structure of the PDS, Martin's (2004) Student Motivation and Engagement Scale (SMES) was also administered to assess the relation between discriminative events and motivational influences within the education setting. The SMES

draws from a unique variety of influential theories encompassing motivation, achievement, control, self-efficacy, expectancy and attribution domains (Martin, 2002, Martin 2003a, Martin 2003b, Martin 2004), and has proven to reliably identify four motivational factors that influence academic performance and outcomes - namely *adaptive cognitions* (self-efficacy, mastery orientation, valuing school), *adaptive behaviours* (e.g. persistence, study management, planning), *impeding cognitions* (e.g. anxiety, failure avoidance, uncertain control) and *maladaptive behaviours* (disengagement, self-handicapping). Each of these factors and their corresponding facets, have been found to share a unique relation with academic achievement, class participation, school enjoyment and future educational aspirations (Martin, 2004). More significantly though, in a large-scale study examining responses to the SMES across a variety of high schools, unique differences were found between ethnic background (as defined by English being a second language) and various facets. That is, for those with English as a second language, scores were significantly higher than participants with English as a primary language for valuing school, mastery orientation, planning and study management, yet significantly lower for perceived control. Although Martin (2003b) rightfully calls for caution in interpreting these results due to the ambiguity of basing a criterion variable on language. This caution is made more pertinent by findings suggesting that different minority groups respond differently to pre-existing discrimination scales (Noh & Kaspar, 2003; Utsey et al., 2002). Logically speaking, different minority groups should also display differential reactions to perceptions of discrimination; Martin's (2003b) results do suggest that it is likely that the SMS will be sensitive enough to identify the varying relations between its facets and the varying factors of discrimination perceived by different minority groups.

The Present Investigation

Research Questions

This study was designed to address some of the issues raised previously. The aims of this research are to:

1. Identify and establish the psychometric properties of the reformulated PDS to determine whether this instrument is a psychometrically sound measure of perceived discrimination;
2. To assess the construct validity of the PDS by examining the mean scores of the individual and macro factors, and comparing these factors to Operario and Fiske's (2001) Personal/Group Discrimination Scale; and
3. Examine any possible relations between the multiple facets of the PDS and the Student Motivation and Engagement Scale, with consideration for variations in cultural identification.

Participants

Participants were drawn from a multi-cultural sample of 171 first year psychology students (Male 33.8%, Female 66.2%, mean age 21.34 years) who received partial course credit for their participation in the study. Of the 171 participants, 77 identified as Australian (Male 35.1%, Female 64.9%, mean age 22.73 years), 20 identified as European (Male 30.0%, Female 70.0%, mean age 19.80 years), 28 identified as Asian (Male 39.3%, Female 60.7%, mean age 20.61 years), 31 identified as Middle Eastern (Male 25.8%, Female 74.2%, mean age 19.16 years), and 14 participants could not be aggregated into a discernable ethnic identity (Male 21.4%, Female 78.6%, mean age 21.70 years).

Materials

Personal and Macro Factors within the original Perceived Discrimination Scale: A 21-item scale designed to unobtrusively measure experiences of perceived discrimination at individual (e.g. "People have called me nasty names based on the culture I come from") and macro (e.g. "Australians don't care about the hardships faced by people from my culture.") levels.

Personal/Group Discrimination Scale (Operario & Fiske, 2001): A 6-item scale designed to assess experiences of personal discrimination in the past, present and future, and group discrimination in the past present and future.

The Student Motivation and Engagement Scale (Matin, 2004): A 44-item scale designed to measure six adaptive dimensions (thoughts and behaviours that reflect enhanced motivation), three impeding dimensions (constrained or impeded motivational occurrences such as anxiety and uncertain control) and two maladaptive dimensions (negative motivational strategies such as self-handicapping and disengagement).

Procedure

Testing was conducted in groups, although no communication between participants was encouraged. The materials were completed in simple pen and paper format. Confidentiality for participants was ensured as no individually identifying items were included. Considering that the PDS and the SMS were designed for secondary school students, participants were instructed to answer the two scales based solely on their secondary school experiences. Upon completion of the materials, participants were fully debriefed and thanked for their time.

