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How good gets better and bad gets worse: measuring the face of emotion

Given the history of the past, black South African students from different settings face unique academic and emotional climate. Using the Differential Emotions Scale (DES) which focuses on ten discrete emotions, and building upon Boyle's (1984) seminal work, this study reports a repeated-measure multiple discriminant function analysis for individual items across raters. The findings further indicate that majority of the DES items are sensitive indicators of the different innate and universal facial expressions. However, the construct requires revision so that it offers the examiner maximum flexibility in assessment at diverse levels, in terms of more extensive norming and programmatic replication. In brief, the DES potentially has much to offer provided that it is adequately developed for use in non-Western nations or contexts.

Keywords: *emotional responses, DES, reliability, validity, Zulu*

Introduction

"Emotion has usually, in the European- American tradition, been seen as the opposite of reason; the definitions provided in the *Oxford English Dictionary* emphasize emotion as agitation, perturbation, and 'feeling' or 'affection' — as distinguished from cognitive or volitional states of consciousness. Philosophically this split became entrenched through the thought of Rene Descartes, with his famous 'I think, therefore I am'. Emotion has thus come to be associated with the body the way reason has been associated with the mind. Emotion's connection to the body is frequently reinforced through our metaphoric description of emotion; it is frequently described as a visceral event. Disappointment means a sinking heart; nervousness, butterflies in the stomach; depression, weight in the chest area; joy, lightness and freedom of movement; excitement, racing heart and blood and tingling nerves. Emotions are conveyed to others through bodily configurations, including *facial expressions*, *posture*, muscle tension, *voice tone*, and *gestures*. While emotions and their physical expression are culturally specific (especially gestures), studies have suggested that facial expressions are remarkably similar across cultures, with the biggest differences or confusions occurring for anger or surprise. We learn to identify and reproduce facial expressions as infants, where we study the expressions on adult faces and learn to associate them with emotions. Western cultures have long attributed special emotional intelligence and capability to women, who have traditionally borne the largest burden of emotional work in the culture."(Julie Vedder, 2002).

"If an individual is to learn something which contradicts what they already think they know — particularly if they are committed to that prior knowledge — they are likely to resist the new learning or thinking. Accommodation is more difficult than Assimilation, even when people made fools of themselves, particularly in a colour-coded milieu" (Bea Oranyan).

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The term emotion can be used to refer to a broad class of complex psychophysiological and neurological demeanour of a person's state of mind as it relates with biochemical (inner) and environmental (external) influences in people. In a word, 'emotion' solely involving physiological arousal, expressive behaviours and conscious experience, writes Myers (2004). The English term 'emotion' comes from the French word *emouvoir*, which also takes its root from the Latin word *emovere* which means '*out' 'move'*. Hence emotion has to do with human mood, temperament, temper, make-up and personality/constitution. Human emotional behaviour are capable of cutting our lives and worlds in two, either by uniting or dividing them, by way of 'motivating the best and the worst of our actions' (Ekman, 1992). Emotion easily plays major roles on our quality of life, as it affects all facets of our lives – family, professional life, religious and marital life, parenting style, worldview, intrapersonal and interpersonal relations (Ekman, 1992; Myers, 2004' Parrot, 2001).

Controversy over the definition and the selection of an appropriate way of measuring emotion or affect has led to numerous lay and academic debate (Batey & Furnham, 2008; Bonanno & Papa 2003; Boyle 1984; Brejard, Bonnet & Pedinielli, 2009; Chaplin, Casey, Sinha, & Mayes, 2010; Darwin, 1872; Davidio, Glick & Rudman, 2005; de Rivera & Paez, 2007; Ekman Friesen & Ellsworth, 1982; Fox, Hong, Siedlaiz & Sinha 2008; Izard 1977, 1980, 1994; James, 1884; Johnson, Waugh & Fredrickson, 2010; Kanyangara, Rime, Philippot, & Yzerbyt, 2007; Knyazev, Slobodskoj-Plusnin & Bocharov, 2010; Plutchik, 1980; Páez, Basabe, Ubillos & González-Castro, 2007; Rim´e, 2007; Tomasik, Silberreisen & Heckhausen, 2010; Mikolajczak, Nelis, Hansenne & Quoidback 2008; Zuckerman, Klorman, Larrance & Spiegel 1981). Emotion or affect could be measure d in three different ways by employing either facial expressions, self-reports, or autonomic responses. Without a doubt, the face has the only skeletal muscles of the body, that we used, 'not to move ourselves, but to move others', hence facial emotional expressions can equally serve as communicative signals and emotional stimuli (Smith & Scott, 1997, p. 229). By far the most frequently used method is the self-report which enables the participant or respondent to report the affect or emotion felt and its intensity through the use of rating scales and adjective checklist (Larsen & Fredrickson, 1999; Seva, Dur & Helander, 2010).

Accordingly, Izard, Dougherty, Blosom and Kotsch, (1974) described emotion by enumerating its different types, thus postulating 16 fundamental universally discernible emotions in the human facial expression. The 30-item self-report inventory is based on ten discrete emotions which involve complex neuromuscular feedback loops via the trogeminal nerve. More specifically, the Differential Emotions Theory assesses the intensity of primary emotions for a comprehensive differentiation between the basic emotions and related constructs from facial expression. The Differential Emotions Scale (DES) can trace its roots back to the study of animal behaviour (Izard, 1977; Seva, Dur & Helander, 2010).

One central debate concerns whether a self–report inventory on emotion or affect can reliably and validly divides the individual's description of his/her emotional experience into discrete categories of fundamental emotions. Unlike other multivariate measures of mood states, the DES is based on the assumption that mood states (such as anxiety or depressed mood) involve a characteristic pattern of fundamental emotions – a unique conceptualization, (Boyle, 1984).

Izard (1977) in the United States, Boyle (1984) in Australia, and Akande (2002) in South Africa have subjected the DES to numerous factor analyses on different sample, using a principal-components plus Promax rotation methodology. Most of these factorings have supported at least eight of the postulated fundamental emotions. It has not been until relatively recently, though, that studies have investigated the psychometric performance of differential emotions scale using non-Western participants (Akande, 2002; Akande & Tserere, 2006). Just as psychometric intelligence tests, measure general intelligence (Furnham & Akande, 2004; Furnham & Bunclark, 2006), studies of mood or emotion have predominantly focused on a single scale (P´aez, Marques, Valencia, & Vincze, 2006; Schneider, 2004; Machleit & Mantel, 2007).

