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Acculturation and mental health: Current findings and recommendations for future research

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Abstract

Results of existing literature suggest that the relationship between acculturation and mental health is complex. Some studies have found a beneficial association between increased acculturation and mental health, whereas others have found a detrimental association or no relationship at all. We reviewed literature on acculturation and mental health in Hispanics/Latino Americans, Asians/Asian Americans, and other ethnic groups. Results indicate that greater acculturation is associated with increased substance use and abuse. Findings for other disorders and symptoms demonstrate considerable heterogeneity and potential reasons for this variation are provided. Acculturation involves a complex set of processes that appear to have differential impact on mental health outcomes. Critical issues in the measurement of acculturation are discussed, and recommendations for future research are offered.

Keywords: Acculturation; Mental health; Hispanics/Latino Americans; Asians/Asian Americans; Ethnic groups; Culture

1. Introduction

1.1. Study overview

Immigration is changing the cultural and ethnic composition of many countries (U.N. Population Report, 2002; U.S. Census Bureau, 2003). In response to rapidly changing demographics, many psychologists are focusing their efforts on better understanding the impact of culture and acculturation on symptom presentation (Draguns & Tanaka-Matsumi, 2003; Koneru & Weisman de Mamani, 2006; Weisman et al., 2000), course (World Health Organization, 1973, 1992), and outcome (Tseng, 1999) of mental illness.

Despite extensive advances in the field of cross-cultural psychology, there is still controversy around issues as fundamental as the definition of culture. Herkovitz (1948) provided an early definition of culture as the "human made part of the environment." Triandis (1980) expanded on this definition by defining culture in terms of both objective elements such as "buildings and tools" and subjective elements including "social norms, roles, beliefs, and values." Lopez and Guarnaccia (2000) further argued that culture is not simply a set of beliefs or values residing within an individual but rather a dynamic process shaped by an individual's engagement within their social network.

Although the label of culture is widely used, many researchers still believe that it is poorly defined and often inappropriately used in psychological research (Hunt, Schneider, & Comer, 2004). In a review on acculturation in Hispanics/Latino Americans (Latino), Hunt et al. (2004) found that only 8% of articles included a definition of culture. The authors further noted that the definitions provided within this 8% were "notably vague" and typically "a cluster of nebulous characteristics carried by ethnic group member." Betancourt and Lopez (1993) have voiced concern that researchers frequently report on ethnic or race variations in their studies and conclude that they are finding cultural differences. Instead, the authors suggest that researchers should first define what is meant by culture that is relevant to the behavior or outcome under study. For instance, culture should be defined in terms of values, beliefs, expectations, norms, and cultural practices. Once culture is defined in such meaningful terms, then these aspects of culture can be assessed and their relations with the relevant outcomes can be tested. Betancourt and Lopez argue that this approach will better equip researchers to ascertain what specific elements of culture are related to the target variables of interest.

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1.2. Aims of this paper

Following Betancourt and Lopez's suggestion, in the current review we will systematically examine the association of acculturation with a variety of mental health outcomes. We have three primary goals within this review. First, we will summarize the current literature on acculturation and mental health. Previous reviews have typically focused on a single ethnic group (e.g., Latinos: Rogler, Cortes, & Malgady, 1991; Asian/Asian Americans: Salant & Lauderdale, 2003). Similar to Balls Organista, Organista, and Kurasaki (2003), we will compare and contrast findings from various ethnic groups. Second, we will examine issues of measurement heterogeneity in acculturation research and will discuss the impact this may have on findings. Finally, we will provide recommendations to inform future research efforts aimed at increasing understanding of the relationship between acculturation and mental health.

1.3. Conceptualizing and measuring acculturation

In one of the earliest systematic attempts to operationalize the construct of acculturation, Redfield, Linton, and Herskovits (1936) reported "acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original culture patterns of either or both groups." Similarly, Gordon (1964) proposed a unidimensional assimilation model in which adoption of mainstream values and beliefs was necessarily associated with the "disappearance of the ethnic group as a separate entity." More recent definitions have considered acculturation to be a multidimensional construct in which culture-of-origin and host cultural identities can vary independently. The most widely cited multidimensional conceptualization has been Berry's acculturation framework (Berry, 1997). This framework is based on the definition of acculturation as "the dual process of cultural and psychological change that takes place as a result of contact between two or more cultural groups and their individual members" (Berry, 2005). From the perspective adopted here (see Betancourt & Lopez, 1993) cultural change implies changes in the components of culture such as values, beliefs, expectations, norms, and roles as well as changes in cultural practices and related psychological functioning.

Within Berry's (2005) definition there is potential for individuals to maintain components of their cultural identity, engage with the culture of the larger society, and have their acculturation experience influenced by the host society. From this conceptualization four acculturation strategies emerge: an *integrative* acculturation strategy, which combines maintenance of some cultural beliefs, values, and practices while also adopting new ones from the host culture, *assimilation* or completely absorbing the norms of the host group, *segregation or separation* which is willfully or forcefully separating from the host norms, and *marginalization* or rejecting, or being rejected by, both the host and the original culture (for critique see Rudmin & Ahmadzadeh, 2001).

Studies have typically indicated that integration is associated with the most adaptive outcomes, whereas marginalization is typically associated with deleterious outcomes (Phinney & Devich-Navarro, 1997). For instance outcomes such as stress, self-esteem, and specific symptoms of mental health have been found to be influenced by an integrated or marginalized acculturation strategy. More recently, Berry, Phinney, Sam, and Vedder (2006) provided further empirical support for these four strategies in a study considering over 5000 immigrant youth from 26 different cultural backgrounds who had settled in 13 countries. Their results further corroborated a four-strategy framework and demonstrated that integration was associated with the highest level of both psychological (e.g., life satisfaction, self-esteem, and psychological problems) and sociocultural adaptation (e.g., school adjustment and behavioral problems).

1.4. Acculturation and mental health

Acculturation is a variable of considerable interest in mental health research.

Theories have suggested that acculturation may facilitate daily social interaction (Balls Organista et al., 2003) and increase awareness of treatment options (Rodriguez-Reimann, Nicassio, Reimann, Gallegos, & Olmedo, 2004). Conversely, acculturation may increase stress or conflict between two competing cultures (Nguyen & Peterson, 1993), or be associated with a reduction in family support (Gil, Wagner, & Vega, 2000). Not surprisingly, then, empirical findings have been mixed, as some studies link greater acculturation to poorer mental health, whereas others demonstrate a favorable relationship or no association at all (Abrams, Allen, & Gray, 1993; Miranda & Umhoefer, 1998; Shen & Takeuchi, 2001).

1.5. Limitations in the study of acculturation and mental health

A potential reason for the discrepancies in findings on acculturation and mental health outcomes may be that acculturation has not been operationalized consistently across studies, resulting in considerable measurement heterogeneity (Zane & Mak, 2003). For example, some studies use ethnic-specific measures (e.g., De Leon & Mendez, 1996; Snowden & Hines, 1999) whereas others use ethnic-general acculturation scales (e.g., Stephenson, 2000). Furthermore, several studies employ single variables (e.g., language, nativity status) to represent acculturation. These variables can be conceived as proxy variables of acculturation and are more reflective of grouping or population categories. More importantly, they do not measure specific values, beliefs, expectations, roles, norms, or cultural practices that define cultural adaptation.

Strong evidence indicates that "acculturation" is bidimensional. These orthogonal dimensions indicate that individuals can maintain or strengthen some values from their culture-of-origin, or the process of enculturation, while also acquiring or adapting to values of the mainstream culture, or the process of acculturation (Kim & Abreu, 2001; Ryder, Alden, & Paulhus, 2000). Despite this, most available instruments mea-

sure acculturation as a unidimensional construct, suggesting that adaptation occurs along a single continuum in which acquisition of host culture values is accompanied by loss of culture-of-origin values (Chung, Kim, & Abreu, 2004). Debate continues regarding how to appropriately operationalize acculturation (Kang, 2006; Rudmin, 2003). Inconsistency in how, and what aspects of acculturation are measured may be a primary reason for disparate findings within the mental health literature (Salant & Lauderdale, 2003). To effectively measure acculturation, the definition of culture should be used to inform the operationalization of the construct. Then, what is really being measured and how it relates to mental health outcome can be systematically determined.

