MEASUREMENT OF ACCULTURATION, SCALE FORMATS, AND LANGUAGE COMPETENCE
Their Implications for Adjustment

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This study was conducted to test whether the lack of independence between ethnic and mainstream cultural orientations is partially due to the adoption of a specific scale format. It was hypothesized that unique structural features commonly found in bidimensional acculturation instruments (paired questions that differ only in their cultural orientations and utilize the "frequency" format) cause strong inverse associations between the two cultural orientations. This study also explored the relative importance of language competence over the other domains of acculturation in the prediction of psychosocial adjustment (i.e., self-esteem, perceived stress, peer relationship, adjustment to college, family conflict). As predicted, results from a sample of 489 Asian Americans supported the hypothesis that the scale formats contribute to the lack of orthogonality. They also showed that language competence was a stronger predictor of adjustment than the other domains of acculturation, implying that language competence is a better indicator of acculturation among Asian Americans.

Keywords: acculturation; measurement; language; adjustment

During the past two decades, acculturation has emerged as one of the main research topics in psychology due to its association with psychological well-being among ethnic minorities (Rogler, Cortes, & Malgady, 1991; Suinn, Richard-Figueroa, Lew, & Vigil, 1987). A number of acculturation models, including unidimensional and bidimensional models, have been proposed (Berry, Trimble, & Olmedo, 1986; Cabassa, 2003; Nguyen & von Eye, 2002; Rudmin, 2003a; Ryder, Alden, & Paulhus, 2000), and under the guidance of these models, numerous acculturation measures have been developed. However, the debate over which model captures the acculturation process appropriately and whether existing instruments assess acculturation properly is still not completely resolved (Flannery, Reise, & Yu, 2001; Olmedo, 1979; Phinney, 1990). The current study was conducted to address these issues and provide resolutions.

The purpose of this research is twofold. First, it questions why a number of the existing tests developed under the bidimensional model (Berry, Kim, Minde, & Mok, 1987) do not show independence between ethnic and mainstream cultural orientations (e.g., Birman, Trickett, & Vinokurov, 2002; Flannery et al., 2001, Nguyen & von Eye, 2002; Tsai, 2001). This study proposes that the lack of independence is partially attributable to *scale formats*

AUTHOR'S NOTE: Portions of this research were presented at the 28th International Congress of Psychology, Beijing, China, August 2004. I would like to thank A. Timothy Church, Floyd Rudmin, David L. Sam, Michele Wittig, and two anonymous reviewers for their helpful comments on earlier versions of this article. Correspondence concerning this article should be addressed to Sun-Mee Kang, Department of Psychology, California State University, 18111 Nordhoff Street, Northridge, CA 91330-8255; e-mail: skang@csun.edu.

JOURNAL OF CROSS-CULTURAL PSYCHOLOGY, Vol. 37 No. 6, November 2006 669-693
DOI: 10.1177/0022022106292077

and demonstrates this in a large-scale study involving Asian Americans. Second, the relative importance of language competence, compared with the other domains of acculturation, in the prediction of psychosocial adjustment is explored and its implications are discussed.

TWO MODELS OF THE ACCULTURATION PROCESS: UNIDIMENSIONAL VERSUS BIDIMENSIONAL

Acculturation is defined as the process of change that results from continuous firsthand contacts between people from different cultures (Redfield, Linton, & Herskovits, 1936). The unidimensional model describes this acculturation as the process of moving from one cultural identity (e.g., ethnic identity) to the other (e.g., mainstream cultural identity) over time (Gordon, 1964). Because of this feature, the unidimensional model is often called an *assimilation model* or *bipolar model* (Nguyen & von Eye, 2002). Although the strength of the unidimensional model is its simplicity, in that it can capture the assimilation process succinctly with only a few concepts, its parsimony also makes the model vulnerable to criticism (Nguyen & von Eye, 2002). The major criticism of this model is that it assumes mutual exclusion of the two cultural identities (Rogler et al., 1991). In other words, this model does not allow ethnic minorities to hold full-blown bicultural identities, although many ethnic minorities describe themselves as such (e.g., Chinese Americans or Mexican Americans; Nguyen & von Eye, 2002).

Due to this limitation, the bidimensional model has quickly become a viable alternative to the unidimensional model. The bidimensional model does not conceptualize the acculturation process as moving along a continuum of identity from one end to the other. Instead, it proposes an *independence assumption* that the maintenance of ethnic identity is independent from the development of mainstream cultural identity. By proposing the independence of the two cultural identities, the bidimensional model is able to embrace not only individuals with bicultural identities but also people who are not attached to either culture. This flexibility is the major strength of the bidimensional model and brings the bidimensional model to the center of attention for acculturation researchers. A critical issue, then, is whether the independence assumption is successfully implemented and embodied in the measurement of acculturation.

ASSESSMENT OF BIDIMENSIONAL MODELS: TWO APPROACHES

A number of bidimensional measures were developed during the past two decades, and those instruments can be roughly subsumed under two different categories based on their approaches to the assessment of the two cultural orientations, which are called here the *typological* and *dimensional* approaches, respectively.

TYPOLOGICAL APPROACH

The most influential version of the bidimensional model was conceptualized by Berry and his colleagues (1987; Berry, Kim, Power, Young, & Bujaki, 1989). This model is based on the observation that ethnic/cultural minorities residing in multicultural societies should confront two essential questions: whether they maintain ethnic identities and whether they want to be actively involved in mainstream culture. Attitudes toward these two questions conjointly

determine cultural orientations, and based on hypothetical responses to these two questions, Berry and his colleagues (1986) identified four types of acculturation style: integration (interest in maintaining both cultural identities), assimilation (only interest in maintaining mainstream cultural identity), separation (only interest in maintaining ethnic cultural identity), and marginalization (little interest in maintaining both cultural identities).

Although these four modes of acculturation style are not true "types" and are rather arbitrary, having been generated by dichotomizing the underlying two dimensions (attitudes toward ethnic and mainstream cultures), Berry and his colleagues developed four separate acculturation measures: the integration, assimilation, separation, and marginalization tests (Berry et al., 1987; Berry et al., 1989; Montreuil & Bourhis, 2001). On one hand, this typological approach has considerable merit. It provides a clear chart of the main outcomes derived from the bidimensional model and this simplicity helps readers to grasp the essence of the theory with ease. However, when the underlying dimensions are inappropriately scaled by a typological model, it produces undesirable consequences (Cohen, 1983, 1988; Tellegen & Lubinski, 1983).

One such consequence is the lack of independence among the four tests. For example, Berry et al. (1989) reported high correlations between assimilation and separation test scores in the French-Canadian sample ($r = –.72$) and between integration and assimilation scores in the Hungarian-Canadian sample ($r = –.63$). These unusually strong correlations suggest that the four acculturation modes cannot be treated as types and that they should not be measured by the separate tests. (For more detailed discussions regarding this issue, see Nguyen & Von Eye, 2002, Rudmin, 2003b, and Ward & Rana-Deuba, 1999.)

DIMENSIONAL APPROACH

The dimensional approach is an attempt to measure cultural orientations using two-dimensional scales. Although this seemingly appropriate approach has been the basis for developing a number of bidimensional acculturation scales, the question of whether those tests meet the independence assumption still remains unresolved. Table 1 presents a comprehensive list of major acculturation scales developed since 1980.[1] As shown in Table 1, the independence assumption was not tested in some cases (Scales 1 through 6), and when it was tested, the correlations between the two-dimensional scales varied widely (Scales 7 through 14). Although four tests—the Hispanic and American Identification tests (Sánchez & Fernández, 1993), the Cultural Identity Scale (Félix-Ortiz, Newcomb, & Meyer, 1994), the Acculturation Index (Ward & Rana-Deuba, 1999), and the Vancouver Index of Acculturation (Ryder et al., 2000)—successfully demonstrated orthogonality (rs = –.11, .02, –.04, and .09, respectively), the other four scales (Scales 7 through 10) failed to meet the independence assumption as indicated by the substantial sizes of the correlations (rs = –.60, –.55, –.53, and –.62).