However, some researchers have noticed, some difficulties were however apparent for the subscales of Anger, Disgust and Contempt, which tended to load a common factor. The subscales of Interest, Joy, Surprise, Sadness, Fear, Shyness and Guilt, on the other hand, seem fairly well validated from the several factoring, although in one large study of 1182 Subjects, the subscales of Fear and Sadness were not clearly separated (see Izard, 1994). Also, Emde (1980) administered the DES to 230 mothers and after factoring the data reported the emergence of eight distinct factors, including those pertaining to Joy, Fear, Surprise, Interest, Shyness (see Table 1), Contempt and Guilt. The subscales of Anger and Sadness were combined as a single factor. Moreover, no distinct factor emerged for the subscale of Disgust and, also, 2 of the 30 DES items failed to load on any of the empirically-derived factors (Emde, 1980, p. 24) Fuenzalida, Emde, Pannabecker and Stenberg (1981) subjected the DES items responses of 613 mothers to an iterative principal-component analysis and rotated to both Varimax and Oblimax criteria (factor extraction number was determined by the old eigenvalue > 1 rule – an unsatisfactory procedure generally – (see Barrett & Kline, 1982; Hyman, Fox, Hong, Doebrick & Sinha 2007). However, some empirical research has been unable to establish these when the orthogonal solution

Table 1
INNATE AND UNIVERSAL EMOTIONS – Emotion Elicitors/Emotion Messengers).

Adaptive Function	Basic Emotion	Behavioural Expression
Incorporation	Acceptance, Relief, Being pleased, Zest. Peace Interest, Encouragement, Harmony, Trust, Optimism, Humour Satisfaction, Connectedness Cheerfulness, Being Enthralled Longing, Adoration, Pleasure Empathy, Friendliness, Love, Glee Pride, Courage, Hope, Relaxation Serenity, Content, Calmness, Politeness Admiration, Appreciation, Esteem, Respect Awe, Affinity, Kindness, Enjoyment, Delight Thrill, Amusement, Ecstasy, Wonder Openness, Being Beatific, Being Blithe Conviviality, Elation, High-spirits, Conviviality Jauntiness, Joyfulness, Jolliness, Hilarity Joyousness, Being Light-hearted, Liveliness Luck, Merriness, Being Overjoyed, Playfulness, Thankfulness, Tranquillity, Vivacity, Support	Affiliating
Rejection	Disgust, hostility, Frustration, Distaste, Chagrin, Envy, Fright, Insult, Homesickness, Gloating, prejudice, Distress, Resentment, Mortification, Self-pity, Self-blame, Shame, Embarrassment, Self-condemnation, let-down Uneasiness, Reproach, Victimization, Contempt, Despondency, Disdain, Indignation, Anxiety, Subjection, Dread, Fear, Petrification, Tension, Scare, Scorn Terrifying. Worry, Timidity, Hopelessness, Xenophobia, Injustice, Bitterness, Devastation, Being enraged, Label,	Repulsing
Protection	Fear, Shyness, Shock, Guilt, Chagrin, Remorse, Abhorrence, Regret, Mortification, Revulsion, Being Deserted, Ambivalence, Threat, Upset, Agitation, Injustice, Violence, Madness, Concern. Oppression.	Escaping
Destruction	Anger, Anxiety, Dupe, Affliction, Moodiness, Guilt, Shame, Depression, Shock, Being Dolorous, Obsession, Seclusion, Disappointment, Joylessness, Haplessness, Hopelessness, Stereotype, Being Singled-out Racism, Virulence, Bereavement. Sullenness, Down, Arrogance	Attacking
Reproduction	Joy, Thrill, Thankfulness, Adequacy, Happiness, Content, Tranquillity, In Transports, Good, Delight, Reverence, Respect, Security, Enthusiasm, Cheerfulness, Favour, Support, Excitement, Fulfilment, Vindication, Jauntiness, Hope, Gladness, Admiration, Serenity, Jolliness, Optimism, Festivities, Jubilation, Rapport, Joyousness, Communion, Communication, Attuned to, Emotional Intelligence, Empathy and Sensitivity/Sensitiveness, Sympathy and Compassion, Self-discovery, Being Identified with, Kindness, Understanding, Friendly Relationship. Expansiveness	Cooperating
Reintegration	Sadness/Grief,, Depression, Broken-heartedness Bitterness, Anger, Compunction, Cheerlessness, Conscience-Stricken, Constriction, Defeatism, Dejection, Demoralization, Desolation, Despair, Unhappiness, Desperation, Despondency, Devastation, Disaffection, Discontent(ment), Dismay, Dissatisfaction, Gloom, Glumness, Groan, Guilt (complex, ridden, trip), Heartache, Heartbreak, Hurt, Lamentation, Lugubriousness, Loneliness Mourning,	Crying for help

Orientation	Surprise, Dynamite, Shock, Eye-opening, Alertness, Amazedness, Curiosity, Daring, Expectancy, Awe, Subjection, Pain. Astonishment,	Stopping
Exploration	Expectancy, Planning, Expecting, Plotting, Trapping, Anticipation, Confirmation, Contrivance, Be Advisely, Being Calculated, Being Chatted, See Coming, Reckoning on, Being Scientific, Strategic Planning, Be on track, By persuading, Probing, To Be Well Thought Out, Be Tactical, Aimed at.	Exploring
Affections	Acceptance, Friendliness, Trust, Kindness, Affinity, Devotion, Adoration, Infatuation, Lust, Agape, Love, Sensual Pleasure, Thrill, Gratification, Mania, Euphoria Adoration, Being Completely Besotted, Dottiness, Endearment, Crush, Affectation, Puppy Love, Romance, Lurve, Enjoyment.	Loving In Love
Insecurity	Envy, Arrogance, Independent, Gossip, Cockiness, Autonomy, Doubt and ambivalence, Hesitation, Indecision/Indecisiveness, Wobble, Look Askance, Unsure of Yourself, Blow Hot and Cold, Have Foot in Both Camps, Hum (Hem) and Haw, Lack Direction, Shades of Grey, Be in (of) two minds, Sitting on the fence, Fence-sitting.	Learning Disensitization

was retained (despite its being only a special instance of the more appropriate oblique solution – (see Chaplin, Casey, Sinha, & Mayes, 2010).. Nevertheless, eight of the DES subscales received factorial support (namely, Anger, Surprise, Interest, Contempt, Fear, Guilt and Shyness), including a mixed factor relating to Joy and Sadness. Five of the DES items failed to load on any factor (see Fuenzalida et al., 1981, p. 40). They therefore asserted that the DES was sufficiently construct valid to justify its continued use in applied studies. Yet, Mosher and White (1981, p. 62) claimed only that six to eight of the postulated fundamental emotions have been confirmed empirically. As yet no study has investigated the psychometric performance of DES on Zulu children. The present study addressed this gap in the literature by seeking to provide further evidence on this issue, and on the validity of the items.