2. Methods

A systematic literature review was conducted using the PsychInfo database. A PsychInfo database search was conducted using "acculturation" as a keyword combined with the following terms: "mental health" or "well being" or "distress" or "emotional distress" or "schizophrenia" or "bipolar disorder" or "major depression" or "depression" or "dysthymia" or "substance abuse" or "substance dependence" or "drug abuse" or "drug dependence" or "alcohol abuse" or "alcohol dependence" or "anxiety" or "generalized anxiety disorder" or "phobia" or "obsessive compulsive disorder" or "eating disorder" or "anorexia" or "bulimia." This search generated an original list of 227 empirical articles which included samples from the U.S. as well as internationally.

All empirical articles identified using these search terms were reviewed. Articles were retained that: (1) identified acculturation as a predictor variable; (2) used a structured mental health measure consisting of more than a single item; and (3) included either a structured measure of acculturation or proxy variables to represent the construct of acculturation (e.g., language usage, length of residence in host-country). Studies using a broad range of acculturation measures were retained with the aim of commenting on measurement heterogeneity in assessing acculturation. We further excluded studies not in English. Using these exclusion criteria, our search resulted in 86 articles.

3. Literature review

Studies are grouped by mental health outcome variable. It should be noted that studies focusing on childhood-specific psychiatric issues are contained in Section 3.5, whereas, studies that used child and adolescent samples that focused on one of the four other mental health variables were included in that respective section. Within each section we present findings on the relationship between acculturation and mental health separately for Latinos and Asians/Asian Americans because these groups have been researched most extensively. Research findings on other less frequently examined ethnic groups are often discussed collectively. Readers are referred to Table 1 for details on ethnic groups of focus, whether a child/adolescent or adult sample was used, sample size, acculturation measures, host-country, mental health outcome measures, and study findings. Finally, Table 1 summarizes whether the acculturation measure was a proxy measure (P), a unidimensional measure (U), or a bidimensional measure (B), and if analyses used both dimensions of the bidimensional measure (B*).

3.1. Stress and distress

As can be seen in Table 1, section A, five studies included in this review examined the relationship between acculturation and distress in Latino samples. Of these, two studies found that greater acculturation was associated with more distress, whereas, three studies found no relationship between these variables. The absence of significant findings in two of the three latter studies (Franzini & Fernandez-Esquer, 2004; Torres & Rollock, 2004) could be specific to the very low levels of acculturation within these samples. Among highly unacculturated individuals, limited host culture language abilities may interfere with accessing resources, but may also be associated with positive attributes (e.g., living in closer contact with relatives) that protect against stress.

Mixed results have also been found with Asian/Asian American samples (see Table 1, section A). Six studies have focused on the relationship between acculturation and distress in Asian/Asian Americans. Two of these studies found that greater acculturation was associated with more distress, but four studies found that greater acculturation was associated with more self-reliance and fewer stress symptoms.

Three of the Asian/Asian American studies used Korean, predominantly student, samples in the United States (Cho, Hudley, & Back, 2003; Kim, Sarason, & Sarason, 2006; Lee, Moon, & Knight, 2004; Lee, Koeske, & Sales, 2004). All found that more acculturation, measured by the Suinn-Lew Asian Self-Identity Acculturation scale (SL-ASIA; Suinn, Ahuna, & Khoo, 1992), was associated with less distress. The Kim et al. (2006) study is noteworthy because it is the only article included in this review that used both self-report (explicit) and non-self-report (implicit) methods to measure level of acculturation and demonstrated different findings when comparing the two methods.

Kim et al. (2006) constructed an ethnic attitude Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) in which first-and-second generation Korean participants were asked to categorize both Korean and Anglo (mainstream White) American names while discriminating pleasant versus unpleasant word meanings. They hypothesized that participants with a stronger positive attitude toward the Korean group would perform the task more efficiently when a Korean name was associated with pleasant attributes as opposed to unpleasant attributes. Their findings indicated that first-generation Korean-Americans indicated stronger Korean self-identity and national identity on both the explicit and implicit measure. However, second-generation Korean-Americans indicated a neutral ethnic identity, and a significant association of self with the U.S. on the explicit measure, but a preference for Korean self-identity and association of self with Korea on the implicit measure. Their findings further indicated that implicit psychological acculturation (i.e., indicating a preference for Korean self-identity and association of self with Korea measured by the IAT), unlike

Table 1
Summary of findings

Authors	Ethnic group	*N*	Measure(s)	Country	Mental health measure	Findings
(A) Stress and distress outcomes						
Barrett et al. (2002)	Multi-ethnic child and adolescent (Yugoslavian, Chinese, Mixed Culture, Australian)	173	Bicultural Involvement Questionnaire (B*) (Szapocznik et al., 1980)	Australia	Internalizing symptoms: Revised Children's Manifest Anxiety Scale (Reynolds and Richmond, 1985); Trauma Symptom Checklist for Children (Briere, 1996)	Greater acculturation (greater Australianism and integration) was associated with fewer symptoms of anxiety and PTSD.
Bratter and Eschbach (2005)	Multi-ethnic (includes non Hispanic Whites, Hispanics, Asians, African American and Native American)	162,032	Length of time in the U.S.; Language use (P)	U.S.	Nonspecific psychological distress: NHIS Psychological Distress Measure (Kessler et al., 2002).	Greater acculturation was associated with more distress.
Buddington (2002)	Jamaican	150	Behavioral Acculturation Scale (U)	U.S.	Stress: Global Stress Measure (Cohen et al., 1983)	Greater acculturation was associated with more stress
Castillo et al. (2004)	Mexican-American	247	Acculturation Rating Scale for Mexican Americans-II (B) (ARSMA-II; Cuellar et al., 1995a,b)	U.S.	Perceived Distress: Outcome Questionnaire-45 (Lambert et al., 1996).	No relationship.
Cho et al. (2003)	Korean-American Adolescents	51	Suinn-Lew Asian Self-Identity Scale (SL-ASIA) (U) (Suinn et al., 1992)	U.S.	Several mental health outcomes (e.g., anxiety, depression, stress): Self-Report of Personality(Reynolds and Kamphaus, 1992)	Greater acculturation was associated with fewer stress symptoms
Franzini and Fernandez-Esquer (2004)	Mexican	1,745	Nativity and Spanish Language use (P)	U.S.	Mental Health: Mental Component Summary Scale of the Short Form Health Survey (Ware et al., 1996)	No relationship
Kim et al. (2006)	Korean-American	288	SL-ASIA (U) (Suinn et al., 1992); Multi-group Ethnic Identity Measure (MEIM) (U) (Phinney, 1992); Implicit Association Test (B*)(Greenwald et al., 1998)	U.S.	Psychological Distress: Brief Symptom Inventory (Derogatis, 1975)	Implicit acculturation, a preference for Korean self-identity and association of self with Korea, was associated with more psychological distress
Lee et al., 2004	Korean	74	SL-ASIA (U) (Suinn et al., 1992)	U.S.	Psychological Distress: Brief Symptom Inventory (Derogatis and Melisartos, 1983)	Greater acculturation was associated with fewer stress symptoms
Liebkind, Jasinskaja-Lahti, and Solheim (2004)	Vietnamese youth	512	Proficiency in majority language (P)	Finland	School Adjustment: Scale based on Andersen (1982) and Moos' (1989) work	Integrative acculturation was associated with less stress
MacLachlan et al. (2004)	Irish	73	3-Item measure assessing: change in Irish culture, retention of "old Ireland", being a part of "new Ireland" (U)	Ireland	Psychological Distress: General Health Questionnaire (Goldberg, 1992)	Assimilationist acculturation strategy was associated with better mental health
Mak, Xiaohua Chen, Wong, and Zane (2005)	Chinese-American	1503	Language usage; ethnic social affiliation; involvement in cultural activities (P)	U.S.	Psychological distress: Global Severity Index of the Symptom Checklist 90-Revised (Derogatis, 1978)	Greater acculturation is associated with more distress
Navara and James (2005)	Multi-ethnic (Missionaries from N. American, Australia, New Zealand)	76	Length of stay; previous cross-cultural experience; language (P)	U.S.	Perceived stress: Perceived stress scale (Cohen et al., 1983)	Language familiarity was associated with less stress, whereas, longer duration of residence was associated with higher stress

Table 1 (*Continued*)