These strong inverse correlations were also noticed by other researchers. In an attempt to defend them, Nguyen, Messé, and Stollak (1999) asserted that the correlations still supported bidimensional models because they were not perfectly negative as the unidimensional model would suggest. Birman et al. (2002) attributed the strong negative correlations to stark cultural differences between ethnic and mainstream societies. According to Tsai and Chentsova-Dutton (2002), the independence assumption should not be applied to immigrants because they tend to go through some degree of change in their values and attitudes while adjusting to a new society. In a similar vein, Flannery et al. (2001) argued that the substantial sizes of inverse correlations may imply that the bidimensional model is not sufficient to cover the

(text continues on p. 675)

TABLE 1
Summary of Bidimensional Scales of Acculturation

No.	*Acculturation Scale*	*Target Cultural Group*	*Proportions of Frequency/ Proficiency/ Endorsement Format Questions*[a]	*Frequency Format Questions (with Specific Contexts)*	*Rating Scale and Response Anchors of Frequency Questions*	*r Between Two Subscales*
1	Bicultural Involvement Questionnaire (Szapocznik, Kurtines, & Fernández, 1980)[b]	Hispanic American	0/42/58			No attempts to test the independence assumption
2	Multicultural Acculturation Scale (Wong-Rieger & Quintana, 1987)	Asian and Hispanic immigrants and sojourners	0/0/100			No attempts to test the independence assumption
3	Accentual Scale for Southeast Asians (Anderson et al., 1993)[b]	Asian American	0/100/0			No attempts to test the independence assumption
4	Acculturation Attitudes Scale (Doná & Berry, 1994)	Latin Canadian	0/0/100			No attempts to test the independence assumption
5	Acculturation Rating Scale for Mexican Americans II (Cuéllar, Arnold, & Maldonado, 1995)	Mexican-American	13/0/87	I speak, write, think in English/Spanish.	5-point: not at all-extremely often or almost always	No attempts to test the independence assumption
6	Behavioral Acculturation Scale (Marin & Gamba, 1996)	Hispanic American	50/50/0	How often do you speak, write, view, listen to English/Spanish? (with friends, on TV, on the radio, in music)	4-point: almost never-almost always	No attempts to test the independence assumption
7	General Ethnicity Questionnaire (Tsai, Ying, & Lee, 2000)	Asian American	24/11/65	How much do you speak, view, read, or listen to English/Chinese? (at home, at school, at work, at prayer, with friends, on TV, in film, on the radio, in literature)	5-point: not at all-very much	r(32) = -.60 (Tsai, 2001)

8	Asian American Acculturation Inventory (Flannery, Reise, & Yu, 2001)	Asian American	32/17/51	What percentage of your personal friends, childhood friends, teenage friends, dating partners are Euro-American/Asian-American? What percentage of food you eat is American/ Asian food (outside or inside the home)	6-point: 0%-100%	*r* (291) = -.55 (Flannery, Reise, & Yu, 2001)
9	Acculturation Scale for Vietnamese Adolescents (Nguyen & von Eye, 2002)	Vietnamese American	32/0/68	How often do you speak English/Vietnamese? How often do you read, view, listen to English/Vietnamese? (in newspapers, on TV, in music) How often do you interact with American/Vietnamese? (in parties, in activity groups) How frequently do you eat American/Vietnamese food?	5-point: never-always	*r* (191) = -.53 (Nguyen & von Eye, 2002)
10	Language, Identity, and Behavioral Acculturation Scale (Birman, Trickett, & Vinokurov, 2002)	Soviet Jewish refugees in the U.S.	36/36/28	How much do you speak, read, listen to, watch English/Russian? (at home, at school, with friends, in music, in books, in movies, on TV) How much do you eat American/Russian food? How much do you have American/Russian friends? How much do you attend American/Russian clubs/parties?	4-point: not at all-very much	*r* (162) = -.62 (Birman, Trickett, & Vinokurov, 2002)
11	Hispanic and American Identification tests (Sánchez & Fernández, 1993)	Hispanic American	0/0/100			*r* (164) = -.11 (Sánchez & Fernández, 1993)

(continued)

TABLE 1 (continued)

No.	*Acculturation Scale*	*Target Cultural Group*	*Proportions of Frequency/ Proficiency/ Endorsement Format Questions*[a]	*Frequency Format Questions (with Specific Contexts)*	*Rating Scale and Response Anchors of Frequency Questions*	*r Between Two Subscales*
12	Cultural Identity Scale (Félix-Ortiz, Newcomb, & Meyers, 1994)[c]	Latino American	0/0/100			*r* (130) = .02 (Félix-Ortiz, Newcomb, & Meyer, 1994)
13	Acculturation Index (Ward & Rana-Deuba, 1999)	Sojourners in Nepal	0/0/100			*r* (104) = -.04 (Ward & Rana-Deuba, 1999)
14	Vancouver Index of Acculturation (Ryder, Alden, & Paulhus, 2000)	Asian Canadian	0/0/100			*r* (150) = .09 (Ryder, Alden, & Paulhus, 2000)

a. Percentages of three different format questions in each acculturation scale are presented in the following order: frequency/proficiency/endorsement format.
b. These two tests are not completely bidimensional, because portions of the test items are unidimensional. To compute the proportions of questions with the frequency, the proficiency, and the endorsement formats, only the bidimensional items were considered.
c. Although Félix-Ortiz et al. (1994) developed a multidimensional scale that includes language preference, cultural attitudes, cultural affiliation, and cultural values, they used only two four-item cultural attitude subscales (attitudes toward Latino and toward American culture) to create four cultural groups (high-level bicultural, Latino, American, and low-level bicultural). Therefore, only the two cultural attitude scales were considered in this table.

entire scope of the acculturation process. They proposed that a third dimension should be added to embrace "emergent ethnic identity" (Cuéllar, Arnold, & Maldonado, 1995; Mendoza, 1989).[2]

LACK OF INDEPENDENCE AND SCALE FORMATS

Those accounts, however, still do not explain clearly why certain acculturation scales have demonstrated the independence, whereas others did not. Even though sampling variation is considered as a possible reason behind the wide range of correlations (Nguyen & Von Eye, 2002; Oetting & Beauvais, 1990), the systematic pattern of the difference in correlations between the two groups of acculturation instruments—the ones that do show the orthogonality (Scales 11 through 14 in Table 1) and the others that do not show it (Scales 7 through 10)—implies that the difference is rather robust.