The Social And Cultural Millieux

Violence pervades the South African society. It works on lives of the people at many levels, from one person, to the family, to the city, to the nation, to political conflicts between race/ethnic group, and to the threat of secession or self-determination, or new apartness, as well as South African psyche. The images and reality of violence are everywhere, and one sees its traumatic effects on each individual and in the society at large (Butchart, 1996; Tomasik, Silberreisen & Heckhausen, 2010).

The goal of the anti-apartheid movement was not just peace, but safety, peaceful co-existence and freedom. There was violence and then more violence, and some violence persist till today. Crime and violence have permeated the social fabric of the society, in a nation where crime has reached critical proportions emanating from historical long build up of crime and violence dated back to apartheid era. Apartheid literarily means "apart-ness"; lines were drawn on maps and masses of people were "re-grouped", "re-settled" and "re-ordered" accordingly. In the words of Spinks (2001) "the concept of fear was a key foundation of apartheid, with the government using this fear of "difference" to form crux of popular phrases used to justify apartheid such as *swart gevaar* (Black danger) and *skollie menace* (scoundrel coloureds)" (p. 10). Regrettably, such motives continue to dominate the mindsets of people, and still being used as overt or covert policy weapon, even over sixteen years after the demise of apartheid. As Spinks (2001) further noted, fear is not mainly linked to crime in South Africa but a sort of mask for fear of "other".

This is obvious in perceptions of the causes of crime. While whites view rising crime as representing the new government's inability to rule (i.e. protect citizens), blacks, attribute increased crime to unfinished democracy and African immigrants. In the eyes of blacks (still on the margins of society), crime is not a new phenomena, but upsurges are linked to the influx of Black African foreigners (especially from Zimbabwe, Nigeria, DRC Congo, Somalia, Zambia, Kenya, Uganda, Mozambique, Ghana, Cameroon etc) colloquially known as *Ma-kwere-kwere* (this appellation refers to the unintelligible sound of Black African foreigners' languages such as 'African heavy accented' style of delivery and speaking (English, French, Portuguese) since the border opening when Nelson Mandela was released in 1990.

These perceived unfriendliness and unopenness to immigrants are good descriptors of emotional climate (Kanyangara, Rime, Philippot & Yzerbyt 2007). All these negative emotional climate amount to negativity of

stereotypic views against the outgroup, in this case African immigrants living in South Africa. By the same token, these shared beliefs and collective representations echo Durkheim's (1912) classic theory of social rituals (see BarTal & Teichman 2005; Kanyangara, Rime, Philippot & Yzerbyt 2007; McLellan, Johnston, Dalrymple-Alford & Porter, 2010). Negative emotional climate must be eliminated; roots and branch in any progressive society (see Table 2).

Studies on intergroup relations and stereotyping have shown that one signature of intergroup prejudice is to view members of the outgroup as being similar to one another (Kanyangara, Rime, Philippot & Yzerbyt, 2007; Simpson, Hillman, Crawford & Overton, 2010; Yzerbyt, Judd & Corneille, 2004). Such a perception is also characteristic of groups or nations having a past history of reckless destruction (BarTal & Teichman 2005). The perception of homogeneity robs individual and personal characteristics to outgroup members and reduce them to mere 'instantiation of their category', hence sustaining prejudice and hostile social relation (Kanyangara, Rime, Philippot & Yzerbyt 2007).

According to Spinks (2001) this fear has to do with concomitant ignorance. It is obvious that the implications of crime in South Africa can never be dismissed as trivial as the costs that it imposes on households and business amounted to R49.4 billion in 2005. To this end, the private security industry is booming and is now larger than South African Police Force.

South Africa (though, with a first-world infrastructure) is a severely traumatized environ, with its chief economic city, Johannesburg, labelled as one of the most violent cities in the world. It has the highest per capita rates of murder and rape, the second highest per capita rate of murder and the fourth highest number of serious assault and other sexual offences in the world (Dirsuwit, 2003; Louw, Shaw, Camerer & Robertshaw, 1998). High crime rates cause uneasy feelings of insecurity and fear which undermine individual development and popular confidence in the process of building a wealthy new society. While the rich barricaded themselves behind high walls, high fences, 'cheetah' dogs, window grilles, armed guards or armed response private security, burglar alarms, cctvs, electronic surveillances, and enclaved neighbourhoods the poor devise their own strategies and fear is equally prevalent across all socioeconomic and race groups (Spinks, 2001). According to analysts, all these securities have not brought social/ national cohesion/cohesiveness and peace of mind, but have reproduced different emotional disorders, paranoia, intolerance, fear, or fear of crime plus or is it code for fear of race or the wider reality fear of "difference" (Pinkham, Griffin, Baron, Sasson, & Gur, 2010). (. These trends are off-shoots of the aftermaths of political violence and apartheid ruthless rule, coupled with breakdown in the rule of law and more recently, the emergence of incessant worker strikes culture of opulence, consumerism, and over materialism in all nooks and corner of the nation, and other over prized bling against *true African value*. High crime levels are taking their toll on all South Africans including men and women, children and families in the country (Akande, Adetoun & Tserere, 2006; de Jong, Koster, van Wees & Martens, 2010). National surveys indicate that crime is now on top of everybody's mind as against concerns for socio-economic problems. People are dissatisfied with the limitations of government statistics. At present, negligible number of people feels safe and sees government to be wining against crime or could bring the situation under control, as the fear of crime is escalating (Dirsuweit, 2003)

It is widely recognized that children and adolescents often evidence emotive behaviour that is of concern to adults, it is only of recent that researchers began to examine the clinical and practical significance of different emotions such as fear as a behaviour problem in children and adolescents, to consider these problems as potential indicators of more long-term difficulties, and to recognize the developmental and theoretical implications of problem behaviour to school entry and education (Akande & Akande, 1994; Akande, 1997; Holland Tamir & Kensinger,

Table 2
USEFUL FACTORS THAT ENHANCE QUALITY OF LIFE*.