Statistical Analysis

CFA of the PDS was conducted with LISREL 8.5 using maximum likelihood estimation. Based on the advice of Marsh, Balla & Hau (1996), for goodness of fit indices emphasis was placed upon root-mean-square error of approximation (RMSEA), Tucker-Lewis index (TLI) and relative non-centrality index (RNI). For the RMSEA, values less than .05 indicate reflect close fit, and values above .05 for the TLI and RNI represent excellent fits for the data. SPSS 12.0.1 was used to assess the construct validity and reliability (alpha) of the PDS, as well as testing what relation factors of the ADPS may have with the SMES using a bivariate Pearson's product moment (r).

Results

Australian Perceived Discrimination Scale – Confirmatory Factor Analysis

On inspection of the missing data, with the exception of one participant who only answered 19 of the initial 32 items within the PDS (deleted from later analysis), it was deemed that the pattern of missing responses was random and the frequency of missing responses was minimal (0.6% of a possible 4448 data points). Considering that any method of dealing with the missing data in this study should yield similar results (Tabachnick & Fidell, 2001), the EM substitution method was used for missing data within each item. Univariate outliers were identified within SPSS and were reduced to the next most extreme score. Univariate analysis was repeated after each score adjustment until no more univariate outliers were identified.

The initial a-priori CFA testing of the 2-factor PDS, based solely on items targeting the individual and macro factors, produced a poor fit to the data, with a RMSEA of .1150 ($\chi^2 = 668.74$, $df = 208$), a TLI of .921 and a RNI of .93. Model re-specification began with the assessment of the significance of each parameter with critical t-values, where the t-value should be under ± 1.96 . One item (#25) within the Individual discrimination factor was identified as failing to meet this criterion and deleted from the model. This did little to improve the model fit with a RMSEA of .119 ($\chi^2 = 633.44$, $df = 188$), a TLI of .92 and a RNI of .93. An examination of the standardised residuals identified the major source of model misspecification. With Coote (2004) suggesting the critical value for standardised residuals being set at 2.58, paired items with standardised residuals greater than this value were considered for deletion. In determining the specific variable for deletion, careful consideration was made as to its standardised residual pairings with other items, its factor loading, and its theoretical relevance. A detailed account of processes involving the deletion of each variable removed is beyond the scope of this paper, however a further 10 items were deleted from the model using this method.

A final 11-item model was produced with 5-items remaining within the individual factor and 6 items remaining within the macro factor. The CFA results of this model produced an excellent fit to the data, according to each of the fit indices (RMSEA of .049, TLI of .99 and RNI of .99). The factor loading of each item (see Table 1) was statistically significant and reasonable in size (range = .60 to .82). The factor correlations between the individual and macro facets (see Table 1.) were modest to high at .69.

Table 1.
Factor Structure and Correlations Within the Perceived Discrimination Scale

Goodness of Fit Indices (LISREL)				
X ²	df	TLI	RNI	RMSEA
58.33	43	.99	.99	.04
Factor Loadings				
	Individual	Macro		
#5	.77			
#6	.62			
#7	.63			
#9	.71			
#11	.74			
#1		.63		
#2		.75		
#3		.60		
#4		.70		
#8		.78		
#10		.82		
Factor Correlations				
	Individual	Macro	Total	
Individual	1.0			
Macro	.68	1.0		
Total	.89	.94	1.0	

Australian Perceived Discrimination Scale & Personal/Group Discrimination Scale

As Table 2 shows, reliability estimates for the final individual, macro and total discrimination factors of the PDS fell above the acceptable level of .70 for research settings (Hills, 2003). An examination of the mean responses (see Table 2) for each factor reveals that although the scores are relatively low, the lower mean score for the individual factor, when compared to the macro factor, supports the construct validity of the scale according to the personal/group discrimination discrepancy models.

Table 2:
Mean scores and reliability estimates for PDS.

Factor	No	Reliability	Mean	SD
Individual	169	.82	2.70	1.23
Macro	169	.86	3.43	1.35
Total Discrimination	160	.90	3.10	1.19

A simple related samples *t* test revealed that the individual and macro factor scores were significantly different, $t(168) = -9.07, p < .001$. An examination of the bi-variate correlations between the PDS and the Personal/Group Discrimination Scale reveal significant correlations between all factors. Despite this, the size of the correlations vary in accordance with personal/discrimination discrepancy model in that the individual factor of the PDS correlates higher with the personal measure, and the macro factor correlates higher with the group measure (see Table 3).