Authors	Ethnic group	*N*	Measure(s)	Country	Mental health measure	Findings
Ouarasse and van de Vijver (2004)	Moroccan	155	Perceived mainstream and minority demands for integration, tolerance and vitality (B*)	The Nether-lands	Depressive Tendencies and Psychosomatic: complaints: 18-item measure of mental health blending the Depressive Tendencies Scale (Alsaker, 1990) and the WHO cross-national somatic survey of psychological and symptoms (WHO, 1988)	Perceived mainstream and minority integration, tolerance, and permissiveness to adjust, and vitality were associated with less stress
Pillay (2005)	African-American	136	African-American Acculturation Scale-33 (U) (Landrine & Klonoff, 1994)	U.S.	Psychological Well-Being and Distress: Mental Health Inventory (Veit and Ware, 1983)	Greater acculturation was associated with more distress
Safdar et al. (2003)	Iranian	166	Revised version of Acculturation Attitudes Scale (U) (Kim, 1984)	Canada	Psychosocial Adjustment: Short form of Scales of psychological well-being (Ryff, 1989)	Greater assimilation was associated with less psycho-physical distress
Torres and Rollock (2004)	Hispanic	96	Cultural Life Style Inventory (U) (Mendoza, 1989)	U.S.	Acculturative Distress (involves affective, behavioral, and psychosomatic responses to general and cultural stress): Cultural Adjustment Difficulties Checklist (Sodowsky and Lai, 1997)	No relationship
Vinuesa Thoman and Suris (2004)	Hispanic	101	ARSMA-II (B) (Cuellar et al., 1995a,b)	U.S.	Overall Psychological Distress: Brief Symptom Inventory (Derogatis, 1993)	Low-bicultural acculturation predicted higher levels of psychological distress
Virta et al. (2004)	Turkish Adolescents	840	Four 5-item scales to assess acculturation strategies (i.e., assimilation, separation, marginalization, integration) (B)	Norway and Sweden	Self-esteem: 10-item scale adapted from Rosenberg's (1986) self-esteem inventory	Integration was associated with better mental health, opposite pattern with marginalization
(B) Alcohol/substance disorders						
Cheng et al. (2004)	Malayo-Polynesian	499	Taiwan Aboriginal Acculturation (U) Scale (Cheng & Hsu, 1995)	Taiwan	Psychiatric morbidity: Chinese Clinical Inter-view Schedule (Goldberg et al., 1970)	Cultural assimilation was associated with greater risk for alcoholism
Epstein et al. (2003)	Hispanic adolescents	1,038	Language (P)	U.S.	Psychological Distress: Mental Health Inventory (Veit and Ware, 1983)	Higher acculturation was associated with higher rates of drug use
Gfroerer and Tan (2003)	Multi-ethnic youth (Predominantly U.S. born [92.9%], 7.1% foreign born from Mexico, Germany, Philippines, India, Vietnam, and Korea)	50,947	Length of residence in the U.S. (P)	U.S.	Substance Use: National Household Survey on Drug Abuse (SAMHSA, 2001)	Higher acculturation was associated with higher rates of alcohol use
Gil et al. (2004)	Hispanic and African American adolescents	213	Modified scale measuring language and behaviors based on Cuellar et al., 1980 (U)	U.S.	Alcohol and Marijuana Use: Time-line Follow-back Follow-back Interview (Sobell and Sobell, 1992)	Higher acculturation was associated with higher rates of alcohol use
Nieri, Kulis, Keith, and Hurdle (2005)	Mexican-American adolescents	1343	Spanish-language predominance (P)	U.S.	Positive consequences of drug/substance use: 6-item scale measuring positive consequences of alcohol, cigarette, or marijuana use	Higher acculturation was associated with higher rates of alcohol use

Sakai, Ho, Shore, Risk, and Price (2005)	Asian	159	Place of birth (P)	U.S.	Substance and Drug Dependence: National Household Survey on Drug Abuse (used DSM-IV criteria to generate both substance and drug dependence diagnoses)	Higher acculturation was associated with greater substance dependence
Segura et al. (2003)	Latino adolescents	115	ARSMA-II (B) (Cuellar et al., 1995a,b)	U.S.	Alcohol consumption: Self-Report Questionnaire designed to categorize the frequency, quantity, and type of alcohol used in the past year	Higher acculturation was associated with greater alcohol consumption
So and Wong (2006)	Asian-American	248	Acculturation Lifestyle Survey (U)	U.S.	Substance use: Substance Use Checklist	Higher acculturation was associated with more substance use
Turner et al. (2006)	Cuban-Americans and other Hispanics	888	5-item Linear Language Behavior Measure (U) (Vega and Gil, 1998)	U.S.	Lifetime occurrence of psychiatric and substance disorders: Michigan composite international diagnostic interview (Robbins et al., 1988)	Higher acculturation was associated with higher rates of drug dependence
(C) Eating Disorders						
Abdollahi and Mann (2001)	Iranian women in Iran and America	104	Length of residence in U.S.; language (P)	U.S.	Body Size and Shape: Figure Rating Scale (FRS) (Stunkard et al., 1983); Eating Disorder Symptoms: Eating Disorder Examination Questionnaire (EDE-Q; Fairburn and Beglin, 1994)	No relationship
Barry and Garner (2001)	East-Asian (Chinese, Japanese Korean)	150	East Asian Acculturation Measure (U) (Barry, 1999)	U.S.	Eating concerns: five items from EAT-26 (Garner and Garfinkel, 1979)	Greater assimilation was associated with less psychological discomfort after eating
Becker et al. (2003)	Fijian	50	Assimilation to Western culture and acculturation from Fijian tradition (B*)	Fiji	Binge Eating Behavior: Questionnaire on Eating and Weight Patterns-Revised (Nangle et al., 1994)	Binge eating was associated with non-Fijian attitude (e.g., body can be reshaped through diet and exercise) toward the body
Bhugra and Bhui (2003)	Multi-ethnic (White, Black, Asian, Other)	226	Language preference; Food and clothing choices (P)	London	Bulimia Symptomatology: BITE (Henderson and Freeman, 1987)	For both Blacks and Others, higher acculturation was associated with more symptoms of bulimia
Bhugra, Bhui, and Gupta (2000)	Indian	504	English language usage; reading and/or listening to music in English (P)	India	Bulimia Symptomatology: BITE (Henderson and Freeman, 1987)	No relationship
Cachelin and Regan (2006)	Multi-ethnic (Hispanic, Asian, Black, and White)	1,257	Country of birth; parent's country of birth; whether English is primary language (P)	U.S.	Eating attitudes: EAT (Garner and Garfinkel, 1979); body distortion BDQ (Fisher, 1970)	Higher acculturation was associated with higher levels of dietary restraint
Chamorro and Flores-Ortiz (2000)	Mexican-American	139	ARSMA-II (B) (Cuellar et al., 1995a,b)	U.S.	Eating attitudes: EAT-26 (Garner et al., 1982)	Higher acculturation was associated with more controlled eating
Chan and Owens (2006)	Chinese	301	MEIM (U) (Phinney, 1992)	New Zealand	Eating disorder symptoms: EDI (Garner et al., 1983)	Higher acculturation was associated with less eating disorder symptoms
Davis and Katzman (1999)	Chinese	197	SL-ASIA (U) (Suinn et al., 1992)		Eating disorder symptoms: EDI (Garner et al., 1983)	Higher acculturation was associated with greater eating disorder symptoms
Franko and Herrera (1997)	Guatemalan-American	57	Culture questionnaire (U) (Pumariega, 1986)	U.S.	Drive for thinness and body dissatisfaction: EDI-2; Fear of Fat: Fear of Fat Scale (Goldfarb et al., 1985); Body attitude: multidimensional body-self relations; (MBSRQ; Brown, Cash, & Mikulka, 1990)	Higher acculturation was associated with greater body image disparagement

Table 1 (*Continued*)