Physical and Material Wellbeing	
1.	Material comfort – desired home, comfort, food conveniences and security.
2.	Health and personal comfort.
Relationship with other people	
3.	Relationship with other people including foreigners.
4.	Having and rearing children.
5.	Close relationship with spouse or members of opposite sex.
6.	Close friends – sharing views, interests and activities.
Social, Community and Civic Activities	
7.	Helping and encouraging others.
8.	Participating in global, governmental and local affairs.
Personal Development and Fulfilment	
9.	Learning attending schools and improving understanding.
10.	Understanding oneself and knowing your assets and limitations.
11.	Work that is interesting, rewarding and worthwhile.
12.	Expressing yourself in a creative manner.
Recreation	
13.	Socializing with others across cultures.
14.	Reading, listening to music and other entertainment.
15.	Participation in other active recreations.
Faith or Belief	
16.	Faith

*Adapted after Flanagan (1982)

2010; Yang et al., 2007).

A growing body of prospective evidence indicates that fears identified in the pre-school years often persist and that adolescents identified as performing poorly in school work often have a history of problems that began in the pre-school years emanating from prevailing emotional climate (Akande & Akande, 1994; Akande, Akande & Odewale, 1994; Chaplin, Casey, Sinha, & Mayes, 2010; Gara et al., 2010).

Method

Participants

A total of 251 (isiZulu-speaking) students took part in this study with an age range of 13-16 years, (with females 49.3 percent). The present study was conducted in Pretoria township schools in Tshwane (Cohort II). Twenty-three percent of students reported that they were from intact families and 2.1 percent did not report family status, the rest indicated that their parents were divorces or raised by single parent. Parental education level ranged from no formal education, partial or full elementary school to partial high school or full matriculation. Participation was voluntary and those who participated appeared to take the study seriously and to follow instructions without reservation. Official authorisation was obtained before the administration of the inventory and standard survey procedures were used in the research. In a version of Izard's Differential Emotions Scale (Izard, Dougherty, Bloxon, & Kotsch, 1974), respondents rated some primary emotions (Sadness/Grief, Anger, Fear, Disgust, Anxiety, Shame and Guilt), each on a seven-point scale ranging from 0 (= not at all) to 6 (= a great deal), in reference to the question: "Considering the fact that all isiZulu-speaking students will be in this situation, to what extent do you feel the following emotions?"

Self-report Inventory

The questionnaire was adopted for the present study because of its comprehensiveness and the comprehensibility of its language. All of the original items were included. The study involved four imaginal treatments (General depression, Curiosity, Specific depression and anxiety), as well as actual pre-examination condition. Izard (1977), Schwartz and Weinberger (1980) and Sirota and Schwartz (1982) in the United States as well as Páez, Basabe, Ubillos & González-Castro, (2007) in Spain, have all demonstrated that imaginal mood treatments effectively induce moods such as anxiety or depression is well known phenomenon in the behavioural modification technique of systematic desensitisation, for example). In the General Depression condition, students responded to the DES items as though they felt 'depressed'. In the Specific Depression condition, they imagined that they were about to take an exam which they felt they would fail, making them feel depressed. Presentation of the four imaginal treatments was counterbalanced to avoid position effects. Use of the pre-examination condition (on a separate occasion) allowed some assessment of external validity (cf. Weiss, 2005).

Results and Discussion

Under the four conditions, the DES subscales of Joy, Contempt, Fear and Shame/Shyness exhibited the highest lower-bound estimates of test-retest reliability with correlations up to about 0.7, which for state measures given under different conditions is good (cf. Boyle 1979, p.78). However, neither the Interest subscale or Surprise subscale nor the Guilt subscale demonstrated significant retest correlations in a comparison of the General and Specific Depression conditions, and also of the Specific Depression and pre-examination conditions. Izard et al (1974), p. 32) reported a retest correlation of 0.77 for the trait version of the DES (using a 5-point frequency rather than intensity response system), which seems somewhat low for a reliable self-report instrument of the trait variety (cf. Boyle, 1979, p. 78).

According to Izard et al (1974) and Boyle (1984), the reliability of the state version of the DES can only be assessed in terms of internal consistency of the items in each subscale. However, with only three items per subscale (which may allow rapid measurement of transient moods – although increased items in accord with the Spearman-Brown formula should result in greater reliability of the DES subscales – see Nunnaly (1978, pp. 210-212, 243-245) one would expect high internal consistency if the items were measuring essentially the same limited aspect of the particular dimension. What is more desirable are items which have less homogeneity of variance (less internal consistency and item redundancy), but which correlate highly with the relevant factor. This would enable each item to measure a different aspect of a given dimension, providing broader, less redundant and more efficient measurement. As Saggino, Cooper & Kline (2001, p.5) indicated, a coefficient should not exceed 0.7 if each item is to add something new to the measurement of a construct. Likewise, Cattell (1982) has discussed this issue along with Allen and Potkay (1983), who have all indicated that internal consistency is not particularly related to reliability. Boyle (1984) reported a mean $\propto$ coefficient for the DES subscales of .82. In the present study, the DES total scale exhibited coefficients of 0.79, 0.87.0.87. 0.85 and 0.88, respectively for the five treatment conditions. For the 10 subscales, α estimates ranged from 0.51 to 0.87, which suggests some item redundancy.

Table 3
Oblique factor pattern solution – Fundamental Emotions.

