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Acculturation Strategies and Integrative Complexity

The Cognitive Implications of Biculturalism

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People are being exposed to second cultures in growing numbers, yet the role played by second-culture exposure in shaping sociocognitive skills has received little theoretical attention. The authors address this gap by exploring the relationship between acculturation strategies and integrative complexity. Consistent with the acculturation complexity model, studies of both Asian American college students (Study 1) and Israelis working in the United States (Study 2) show that biculturals are more integratively complex across domains (e.g., culture, work) than either assimilated or separated individuals. Using priming manipulations to clarify the directional flow of causality between acculturation and integrative complexity, the authors also find that greater integrative complexity among biculturals is driven by acculturation pressures (Study 3). Finally, the authors discuss the adaptive implications of multiculturalism.

Keywords: *acculturation; biculturalism; integrative complexity; frame switching*

Globalization locks ever-widening ranges of people into intricate patterns of economic interdependence and, in the process, compels them to cope with cultures strikingly different from what they have grown accustomed (Markus & Kitayama, 1991). Early studies of the experience of living at the juncture of two cultures have stressed the negative psychological consequences (e.g., Park, 1928). However, researchers now agree that immersion in different cultures can also have a positive effect on psychological functioning and well-being (e.g., LaFromboise, Coleman, & Gerton, 1993). Indeed, researchers have begun to focus on the benefits of multiculturalism at all levels of analysis. They have suggested that diversity of cultural perspectives can increase tolerance and reduce prejudice (Fowers & Richardson, 1996; Gaertner, Dovidio, Nier, Ward, & Banker, 1999; Roccas & Brewer, 2002) as well as foster flexibility, innovation, creativity, and decision quality (e.g., Leung, Maddux, Galinsky,

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& Chiu, 2008; McLeod, Lobel, & Cox, 1996). It is surprising, however, that little research has examined the effects of such cross-cultural experiences on individuals' cognitive skills and functions. In particular, the impact of managing a dual cultural identity on cognitive functioning has been largely overlooked in the cross-cultural literature (Benet-Martinez, Leu, Lee, & Morris, 2002; Bialystok, 1999). Clarifying these process issues can illuminate the mechanisms by which positive outcomes linked to multiculturalism may arise.

One key stream of psychological research has focused on the intrapsychic changes that occur when people are exposed to the values and normative expectations required to assume a new cultural identity (Ryder, Alden, & Paulhus, 2000). Most of this research is based on Berry's (1980) acculturation framework, which assumes the orthogonality of identification with the culture of origin and of mainstream culture. Berry identified—as did Bourhis, Moise, Perreault, and Senecal (1997)—four acculturation strategies: assimilation, separation, marginalization, and integration. Assimilation involves relinquishing one's cultural heritage and adopting the new culture. Separation involves maintaining only one's cultural heritage. Marginalization involves distancing oneself from both the old and new cultures. Finally, integration, or biculturalism, involves simultaneously maintaining one's cultural heritage and adopting a new cultural identity. This research has traditionally focused on how acculturation orientations can affect psychological adaptation and on how demographic, personality, and situational characteristics affect the propensity to adopt different acculturation strategies (e.g., Berry, Kim, Minde, & Mok, 1987; Bourhis et al., 1997; LaFromboise et al., 1993). By contrast, the process by which individuals absorb a cultural identity, as well as the role of second-culture exposure in shaping cognitive processes, has received little attention (Benet-Martinez et al., 2002).

One potentially important process variable is integrative complexity, or the capacity and willingness to acknowledge the legitimacy of competing perspectives on the same issue (differentiation) and to forge conceptual links among these perspectives (integration) (Suedfeld, Tetlock, & Streufert, 1992). Within a cross-cultural context, integrative complexity reflects the degree to which people accept the reasonableness of clashing cultural perspectives on how to live and, consequently, the degree to which they are motivated to develop cognitive schemas that integrate these competing worldviews by explaining how different people can come to such divergent conclusions or by specifying ways of blending potentially discordant norms and values.

Forty years of psychological research has shown that integrative complexity affects performance on a variety of cognitive and interpersonal tasks. Specifically, greater integrative complexity is associated with more effective information search, greater creativity, better team performance, and less susceptibility to prejudice (for a review, see Streufert & Nogami, 1989). The similarities between the proposed effects of integrative complexity and those suggested in the multiculturalism research are striking.