Authors	Ethnic group	*N*	Measure(s)	Country	Mental health measure	Findings
Gowen, Hayward, Killen, Robinson, and Taylor (1999)	Hispanic	920	Language spoken at home; time lived in U.S. (P)	U.S.	Body dissatisfaction: EDI-BD (Garner et al., 1983); weight concerns: Weight Concerns Index (Killen et al., 1994)	Higher acculturation was associated with partial syndrome eating disorders
Haudek, Rorty, and Henker (1999)	Asian	51	SL-ASIA (U) (Suinn, Rickard-Figueroa, Lew, and Vigil, 1987)	U.S.	Eating disorder symptoms: eating disorder examination (EDE; Fairburn and Cooper, 1993); 3 subscales of the EDI (Garner et al., 1983)	No relationship
Jennings et al. (2005)	Asian	42	Typical Asian Index (TA) and Typical Caucasian Australian Index (TCA) (B*)	Australia	Eating disorder symptoms: EAT-26 (Garner et al., 1982); EDI-2 (Garner et al., 1983)	Higher scores on the Typical Asian Index were associated with more eating disorder symptoms
Joiner and Kashubeck (1996)	Mexican-American	120	ARSMA (B) (Cuellar et al., 1980)	U.S.	Body dissatisfaction: Body Dissatisfaction Scale of EDI (Garner et al., 1983); eating attitudes: EAT-26 (Garner et al., 1982); bulimic symptomatology: BULIT-R (Thelen et al., 1991); body shape satisfaction: Body Figure Perception and Preference Questionnaire (Stunkard et al., 1983)	No relationship
Kuba and Harris (2001)	Mexican-American	115	Minority-majority relations survey(U) (MMRS; Sodowsky et al., 1991)	U.S.	Eating disorder symptoms: structured interview for anorexia and bulimia (SIAB; Fichter et al., 1991)	No relationship
Lester and Petrie (1995)	Mexican-American	142	ARSMA (B) (Cuellar et al., 1980)	U.S.	Body satisfaction: Body Parts Satisfaction Scale (BPSS; Bohrnstedt, 1977); Bulimic symptomatology: BULIT-R (Thelen et al., 1991)	No relationship
Marais, Wassenaar, and Kramers (2003)	Black South African men, women, and white men	150	South African Acculturation Scale (U) (Kramers, 2000)	South Africa	Body image disturbances: EDI (Garner et al., 1983)	Assimilation was associated with more eating disorder symptoms
Ogden and Elder (1998)	Asian (Indian, Pakistani, Sri Lankan, Other)	100	Language preference; friends; music preferences (P)	U.K.	Body Image: BSQ (Cooper et al., 1987); Silhouettes (subjects examined and rated a set of 12 cards indicating which figure they thought they were most like and their ideal shape); eating behavior: restrained eating section of the Dutch Eating Behaviour Questionnaire (DEBQ; Van Strien et al., 1986)	No relationship
Sahi Iyer and Haslam (2003)	South Asian	122	SL-ASIA (U) (Suinn et al., 1992)	U.S.	Eating attitudes: EAT-26 (Garner et al., 1982)	No relationship
Stark-Wrobleweski, Yanico, and Lupe (2005)	Asian (Japanese, Chinese, Taiwanese, Hong Kong)	106	American-International Relations Survey (U) (AIRS; Sodowsky and Plake, 1991)	U.S.	Eating pathology: EAT-26 (Garner et al., 1982)	No relationship
Yoshimura (1995)	Asian-American (Japanese, Chinese, Korean, Philippino, and Vietnamese)	31	SL-ASIA (U) (Suinn et al., 1987)	U.S.	Eating disorder symptoms: EDI (Garner et al., 1983)	No relationship

(D) Depression

Abbott et al. (2003)	Chinese	162	Twenty-one questions concerning Chinese culture and 21 complementary New Zealand questions (B*)	Auckland	Depression: 15-item version of Geriatric Depression Scale (Yesavage et al., 1983)	No association between Chinese cultural orientation and depression. Lower New Zealand orientation was associated with more depression.
Bhui et al. (2005a)	African-Caribbean, Bangladeshi, White-British adolescents	2,790	Clothes and friends preference (P)	London	Depression: Moods and Feelings Questionnaire (Angold et al., 1987)	Integration was associated with lower risk for depression
Carvajal, Hanson, Romero, and Coyle (2002)	Latino youth	1,119	Latino Orientation Scale and Other Group Orientation Scale (B); generational status; language preference (P)	U.S.	Depressive symptomatology: shortened version of Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977); optimism: positive global expectancy measure	Marginalization was associated with higher depression and less optimistic outlook
Chen et al. (2003)	Chinese and Japanese	102	5-item measure focused on culturally relevant activities (U)	U.S.	Depression: Measured based on CES-D (Radloff, 1977)	Higher acculturation was associated with greater affective symptoms and fewer somatic symptoms
Cintron, Carter, Suchday, Sbrocco, and Gray (2005)	Puerto Rican	275	Psychological Acculturation Scale (U) (Tropp et al., 1999)	Puerto-Rico	Anxiety: Anxiety Sensitivity Index (Reiss et al., 1986); State-Trait Anxiety Inventory (Knight et al., 1983); Beck Anxiety Inventory (1988); Depression: BDI-II (Beck et al., 1996)	Higher acculturation was associated with less anxiety and demonstrated no relationship with depression
Cuellar et al. (2004)	Mexican	353	Brief ARSMA-II-SV (B) (Cuellar et al., 1995a,b)	U.S.	Depression: Depressive Symptoms Scale (items based on MMPI Depression Scale)	Higher acculturation was associated with more depression
Elder et al. (2005)	Mexican-American adolescents	106	ARSMA-II (B*) (Cuellar, 1995)	U.S.	Depression: CES-D (Radloff, 1977)	No relationship
Foss (2001)	Vietnamese and Hmong	30	SL-ASIA (Suinn et al., 1992) (U)	U.S.	Post-traumatic stress: Hopkins Symptom Checklist-25 (Indochinese version, Mollica et al., 1987; Hmong version, Mouanoutoua and Brown, 1995)	Less acculturation was associated with greater anxiety and depression
Gonzalez, Costello, La Tourette, Joyce, and Valenzuela (1997)	English and Spanish speaking clients	55	Short Acculturation Scale (U) (Marin et al., 1989)	U.S.	Depression: CES-D (Radloff, 1977); Beck Depression Inventory (BDI (Beck et al., 1979))	No relationship
Gonzalez and Shriver (2004)	English and Spanish speaking clients	256	Bidimensional Acculturation Scale (B*) (Marin and Gamba, 1996)	U.S.	Depression: BDI-II (Beck et al., 1996); Voice Interactive Depression Assessment System-III (Gonzalez and Shriver, 2004)	High Hispanic-low non-Hispanic and bicultural Hispanics did not differ on depression scores
Greenland and Brown (2005)	Japanese	35	Reported language ability; perceived cultural distance between Japan and U.K (P)	U.K.	Psychosomatic illness: 6-item scale measuring general physical and emotional well-being	Higher language ability was associated with stress, whereas, greater perceived cultural distance was associated with greater psychosomatic illness
Heilemann, Frutos, Lee, and Kury (2004)	Mexican	129	Place of birth; language preference; exposure to the U.S. in childhood (P)	U.S.	Depression: CES-D (Radloff, 1977)	Higher acculturation was associated with more depressive symptoms
Hwang, Chun, Takeuchi, Myers, and Siddarth (2005)	Chinese-American	1,747	Age at immigration; length of residence in the U.S. (P)	U.S.	Depression: Composite International Diagnostic Interview (Kessler et al., 1994)	Longer length of residence in U.S. was associated with less risk for experiencing 1st depressive episode. Younger age at immigration was associated with greater overall risk, however, later age was associated with developing depression at or soon after arrival

Table 1 (*Continued*)