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
1	0.33	-0.33	-0.14	0.06	0,06	0.05	0.54	-0.06
2.	0.05	0.74	-0.06	-0.06	0.06	0.06	0.13	0.13
3.	-0.11	0.06	0.07	0.07	-0.06	-0.11	0.63	-0.01
4.	0.33	-0.33	0.07	-0.05	0.14	-0.04	-0.07	-0.06
5.	-0.03	0.13	-0.01	-0.41	-0.02	-0.01	0.01	-0.04
6.	0.06	-0.02	0.73	0.11	-0.03	0.03	0.03	-0.05
7.	0.23	-0.06	0.06	-0.05	0.06	-0.07	-0.05	-0.05
8.	0.04	-0.08	-0.11	-0.06	-0.06	-0.06	0.06	0.01
9.	0.01	-0.01	-0.07	0.07	-0.05	-0.83	0.05	0.06
10.	-0.13	0.01	0.06	-0.06	-0.12	0.06	0.07	0.11
11.	-0.03	0.71	-0.01	-0.13	-0.06	-0.07	-0.07	0.07
12.	-0.02	-0.05	0.71	0.06	-0.06	0.01	0.13	0.15
13.	0.01	0.51	-0.22	0.06	-0.06	-0.01	-0.01	0.15
14.	0.06	-0.01	0.01	-0.13	0.63	-0.02	0.02	-0.06
15.	-0.03	-0.07	0.07	0.61	0.07	0.07	-0.07	-0.02
16.	-0.06	0.03	0.03	0.68	0.07	0.04	-0.01	-0.01
17.	0.35	-0.31	0.03	0.33	-0.02	0.03	0.21	-0.33
18.	0.33	-0.07	-0.07	0.11	0.01	-0.06	-0.31	
19.	0.33	0.21	0.06	-0.06	-0.33	-0.21	-0.11	-0.33
20.	-0.01	-0.14	0.13	0.22	0.16	-0.01	0.26	-0.13
21.	-0.03	0.51	0.06	0.07	0.06	0.05	0.04	0.05
22.	-0.01	0.13	0.21	0.21	0.03	0.05	0.01	0.05
23.	0.05	0.44	0.44	0.11	0.11	0.06	0.12	0.02
24.	0.11	-0.11	0.05	0.05	0.15	0.15	0.15	0.55
25.	-0.14	0.13	0.02	-0.17	-0.53	-0.06	0.06	-0.07
26.	0.03	0.65	-0.06	0.14	-0.07	-0.08	-0.04	-0.07
27.	0.15	-0.25	0.15	-0.05	0.05	-0.06	-0.02	0.06
28.	0.22	-0.21	0.05	0.36	-0.32	0.05	-0.07	-0.05
29.	0.31	-0.06	0.17	0.11	0.12	-0.25	-0,17	-0.27
30.	0.14	0.06	-0.04	0.07	0.22	-0.34	-0.11	-0.34
Percentage of variance ±0 10 Hyperplane count								
	23.4	17.5	12.3	10.1	8.3	7.3	6.3	4.4
	14	12	14	21	21	21	18	21

Following Boyle (1984), to check the construct validity of the 10 DES subscales, so iterative principal factoring was performed on the item intercorrelations. Eight factors on the basis of the Scree test were rotated to oblique sample structure for the General Depression condition using a direct oblimin procedure (see Izard, 1994). The ±0.10 hyperplane count (Catell, 1978, p. 142) was 60.05%. While a seven-factor oblique solution accounted for 54.3% of variables in the hyperplane, a nine-factor solution produced a hyperplane count of 0.44% which was no better than that for the eight-factor solution. Interestingly, had the eigenvalue >1 factor-extraction number rule been applied, only seven factors would have been retained for subsequent rotation, and one factor would have been lost.

Examination of the oblique factor pattern (cf. Table 3) reveals that the four DES subscales of Contempt, Surprise, Fear and Disgust were clearly defined by Factors 3, 5, 6 and 7, respectively. Nevertheless, Item 23, “Feel like you are better than somebody” failed to load significantly on Factor 3. For Factor 6, Item 7. Item 22, “Feel like things are so rotten they could make you sick”, failed to have a significant loading, while Item 1, “Feel regret, sorry about something you did”, loaded significantly on this factor. Factor 4 represented a combination of the Sadness and Anger subscales which suggests that the instructions to students may have simultaneously induced

Table 4
Canonical Correlations for the DES items (N = 251).

Function	Eingenvalue	Percentage of Variance	Canonical correlations
1	1.34	58.00	0.6500
2.	9.01	17.04	0.4301
3.	0.29	18.17	0.5032
4.	0.01	4.03	6.1201

Table 5
Correlations of the DES items with first discriminant function (N = 251).

Item	r	Item	r
1.	-0.51	15.	-0.39
2.	0.52	17.	-0.66
3.	-0.41	22	0.63
4.	-0.42	23.	0.63
5.	0.52	25.	0.51
7.	-0.41	26.	0.83
8.	0.74	27.	-0.51
10.	-0.51	28.	-0.41
13	-0.52	29.	-0.43
14.	0.51	30.	-0.41

some hostility, presumably due to the inconvenience of having to experience a negative mood state (depression), when no such state already existed. Factor 1 represented a combination of the Guilt, Sadness and Shame/Shyness subscales, while Factor 2 represented a grouping of the Joy, Surprise and Interest subscales. Hence, Factor 1 involved a cluster of negative mood states, whereas Factor 2 involved a cluster of positive moods reminiscent of Eysenck's (e.g. Lynn, 1981) personality dimensions of Introversion and Extraversion. Factor 8 seemed to represent a state of depressed mood indicative of the condition under which this data was obtained. These factor-analytic finding was very similar to previous study (Akande, 2002), therefore, provided only partial support for the construct validity of Izard's DES subscales. Since some factors involved combination of the postulated fundamental emotions, it appears that the division of the DES into 10 subscales may be partly an artefact of the factor-analytic procedure employed in Izard's studies (cf, Izard, 1977; Reid, 2010).

Given the clustering of these subscales, it was deemed necessary to examine the discriminant validities of the DES items, using a repeated-measures application of multiple discriminant analysis. The 30 DES items were tested for their ability to individually discriminate between the five treatment conditions – an extremely stringent test of the sensitivity of the items. Twenty of the 30 items discriminated significantly. Had only two or three conditions been employed, several of the remaining 10 items probably also would have been significant discriminators. F-tests on the power of the discriminant functions were all highly significant ($P < 0.001$). The first discriminant function accounted for most of the variance (65.14%) and therefore was considered as the most important for examining the discriminant validities of the DES items. Table 4 presents the data pertaining to the four discriminant functions.

Examination of the correlations of the 20 significant DES items with the first discriminant functions (see Table 5), revealed that item 23 (from the Contempt subscale) correlated only 0.18 with the function. While this was statistically significant ($P < 0.05$), compared to the other correlation it was low. Therefore of the 30 DES items, a stringently conservative estimate is that 18 items appear to be highly valid discriminatory between various mood states. The stepwise discriminant analysis sequentially selected those DES items which contained most of the classificatory information (cf. Amick & Walberg, 1975, pp. 244-251). All three items for the subscales of Interest, Surprise and Sadness, were significant discriminators between the five conditions. For the subscales of Joy, Anger, Fear and Shame/Shyness, two items were significant discriminators, while for the Disgust. Contempt and Guilt subscales only one item discriminated significantly between the five conditions.