Table 3:
Correlations between PDS and Personal/Group Discrimination Facets.

Factor	Individual	Macro	Total Discrimination
Personal	.45	.39	.45
Group	.34	.41	.41

Australian Perceived Discrimination Scale & Student Motivation and Engagement Scale

Like the PDS, missing data for the Student Motivation and Engagement Scale was minor (.2%) and randomly spread. As a result missing values were replaced using the EM estimation score for that item. Univariate outliers were also identified with SPSS and adjusted to one unit above the next most extreme score. Two multivariate outliers were identified and deleted using the Mahalanobis distance criteria ($p < .001$, $\chi^2 = 78.603$). This left a total of 169 items for the correlation analysis.

In analysing the correlations between the PDS and the SMES, participants were divided into four general cultural identification groupings, that being primarily Australian (e.g. Australian, Catholic Australian. $N = 77$), European, Asian, and Middle Eastern. Table 2 lists the correlations between SMES and PDS for the above listed culturally identified groups. Examining the correlations for Australian identified participants, a significant negative correlation was found between the macro facet of the PDS and the SMES facet of planning ($r = -.24$, $p < .05$). For Asian identified participants, there were significant negative correlations between all facets of the PDS and valuing of school within the SMES (Individual: $r = -.38$, $p < .01$. Macro: $r = -.55$, $p < .005$. Total: $r = -.50$, $p < .005$), as well as the macro and total facets of the PDS significantly negatively correlating with planning (Macro: $r = -.46$, $p < .05$. Total: $r = -.38$, $p < .05$). Significant positive correlations were found between macro and total discrimination and disengagement (Macro: $r = .42$, $p < .05$. Individual: $r = .38$, $p < .05$). For Middle Eastern participants, significantly negative correlations were found between all facets of discrimination and academic planning (Individual: $r = -.36$, $p < .05$. Macro: $r = -.48$, $p < .005$. Total: $r = -.46$, $p < .05$). The macro and total discrimination facets correlated significantly positively with uncertain academic control (Macro: $r = .46$, $p < .01$. Total: $r = .43$, $p < .05$), and the individual discrimination facet approached significance in its positive correlation with uncertain academic control ($r = .34$, $p = .063$).

Table 4:
Correlation for SMES and PDS facets.

Australian Identified (77)				European Identified (19)			
Facets	PDS			Facets	PDS		
SMES	Individual	Macro	Total	SMES	Individual	Macro	Total
Self Belief	-.08	-.13	-.12	Self Belief	-.13	-.24	-.21
Value School	-.08	-.10	-.10	Value School	.04	-.14	-.08
Learning Focus	-.11	-.06	-.09	Learning Focus	.13	.22	.21
Planning	-.07	-.24*	-.18	Persistence	-.19	-.39	-.33
Study Manage	-.07	-.17	-.08	Planning	-.08	-.12	-.11
Persistence	-.09	-.12	-.11	Study Manage	-.11	-.08	-.10
Anxiety	.07	.01	.03	Anxiety	.38	.23	.31
Fail avoid	.22°	.02	.11	Fail avoid	.22	.08	.14
Low control	.03	.08	.06	Low control	.02	.34	.23
Self sabotage	.06	.03	.05	Self sabotage	-.09	-.09	-.10
Disengagement	.09	.17	.15	Disengagement	-.26	.05	-.07

° $p < .07$, * $p < .05$, ** $p < .01$

Table 4 (continued):
Correlation for SMES and PDS facets.

Asian Identified (28)				Middle Eastern Identified (31)			
Facets	PDS			Facets	PDS		
SMES	Individual	Macro	Total	SMES	Individual	Macro	Total
Self Belief	.05	.11	.08	Self Belief	-.14	-.29	-.23
Value School	-.38*	-.55**	-.50**	Value School	.05	-.11	-.03
Learning Focus	-.13	-.30	-.23	Learning Focus	-.06	-.02	-.04
Persistence	-.17	-.08	-.13	Persistence	-.36*	-.48**	-.46*
Planning	-.23	-.46*	-.38*	Planning	.12	.05	.10
Study Manage	-.20	-.03	-.09	Study Manage	.07	.23	.16
Anxiety	-.26	-.14	-.21	Anxiety	.10	.24	.19

Fail avoid	-.27	-.22	-.22	Fail avoid	.22	.23	.25
Low control	-.06	-.02	-.04	Low control	.34°	.46**	.44*
Self sabotage	.12	.24	.20	Self sabotage	.27	.13	-.22
Disengagement	.28	.42*	.38*	Disengagement	-.06	.01	-.03

° $p < .07$, * $p < .05$, ** $p < .01$

Discussion

Confirmatory Factor Analysis and Construct Validity.