Early work on integrative complexity, inspired by Kelly's (1955) personal construct theory, treated the concept as a relatively stable trait. Later researchers discovered that integrative complexity is sensitive to environmental cues such as stress, value conflict, and accountability pressures (e.g., Tetlock, Peterson, & Lerner, 1996). Recently, Tadmor and Tetlock (2006) proposed an additional determinant of level of complexity: the type of acculturation strategy people adopt when they are exposed to a second culture. Specifically, in our acculturation complexity model (ACM), we argue that people who cope with cultural

conflict by internalizing the values of two groups (by becoming bicultural) will respond in reliably more complex ways than those who adhere to the values of only one group. The model, which is based on research examining adaptation to intrapsychic and interpersonal cross-pressures, outlines the mechanisms by which differences in acculturation choice and integrative complexity arise. Here, we extend this model by exploring the degree to which biculturals are indeed more integratively complex, by examining whether complexity generalizes across domains, and by testing the causal link between acculturation and integrative complexity.

Overview of the ACM

With the ACM, Tadmor and Tetlock (2006) posited a five-step progression of acculturation strategies. When people initially move to a new culture, they become sensitized to the value conflicts between their old and new cultures (Step 1). The type of accountability pressures encountered shapes their subsequent choice of acculturation strategy (Step 2) and determines the level of conflict experienced during second-culture exposure (Step 3) and the cognitive effort required to resolve it (Step 4). Repeated exposure to cultural conflicts leads to the gradual development of automatic coping responses and relatively stable individual differences in integrative complexity (Step 5).¹

Briefly, the model suggests that people who are in the process of becoming bicultural will experience more severe cultural dissonance during acculturation than those who are becoming separated or assimilated. This happens because the mixed accountability pressures facing biculturating individuals require them to justify their conduct to representative members of both cultural groups. Simultaneous exposure to the inconsistent cognitions of both cultural groups creates strong internal conflict. By contrast, assimilating and separating individuals are held accountable to a single cultural constituency and experience less conflict (Tadmor, 2006; Tetlock, 1992; also see Baumeister, 1986).

Drawing on cognitive-consistency theories (e.g., Roccas & Brewer, 2002; Tetlock, 1986), the model stipulates that the more severe the cultural conflict, the greater the need to resort to more effortful, integratively complex solutions. Repeated exposure to cultural conflicts will lead to the development of increasingly automatic coping responses, either simple (for assimilating and separating individuals) or complex (for biculturating individuals) (Strickler & Bonnefil, 1974).

Consistent with this argument, Benet-Martinez, Lee, and Leu (2006) found that Chinese American biculturals' free descriptions of both American and Chinese cultures are more complex than those of Anglo-American monoculturals. The researchers attribute this difference to biculturals' frequent use of cultural "frame switching," or the process of shifting between two cultural meaning systems in response to distinctive cultural cues (Hong, Morris, Chiu, & Benet-Martinez, 2000). Specifically, cultural frame switching arguably increases biculturals' complexity as they develop increasingly integrated cultural schemas, engage in more effortful processing of cues, and recognize the self-relevance of cultural information.²

One drawback of Benet-Martinez et al.'s (2006) methodology is the monocultural–bicultural comparison. Biculturals' greater complexity may be not because of cultural

frame switching but rather because of the stress of acculturation, which is not shared by monoculturals. Indeed, previous research has suggested that moderately stressful life experiences can stimulate integrative complexity (e.g., Suedfeld & Bluck, 1993). Therefore, to rule out this alternative explanation, a more conservative test would compare biculturals with other types of acculturating individuals. Such a test would not only compare individuals who have undergone the stress of second-culture exposure but also tie elevated integrative complexity to cultural internalization. As we will soon see, Benet-Martinez et al. addressed this gap by comparing different types of biculturals. And yet, given the brevity of participants' written descriptions, Benet-Martinez et al. could not rely on the standard integrative complexity measures which require an analysis of extended narratives (Baker-Brown et al., 1992). It remains to be seen whether more traditional measures of integrative complexity would yield similar results.

Extending the ACM: Generalized Complexity

Does the greater integrative complexity of biculturals generalize to other domains? Benet-Martinez et al. (2006) suggested not: They found that the effect did not carry over to culture-neutral domains (e.g., descriptions of landscapes) and conjectured that, absent explicit cultural references, biculturals lack the cognitive self-control or expertise necessary to sustain greater complexity.

We concur but maintain that cultural relevance exists on a continuum along which biculturals' integrative complexity should gradually, not suddenly, diminish. Indeed, evidence suggests that if a person possesses a certain level of complexity in one domain, it will transfer to some degree to other domains, particularly if the two domains share key components (Streufert & Swezey, 1986). The more features past and present situations share, the more likely a minimal threshold of activation will be exceeded and a person will spontaneously use past experiences to adapt to new situations (Holyoak & Koh, 1987). The key is that some functional equivalence must exist between the original context in which the response was reinforced and the new context.