The above findings suggest that while majority of the DES items are sensitive indicators of different mood states the construct validity of the DES subscales is not clear. Only for the subscales of Contempt, Surprise, Fear and Disgust, was a clear-cut matching of the subscale with empirical factor achieved in the present study. While there is an apparent need to improve the construct validity of the DES subscales (perhaps different subscales are required) for reducing item redundancy (internal consistency), for improving the retest reliability of the instrument. Izard must be commended for his attempt to measure fundamental emotions. Izard's differential emotions theory represents an advance in conceptualization, and his DES follows logically from his theory. Unfortunately, there are many problems with self-report measures, such as the transparency of items, which therefore tend themselves to distortion, ranging all the way from inadequate self-insight to deliberate faking. What is needed in this area are measures which comprise objective items which have no readily discernible connection with the moods being measured (content validity is no guarantee of validity). In the absence of objective instruments the best that can be achieved is to utilize scales such as the DES (with its unique conceptualization of patterns of fundamental emotions), and to further refine the various subscales and items in order to improve its reliability and validity (cf. Akande, 2002; Boyle, 1984; Jin Park & Len-Rios, 2010). Perhaps also evidence in support of additional fundamental emotions might appear in a clinical sample in which confirmatory factor analysis is applied. It would seem useful to look at target groups identified as in error

situations (similar to recent critical item subsets for the MMPI), in the search for additional fundamental emotions. In brief, the DES potentially has much to offer provided that it is adequately refined and developed; hence, more research is warranted.

Conclusions and Implications

The study makes a number of academic and professional contributions. The findings have valuable implications for prospective use of DES in non-Western nations. This lays the groundwork for better understanding of mood states. Second, South Africa is a nation with vast urban and rural differences in terms of educational and social development, hence these participants and Western participants are quite different cross-culturally, educational researchers need to be sensitive to these issues.

Of course, considerable further research will be required before the extent of the validity of such an analysis on emotional states can be determined. Such in depth studies might also throw light on the possibility of focusing on one of these dimensions and consequently embedding the analysis in a coherent theoretical framework via a more targeted and more rigorous analysis. Such different facets can only emerge in different sets of data collection. Naturally there is need for caution in drawing conclusion on empirical analysis based on a limited sample from a few students, even if they were chosen to be representative of their country.

However, the findings of this study with its academic orientation, indicate that among South African participants these factor-analytic finding, therefore, provided only partial support for the construct validity of Izard's DES subscales. The full validity of comparing scores on instruments such as the DES across different cultures is questioned in this research. The "Pygmalion Effect" cannot be upheld. As found in previous research with non-Western students (Akande, 2002; Watkins & Akande, 1992), these students tended to score like or even slightly more than comparable Western students on all DES scales, a finding which hard to believe given the nature of the scales. This suggests a lack of metric equivalence across these cultures, perhaps due to differences in responding to rating scale (Triandis & Gelfand 1998). However, experts have suggested that metric equivalence is not necessary before an instrument can be utilised validly within a culture (Watkins, Mcinerney, Akande & Lee, 2003).

Thus, we feel that research on differential emotions is important and offers a promising area of inquiry for educational and other scholars. Future research using African data will add value to our true understanding of psychological and social factors that might strengthen the motivation to learn and communicate dialogue across cultures, which might help us not only uplift individual happiness but also the wealth of the society. It will reduce our level of ignorance, frustrations, and anxiety and give us total insights into other cultures' rules and conventions, so as to be adept at interacting with people in other nations.

Limitations and Suggestions

First, the investigation on DES was limited to relative small participants, with small effect size. Secondly, the investigation was conducted on children only, and not on other populations, to check if there might be a link between emotions and cognitive complexity or emotions and increased knowledge (Low, 1999). Perhaps additional studies can consider locus attributions for specific, individual emotions instead of for emotions as a set with two different emotions typology scales (Machleit & Mantel, 2007). Thirdly, the present study was cross-sectional, rather than longitudinal, whilst the latter could have substantiated the findings of the study along certain structural changes (Low, Akande & Hill 2005). Future studies may contribute finer grained understanding of other forms of analyses and exploring ways of grouping countries and geopolitical locations in terms of mood states and cultures. Despite the limitations of the present study, the DES model has potential as an explanatory tool for studying the changes that might take place among children in a classroom setting. Additional cross-cultural studies using DES combined with other instruments on affect would therefore appear important. Such in-depth studies should allow exploration of indigenous notions of facial expressions.

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References

Akande, A., & Ross, M. W. (1994). Fears of AIDS among Nigerian students. *Social Science & Medicine, 38,* 339-342.

Akande A., & Akande, B. E. (1994). On becoming a person: Activities to help children with their anger. *Early Child Development and Care, 102,* 31-62.

Akande, A. (1997). Treating anger: the misunderstood emotion in children. *Early Child Development and Care, 132*, 75-91.

Akande, A. (2002). The psychometric performance of Differential Emotions Scale. An Unpublished paper, Tshwane.

Akande, A. & Tserere, M.M. (2006). Patterns of emotional responses to affective situations. An Unpublished paper, VDBP.

Akande, A., Adetoun, B., & Tserere, M. (2006) "South Africa". In Georgas, J., Berry, J.W., vd Vijver, FJR., Kagitçibasi, C, and Poortinga, Y H. (Ed.), *Family Across Cultures – A 30-Nation Psychological Study*. Cambridge: Cambridge University Press

Allen, B.P. & Potkay, C.R. (1981). On the arbitrary distinction between states and traits. *Journal of Personality and Social Psychology, 41,* 916-928.

Allen, B.P., & Potkay, C.R. (1983). Just as arbitrary as ever, comments on Zuckerman's rejoinder. *Journal of Personality and Social Psychology, 44*, 1087-1089.

Amick, D.J. & Walber, H.J. (1975). *Introductory: Multivariate Analysis for Educational Psychological and Social Research*. McCutchan, Berkeley, Calif.

Bar-Tal, D., & Teichman, Y. (2005). *Stereotypes and prejudice in conflict: Representations of Arabs in Israeli Jewish society*. Cambridge, UK: Cambridge University Press.

Bonanno, G., & Papa, A. (2003). The social and functional aspects of emotional expression during bereavement. In P. Philippot, R. S. Feldman,&E. J. Coats (Eds.), *Nonverbal Behavior in Clinical Settings* (pp. *145–170).* New York: Oxford University Press.

Batey, M., & Furnham, A. (2008). Creativity, intelligence, and Personality: A critical review of the scattered literature. *Genetic, Social and General Psychological Monograph, 132,* 305-429.

Boyle, G.J. (1979). Delimination of state-trait curiosity in relation to state-anxiety and learning task performance. *Australian Journal of Education, 23*, 70-83.