Of primary importance in this study was the model-fit and construct validity of the PDS. Firstly, the model-fit for the a-priori two-factor structure encompassing individual and macro discrimination within the overall discrimination model was examined using CFA techniques. The initial CFA did little to support this theoretical foundation, yet after model re-specification through the deletion of inappropriate items, a strong 2-factor model with a higher order total discrimination factor was achieved within the group discrimination discrepancy framework (see Table 1). Concern may be raised over the drastically reduced size of the final scale (11 items, see Appendix 1), especially when compared to other perceived discrimination scales such as the 46-item Index of Race Related Stress (IRRS - Utsey & Ponterotto, 1996; see also Utsey, 1999 for a brief 22-item version). It should be noted that unlike the PDS, the final model of the IRRS still struggled to meet the general fit criteria. It could be suggested that after an examination of the individual items of the versions of the IRRS, difficulties may be due to items that are leading and may be deemed as tapping multiple facets (“You notice that when Black people are killed by the police, the media informs the public of the victims criminal record or negative information in their back ground, suggesting they got what they deserved”). Alternatively, the PDS is more simply worded, thus avoiding unnecessary complexity that may distort response patterns. This assertion is backed by the strong reliability alphas achieved for each factor within the PDS (see Table 2).

Testing of the external validity of the PDS was largely based on the theoretical framework of personal/group discrimination discrepancy research. Drawn on the reasoning from this research, the mean response for the individual factor of the PDS should be lower than the mean response for the macro factor due to the general population’s tendency to more readily attribute discrimination to their reference group, then attribute discrimination aimed directly at themselves (Foster & Matheson, 1999; Operario & Fiske, 2001; Szalacha, Erkut, et al., 2003). As can be observed in Table 2, the mean responses to the PDS support personal/group discrimination research, in that the macro discrimination factor was significantly higher than the individual factor. Additionally, an examination of the correlations between the factors of the PDS and the brief Personal/Group Discrimination Scale (see Table 3) formulated by Operario and Fiske (2001) further support this reasoning as the individual factor of the PDS correlated higher with the personal factor, and the macro factor of the PDS correlated higher with the group factor. Considering the results examining the model-fit, reliability, and construct validity of the PDS, evidence suggests that the PDS could be a strong tool for assessing levels of perceived discrimination in the face-to-face setting (individual), and within the general public or media (macro).

Perceived Discrimination and the Student Motivation and Engagement Scale.

Whilst the within-construct findings reported above provide support for the internal validity of the PDS, between-construct research allows tests of external validity whereby what relations perceptions of discrimination may have with other variables can be assessed. Within this paper, Martin’s (2004) Student Motivation and Engagement Scale acted as the primary source for between construct comparisons, providing a preliminary basis for examining what relations perceived discrimination may have with varying facets of a student’s academic motivation. Comparisons were obtained for four separate ethnic identity groups, those being Australian, European, Asian and Middle Eastern, and unique correlations were found within the majority of these groups with the exception of the European identified sample that failed to achieve any significant correlations.

For Australian identified participants, a significant relations was found suggesting that as a participant’s perceptions of discrimination within the wider public setting increased (macro factor), the amount of effort they put into planning their schoolwork, assignments and tracking their progress diminished (planning). With

Asian identified participants, as perceptions of both individual and macro discrimination increased, participants perceived importance placed on what was taught in school decreased (value of school). Also a significant correlation was found in that as macro discrimination increased, a participant's commitment to planning and monitoring their schoolwork decreased (planning), and their desire to give up at school increased (disengagement). Finally, significant correlations were found for Middle Eastern identified participants, where as both individual and macro discrimination increased, a participant's commitment and resiliency to overcome difficult schoolwork decreased (persistence). Also, as perceptions of macro discrimination increased, a participant's uncertainty on how to achieve at school also increased (uncertain/low control)..