Authors	Ethnic group	*N*	Measure(s)	Country	Mental health measure	Findings
Jang, Kim, and Chiriboga (2005)	Korean-American	230	Language (proficiency, used with, family preferred language for media and books); food preference, ethnic interaction (P)	U.S.	Depression: Geriatric Depression Scale-Short Form (GDS-SF, Sheikh and Yesavage, 1986); CES-D (Radloff, 1977)	Higher acculturation was associated with fewer depressive symptoms
Kim, Han, Shin, Kim, and Lee (2005)	Korean	154	Length of residency in U.S.; English proficiency; use of societal resources (P)	U.S.	Depression: CES-D (Radloff, 1977)	Higher acculturation was associated with less depression
Knipscheer and Kleber (2006)	Bosnian	78	Lowlands Acculturation Scale (U) (Mooren et al., 2001)	Netherlands	Posttraumatic Reactions: Impact of Events Scale (Weiss and Marmar, 1997)	Preservation of cultural traditions and ability to perform skills were associated with fewer mental health symptoms
Kuo et al. (2004)	Hispanic	3,592	Short Acculturation Scale for Hispanics (U) (Marin et al., 1987)	U.S.	Depression: CES-D (Radloff, 1977)	No relationship
Lee et al., 2004	Korean	95	Questions regarding number of years in the U.S., ethnic identification, proficiency in the English language, changes in value system, and changes in life style (P)	U.S.	Depression: CES-D (Radloff, 1977)	No relationship
Mak and Zane (2004)	Chinese American	1,747	Language usage; ethnic social affiliation; involvement in cultural activities (P)	U.S.	Depression, Anxiety, and Somatization: SCL-90R (Derogatis, 1978)	No relationship
Martinez-Schallmoser et al. (2003)	Mexican-American	66	Language; ethnic identity; ethnic traditions and values (P)	U.S.	Depression: CES-D (Radloff, 1977)	Higher acculturation was associated with more symptoms of depression
Masten et al. (2004)	Mexican and European American	76	Olmedo Acculturation Inventory (U) (Olmedo and Padilla, 1978)	U.S.	Depression: CES-D (Radloff, 1977)	No relationship
McNaughton, Cowell, Gross, Fogg, and Ailey (2004)	Mexican Children	182	Acculturation and Structural Assimilation Scale (U) (Hazuda et al., 1988)	U.S.	Maternal anxiety and depression: Hopkins Symptom Checklist (Derogatis et al., 1974); Child Depression: Children's Depression Inventory (Kovacs, 1992)	No relationship
Michaels Miller et al. (2006)	Soviet immigrants	226	English language; American behavior (P)	U.S.	Depression: CES-D (Radloff, 1977)	Higher acculturation was associated with lower scores for depressed mood
Newcomb and Vargas Carmona (2004)	Latina	113	20-item Acculturation Scale (U) (Cuellar et al., 1980)	U.S.	Depression: CES-D (Radloff, 1977)	Higher acculturation was associated with less depression
Parker, Chan, Tully, and Eisenbruch (2005)	Chinese	528	SL-ASIA (U) (Suinn et al., 1992); proportion of time lived in Australia (P); age at any migration (P)	Australia	Depression: DMI-10 (Parker et al., 2002)	Higher acculturation was associated with less state depression
Rahman and Rollock (2004)	South Asian	199	Minority-Majority Relations Survey (U) (Sodowsky & Plake, 1991)	U.S.	Depression: CES-D (Radloff, 1977)	Higher acculturation was associated with greater depression
Ramos (2005)	Puerto-Rican	1,501	Language usage and preference (P)	U.S.	Depression: CES-D (Radloff, 1977)	Higher acculturation was associated with higher levels of depressive symptoms
Robinson Shurgot and Knight (2004)	Latino	48	ARSMA-II (B*) (Cuellar et al., 1995a,b)	U.S.	Depression: modified CES-D (Kohout et al., 1993)	No relationship

Rodriguez Le Sage and Townsend (2004)	Mexican-American	173	Individual level acculturation: language and nativity; couple level: dyad concordance on language preference and nativity (P)	U.S.	Depression: CES-D (Radloff, 1977)	No relationship
van der Wurff et al. (2004)	Turkish and Moroccan	933	20-question scale developed by the Institute of Social Medicine assessing: ethnic self-identification, orientation towards native or host culture, and social contact (U)	The Nether-lands	Depression: CES-D (Radloff, 1977)	Separation was associated with higher depression symptoms
(E) Child and adolescent psychiatric disorders						
Bhui et al. (2005b)	Multi-ethnic	2,623	Clothes and friends preference (P)	London	Emotional symptoms, conduct problems, peer problems, hyperactivity: Strengths and Difficulties Questionnaire (Goodman et al., 2003)	Integrated friendship choices were associated with fewer mental health problems
Crane et al. (2005)	Chinese	41	SL-ASIA (U) (Suinn et al., 1992)	North America	Delinquency: Delinquent subscale of the Child Behavior Checklist-Youth self-report (Achenbach and Edelbrock, 1987)	Higher acculturation was associated with less delinquency and more social initiative
Lau et al. (2005)	Mexican	260	Pan-Acculturation Scale (B) (Soriano and Hough, 2000)	U.S.	Conduct problems: Diagnostic Interview Schedule for Children-IV (Shaffer et al., 2000)	Lower child acculturation, relative to parent's, was associated with greater conduct problems
McQueen et al. (2003)	Mexican-American	1,546	English language use; generational status (P)	U.S.	Deviant Behavior: 16-item scale based on (Jessor and Jessor's work 1977; Jessor, 1987)	Higher acculturation was associated with more deviant behavior
Oppedal et al. (2004)	Multi-ethnic adolescents (participants were from countries in, Asia, Africa, and Europe)	160	Perceived discrimination; ethnic identity crisis; host culture competence; ethnic-culture competence (P)	Norway	Distress: Hopkin's Symptom Checklist (Derogatis et al., 1974); self-esteem: Rosenberg Self-Esteem Scale (1965)	Host and ethnic cultural competence were associated with greater self-esteem and fewer mental health symptoms. Ethnic identity crisis was associated with lower self-esteem.
Oppedal et al. (2005)	Multi-ethnic adolescents	1,275	Ethnic identity crisis; perceived discrimination; host and ethnic-culture competence; collectivist family values (P)	Norway	Psychiatric problems (e.g., emotional, conduct): Strengths and Difficulties Questionnaire(Goodman et al., 1998)	Ethnic and host culture competence were generally associated with fewer psychiatric symptoms. Low positive correlation between ethnic competence and conduct problems.
Sawrikar and Hunt (2005)	Non-English speaking adolescents	263	Acculturation Inventory (B*) (Sawrikar & Hunt, in review)	Australia	Depression, Anxiety, Stress: Depression Anxiety Stress Scale (Lovibond and Lovibond, 1995) Positive and Negative Affect: General Positive Affect Negative Affect Schedule (Watson, Clark, & Tellegen, 1988)	High Australian pride and high native pride were associated with lower depression, anxiety, stress and negative affect, and higher positive affect. Separated cultural identity (high native pride and low Australian pride) was associated with more depressive symptoms.

explicit psychological acculturation (i.e., ethnic attitude measured by the self-report SL-ASIA), was a significant predictor of psychological distress in second-generation Korean-Americans. This finding underscores the idea presented by Landrine and Klonoff (1994) that "culture operates largely at the unconscious level." The authors argued that psychological acculturation may represent both explicit and implicit constructs and may be most appropriately measured, particularly when working with later generation minority groups, employing both types of measures.

Although most studies on acculturation and distress have focused on Latino and Asian/Asian American samples, seven studies were reviewed that considered other ethnic groups, including African-American, Moroccan, and Turkish samples (see section A of Table 1). Three studies, in non-Latino and non-Asian/Asian American samples, have found that greater acculturation was associated with more stress or distress, whereas, three studies found that a greater acculturation was associated with less distress.

The latter three studies which found that increasing acculturation is associated with less distress (MacLachlan, Smyth, Breen, & Madden, 2004; Ouarasse & van de Vijver, 2004; Safdar, Lay, & Struthers, 2003) were conducted outside of the U.S. and investigated samples acculturating to Irish, Dutch, and Canadian cultures. In comparison, in those studies finding that a greater acculturation was associated with more stress/distress, only Virta, Sam, and Westin (2004) investigated Turkish adolescents in Norway and Sweden whereas the remaining two studies investigated individuals acculturating to the U.S. culture. Ward (2001) has suggested that discrimination, stress and distress may be lessened in host-countries encouraging integration in comparison to assimilation. Findings from the Virta et al. (2004) study underscore this point. Their results demonstrated that Turkish adolescents acculturating in Norway, in comparison to Sweden, demonstrated less psychological adaptation. Vedder (2001) has demonstrated that attitudes toward integration are more favorable in Sweden than in Norway. Thus, the country and that country's overarching stance on immigration and acculturation, should be considered when evaluating the distress of individuals entering a new culture.

Finally, Navara and James (2005) found the need to consider specific dimensions of acculturation among a sample of mixed ethnicity missionaries from the U.S., Australia, New Zealand, and several South American and African countries. Their findings indicated that higher language proficiency was inversely related to stress whereas longer duration of stay was associated with more stress.