Boyle, G.J. (1984). Reliability and validity of Izard's Differential Emotions Scale, *Personality, 56,* 747-750.

Brejard, V., Bonnet, A., & Pedinielli, J.H. (2009). Depressive symptoms and emotion in adolescence. A developmental functionalist view. *European Psychiatry, 24*, 620-621.

Butchart, A. (1996). Violence prevention in Gauteng: the public health approach. *ACTA Criminologica, 9,* 5-13.

Campbell, D.T. & Stanley, J.C. (1966). *Experimental and Quasi-experimental Designs for Research.* Rand McNally. Chicago, Ill.

Cattell, R.B. (1978). *The Scientific Use of Factor Analysis in Behavioural and life Sciences*. Plenum Press: New York.

Cattell, R.B. (1982). The psychometry of objective motivation measurement, a response to the Critique of Cooper and Kline. *British Journal of Educational Psychology, 52,* 234-241.

Chaplin, T. M., Casey, J., Sinha, R. & Mayes, L. C. (2010), Gender differences in caregiver emotion socialization of low-income toddlers. *New Directions for Child and Adolescent Development, 128*, 11-17.

de Jong, P.J., Koster, E.H.W., van Wees, R., & Martens, S. (2010).Angry facial expressions hamper subsequent target identification. *Emotion 12*, 727-732.

de Rivera, J., & Paez, D. (2007). Emotional climate, human security and cultures of peace. *Journal of Social Issues, 63*, 233–254.

Darwin, C. (1872). *The Expression of Emotions in Man and Animals*. Note: This book was originally published in 1872, but has been reprinted many times thereafter by different publishers.

Dirsuwit, T. (2003). Johannesburg: Fearful City? Unpublished paper.

Dovidio, J. F., Glick, P., & Rudman, L. (2005). *On The Nature of Prejudice: Fifty Years After Allport*. Oxford, UK: Blackwell.

Durkheim, E. (1912). Les formes ´el´ementaires de la vie religieuse [The Elementary Forms of Religious Life]. Paris: Alcan.

Emde, R.N. (1980). Levels of meaning for infant emotions. In *The Minnesota Symposium on Child Psychology. Vol 11, Development of Cognition, Affect and Social Relations* (Edited by Collins, W.A.) Erlbaum, Hillsdale, N.J.

Ekman., P. (1992). *Telling Lies: Clues to Deceit in the Marketplace, Marriage, and Politics.* New York: WW Norton,

Ekman, P., Friesen, W. V., & Ellsworth, P. (1982). What emotion categories or dimensions can observers judge from facial behavior? In P. Ekman (Ed.), *Emotion in the human face* (pp. 39-55). New York: Cambridge University Press.

Eysenck, H.J. & Eysenck, S.B.G. (1976). *Personality Structure and Measurement* . Routledge & Kagan Paul. London Press.

Flanagan, J. (1982). Measurement of quality of life. *Archives of Physical Medicine and Rehabilitation, 63,* 56-59.

Fox, H.C., Hong, K.A., Siedlaiz, K.M. & Sinha, R. (2008). Enhanced sensitivity to stress and drug/alcohol craving in abstinent cocaine-dependent individuals compared to social drinkers. *Neuropsychopharmacology, 33*, 796-806.

Fuenzalida, C., Emde, R.N., Pannabecker, B.J., & Stenberg, C. (1981). Validation of the Differential Emotions Scale in 613 mothers. *Motivation and Emotion, 5*, 17-43.

Gara, M. A., Vega, W. A., Lesser, I., Escamilla, M., Lawson, W.B., Wilson, D.R., Fleck, D.E., & Strakowski, S.M. (2010). The Role of Complex Emotions in Inconsistent Diagnoses of Schizophrenia. *Journal of Nervous & Mental Disease. 198* - Issue 9 - pp 609-613

Holland, A.C.; Tamir, M., & Kensinger, E.A. (2010). The effect of regulation goals on emotional event-specific knowledge. *Memory, 18*, 504-521.

Hyman S, Fox HC, Hong K, Doebrick C., & Sinha, R. (2007). Stress and drug cue-induced craving in opioid dependent individuals in naltrexone treatment. *Experimental Clinical Psychopharmacology* 15,134–143.

Izard, C.E. (1977). *Human Emotions*. Plenum York.

Izard, C.E. (1980). The emergence of emotions and the development of consciousness in infancy. *In the Psychobiology of Consciousness* (Edited by Davidson, J.M. and Davidson, R.J.). Plenum Press, New York.

Izard, C.E. (1994). Innate and universal facial expressions: Evidence from developmental cross-cultural research. *Psychological Bulletin, 115*, 288–299.

Izard, C.E., & Dougherty, F.E., Blosom, B.M. & Kotsch, N.E. (1974). *The Differential Emotions State. A Method for Measuring the Subjective Experience of Discrete Emotions.* Vanderbilt University Press, Nashville, Tene.

James, W. (1884). „What is Emotion?". *Mind 10*: 188–205.

Jin, Y., Park, S.A., & Len-Rios, M.E.(2010). Strategic communication of hope and agner: A case of Duke University's conflict management with multiple publics. *Public Relations Review, 36*, 63-65.

Johnson, K.J., Waugh, C.E. & Fredrickson, L. (2010). Smile to see the forest. Facially expressed positive emotions broaden cognition. *Cognitive & Emotion, 25*, 299-321.

Kanyangara, P., Rime, B., Philippot, P. & Yzerbyt, V. (2007). Collective rituals, emotional climate, intergroup perceptions: Participation in "Gacaca" tribunals and assimilation of the Rwandan Genocide. *Journal of Social Issues, 63,* 387-403.

Kline, P. (1979). *Psychometrics and Psychology*. Academic Press, London.

Knyazev, G. G., Slobodskoj-Plusnin, J.Y. & Bocharov, A.V. (2010). Gender differences in implicit and explicit processing of emotional facial expressions as revealed by event related theta synchronization, *Emotion, 10*, 678-687.

Larsen, R., & Fredrickson, B. (1999). Measurement issues in emotion research. In D.

Kahneman, E. Diener & N. Schwarz (Eds.), *Well-being: The Foundations of Hedonic Psychology* (pp. 40-60). New York, NY: Russel Sage Foundation.

Louw, A., Shaw, M., Camerer, L. & Robertshaw, R. (1998). Victims of Crime in Johannesburg. Monograph No 18, Institute of Security Studies, Pretoria.