This observation called for a close examination of the instruments, and it revealed that, indeed, there was a crucial difference between the two groups of questionnaires. They were clearly distinguished by *whether they mixed different scale formats*. All of the instruments in the two groups consist of paired questions (e.g., a set of identical or similar questions) to cover both ethnic and mainstream cultural orientations in single or multiple domains of cultural life. They include (a) attitudes toward ethnic and mainstream cultures; (b) affiliation with cultural groups; (c) preferences with regard to food, music, activities, and media; (d) cultural practices or activities; and (e) language use and proficiency. When these domains are scaled, three different formats of questions tend to be used. One type of questions named the *frequency format*, asks examinees to rate each statement in terms of frequency of certain behaviors or proportions of ethnic compositions in their interpersonal network. Examples of paired questions adopting this format are "How much do you speak English/Chinese at home?" (Scale 7, a 5-point scale raging from *not at all* to *very much*); "What percentage of your personal friends is Euro-American/Asian-American?" (Scale 8, a 6-point scale ranging from *0%* to *100%*); "How often do you eat American/Vietnamese food?" (Scale 9, a 5-point scale raging from *never* to *always*) and "How much do you listen to American/Russian songs?" (Scale 10, a 4-point scale raging from *not at all* to *very much*). Although this frequency format is applied to questions from a wide rage of cultural domains (e.g., food preference, media selection, cultural activities, and interpersonal networks), it is often chosen to assess language use (e.g., "How often do you speak English/Vietnamese?").

Another format of questions frequently appearing in acculturation instruments is the "proficiency" format. This format asks examinees to rate each statement in terms of competence of language skills (e.g., "How well can you speak English/Chinese? Rate this question on a 5-point scale ranging from *not very well* to *very well*"). Whereas the frequency format questions are not limited to language behavior and accommodate a wide range of cultural behaviors and interpersonal networks, the proficiency format is exclusively adopted to assess language proficiency.

All of the remaining questions can be subsumed under the *endorsement format*, which asks examinees to rate each statement in terms of how strongly they agree or disagree with it (e.g., Scales 7, 8, 9, 12, 14), to what extent each statement is true of them (e.g., Scales 8 and 10), how much they enjoy it (e.g., Scale 8), or how similar their experiences or behaviors are to those of their own cultural members or people of the country where they temporarily stay (e.g., Scale 13). Examples are, "I am proud of American/Chinese culture" (Scale 7), "I think of myself as being American/Russian" (Scale 10), or "I would be willing

to marry a person from North American/my heritage culture" (Scale 14). Although this endorsement format mainly accommodates questions on cultural attitudes, values, or preferences, it also serves for cultural behavior questions in some circumstances. For example, the General Ethnicity Questionnaire (GEQ, Scale 7; Tsai, Ying, & Lee, 2000) includes a number of endorsement-format questions asking for cultural behaviors such as "At home, I eat American/Chinese food" or "I celebrate Chinese holidays" (rated on a 5-point scale ranging from *strongly disagree* to *strongly agree*). The Vancouver Index of Acculturation (Scale 14; Ryder et al., 2000) also includes one cultural behavior question: "I often participate in my mainstream North American/my heritage cultural traditions" (rated on a 9-point scale ranging from *strongly disagree* to *strongly agree*).

One major difference between the acculturation instruments that showed the orthogonality (Scales 11 to 14) and those that did not (Scales 7 to 10) seems to be whether they utilize the frequency questions. The four instruments that failed to show the orthogonality *mix the frequency questions with the endorsement questions,* whereas the acculturation scales that showed the orthogonality use only the endorsement format.

The merit of using only the endorsement format is that it guarantees relative "conceptual independence": An answer to one question in the pair does not necessarily constrain a response to its counterpart. For example, how strongly one agrees with the question "I like to eat American food" does not necessarily prescribe a specific answer to its counterpart, "I like to eat Vietnamese food." This conceptual independence, however, cannot be guaranteed when the frequency format is utilized. For example, answers to the questions "How much do you speak English?" and "How much do you speak Chinese?" cannot be independent from each other because the time devoted to speaking two different languages cannot exceed 100% of the time spent speaking. Indeed, when this format of questions is paired with specific contexts (e.g., "How much do you speak English/Chinese *at home*?" or "What percentage of food you eat is American/Vietnamese food *inside the home*?"), the answers to the paired questions would be more conceptually dependent on each other, because given a specific temporal or spatial frame, it becomes clearer to examinees that the combined frequencies of certain cultural behaviors or combined proportions of ethnic compositions in interpersonal networks should not exceed 100%.

The frequency format questions used in each acculturation instrument are summarized in Table 1.[3] Acculturation scales vary in terms of whether specific contexts are included in the frequency questions, and this information is also presented in Table 1. A quick glance over Table 1 reveals that the four scales that did not show the orthogonality (Scales 7 to 10) actively utilize frequency format questions combined with specific contexts, whereas none of the instruments that showed the orthogonality (Scales 11 to 14) employ such questions at all. This observation raises the question of the possible role of scale formats in testing the bidimensional assumption of acculturation. Because test scores based on the frequency format must be inversely related to each other, it is suspected that the scale formats are partially, if not wholly, responsible for the strong negative correlations between the two cultural orientation subscales found in the previous studies. One of the main goals of this study is to test this hypothesis empirically.

LANGUAGE COMPETENCE AND PSYCHOSOCIAL ADJUSTMENT

One intriguing question is raised at this point. Why has the frequency format of questions been widely used across a number of acculturation instruments (Scales 5 through 10 in Table 1)? A simple and straightforward answer to this question is that this particular

format is so well suited to the assessment of language use. Although the frequency format is applied to other cultural behaviors including food selection, cultural activities, and interpersonal interactions, a majority of the frequency/proportion questions listed in Table 1 are concerned with language behavior. Indeed, the proficiency format, another widely used question format in the acculturation scales, is solely dedicated to linguistic proficiency questions (e.g., "How well do you speak English/Chinese?"). Language is considered one of the most important components of ethnic identity (Laroche, Kim, Hui, & Tomiuk, 1998; Noels, Pon, & Clement, 1996; Phinney, 1990) and has been commonly and widely assessed across acculturation instruments (Zane & Mak, 2003). Given the importance of language, it is not surprising that a number of the scales listed in Table 1 allocate considerable portions of questions to language behavior and proficiency questions.

This situation creates a unique challenge for researchers who are interested in the development of a bidimensional acculturation scale. If the frequency questions serve well for the assessment of language behavior, they should be included in an acculturation instrument. However, at the same time, that would make it hard to establish the independence of the underlying dimensions. The inclusion of the proficiency format questions may make the situation even worse, because confidence in one language (e.g., "How well do you speak/read/write English?") tends to be associated with a relatively lower level of confidence in the other language (e.g., "How well do you speak/read/write Chinese?"). As supporting evidence, Flannery et al. (2001) reported that correlations between English and Asian language proficiency were –.21 for spoken language ability and –.36 for reading/writing ability.

The Vancouver Index of Acculturation (Ryder et al., 2000) illustrates one interesting way to handle this conflicting situation. This 20-item test covers various aspects of acculturation, including cultural attitudes, values, and preferences, but it completely excludes questions on the frequency of language use or language proficiency. Thanks to this exclusion, all of the questions in this test can fit nicely into the endorsement format, and this seems to help the instrument demonstrate the orthogonality of the two dimensions.

Does this example imply that language use and proficiency should not be included in an acculturation instrument to meet the independence assumption? Given the importance of language as the core element of acculturation, it may not be easy to completely eliminate it from the instrument. Furthermore, there is some empirical evidence that shows the positive effect of language competence, as measured by language use and proficiency, on adjustment (Berry et al., 1987; Birman, 1994; Birman et al., 2002).

One way to resolve this issue is to explore the relative importance of language competence, compared with the other domains of acculturation, in the prediction of adjustment, because one of the main goals of assessing acculturation concerns the associations between acculturation and adjustment. If language use and proficiency do not explain additional variance in outcome measures above and beyond the variance accounted for by the other domains of acculturation, it would suggest that language competence may not be a necessary part of acculturation instruments. If, on the other hand, language competence is a stronger predictor of adjustment than the other domains of acculturation, it could have intriguing implications for acculturation assessment and adjustment.