3.2. Alcohol and drugs

Researchers have suggested that exposure to a new culture may be associated with more stress and that increased alcohol consumption may serve as a coping mechanism (Alva, 1995; Neff, Hoppe, & Perea, 1987). Nine studies were reviewed that focus on the relationship between acculturation and alcohol/drug use (see Table 1, section B). Three studies, primarily with Latino samples in the U.S., have demonstrated that greater acculturation is associated with more alcohol use. Segura, Page, Neighbors, Nichols-Anderson, and Gillaspy (2003) found a moderate positive trend in the relationship between generational status and adolescent alcohol use, however the total score on the Acculturation Rating Scale for Mexican Americans-II (ARSMA-II; Cuellar, Arnold, & Maldonado, 1995b), was not related to alcohol use. In addition, three studies demonstrated that acculturation is associated with higher drug use and drug dependence (Epstein, Doyle, & Botvin, 2003; Gil, Wagner, & Tubman, 2004; Turner, Lloyd, & Taylor, 2006).

Khoury, Warheit, Zimmerman, Vega, and Gil (1998) have suggested that there may be a critical period in which the process of acculturation shifts from being neutral or beneficial to being detrimental. Gfroerer et al.'s work (2003) supports this idea. Their findings demonstrated that foreign-born youths, predominantly of Mexican-origin, who had resided in the U.S. for 5 years or less, as opposed to 10 years or more, demonstrated lower prevalence for substance use when compared to U.S. born youth. In addition, contrary to Berry's conceptualization that integration is typically associated with the most adaptive health outcomes, Galan (1988) and others (Fitzpatrick, 1987) have suggested that bicultural Latino youth may experience behavioral confusion and stress that could contribute to alcohol/drug use. Epstein et al.'s (2003) work is in partial support of this idea. Their findings demonstrated that both highly acculturated and bicultural Latino youth demonstrated greater polydrug use in comparison to youth who spoke only Spanish at home.

In Asian/Asian American samples, three studies (see section B of Table 1), using three different methods to measure acculturation also demonstrated that greater acculturation is associated with increased odds of substance use, dependence, and less engagement in substance abuse treatment. Researchers have argued that acculturation diminishes a family's conservative stance on substance use in Latino families, a topic worth considering in future research with Asian/Asian American samples.

Findings consistently demonstrated that greater acculturation, measured by both proxy variables and structured measures, was associated with increased substance use. The significant challenges associated with sociocultural adjustment may be fostering use of maladaptive coping mechanisms.

3.3. Eating disorders

As backdrop for understanding acculturation, it is worth noting that many authors have examined the relationship between eating disorders and culture (Altabe, 1998; Furukawa, 2002). Soh, Touyz, and Surgenor (2006) argue that considering acculturation in future research may provide "a way forward in further teasing out the relationships between eating disorders and culture." Rathner et al. (1995) and others (Nagel & Jones, 1992; Weiss, 1995) have suggested that the onset of eating disorders in minority populations may be associated with greater exposure to, and identification with, Western values and norms including excessive body consciousness and a push towards extreme and dangerous thinness. It has been argued that acculturation may increase media exposure to Western standards of thinness as beauty, attempts to emulate unrealistic body standards

(Striegel-Moore, Silberstein, & Rodin, 1986), and negative attitudes towards eating.

Twenty-one studies that examined the relationship between acculturation and eating disorders were included in this review (see Table 1, section C). Six studies focused on Latino samples. Three of these studies found that acculturation was associated with diminished body image satisfaction and more eating disorder symptoms. In contrast, three studies found no relationship between acculturation and eating disorder symptoms or body dissatisfaction. Interestingly, Lester and Petrie (1995) did find that endorsement of U.S. values regarding attractiveness, unlike acculturation measured by the ARSMA (Cuellar et al., 1980), was related to more bulimia symptoms. The ARSMA measures several factors relevant to the construct of acculturation including: language usage and familiarity, ethnic interaction, ethnic pride and identity, cultural heritage, and generational proximity (1980). The findings from Lester and Petrie (1995) underscore the necessity to measure adoption of host-country values and specific aspects of culture that are relevant to the mental health outcome of interest.

Sampling issues may explain the absence of relationship between acculturation and eating disorders within three studies. Despite using predominantly 4th and 5th generation Mexican-American adolescent female samples, mean levels of acculturation reflect an integrative acculturation strategy. Thus, participants, while demonstrating some movement towards mainstream culture, are potentially retaining elements of their host culture which may protect them from developing general body dissatisfaction and eating disorder symptoms.

Eleven studies focused on Asian/Asian American samples. Only one of these studies found that greater acculturation to U. S. norms and values was associated with more eating disorder pathology in a sample of Chinese students in the U.S. However, 53% of participants in the Davis and Katzman (1999) study had lived in the U.S. for 5 years or less, thus, this study's findings are challenging to interpret due to a limited acculturation range within their sample. In contrast, four studies found that greater acculturation predicted lower body dissatisfaction, a lower drive for thinness, and fewer eating disorder symptoms. Six studies found no relationship among Asian/Asian American samples. The idea that "movement" towards Western values and standards of beauty and thinness contributing to eating disorder symptoms may not be an applicable theory with regard to Asian/Asian American populations. Studies have demonstrated that greater body image dissatisfaction is associated with individuals in Asian/Asian American families with more traditional Asian values (Mumford, Whitehouse, & Platts, 1991). Traditional Asian culture may demand adherence to rigid norms and have strict expectations for physical appearance, thus, ethnic identification may not serve as a protective influence (Sahi Iyer & Haslam, 2003).

Finally, four studies investigating the relationship between acculturation and eating disorder symptoms have focused on Iranians, Fijians, and Blacks in London and South Africa. Abdollahi and Mann (2001) found no relationship between acculturation and disordered eating or body image concerns in either their Iranian sample in Tehran or in Los Angeles. However, in the Tehran sample, their results indicated that exposure to Western culture was associated with more restrained eating. The remaining three studies all found that greater acculturation was associated with less body satisfaction or more eating disorder symptoms.

3.4. Depression

Several studies have demonstrated variations in depressive symptoms among ethnic groups (Cole, Kawachi, Maller, & Berkman, 2000; Iwata & Buka, 2002). Fifteen studies in this review investigated the relationship between acculturation and depression in Latino samples (see Table 1, section D). Results from these studies are rather equivocal. Four studies found that greater acculturation was associated with greater depression. Of these four studies, only Cuellar, Bastida, and Braccio (2004) used a validated acculturation scale, the brief ARSMA-II-SV (Cuellar, Arnold, & Gonzalez, 1995a; Cuellar et al., 1995b). The brief ARSMA-II is bidimensional and provides data on two orthogonal cultural scales: the Anglo-orientation scale (AOS) and the Mexican-orientation scale (MOS). This scale measures linear acculturation by subtracting the mean AOS from the mean MOS. Using a linear score limits interpretation of findings because it is unclear whether each orientation would demonstrate a unique association with symptoms of depression. As noted in the introduction, using each orientation separately would allow for an exploration of the relationship between acquisition of host-culture and retention of culture-of-origin in relation to symptoms of depression.

Two studies found that greater acculturation was associated with fewer symptoms of depression. The authors interpreted their findings as suggesting that acculturation may facilitate cultural adaptation and subsequently enhance feelings of efficacy, positive affect, and outlook on life.

Finally, nine studies found no relationship and one study found mixed results with respect to acculturation and depression (Gonzalez & Shriver, 2004). The Gonzalez and Shriver results are challenging to interpret because only 9 of 128 study participants reported symptoms of depression.

Eleven studies investigated the relationship between acculturation and depressive symptoms in Asian/Asian American samples (see section D of Table 1). One study found that greater acculturation was associated with greater symptoms of depression. This study was the only investigation that used a South Asian sample composed of Indian, Pakistani, and Bangladeshian international university students in the U.S. The authors used the Minority–Majority Relations Survey (Sodowsky & Plake, 1991) and found that only perceived prejudice, unlike language and social customs, predicted depressive symptoms. The authors suggest that using language as an acculturation subscale may not be appropriate with many international student groups who often arrive to their host society with relative language proficiency (Rahman & Rollock, 2004), yet still may be fairly unfamiliar with the customs and norms of the adopted society.