Low, J.M. (1999). Differences in cognitive complexity of adolescents with foreclosed and achieved identity status. *Psychological Reports, 87,* 1093-1099.

Low, J. M., Akande, A., & Hill, C. J. M., (2005). "A cross-cultural comparison of identity development: South Africa and the United

States," *Identity: An International Journal of Theory and Research, 5*, 303-314.

Lynn, R. (1981). *Dimension Papers in honor of H. J. Eysenck*. Pergarmon Press, London.

Machleit, K.A., & Mantel, S.P. (2007. Emotional response and shopping satisfaction moderating effects of shopper attribution. *Journal of Business Research, 23*, 77-100.

McLellan, T., Johnston, L., Dalrymple-Alfotd, J., & Porter, R. (2010). Sensitivity to genuine versus posed emotion specified in facial displays. *Cognitive & Emotion, 25*, 1277-1292.

Mikolajczak, M., Nelis, D Hansenne, M., & Quoidback, J, (2008). If you can regulate sadness, you can probably regulate shame: Associations between trait emotional intelligence, emotion regulation and coping efficiency across discrete emotions. *Personality and Individual Difference, 44*, 1356-1368.

Mosher, D.L., & White, B.B. (1981). On differentiating shame and shying. *Motivation and Emotion, 5*. 61-64.

Myers, DG. (2004) „Theories of Emotion." *Psychology: Seventh Edition*, New York, NY: Worth Publishers, p. 500.

Nunnally, J. C. (1978). *Psychometric Theory*. McGraw-Hill, New York.

Ollendick, T. H., Yang, B., King, N. J., Dong, Q., & Akande, A. (1996). Fears in American, Australian, Chinese, and Nigerian children and adolescents: a cross-cultural study. *Journal of Psychology and Psychiatry, 37*, 213-220

P´aez, D., Marques, J., Valencia, J., & Vincze, O. (2006). Dealing with collective shame and guilt. *Psicologia Politica, 32*, 59–78.

Páez, D., Basabe, N., Ubillos, S. & González-Castro, J. L. (2007), Social Sharing, Participation in Demonstrations, Emotional Climate, and Coping with Collective Violence After the March 11th Madrid Bombings. *Journal of Social Issues, 63*: 323–337. doi: 10.1111/j.1540-4560.2007.00511.x

Parrott, W. (2001), *Emotions in Social Psychology,* Psychology Press, Philadelphia.

Pinkham, A.E., Griffin, M., Baron, R., Sasson, N, J., & Gur, R.C. (2010). The face in the crowd effect: anger superiority when using real faces and multiple identities. *Emotion, 10*, 141-146.

Plutchik, R. (1980). *Emotion: A Psychoevolutionary Synthesis*. New York, NY: Harper and Row.

Reid, R.C. (2010). Differentiating emotions in a sample of men in treatment of hypersexual behaviour. *Journal of Social Work Practice in the Addictions, 10*, 197-203.

Ruys, K. I., & Stapel, D. A. (2008). Emotion elicitor or emotion messenger? *Psychological Science, 19*, 593-600.

Saggino, A., Cooper, C., & Kline, P. (2001). A confirmatory factor analysis of the Myers-Briggs Type Indicator, *Personality and Individual Differences, 30,* 3-9.

Schneider, D. J. (2004). *The Psychology of Stereotyping.* New York: Guilford Press.

Schwartz, G.E., & Weinberger, D.A. (1980). Patterns of emotional responses to affective situations relations among happiness, sadness, anger, fear, depression and anxiety. *Motivation and Emotion, 4,* 175-191.

Seva, R.R., Dur, H.B.L., & Helander, M. G. (2010). Structural analysis of affect in the pre-purchase context. *DLSU Business & Economics Review, 19,* 43-52.

Simpson, J., Hillman, R., Crawford, T., & Overton, P.G. (2010). Self-esteem and self-disgust both mediate the relationship between dysfunctional cognitions and depressive symptoms. *Motivation and Emotion, 34*, 399-406

Sirota, A.D., & Schwartz, G. E. (1982). Facial muscle patterning and lateralization during elation and depression imagery. *Journal of Abnormal Psychology, 91*, 25-34.

Spinks, C. (2001). A new apartheid? Urban spatiality (fear of) crime and segregation in Cape Town, South Africa. Unpublished Working paper 01-20. Development Studies Unit, LSE.

Smith, C. A., & Scott, H. S. (1997). A componential approach to the meaning of facial expression. In J.A. Russell & J.M. Fernandez-Dols (Eds.), *The Psychology of Facial Expression (pp. 229–254)*. Cambridge, England: Cambridge University Press.

Tomasik, M.J., Silberreisen, R.K., & Heckhausen, J. (2010) Is it adaptive to disengage from demands of social change? Adjustment to developmental barriers in opportunity-deprived regions. *Motivation and Emotions, 34*, 384-398.

Triandis, H. and Gelfand, M. (1998), Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology, 74*, 118-128.

Watkins, D., & Akande, A. (1992). Approaches to learning of Nigerian secondary school children: Emic and etic perspectives. *International Journal of Psychology, 29*, 165-182.

Watkins, D., McInerney, D., Akande, A., & Lee, C. (2003). "An investigation of ethnic differences in the motivation and strategies for learning of students in desegregated South African schools," *Journal of Cross-Cultural Psychology, 34*, 189-194.

Weiss F. (2005).Neurobiology of craving, conditioned reward and relapse. *Current Opinion Pharmacology.* 5, 9–19.

Vedder, J (2002). Embodied Rhetorics: Disability in Language and Culture: Unpublished paper, University of Pennsylvania.

Yang, L., Kleinman, A., Link, B., Phelan, J., Lee, S., & Good, B. (2007). Culture and stigma: adding moral experience to stigma theory. *Social Science & Medicine, 64*, 1524-1535.

Yzerbyt, V. Y., Judd, C. M., & Corneille, O. (2004). *The Psychology of Group Perception: Perceived Variability, Entitativity, and Essentialism*. London: Psychology Press.

Zuckerman, M., (1983). The distinction between trait and state scales is not arbitrary: comment on Allen and Potkay's Ön the arbitrary distinction between traits and states". *Journal of Personality and Social Psychology, 44*, 1083-1086.

Zukerman, M., Klorman, R., Larrance, D.T., & Spiegel, N. H. (1981). Facial, autonomic and subjective components of emotion the facial feedback hypothesis versus the externalizer-internalizer distinction. *Journal of Personality and Social Psychology, 41*, 929-944.