Past research has suggested that every social domain, such as work and family, can be viewed as a cultural microcosm governed by its own distinctive norms and values (Fiske & Tetlock, 1997). Although these domains differ from national cultures in scope and inclusiveness, they can also lead to value conflict (Tetlock, 1986). Moreover, as Turner, Hogg, Oakes, Reicher, and Blackwell (1987) suggested that because each domain is subsumed by the national culture in which it operates, cultures with different worldviews are also likely to differ in their views of these domains. As a result, many conflicts faced by individuals within domains raise conflicts similar to those faced by acculturating individuals. Therefore, we argue that the experience of conflict in the social domain will trigger past experiences of cultural conflicts as relevant analogs and generate similar solutions (Shoda, Tiernan, & Mischel, 2002). We hypothesize that when confronted by a conflict in a domain that does not directly elicit cultural themes, biculturals will resolve the conflict in more complex ways than either separated or assimilated individuals.

However, as previously implied, integrative complexity should not be constant across the continuum of cultural relatedness. Specifically, although all acculturating individuals

should demonstrate greater complexity relative to monoculturals in the cultural domain, because of their greater immersion in both cultures (Woll, 2002), they should lose these advantages when conflicts are removed from the cultural domain.

Assessing the Direction of Causality

It is easy to imagine either more situationalist or dispositionalist versions of the ACM. From the situationalist perspective, high-value conflict coupled with accountability to culturally diverse audiences will lead virtually everyone to develop bicultural complexity. From the dispositionalist perspective, only those disposed to be integratively complex become bicultural; preexisting tolerance for dissonance (Crockett, 1965) allows them to internalize contradictory aspects of both cultures. If so, biculturalism should be considered a by-product, not a cause, of cognitive style.

Some researchers have endorsed the dispositional perspective (e.g., Kashima & Loh, 2006; Kusic, Kruglanski, Pierro, & Mannetti, 2004). Kusic et al. (2004) focused on “need for cognitive closure” (NCC), or desire for definite answers and aversion to ambiguity (Kruglanski & Webster, 1996), which has been shown to negatively correlate with integrative complexity (e.g., Tetlock, 1998). Kusic et al. proposed that high-NCC individuals are more likely than others to become separated or assimilated. Which specific strategy high-NCC individuals choose depends on whether the social support they experience during the initial stay in a new culture comes mainly from their culture of origin or from their new culture. Because the specific reference group at entry offers clear direction on how to behave, think, and feel, it provides high-NCC individuals with the certainty they desire. Kusic et al.’s research on Croatian and Polish immigrants in Italy supported these hypotheses.

These findings dovetail with cross-cultural research that has shown that high-NCC individuals from the United States and China are more likely to exemplify the attribution biases and conflict resolution behaviors of their respective cultures than are low-NCC individuals (Chiu, Morris, Hong, & Menon, 2000; Fu et al., 2007). Moreover, Fu et al. (2007) provided empirical support that this pattern of cultural conformity is driven by high-NCC individuals’ desire for consensual validation. Indeed, high-NCC individuals’ desire for consensus is so great that when they are restricted from using their normative cultural responses, Fu et al. showed they will search for more information to forge a consensus. And yet, when given a choice, they will prefer to rely on the cultural patterns they already know. By contrast, Fu et al. found that low-NCC individuals do not reliably prefer one set of cultural norms to the other. If anything, they display a slight tendency to endorse counternormative responses. Given that many participants in Fu et al.’s studies have been extensively exposed to a second culture, it is possible that low-NCC individuals’ willingness to use alternative cultural frameworks could be an indication of their bicultural status. However, because no measures of acculturation were used, no firm conclusion can be drawn.

Kusic (2004) acknowledged that acculturation strategies can affect one’s level of NCC, but she considered this reversed order of causality implausible. Because Kusic et al. measured NCC only after acculturation had taken place, however, no conclusion about causal direction can be drawn. Moreover, no other studies of acculturation and complexity have tested the direction of causality (e.g., Benet-Martinez et al., 2006; Kashima & Loh, 2006).

We suspect that there is a reciprocal relationship between the two (e.g., Mischel, 2004; Roccas & Brewer, 2002), but we focus here on the situationist explanation to argue that biculturals' greater integrative complexity stems from second-culture internalization and that social structures—the accountability matrix confronting the individual—have lingering effects on cognitive development. In brief, becoming bicultural will lead to greater integrative complexity than becoming either assimilated or separated.

Overview

To explore these ideas, we conducted three studies. Using a cross-sectional, correlational design, Study 1 examines East Asian college students living in the United States to explore the relative integrative complexity of biculturals vis-à-vis other acculturation types—and the cross-domain generalizability of any differences that do arise. To show that our results extend to other cultures and age groups, Study 2 draws on a sample of Israeli adults working in the United States. Study 3 is a laboratory study that uses priming techniques to explore the direction of causality between integrative complexity and acculturation strategy.