OVERVIEW OF THIS STUDY AND MAJOR HYPOTHESES

The main goals of this study were twofold. First, this study was designed to test whether the lack of orthogonality between the two cultural orientation tests is partially due to using specific scale formats. Second, the relative importance of language competence over the

other domains of acculturation in the prediction of adjustment was explored. To address these issues, Asian American students were selected as a target ethnic group, because several acculturation instruments recently developed for Asian Americans displayed a wide range of correlations between the two cultural orientation tests. Although the three bidimensional tests (the GEQ, the Asian-American Acculturation Inventory, and the Acculturation Scale for Vietnamese Adolescents) showed a lack of independence, one test (the Vancouver Index of Acculturation) demonstrated independence. To resolve this inconsistency and to attribute the inconsistency to the scale formats, the main hypotheses should be tested with the same ethnic group. Asian American students at a large state university were recruited for this purpose.

The major hypotheses were as follows: (a) There will be no association between two cultural orientations measured by the endorsement format questions, suggesting that the two underlying dimensions of acculturation are independent when the conceptual independence of responses is guaranteed. (b) There will be a strong inverse relationship between two cultural orientation tests measured by the frequency and proficiency formats, implying that the scale formats lead to the lack of independence. In addition to these two hypotheses, the relative contribution of language competence over the other domains of acculturation to adjustment would be explored to find out whether language competence is a stronger predictor of adjustment.

METHOD

PARTICIPANTS AND PROCEDURE

A total of 489 Asian American students at the University of California, Davis, participated for extra credit. A packet of questionnaires was completed in small-group sessions. The participants ranged in age from 17 to 28, with a mean of 19.67 years (SD = 1.57), and there were more women (78%) than men. In terms of ethnic background, the Asian American students consisted of 232 Chinese, 92 Vietnamese, 82 Filipinos, 37 Koreans, 26 Japanese, and 20 Hmongs. Although 219 Asian Americans (45%) were not born in the United States, 56.1% of them came to live in the United States at or before age 6 (M = 5.62, SD = 3.85), with a range of 1 to 12 years old.

MATERIALS

The measures used in this study can be grouped into five different categories. They are acculturation, psychological adjustment, interpersonal adjustment, academic performance, and social desirability.

Acculturation. The GEQ (Tsai et al., 2000) was used for assessing acculturation in this study. Among acculturation scales geared toward the Asian American population, the GEQ was selected because it has distinct features that make it suitable for testing the main hypotheses of this study. First, the GEQ consists of two versions of the same set of questions (38 questions per culture) that differ only in their reference culture, named GEQ-American[4] (AM) and GEQ-Asian (AS). Whereas 25 questions cover diverse domains of cultural life, including cultural affiliation, participation in cultural activities, and cultural pride, 13 questions are solely dedicated to assessing language use and proficiency. More precisely, 9 out of the 13 questions are strictly behavioral frequency questions (e.g., “How much do you speak

English/Chinese?"), and the other 4 questions are about language proficiency (e.g., "How fluently do you speak English/Chinese?"). Those 9 items cover language behavior in a wide range of specific situations and contexts (presented in Table 1), which enables the performance on these questions to be a solid indicator of language competence.

Second, three formats of questions are used in the GEQ. For language-use and proficiency questions, the frequency and proficiency formats were exclusively employed (a 5-point rating scale ranging from 1 = *not at all* to 5 = *very much*). For all of the other acculturation questions, the endorsement format was exclusively used (a 5-point rating scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*). These structural features of the GEQ (language competence associated with the frequency/proficiency formats vs. the other domains of acculturation combined with the endorsement format) provided one unique condition to test the major hypotheses (i.e., endorsement vs. frequency/proficiency format).

Principal axis factor analyses were conducted to reveal the factor structures of the GEQ-AM and the GEQ-AS tests. Although Tsai et al. (2000) reported six factors within each cultural test, the current factor analysis identified only two factors for each cultural test.[5] The scree plots for the two versions of the GEQ revealed clear breaks after the second factor (λs for the first 5 factors = 10.2, 3.8, 1.2, 1.1, and 0.9 for the GEQ-AM test, and λs = 10.3, 4.1, 1.5, 1.0, and 0.9 for the GEQ-AS test). The pattern matrix confirmed that the two question formats determined the two-factor structures of the GEQ-AM and the GEQ-AS tests in this study. That is, within each cultural test, 38 items were divided into two groups depending upon the response format they used—either the endorsement or the frequency/proficiency formats.

Based on the results of the factor analyses, six summary scores were generated from the GEQ: (a) the overall mean score of the 38-item GEQ-AM test, (b) the overall mean score of the 38-item GEQ-AS test, (c) the mean score of the 25 acculturation questions in the GEQ-AM that cover various domains of acculturation except language (AMACC), (d) the mean score of the 13 language competence questions in the GEQ-AM (AMLAN), (e) the mean score of the 25 acculturation questions in the GEQ-AS that encompass a wide range of acculturation domains except language (ASACC), and (f) the mean score of the 13 language competence questions in the GEQ-AS (ASLAN). The alpha coefficients of the six summary scores based on the current sample were .92 for AM, .93 for AS, .89 for AMACC, .89 for AMLAN, .91 for ASACC, and .91 for ASLAN.

Psychological adjustment. Three measures were employed for assessing psychological adjustment: self-esteem, perceived stress level, and adjustment to college.

The Rosenberg Self-Esteem Scale (SE; Rosenberg, 1965) is a 10-item measure based on a 7-point rating scale. It is a measure of global self-esteem, and half of the items are reverse keyed. Sample items are "On the whole, I am satisfied with myself" and "I certainly feel useless at times" (reversed). The internal consistency of this scale was .91 in this sample.

A modified version of the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983) was used to measure the degree to which situations in one's life are appraised as stressful on a 7-point scale. Sample items are "In general, how often do you feel you are unable to control the important things in your life?" and "In general, how often do you deal successfully with irritating life hassles?" (reversed). The alpha coefficient of this six-item test was .75 in this study.

Finally, a modified version of the Adjustment to College Scale (Aspinwall & Taylor, 1992) was selected to explore the self-reported evaluation of adjustment to college from the participants' perspective. Sample items are "Compared to the average student, how happy

do you think you are?" and "Overall, how well do you think you've adjusted to college?" The internal consistency of this four-item, 7-point rating scale was .78 in the current study.

Interpersonal adjustment. Two different types of measures were selected for assessing relationships with friends and family. The six-item Interpersonal Relationship Quality Scale (IRQ; Kang & Shaver, 2004) was used to assess the quality of peer relationships. Sample items are "I feel that my relationships with others are friendly and comforting" and "I enjoy visiting old friends and neighbors in my hometown." All items were rated on a 5-point scale ranging from 1 (*does not describe me at all*) to 5 (*describes me very well*). The reported psychometric properties of the IRQ implied that it was a sound measure of peer relationship quality (Kang & Shaver, 2004). The internal consistency reliability was .80, the test-retest reliability for a 6-week interval was .78 ($n = 93$), and the self-peer agreement ($n = 94$) was .56, implying that individuals who score high on the scale are perceived by others as people who maintain good interpersonal relationships with peers (refer to the Method section of Study 2 in Kang & Shaver, 2004, for more details). The internal consistency of the IRQ was .83 in the current study.

The 10-item Asian-American Family Conflicts Scale (FCS; Lee, Choe, Kim, & Ngo, 2000) is a self-report measure of family conflicts that reflects both intergenerational and acculturation differences between parents and children. Sample items include "Your parents do not want you to bring shame upon the family, but you feel that your parents are too concerned with saving face" and "Your parents expect you to behave like a proper Asian male or female, but you feel your parents are being too traditional." Each item is rated according to likelihood of occurring (1 = *almost never* to 5 = *almost always*). The internal reliability of this scale was .91 in this study. Unlike the other measures, this scale was introduced and used in the middle of the study. Therefore, only a portion of the sample ($n = 116$) completed this questionnaire.