Five studies found that greater acculturation was associated with less severe depressive symptoms among Asian/Asian Americans. Abbott et al. (2003) used a multidimensional

approach in measuring acculturation by gathering data on both acculturation and enculturation in their study focusing on elderly Chinese immigrants in New Zealand. The authors used two 21-question surveys to gather data regarding orientation to both Chinese and New Zealand culture. Their results demonstrated no association between Chinese cultural orientation and depressive symptoms. A low New Zealand cultural orientation, however, was associated with more symptoms of depression. H.Y. Lee et al. (2004) and J.S. Lee et al. (2004) have suggested that greater acculturation for elderly Chinese immigrants in New Zealand may diminish the detrimental impact of being unfamiliar with a new economic and language system, as well as, temper adjustment difficulties associated with having a limited support network.

Three studies found mixed results regarding the association between acculturation and depression in Asian/Asian Americans. Chen, Guarnaccia, and Chung's (2003) findings are particularly interesting because they investigated a cognitive mechanism underlying the relationship between acculturation and symptoms of depression. Their findings demonstrated that attention to the affective component of the self mediates the relationship between greater acculturation and more affective symptoms of depression. In addition, they found that acculturation is associated with decreased somatic attention to self and fewer somatic symptoms of depression. Their findings empirically demonstrate an association between a change in culture (i.e., a change in self-attention from the somatic self towards the affective self) and an increasing level of acculturation.

Finally, two studies found no relationship between acculturation and depression. Similar to those studies that found no relationship between acculturation and depression in Latino samples, both of these studies had limited range in acculturation resulting in relatively unacculturated samples.

Four studies focused on acculturation and depression in non-Latino and non-Asian/Asian American samples (see Table 1, section D). Knipscheer and Kleber (2006) found that an integrative acculturation strategy was associated with fewer mental health symptoms in a sample of Bosnian refugees in the Netherlands. Their results demonstrated that preservation of cultural traditions and attempting to integrate into Dutch culture by expanding their instrumental skill set was associated with fewer mental health symptoms.

As findings on acculturation and depression are particularly equivocal, it is worth examining key features that might explain cross-study discrepancies. Across studies there was considerable heterogeneity in acculturation measures (e.g., single variables, full scales focusing on behavioral aspects whereas others focused on psychological components of acculturation), but findings did not differ systematically by acculturation measure. In addition, several studies, using both Latino and Asian/Asian American samples, had samples with relatively restricted acculturation ranges. These studies included few participants who were highly acculturated and demonstrated an assimilationist strategy, an acculturation level that is typically associated with better mental health adjustment and outcome in comparison to a separation or marginalization strategy. Future studies would benefit from attempting to recruit across the acculturative range. An initial strategy to accomplish this may involve recruiting across generational groups (Cuellar et al., 1995a,b).

3.5. Child and adolescent psychiatric problems

Immigrants are the fastest growing subgroup of the U.S. population under the age of 18 (Reardon-Anderson, Capps, & Fix, 2002). As can be seen in Table 1, section E, two studies in this review focused on acculturation and childhood-specific psychological issues in Latino American samples. McQueen, Getz, and Bray (2003) found that higher acculturation was associated with more deviant behavior in a sample of Mexican-American high school students. Their results demonstrated that this association was fully mediated by the unique effects of separation and family conflict. The authors argued that while striving to achieve an individual identity is a normal developmental process, feelings of separation from supportive family members, particularly in cultures that place value on interdependence, may be a stressor contributing to engagement in risky behavior.

Lau et al. (2005) explored the acculturation gap-distress hypothesis using the Pan-Acculturation Scale in a sample of Mexican-American families. This hypothesis suggests that variation in acculturation level or type between children and their parents may be associated with a "clash of values and preferences" and may subsequently lead to conflict and maladjustment. Their results suggested that youth who were more aligned with traditional Mexican culture, in comparison to their parents, reported more conduct problems (e.g., oppositionality, aggression). They also found that when either the child or parent was marginalized there was more risk of youth conduct problems. The authors interpreted their findings regarding the association between parent–child acculturation gap and conduct problems by suggesting that this gap may be associated with a dissolution in supportive parenting and a reduction in discipline and structure within the home.

Five studies focused on non-Latino samples (see Table 1, section E). Three studies found that greater acculturation was associated with fewer psychiatric problems. Both Bhui et al. (2005b) and Oppedal, Roysamb, and Sam (2004) found that an integrative acculturation strategy was associated with fewer mental health symptoms (e.g., conduct problems) in multi-ethnic samples of children and adolescents in East London and Norway. In a sample of Chinese North American families, Crane, Ngai, Larson, and Hafen (2005) found that parent/child acculturation differences significantly predicted adolescent depression. Despite significant study differences, these findings are congruent with those of Lau et al. (2005) in suggesting that parent/child acculturation differences can be related to negative outcomes.

In studies of other cultures, two child/adolescent studies found the need to consider more specific dimensions of mental health and acculturation. That is, Oppedal, Roysamb, and Heyerdahl (2005) found that both ethnic and host cultural competence were generally associated with more conduct problems but lower rates of other psychiatric problems in a multi-ethnic sample (from 11 different national origins) in Norway. Sawrikar and Hunt (2005) used a bidimensional acculturation scale and found that high Australian pride as well as high native pride

were associated with less depression, anxiety, stress, and negative affect in a sample of mixed ethnicity non-English speaking adolescents in Australia. In addition, their results indicated that a separated cultural identity (high native pride and low Australian pride), as opposed to an assimilated cultural identity (high Australian pride and low native pride), was associated with more severe depressive symptoms. Both studies' major results provide support for Berry's theory indicating that integration, measured bidimensionally in both of these works, is associated with better mental health outcomes.

There were striking trends across studies that used child and adolescent samples. Study results consistently demonstrated that greater acculturation was associated with more substance use/abuse and behavioral problems (e.g., conduct problems, deviant behaviors). In contrast, study results that focused on emotional manifestations of psychiatric conditions demonstrated that an integrative acculturation strategy, measured both unidimensionally and bidimensionally, was associated with fewer mental health symptoms (e.g., stress, depression).

4. Discussion

This paper reviewed literature on the relationship between acculturation and various mental health outcomes in Latinos, Asians/Asian Americans, and other ethnic groups. Previous reviews (Balls Organista et al., 2003; Lara, Gamboa, Kahramanian, Morales, & Hayes Bautista, 2005; Rogler et al., 1991; Salant & Lauderdale, 2003) have documented mixed findings. To eliminate some cross-study variance attributable to unstructured mental health assessment tools (e.g., single items, chart reviews) this review included only empirical articles that used a structured mental health measure. This focus may have resulted in more consistent findings with respect to how acculturation relates to substance use. Studies consistently demonstrated that greater acculturation was associated with increased substance use/abuse. For other outcome variables however, we still found considerable heterogeneity. Variation in how acculturation is measured may be one factor leading to discrepancies in study findings, a topic we discuss next.

4.1. Limitations in measuring acculturation

Studies included in this review indicate that researchers often use vastly different measures when assessing acculturation. This hinders the ability to make direct comparisons across studies. Thirty studies included in this review used single-item scales (e.g., language, place of birth, length of residence), as opposed to a structured scale, to assess level of acculturation. Some researchers (e.g., Cuellar et al., 1995a,b) argue that single-item variables can be both reliable and valid. For example, many researchers contend that language may be the most critical aspect of acculturation (Rodriguez Le Sage & Townsend, 2004; Vega & Sribney, 2003). However, proxy variables do not specifically assess adaptation to a particular culture as they do not assess the specific cultural domains (e.g., cultural values, beliefs, expectations, norms, and practices) that an individual may be acculturating to. Moreover, using single or proxy variables is insufficient to assess the complexity of acculturation because they do not capture information regarding both retention of culture-of-origin as well as acquisition of host-culture norms and values (Berry, 2003). Findings from this review demonstrated that the relationship between acculturation and mental health can vary when using language as an isolated measure of acculturation. As discussed earlier, language usage as a solitary measure of acculturation can also present complications because many immigrants who possess proficiency in the host culture's language may still be relatively unfamiliar with other traditions and practices of the host society (Rahman & Rollock, 2004).