Two theoretical implications can be drawn from these findings. Firstly, considering the differing pattern of correlations between the Australian, European, Asian and Middle Eastern identified participants, support can be found for the need to identify specific ethnic/cultural groups to assess not only variations in how such groups perceive discrimination, but also what effects perceived discrimination may have on the targeted group (see also Noh & Kaspar, 2003, Utsey et al., 2002). The results within this paper suggest that the PGDS may be a sensitive enough measure to discriminate between varying experiences and responses of various ethnic/cultural groups. The second implication is the consistent direction of all the significant findings, that is, as perceptions of discrimination increased, the more negative the motivational tendencies reported. This is in contrast to a number of findings and theoretical reasoning suggesting that perceptions or attributions of discrimination may have a positive or protective effect (e.g. Barry & Grillo, 2003; Crocker & Major, 1989; Major & O'Brien, 2005; Major, et al., 2003; Romero & Roberts, 2003). As briefly discussed in the introduction, there may be a number of reasons as to why this may be the case. Firstly, one must consider the possibility that experimental research tends to produce the reported positive relations between self-esteem and experiences of discrimination, theoretically due to specific setting (e.g. laboratory) the discrimination is experienced in and the lack of relevance such discrimination may have outside this setting (Szalacha, Erku, et al. 2003). Alternatively, self-report measures such as the PDS, may tap the longer-term experiences of discrimination. The difficulty in fully accepting Szalacha, Erku, et al.'s explanation though is that some evidence suggests that these positive effects also apply to research using discrimination scales (e.g. Barry & Grillo, 2003; Romero & Roberts, 2003). A second limitation listed was specifically targeting the use of inadequate outcome variables where general measures (such as the Rosenberg Self-Esteem Scale) may not be sensitive enough to assess the true effects of perceptions of discrimination. This criticism is arguably more relevant to the findings within this research as specific facets of the SMES were found to be detrimentally related to the PDS. However, this research cannot answer as to whether a motivational focus is more adequate in assessing the negative impact of discrimination when compared to self-esteem or self-concept, or that multi-dimensional domain specific measures may be more sensitive than general measures for assessing the impact of discrimination.

Overall, looking at the trend of the relations between the PDS and SMES, one could suggest that for Australian identified participants, the effects of discrimination on motivation is relatively minor, as demonstrated by the small size of the correlations that were significant (the highest correlation being -.24 for the relation between planning and macro discrimination). Although significance wasn't achieved for the European sample, two moderate correlations were observed, suggesting that with a larger sample size, European identified participants may have shown significant levels of anxiety in relation to individual discrimination and significantly less persistence as macro discrimination increased. This trend for higher correlations between the two factors of discrimination and various facets of academic motivation becomes more distinct with both the Asian and Middle Eastern identified students as numerous correlations were above .40 for both samples (see Table 4 for exact figures). A tentative implication that can be drawn from these higher correlations is that as a student's identity becomes more distinct from the Caucasian majority, the greater the impact perceived discrimination may have on a minority student's various facets of academic motivation.

Limitations and Conclusion.

The primary limitation of this study is its correlational nature, that is no causal evidence between PDS and the SMES can be drawn from this study, therefore the reader must be aware that any directional inferences made in this paper are merely hypothetical in nature. Rather longitudinal studies are needed to test any directional relation between the two scales. A second limitation is the nature of the sample used, more

specifically, considering that this study was aimed at examining what relations perceived discrimination may have with academic motivation, the use of university students, already reasonably high achievers within the academic realm, may have dampened what relations perceived discrimination may have. Thirdly, as specified earlier, the need to identify specific ethnic/cultural groups is an important consideration, and it may be argued that this research failed to adequately address this issue. More precisely, the general grouping of ethnic identities may be misleading; for example, the general experiences of Singaporean identified students may differ drastically with students who identified as being Japanese. Unfortunately, due to the limited sample size of the minority group samples within this study, such distinctions were not possible.