Academic performance and social desirability. The 40-item Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984) was selected to assess the social desirability response set. The BIDR contains two subscales measuring Impression Management (Cronbach's $\alpha = .79$ in this study) and Self-Deception (Cronbach's $\alpha = .66$). Participants were also asked to report their SAT scores and cumulative college grade point averages (GPAs).

RESULTS

EFFECTS OF SCALE FORMATS ON BIDIMENSIONAL INDEPENDENCE

One of the main hypotheses in this study was that a lack of orthogonality emerges due to the scale formats. To test this hypothesis, intercorrelations among the six summary scores generated from the GEQ were carefully examined. Table 2 displays descriptive statistics and intercorrelations of the six summary scores: (a) the overall mean score of the GEQ–AM, (b) the overall mean score of the GEQ–AS, (c) the mean score of the 25 acculturation questions from the GEQ-AMACC, (d) the mean score of the English competence test (AMLAN), (e) the mean score of the 25 acculturation questions from the GEQ-ASACC, and (f) the mean score of the Asian language competence test (ASLAN).

The correlation between the AM and AS scores was –.41, replicating the inverse correlations found in the previous studies (e.g., Scales 7 through 10 in Table 1). However, when

TABLE 2

Intercorrelations Among the Six Summary Scores Generated From the General Ethnicity Questionnaire (GEQ) and Their Correlations With the Outcome Measures and Descriptive Statistics

	AM	*AS*	*AMACC*	*ASACC*	*AMLAN*	*ASLAN*	*Self-Esteem*	*Stress*	*Adjust*	*Peer Relationship*	*Family Conflict*[a]	*SAT Verbal*	*GPA*	*Mean*	*SD*
AM	(.92)						.23	–.21	.20	.21	–.10	.28	.06	3.90	0.44
AS	**–.41**	(.93)					.00	.06	.02	.15	.21	–.20	–.14	3.14	0.53
AMACC	.94	–.33	(.89)				.18	–.18	.16	.19	–.13	.21	.04	3.55	0.50
ASACC	–.17	.88	**–.13**	(.91)			.04	.04	.05	.18	.22	–.15	–.13	3.62	0.54
AMLAN	.79	–.41	.53	–.14	(.89)		.22	–.18	.22	.15	–.01	.29	.08	4.19	0.52
ASLAN	–.56	.82	–.34	.44	**–.60**	(.91)	–.05	.08	–.02	.06	.13	–.20	–.10	2.23	0.80

NOTE: AM = the overall mean score of the 38-item General Ethnicity Questionnaire (GEQ)-American test; AS = the overall mean score of the 38-item GEQ-Asian test; AMACC = the mean score of the 25 acculturation questions in the GEQ-AM; ASACC = the mean score of the 25 acculturation questions in the GEQ-AS; AMLAN = the mean score of the 13 language competence questions in the GEQ-AM; ASLAN = the mean score of the 13 language competence questions in the GEQ-AS; Adjust = adjustment to college; SAT verbal = SAT verbal score; GPA = cumulative college grade point average. Numbers in parentheses are alpha coefficients. Numbers in italics represent the results supporting the main hypothesis. Correlation coefficients with an absolute value greater than .10 (n = 489) or .19 (n = 116) are significant at the .05 level according to a two-tailed test.

a. The number of participants for this outcome variable was 116. Otherwise, n = 489.

the overall test (AM and AS) was divided into two parts—such as (a) cultural orientations exclusively measured by the endorsement questions (AMACC and ASACC) and (b) language competence exclusively measured by frequency/proficiency questions (AMLAN and ASLAN)—the correlation between the AMACC and ASACC scores was –.13, whereas the correlation between the AMLAN and ASLAN scores was –.60. Because AMLAN and ASLAN consist of two different types of questions, they were divided into two parts—nine language-use questions and four language-proficiency questions—and intercorrelations among the four scores were examined. As expected, the responses to the language-use questions were more strongly *constrained* (i.e., responses to the paired questions were not independent from each other) than the language-proficiency questions. The correlation between English usage and Asian language usage was –.66, and the correlation between English proficiency and Asian language proficiency was –.32, replicating the results reported by Flannery et al. (2001). This correlation of –.32 indicates that proficiency questions are not completely independent from one another, as well, although they are less conceptually dependent than the frequency questions.

In summary, the pattern of the intercorrelations among the six acculturation indicators implies that the association between the two overall subtest scores ($r = –.41$) was mainly rooted in the substantial size of the negative correlation between the AMLAN and ASLAN scores ($r = –.60$). These results also suggest that when cultural orientations are exclusively measured by endorsement-format questions, the independence assumption could be satisfied ($r = –.13$).

RELATIVE CONTRIBUTION OF LANGUAGE COMPETENCE TO ADJUSTMENT

Zero-order correlations between the six acculturation indicators and seven outcome measures, including self-esteem, perceived stress, adjustment to college, peer relationship, family conflict, SAT verbal test, and GPA scores are displayed in Table 2. A casual glance over the zero-order correlations reveals that (a) the overall American cultural orientation test (AM) is more strongly associated with positive outcome measures than the overall Asian cultural orientation test (AS) and that (b) both the AMLAN and AMACC scores competitively contribute to the psychosocial outcome. Because the AMLAN and AMACC scores are substantially correlated with each other ($r = .53$), two sets of hierarchical multiple regression analyses were conducted to explore the unique contribution of language competence and the other domains of acculturation to psychosocial adjustment.

In the first set of analyses, a series of three-step hierarchical regression analyses were applied to each outcome measure in the following sequence: At the first stage, control variables were entered, including gender, social desirability (the Self-Deception and Impression Management subscales of the BIDR), and birthplace (whether participants were born in the United States; 0 = born in the United States, 1 = born in a foreign country). In the next step, the other domains of acculturation (AMACC and ASACC) were entered to explore how much variance in the outcome measures could be explained by those variables above and beyond the control variables. In the third step, English and Asian language competencies (AMLAN and ASLAN) were entered to examine the unique contribution of each language competence to the regression model.

Table 3 displays the results of the first set of hierarchical regression analyses (the standardized regression coefficients), along with R^2 associated with each regression model and the ΔR^2, by adding new predictors to a regression model at each step. First, one major predictor emerged across the three steps of hierarchical regression analyses: the Self-Deception

TABLE 3

Standardized Regression Coefficients of Predictors Accounting for Variance in Various Psychosocial Adjustment Scores