Several researchers have argued that acculturation is a bidimensional process in which the acquisition of host-culture norms and values is not necessarily associated with the loss of culture-of-origin attributes. Thus, as stated above, both retention of ethnic-culture and acquisition of host culture should be assessed independently (Berry, 2003; Kim & Abreu, 2001; Ryder et al., 2000). Only a small portion of studies within this review measured acculturation using a multidimensional scale, and surprisingly, a number of studies that used multidimensional scales still reported a linear acculturation score. Those studies (Barrett, Sonderegger, & Sonderegger, 2002; Becker, Burwell, Navara, & Gilman, 2003; Elder, Broyles, Brennan, Zuniga de Nuncio, & Nader, 2005; Gonzalez & Shriver, 2004; Jennings, Forbes, McDermott, Juniper, & Hulse, 2005; Ouarasse & van de Vijver, 2004; Robinson Shurgot & Knight, 2004) that analyzed the relationship between separate cultural orientations and their respective mental health outcome of interest were able to present more interpretable results. Findings were able to clearly demonstrate that integration (e.g., high values on both ethnic-culture orientation and host-culture orientation) was generally associated with fewer mental health symptoms in comparison to marginalization, separation, or assimilation.

Multifaceted acculturation measures should also attempt to capture information regarding behavioral as well as attitudinal or psychological aspects of acculturation. Few studies used measures which assessed multiple factors, however, those studies that did typically found varying patterns of results. For example, Castillo, Conoley, and Brossart (2004) found that mainstream Anglo attitudinal marginalization (i.e., not adopting Anglo cultural values and beliefs), unlike the behavioral aspects of acculturation (e.g., language usage), was associated with more distress in a sample of Mexican-American college women.

Finally, only one study used a non-self-report measure (Kim et al., 2006) to measure psychological acculturation. Kim et al. (2006) argue that exclusive usage of self-report measures may not appropriately capture the implicit component of acculturation. The authors suggest that future studies investigating the relationship of cultural transition should incorporate an implicit measure of psychological acculturation. This type of measure may more clearly display the impacts of acculturation (e.g., shifts in cultural values, norms, attitudes) in contrast to an explicit measure which is more susceptible to bias due to under-reporting or social desirability.

In summary, future studies focusing on acculturation and mental health would benefit from using multidimensional mea-

sures, both self-report and non-self-report, because it would allow them to capture the "conceptual complexity" (Rodriguez Le Sage & Townsend, 2004) inherent in acculturation. This approach would also allow researchers to present data regarding several facets of acculturation (e.g., behaviors, attitudes, values), representing both acculturation and enculturation, on both explicit and implicit levels, and their unique relationships with specific mental health outcomes of interest.

4.2. Areas for future research

4.2.1. The role of culture and mental health outcomes

Because acculturation is defined as the adaptation to mainstream culture, a more comprehensive understanding of the host culture as well as the culture-of-origin may better inform acculturation research. Understanding the cultural values, beliefs, expectations, roles, norms and cultural practices in addition to the social context which immigrants may be adapting to is particularly important (Suarez-Orozco & Suarez-Orozco, 2001). For instance, individuals acculturating within the context of a highly educated/high income segment of the population will adopt and adapt to a different set of cultural values, beliefs, norms and cultural practices than those acculturating within the context of an underprivileged, lower education/income community. Consistent with this, implications for mental health outcomes may not be the same for such different groups of acculturating immigrants. Since such factors are expected to influence mental health, they should also contribute to the development of acculturation scales that are more relevant to mental health outcomes.

4.2.2. Mediators of the relationship between acculturation and mental health symptoms

Researchers have posited that acculturation can be associated with positive attributes, such as awareness of health systems and resources, or negative consequences, such as familial conflict or disruption of support networks, however, there is a limited empirical base to support these claims. Only seven studies within this review investigated mediational models (Chen et al., 2003; Epstein et al., 2003; McQueen et al., 2003; Michaels Miller et al., 2006; Oppedal et al., 2004; Ouarasse & van de Vijver, 2004; Robinson Shurgot & Knight, 2004). Findings from these investigations were mixed, with some results demonstrating that acculturation can be associated with positive attributes (e.g., reduced social alienation, more school and work success) and subsequent reductions in mental health symptoms, whereas, other studies demonstrated the opposite pattern of findings (e.g., acculturation was associated with more family conflict). A number of studies focused on changes within the familial environment that occur during the acculturation process and their subsequent association with poorer mental health. Thus, greater focus on family dynamics could advance our understanding of the relationship between acculturation and mental health.

Future research is needed to identify other variables which potentially mediate the relationship between acculturation and mental health symptoms and outcomes (Shen & Takeuchi, 2001), such as familism, coping style, religiosity/spirituality, marianism, roles, self-attention. Mediational analyses can elucidate possible mechanisms underlying these relationships as well as provide possible targets for clinical intervention (Gonzalez, Deardorff, Formoso, Barr, & Barrera, 2006).

4.2.3. Longitudinal analysis

Acculturation is a dynamic process involving potential changes in adaptation and well-being over time. Berry and Kim (1988) posited the "U-curve hypothesis" which argues that stress will increase over time until an adaptation point is reached. Despite this, only five studies in this review provided longitudinal data (Cheng, Gau, Chen, Chang, & Chang, 2004; Gil et al., 2000; Greenland & Brown, 2005; Martinez-Schallmoser, Telleen, & Macmullen, 2003; Oppedal et al., 2004). These studies supported Berry's acculturation strategy framework. The results of these studies demonstrated that integration, as opposed to an assimilationist strategy, was associated with better longitudinal mental health outcomes. For example, Oppedal et al. (2004) found that both host and ethnic cultural competence were associated with greater self-esteem and fewer mental health symptoms in a multi-ethnic sample of adolescents in Norway. In contrast, a longitudinal assimilationist strategy can be associated with worsening symptoms of stress, depression, and alcoholism (Greenland & Brown, 2005; Martinez-Schallmoser et al., 2003).

Analysis over time is critical because the relationship between stage of acculturation and outcome may not be linear over time (Fuligni, 2001). In addition, certain cultural values change rapidly, whereas others demonstrate more stability (Cabassa, 2003). This may be of particular importance when conducting research with adolescent samples because of the potential for developmental progression to coincide with mental health changes (Oppedal et al., 2004).

4.2.4. Acculturation in non-migrating groups

Existing acculturation research is generally focused on immigrants entering a novel environment or country. However, acculturation theory has suggested that acculturation is a bidirectional process in that it can have a significant impact on those moving into a new environment as well as those already living within the environment. MacLachlan et al. (2004) and Cheng et al. (2004) conducted investigations exploring temporal acculturation (i.e., adapting to changes within the same society over time). Their results, respectively, demonstrated that an assimilationist strategy (a strategy indicating rejection of the "old Ireland" and acceptance of the "new Ireland") was associated with less distress in Irish residents and that cultural assimilation was associated with a greater risk for alcoholism in residents of Taiwan.

The notion of temporal acculturation could also apply to more infrequently considered ethnic groups such as African-Americans and Native Americans in the U.S. Researchers have argued and demonstrated that there are unique African American and Native American cultures, making acculturation an applicable construct for these ethnic groups (Bryant & LaFramboise, 2005; Landrine & Klonoff, 1994; Pillay, 2005). This would be similar to the acculturation of 3rd or later generation immigrants. For them, as well as for African Americans and Native Amer-

icans who have lived within relatively isolated or marginalized communities, acculturation may imply similar mental health issues. Hence, temporal acculturation may be an additional variable to consider when focusing on non-migrating groups.

4.2.5. Studies of severe psychopathology

Cross-cultural researchers have made great strides in providing information on the prevalence, symptom presentation, and course of mental disorders such as bipolar, obsessive-compulsive, and schizophrenia (Tramontina, Schmitz, Polancyzk, & Rohde, 2003; Williams, Chambless, & Steketee, 1998; Weisman et al., 2000), and some researchers have even begun to examine the association between acculturation and specific mental disorders. For example, Koneru and Weisman de Mamani (2006) conducted the first study exploring the relationship between acculturation and symptoms of schizophrenia. Overall, greater acculturation was associated with more symptoms of schizophrenia. However, this finding was complex and varied by ethnicity. To date, there has been no research exploring the association between acculturation and bipolar disorder or obsessive-compulsive disorder. Future investigations could benefit by further assessing the relationship between acculturation and other severe mental disorders, which are less frequently considered in cultural psychology research.

5. Conclusion

This review provided further evidence indicating that the relationship between acculturation and mental health is complex. Similar to previous reviews, findings regarding the relationship between acculturation and alcohol and drug use were relatively consistent, whereas, other areas demonstrated significant heterogeneity. Future research employing multidimensional measures of acculturation, considering both behavioral and psychological aspects of acculturation, as well as non-self-report measures are needed to provide greater clarity in this area of research.

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