A possible limitation of the PDS itself is that of its subjective nature. That is, with such a contentious issue as what constitutes discrimination, perceptions of discrimination will vary considerably from individual to individual (Meyer, 2003; Sellers & Shelton, 2003). This is a problem faced by every perceived discrimination scale and generally speaking, it could be considered as an unfortunate necessity when considering the unethical alternative of manipulating *real life* discriminative events. More importantly, careful consideration must be given to the subjective nature of the scale, in that, as well highlighted by Fischer and Shaw (1999), if future non-significant findings do emerge with other psychological and performance measures, it does not mean discrimination is not harmful to the targeted group. Rather a myriad of other factors may be intervening (e.g. identity), or the scales themselves may be inappropriate.

Finally, a more general caution towards the implications of perceived discrimination research as a whole is necessary, and this warning is well summarized by Szalacha, Erkut, et al. (2003, p.432) who argue that perceived discrimination research “could be erroneously misread to assume that the solution lies in helping people to not perceive discrimination... The goal is to eradicate racism, not to “protect” the people from perceiving it. In fact, the more it is perceived, the more urgent it is that social forces must be galvanized to work against racism”. With these comments in mind, it is hopeful that the PDS will provide researchers with a valuable tool in identifying perceptions and experiences of discrimination within educational and other settings. From this starting point, further research and intervention can then seek to reduce the impact of discrimination by correcting the actions and perceptions of the perpetrators, and seeking to more effectively counsel the experiences of individuals who are targeted with such discrimination.

About The Authors

Mr. Gawaian Bodkin-Andrews was awarded a Bachelor of Arts (Psychology & Sociology majors) in 1999 and a Bachelor of Arts (Hons, Psychology) in 2002 with a specialisation in quantitative research methodology. Mr Bodkin-Andrews is currently enrolled in a PhD of Psychology within the SELF Research Centre at the University of Western Sydney, and is focusing on cross-cultural differences in the effects perceptions of discrimination, multidimensional self-concept and student motivation.

Associate-Professor Rhonda Craven is the Deputy Director of the Self-concept Enhancement and Learning Facilitation (SELF) Research Centre, and has a publication record including: 7 books, 19 book chapters, 49 refereed journal articles, 56 refereed conference papers and 5 commissioned (by invitation) national project reports. She is also nationally acknowledged for her contributions to Aboriginal Studies and Aboriginal Education and has extensive research experience in the area of self-concept.

Professor Herb Marsh is Director and Research Professor of the SELF Research Centre, University of Western Sydney. Largely due to his established research program into self-concept, motivation, identity and related constructs that are the focus of the SELF Research Centre, he is arguably Australia’s leading researcher in both the broad disciplines of Education and Psychology.

Dr Andrew Martin is Post Doctoral Research Fellow at the SELF Research Centre, University of Western Sydney. He is a Registered Psychologist and his research interests are student motivation, parenting, and research methodology. He has published over 35 refereed articles and chapters, presented 18 invited/keynote addresses in the past two years and won numerous research awards including the Most Outstanding Doctoral Dissertation in Educational Psychology by the American Psychological Association in 2002. Andrew also regularly conducts staff development in schools focused on enhancing student motivation in the classroom,

and is author of the recently published book by Bantam, "How to Motivate Your Child For School and Beyond".

Contact Details

Mr. Gawaian Bodkin-Andrews
PhD Student
Self Research Centre
University of Western Sydney- Bankstown Campus
Locked Bag 1797
Penrith South DC
NSW 1797 Australia
Email: gawaian@tpg.com.au
Phone: 612 9772 6302
Fax: 612 9772 6432

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Appendix 1

The Perceived Discrimination Scale

Items.

01. Other Australians are often proud of the achievements of people from my culture (Macro).
02. Other Australians don't understand the history of my culture (Macro).
03. Other Australians see their cultural values as superior to the values of my culture (Macro).
04. Other Australians would rather blame people of my culture for all the problems faced by my culture (Macro).
05. People treat me as if I'm strange because of the culture I come from (Individual).
06. People have called me nasty names based on the culture I come from (Individual)
07. People I meet respect my cultural identity (Individual).
08. Other Australians don't care about the hardships faced by people from my culture (Macro)
09. I have over heard people speak in a nasty way about me and my culture (Individual).
10. If given a choice, other Australians would rather ignore people from my culture (Macro)
11. People have rudely stared at me when they became aware of my culture (Individual).