	Self-Esteem Steps			*Stress Steps*			*Adjustment to College Steps*			*Peer Relationship Steps*			*Family Conflict Steps*			*SAT Verbal Steps*			*GPA Steps*		
Predictors	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*
Gender	–.01	.00	–.00	–.03	–.03	–.03	**.12**	**.14**	**.13**	–.07	–.07	–.07	.14	.13	.13	–.04	–.04	–.05	**.14**	**.14**	**.14**
Self-deception	**.42**	**.41**	**.41**	**–.42**	**–.41**	**–.40**	**.33**	**.32**	**.30**	**.20**	**.19**	**.18**	–.01	–.01	.01	.05	.03	.03	–.08	–.08	–.07
Impression	.08	.08	.07	–.05	–.05	–.04	–.00	–.00	–.01	**.18**	**.15**	**.14**	–.16	–.15	–.15	.01	.01	.01	.10	.09	.10
Born U.S.	–.08	–.03	.01	**.12**	.07	.05	**–.11**	–.06	–.04	–.09	–.07	–.06	.16	.07	.10	**–.18**	**–.11**	–.08	.02	.06	.09
AMACC		**.17**	.09		**–.13**	–.08		**.14**	.08		**.15**	.12		–.12	–.18		**.16**	.08		.06	.01
ASACC		.04	.04		.05	.05		.06	.04		**.17**	**.15**		**.21**	**.21**		**–.12**	**–.13**		**–.13**	**–.11**
AMLAN			**.20**			**–.13**			**.23**			.12			.15			**.23**			.08
ASLAN			.02			–.01			.10			.08			.03			.05			–.05
R^2	.200	.227	.255	.184	.202	.213	.118	.137	.170	.102	.152	.162	.074	.121	.133	.035	.074	.108	.039	.059	.067
ΔR^2		.027	.028		.018	.011		.019	.033		.050	.010		.046	.012		.040	.034		.020	.008

NOTE: Self-deception = Balanced Inventory of Desirable Responding-Self-Deception subscale; Impression = Balanced Inventory of Desirable Responding-Impression Management subscale; AMACC = the mean score of the 25 acculturation questions in the General Ethnicity Questionnaire (GEQ)-American (AM); ASACC = the mean score of the 25 acculturation questions in the GEQ-Asian (AS); AMLAN = the mean score of the 13 language competence questions in the GEQ-AM; ASLAN = the mean score of the 13 language competence questions in the GEQ-AS; R^2 = total variance in outcome variables accounted for by the regression model; ΔR^2 = increased amount of variance in outcome variables contributed by additional predictors added on each regression step. Numbers in italics are considered significant at the .05 level according to a two-tailed test.

scale of the BIDR. This was interpreted as suggesting that scores on the psychological adjustment measures (i.e., self-esteem, perceived stress, adjustment to college, and peer relationships) were affected in part by self-enhancing tendencies (Kang & Shaver, 2004; Paulhus & Reid, 1991). However, even after controlling for self-enhancing tendencies and other confounding factors, the AMACC scores were significantly associated with higher self-esteem (β = .17, t = 3.95), a lower level of perceived stress (β = –.13, t = –2.46), a higher level of adjustment to college (β = .14, t = 2.71), positive peer relationships (β = .15, t = 2.51), and higher SAT verbal scores (β = .16, t = 3.21). In contrast, the ASACC scores were related to a higher level of conflicts with parents (β = .21, t = 2.19), lower SAT verbal scores (β = –.12, t = –2.49), and a lower GPA (β = –.13, t = 2.51), although it contributed to positive peer relationships (β = .17, t = 2.89). The AMACC and ASACC scores accounted for the significant variance in outcome variables (ΔR^2), ranging from 1.8% to 5.0%, after controlling for portions of the variance explained by control variables.

In the next step, English and Asian language competence (AMLAN and ASLAN) were entered to determine whether they could account for additional variance in the outcomes above and beyond the variance explained by the existing regression model. The results of the hierarchical regression analyses are presented in Table 3. A quick glance over Table 3 reveals one clear trend—AMACC was no longer a significant predictor, and English language competence took over the predictive role. English language competence was associated with higher self-esteem (β = .20, t = 3.90), a lower level of stress (β = –.13, t = –2.01), a higher level of adjustment to college (β = .23, t = 3.70), and better performance on the SAT verbal test (β = .23, t = 3.91). The AMLAN and ASLAN scores were able to explain additional portions of the variance in adjustment measures above and beyond the variance that the control variables and the AMACC and ASACC scores accounted for. As reported in Table 3, the changes in the R^2 (ΔR^2) were statistically significant in self-esteem (2.8%), perceived stress (1.1%), adjustment to college (3.3%), and SAT verbal score (3.4%).

One exception was interpersonal relationships with friends. The AMLAN scores were not a meaningful addition for this outcome variable (ΔR^2 = .01), and indeed, both the AMACC and AMLAN scores turned out to be statistically insignificant predictors (βs = .12 and .12 for AMACC and AMLAN, respectively). Because AMACC alone was a significant predictor before (β = .15, t = 2.51), the shared variance between the AMACC and AMLAN scores must have caused the statistical insignificance. With respect to family conflicts and GPA, the AMLAN and ASLAN scores were not statistically meaningful predictors.

The second set of hierarchical regression analyses was identical to the first set of the analyses except that language competencies (AMLAN and ASLAN) were entered at the second stage, and the other domains of acculturation (AMACC and ASACC) were entered at the last stage. The results from these analyses are presented in Table 4. A careful examination of Table 4 confirmed the conclusion based on the results from the first set of the hierarchical analyses. When English language competence was entered in the second stage, it was associated with higher self-esteem (β = .24, t = 4.93), a lower level of stress (β = -.14, t = –2.48), a higher level of adjustment to college (β = .26, t = 4.37), better quality of interpersonal relationships (β = .19, t = 2.80) and better performance on the SAT verbal test (β = .23, t = 4.21). Asian language competence was also associated with better quality of interpersonal relationships (β = .14, t = 2.01) and lower GPA scores (β = –.11, t = –1.98) at this stage. When the AMACC and ASACC scores were entered in the third step, neither the AMACC nor the ASACC scores accounted for significant portions of variance in self-esteem (0.8%), perceived stress (0.7%), and adjustment to college (0.5%). However, the ASACC scores were associated with better quality of interpersonal relationships (β = .15, t = 2.26), increased

TABLE 4

Standardized Regression Coefficients of Predictors Accounting for Variance in Various Psychosocial Adjustment Scores

	Self-Esteem Steps			*Stress Steps*			*Adjustment to College Steps*			*Peer Relationship Steps*			*Family Conflict Steps*			*SAT Verbal Steps*			*GPA Steps*		
Predictors	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*
Gender	–.01	–.01	–.00	–.03	–.03	–.03	**.12**	**.12**	**.13**	–.07	–.07	–.07	.14	.13	.13	–.04	–.04	–.05	**.14**	.15	**.14**
Self-deception	**.42**	**.42**	**.41**	**–.42**	**–.41**	**–.40**	**.33**	**.31**	**.30**	**.20**	**.19**	**.18**	–.01	–.02	.01	.05	.05	.03	–.08	–.07	–.07
Impression	.08	.07	.07	–.05	–.04	–.04	–.00	–.01	–.01	**.18**	**.15**	**.14**	–.16	–.16	–.15	.01	.01	.01	.10	.10	.10
Born U.S.	–.08	–.01	.01	**.12**	.06	.05	**–.11**	–.05	–.04	–.09	–.07	–.06	.16	.14	.10	**–.18**	–.09	–.08	.02	.08	.09
AMLAN		**.24**	**.20**		**–.14**	**–.13**		**.26**	**.23**		**.19**	.12		.09	.15		**.23**	**.23**		.06	.08
ASLAN		.02	.02		.03	–.01		.10	.10		**.14**	.08		.13	.03		–.03	.05		**–.11**	–.05
AMACC			.09			–.08			.08			.12			–.18			.08			.01
ASACC			.04			.05			.04			**.15**			**.21**			**–.13**			**–.11**
R^2	.200	.246	.255	.184	.206	.213	.118	.165	.170	.102	.131	.162	.074	.088	.133	.035	.091	.108	.039	.058	.067
ΔR^2		.046	.008		.022	.007		.047	.005		.029	.032		.014	.045		.056	.018		.019	.010

NOTE: Self-deception = Balanced Inventory of Desirable Responding-Self-Deception subscale; Impression = Balanced Inventory of Desirable Responding-Impression Management subscale; AMACC = the mean score of the 25 acculturation questions in the General Ethnicity Questionnaire (GEQ)-American (AM); ASACC = the mean score of the 25 acculturation questions in the GEQ-Asian (AS); AMLAN = the mean score of the 13 language competence questions in the GEQ-AM; ASLAN = the mean score of the 13 language competence questions in the GEQ-AS; R^2 = total variance in outcome variables accounted for by the regression model; ΔR^2 = increased amount of variance in outcome variables contributed by additional predictors added on each regression step. Numbers in italics are considered significant at the .05 level according to a two-tailed test.

conflicts with parents ($\beta = .21$, $t = 1.99$), poor performance on the SAT verbal test ($\beta = -.13$, $t = -2.43$), and lower GPA ($\beta = -.11$, $t = -1.97$).[6]

The main results from these multiple regression analyses can be summarized in the following three points: (1) AMLAN was positively associated with psychological adjustment (self-esteem, perceived stress, and adjustment to college) and better performance on the SAT verbal test, (2) ASACC was associated with increased conflicts with parents, lower GPA, and poorer performance on the SAT verbal test, and (3) both AMACC and ASACC (or AMLAN and ASLAN) were positively associated with maintaining good interpersonal relationships with friends, implying that Asian American students may need both ethnic and mainstream cultural orientations.

DISCUSSION

LACK OF INDEPENDENCE AND SCALE FORMATS

To my knowledge, this study was the first attempt to explore whether the lack of independence between ethnic and mainstream cultural orientations is partially attributable to scale formats. As predicted, the intercorrelations among the six summary scores of the GEQ supported the main hypothesis—when the frequency format was coupled with paired questions (i.e., one question for ethnic language behavior and the other for mainstream language behavior), responses to the paired questions were not independent from each other. By overlooking this constraint (i.e., responses to paired questions are not independent from each other), a number of acculturation instruments that utilize frequency questions did not meet the independence assumption. This suggests that eliminating scale artifacts could secure bidimensional independence, as illustrated by the low correlation ($r = -.13$) between the two cultural orientation test scores (AMACC and ASACC).

In fact, Berry's (1997) original bidimensional model was exclusively based on *attitudes* toward cultural orientations. He assumed that responses to the two crucial questions—whether ethnic minorities should maintain their own cultural identities and whether they should be actively involved in the mainstream culture—could be independent from each other, and this independence assumption played an important role in generating four types of acculturation style. Following his initiative, however, the scope of the acculturation domain was expanded by including behavior components in subsequent measures (e.g., Nguyen & von Eye, 2002). This trend is grounded in a viewpoint that attitudes do not necessarily match up with corresponding behaviors (Fishbein & Azjen, 1974; Nguyen & von Eye, 2002).

Although language use has been most widely employed in acculturation instruments (Laroche et al., 1998), behavior components of acculturation have not been limited to language behavior. Cultural practices, cultural activities, food selection, and interpersonal contacts with specific ethnic groups were often included in acculturation measures (see Table 1). The frequency format tends to be adopted to assess those behaviors in specific contexts (e.g., "How often do you speak English/Chinese *at home*?"), because this format is particularly suitable for the questions emphasizing frequencies of certain behaviors under specific situations. Unfortunately, this study demonstrated that the inclusion of the paired frequency format questions in acculturation instruments could create unsolicited complications to maintaining the independence of the two cultural orientations.

One intriguing question, then, is what would happen if behavioral questions of acculturation are combined with a nonfrequency format? Would it ameliorate the situation? As

briefly mentioned before, 7 questions out of 25 acculturation questions in the GEQ-AM or the GEQ-AS are cultural behavior questions in the endorsement format, such as "I listen to Chinese/American music," "At home, I eat Chinese/American food," and "I go to places where people are Chinese/American," which are rated on a 5-point scale ranging from *strongly disagree* to *strongly agree*. When the correlation between these two 7-item scores from the GEQ-AM and GEQ-AS was computed in this study, it was merely –.03, implying that if behavioral questions are asked in the endorsement format, they do not necessarily lead to a strong inverse correlation.

Another interesting example is the Stephenson Multigroup Acculturation Scale (MAS; Stephenson, 2000). Whereas the GEQ did not include any language behavior questions in the endorsement format, this 32-item bidimensional acculturation scale did (using a 4-point rating scale ranging from *false* to *partly false* to *partly true* to *true*). The language behavior questions used in the MAS are "I speak English/my native language at home," "I regularly read an American newspaper/my ethnic group's magazines," "I speak English/my native language with my spouse or partner," and "I think in English/my native language." Although Stephenson did not attempt to explore the correlation between the two cultural orientation scales, she reported an interfactor correlation of –.32, based on her confirmatory factor analysis (Study 3). From the size of the interfactor correlation, an observed correlation between the two acculturation scales must have been less than –.32 because measurement error tends to attenuate the magnitude of the observed correlation between the two test scores (Crocker & Algina, 1986).

The GEQ and the MAS illustrate that cultural and language behaviors could be asked using the endorsement format and that doing so would reduce the strong inverse correlations between the ethnic and mainstream cultural orientation scales. However, it is difficult to know whether the cultural and language behavior questions with the two different formats would measure the same thing. For example, a concept that is assessed by a frequency format question, "How much do you speak Chinese/English at home?" (on a rating scale ranging from *not at all* to *very much*) may not be the same as that which is measured by an endorsement format question, "I speak Chinese/English at home" (on a rating scale ranging from *false* to *true*). Language competence is often assessed by questions using the frequency/proficiency formats rather than the endorsement format, which implies that the format serves well for the assessment of language competence. An interesting question, then, is what the role of language competence (measured by the frequency/proficiency formats) would be in psychosocial adjustment, compared with other domains of acculturation. This question was also explored in this study.

RELATIVE IMPORTANCE OF LANGUAGE COMPETENCE IN PSYCHOSOCIAL ADJUSTMENT

One unique contribution of this study is that it clearly revealed the importance of English competence in adjustment among Asian American students. The two sets of hierarchical regression analyses revealed one clear pattern: English competence (AMLAN) outweighed the other domains of acculturation to the mainstream culture (AMACC) in the prediction of psychological adjustment, as marked by the change of R^2 (ΔR^2). Even though AMLAN shared a considerable amount of common variance with AMACC, AMLAN accounted for additional variance above and beyond what AMACC could explain across a number of outcome measures, including self-esteem, perceived stress, adjustment to college, and verbal SAT scores. One exception was peer relationships. When the AMLAN and

AMACC scores were separately entered into a regression model, they were each a significant predictor without the other. However, when they entered into a regression equation simultaneously, both of them turned out to be nonsignificant. This suggests that both variables convey essentially the same information on interpersonal relationships. Along with AMACC (or AMLAN), the other domains of acculturation to the ethnic culture (ASACC) were positively associated with maintaining good interpersonal relationships. This result clearly showed the advantage of the integration mode of acculturation. It is not surprising, given that Asian American students tend to interact with people from both Asian and non-Asian social networks (Kang, Shaver, Sue, Min, & Jing, 2003).

Why does linguistic acculturation play such an important role in psychosocial adjustment among Asian American college students? Notice that the participants in this study either were born in the United States or came to the United States at early ages (the mean was about 6 years old). This implies that English is their primary medium of daily communication. However, even the simple and straightforward test of English use and proficiency (e.g., "How much do you speak English at home, at school, at work, at prayer, and with friends?", "How much do you view, read, or listen to English on TV, in film, on the radio, and in literature?", and "How fluently do you speak, read, write, and understand English?") was sufficient to reveal individual differences in language use and proficiency. The differences were subtle, but they predicted psychological adjustment better than the other domains of acculturation to the mainstream culture.

This conclusion may not be surprising, given that language is considered to be "a carrier of cultural meanings" (Lau, Lee, & Chiu, 2004). Language is the major channel through which cultural information and heritage are exchanged and shared. Even though the participants in this study speak English on a daily basis, they are different in terms of their "language environments." For example, to an open-ended question regarding the most frequently spoken language in their home environments, 56% of the participants mentioned their ethnic languages (sometimes more than one ethnic language), whereas 40% named English only and the rest reported both ethnic languages and English. It is speculated that the individual differences in language use and proficiency reflect the differences in language environments to which ethnic minorities are exposed, and these differences may affect their levels of acculturation and the degree of their involvement in mainstream culture. In this regard, it could be argued that the assessment of language behavior would be an indirect yet powerful way to measure how deeply ethnic minorities immerse themselves in the mainstream culture.

LIMITATIONS

This conclusion should be interpreted with caution due to the limitations of this study. This study was conducted with Asian American college students residing on the West Coast of the United States. Whether the special role of language competence in adjustment can be generalized to other populations in different societal environments needs to be investigated further. The imbalanced gender and ethnic composition of the current sample is another limitation of this study: Although the sample size in this study was substantial, more women than men and more Chinese than any other East Asian group participated. It would be desirable to replicate the current results using gender- and ethnicity-balanced samples in future studies.

A more serious limitation, however, is a possible confounding between content and scale format. This study showed the lack of independence between English competence and ethnic language competence, whereas it revealed the relative independence between nonlinguistic

domains of cultural orientations. Although these results were attributed to the scale formats used in the subtests (frequency/proficiency vs. endorsement formats), they may also be explained by the difference in content (i.e., language vs. nonlinguistic domains of acculturation). Due to the unique structure of the GEQ (language items with a frequency/proficiency format vs. nonlinguistic acculturation items with an endorsement format), it was selected to test the relative importance of language competence, but its distinct structure may also introduce confounding between content and scale format, and this issue would not be easily resolved in this study. Although the Stephenson (2000) Multigroup Acculturation Scale showed that language items with an endorsement format did not have a strong inverse correlation, suggesting that a strong inverse correlation between two cultural orientation tests is more likely to be rooted in scale artifacts rather than scale contents, this confounding problem still needs to be addressed and resolved in future studies using better research designs and methods.

One solution is a multimethod approach in which the same set of acculturation questions are asked several times using different formats (Green, Goldman, & Salovey, 1993). This method can be also applied to resolve the related issue of scale formats and bidimensional independence. The current study provided empirical support for the idea that the independence assumption can be satisfied if only the endorsement format is used. This independence, however, could be interpreted as a byproduct of another scale artifact. It has been argued that the endorsement format may promote independence between the two tests, due to the acquiescence response bias (Green et al., 1993).[7] This response bias is defined as individual differences in endorsing questions regardless of their content (Russell, 1979). Green and his colleagues (1993) demonstrated through a series of studies that different scale formats could have an influence on the testing of the independence of positive and negative affect. It is possible that the same bias could have an influence on the testing of the independence assumption with regard to the two cultural orientations in this study or in the previous studies that have shown orthogonality (e.g., Scales 11 to 14 in Table 1), because there is no reason to believe that the acquiescence response bias is applied only to mood ratings (Watson & Clark, 1997; Wiggins, 1973).

To more adequately test the independence assumption of the bidimensional model, future studies should employ a multimethod approach. If the ethnic and mainstream cultural orientations emerge as nonorthogonal after the scale artifacts are controlled for through the multimethod approach, it would have profound implications for the field of acculturation theory and research (e.g., Flannery et al., 2001).

CLOSING REMARKS

Birman et al. (2002) proposed the contextual model in which they argued that there is no single best acculturation strategy independent of context from a coping and adaptation perspective. Other acculturation researchers have echoed this argument (e.g., Nguyen et al., 1999), and portions of this study also support the contextual model by showing that different acculturation strategies work better in different contexts. For example, peer relationship is one domain that requires both ethnic and mainstream cultural orientations, but adjustment to college seems to be associated only with mainstream cultural orientation (or English competence). Although portions of the results from this study are consistent with the contextual model (Birman et al., 2002, p. 586), one general trend that also emerged in the present study is that acculturation to the mainstream culture (or English competence) significantly contributes to greater adjustment, whereas maintaining ethnic cultural orientation either has no association or is negatively associated with adjustment (besides peer relationships).

Along with similar conclusions put forward by other empirical studies (e.g., Nguyen et al., 1999; Ryder et al., 2000), this finding questions the effectiveness of the integration mode for Asian Americans (Berry, 1997, 1999; Berry et al., 1987). Instead, this finding seems to support the assimilation mode for psychological adjustment (Flannery et al., 2001). According to Bourhis, Moise, Perreault, and Senecal (1997), the United States encouraged immigrants to adopt the assimilation mode of acculturation until the middle of the 20th century (Gordon, 1964), but since then, the U.S. immigration and integration policy has moved away from the assimilation ideology and toward a multicultural society. This study implies that the new policy has not been successfully implemented, because Asian Americans, along with other ethnic groups in the United States (Taylor & Lambert, 1996), do not seem to feel the policy change.

NOTES

1. Although this list may not cover all the existing bidimensional measures, those not included in this table should be represented by at least one of the bidimensional scales listed in Table 1, because in terms of both content and structure, acculturation instruments share a great degree of similarity from one to another.

2. A good example of this emergent identity, according to Flannery, Reise, and Yu (2001), is Chicanos in Los Angeles, because this new ethnic identity cannot be explained by the simple combination of "being Mexican" and "being American."

3. The Asian American Multidimensional Acculturation Scale (AAMAS; Chung, Kim, & Abreu, 2004), a newly developed acculturation scale, was not included in Table 1 because of its structural anomaly. Although the AAMAS mixed the frequency format questions with other types of questions, it used only one set of response anchors ranging from *not very well* to *very well*, regardless of the format or content of questions. This means that the response anchors do not equally fit the item stems in the instrument. Due to this misfit, it is not clear how to categorize the items in the AAMAS into the three groups—frequency, proficiency, and endorsement—in Table 1.

4. The use of "American" in the term GEQ-American refers to mainstream cultural attitudes/values/views held by the majority of people in the United States rather than those held by any specific ethnic group (e.g., European American). Although it might be more appropriate to call the subscale GEQ-Mainstream, GEQ-American was used here to be consistent with the original work of Tsai, Ying, and Lee (2000).

5. This inconsistency could be attributed to different populations (Asian vs. Chinese only) or different factor-extraction methods, although it is not clear what extraction method was used in Tsai et al. (2000). It is also not clear on what basis they obtained the six factors. Nonetheless, their factor structure (Table 3 on p. 315) revealed some problems in their analyses because they extracted a factor with only two indicators (e.g. the food factor in the GEQ-American version).

6. Due to the considerable imbalance among the number of participants from the six ethnic groups (e.g., 232 Chinese vs. 20 Hmongs), only the three major ethnic groups (232 Chinese, 92 Vietnamese, and 82 Filipinos) were included in the further analyses to check possible effects of ethnic group differences on the outcome measures. All of the analyses reported in Tables 3 and 4 were repeated after ethnicity was entered as a control variable (i.e., create two dummy variables with Chinese as a reference group) at the first stage. Ethnicity was not a significant predictor and did not significantly affect any of the results.

7. The author thanks A. Timothy Church for his suggestion on this alternative explanation.

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