Study 1

Method

Participants

Participants were 75 East Asian undergraduate students (31 males, 44 females; age $M = 20.9$, $SD = 2.69$) from the University of California, Berkeley. Among the participants, 61.3% were of Chinese descent; the rest self-identified as belonging to a variety of other East Asian nationalities. Participants had lived an average of 15 years in the United States ($SD = 6.97$). In all, 57% self-identified as first-generation East Asian Americans; the rest self-identified as second generation and were all born in the United States. Participants' English-language ability, which was measured by averaging two self-report items gauging their ability to read, write, and speak English on a scale of 1 (*very little knowledge*) to 7 (*perfectly fluent*), was 6.57 ($SD = 0.75$). Participants' ethnic language ability, measured using two similar items, was 4.18 ($SD = 1.92$). Some participants were recruited through campus flyers and were paid; the rest were recruited through introductory business and psychology subject pools and received class credit.³

Materials and Procedure

Participants completed a variety of questionnaires (all in English), designed to measure the following variables.

Acculturation strategy. Acculturation strategy was measured using Ward and Kennedy's (1994) Acculturation Index (AI), which assesses the two fundamental dimensions of acculturation strategies: identification with culture of origin and identification with host culture. Participants indicated their culture of origin and were asked to consider it "culture A." They then were asked to consider two questions about 21 aspects of their current lifestyle (e.g., food,

recreational activities, language, values, customs): (a) “How similar are you to people from culture A in the following domains?” and (b) “How similar are you to Americans in the following domains?” Participants rated their similarity to members of each cultural group on a 7-point scale ranging from *not at all similar* (1) to *extremely similar* (7). This approach results in two scores: East Asian cultural identification and American cultural identification. For each scale, scores can range from 21 to 147, with higher scores representing greater identification with that culture. The AI has shown both high reliability and strong predictive validity (see Ward & Kennedy, 1994). For the present study, internal reliabilities (Cronbach’s α) for the American cultural identification and East Asian cultural identification scales were .91 and .89, respectively. Importantly when the East Asian and American identifications are considered in conjunction, the four acculturation strategies result (also see Ward, 2001). As expected, the identification scales were orthogonal ($r = .003$), which permitted the subsequent classification of the four acculturation strategies.

Two methods are widely used for classifying and analyzing acculturation strategies (Ward & Rana-Deuba, 1999). First, the American cultural identification and East Asian cultural identification scales can both be subjected to a median split, creating a fourfold typology of acculturation strategies. This categorical approach is useful to illustrate differences among the four acculturation strategies. Second, acculturation strategies can be analyzed using multiple regression techniques, which have the advantage of exploiting all information in the data set. In this approach, the effects of the four acculturation strategies are represented by the cross-product interaction term for American and East Asian cultural identifications (Ward & Rana-Deuba, 1999). Specifically, scale scores for separate levels of identification with each culture are first standardized. Then, the interaction term is computed by multiplying the standardized East Asian and American identification scales. The significance of the differences between the four acculturation strategies is determined using simple slope analysis (Aiken & West, 1991).

To test the convergent validity of Ward and Kennedy’s AI, we also included Benet-Martinez et al.’s (2006) two single-item measures of overall identification with each culture. Participants rated the strength of their identification with North American culture and with their culture of origin on a scale from *very weak* (1) to *very strong* (6). The two items were roughly orthogonal ($r = .14$), and, as expected, there were substantial positive correlations between (a) the single-item measure of identification with American culture and Ward and Kennedy’s measure of American cultural identification ($r = .64, p = .0001$) and (b) the single item of identification with culture of origin and Ward and Kennedy’s measure of East Asian cultural identification ($r = .64, p = .0001$).

Integrative complexity. Integrative complexity was measured using the traditional method of content analyzing open-ended responses. This technique, which allows the assessment of both differentiation and integration, has proven useful in previous laboratory and archival research to test hypotheses concerning both personality and situational determinants of complexity of information processing and has demonstrated high reliability and reasonable construct validity (e.g., Baker-Brown et al., 1992; Tetlock et al., 1996). The coding of integrative complexity focuses on the structure of thought rather than on its content, and indeed empirical studies have shown that integrative complexity has low correlations with content-laden cognitive traits such as authoritarianism, dogmatism, and field independence. It has also been shown to have only low to moderate correlations with constructs such as verbal fluency and IQ (Suedfeld et al., 1992).

The coding procedures for assessing integrative complexity were originally developed by Schroder, Driver, and Streufert (1967) and subsequently clarified and expanded by Baker-Brown et al. (1992). The coding entails an assessment of the extent to which the two structural dimensions, differentiation and integration, are present in the text. Evidence for differentiation consists of references to more than one dimension of a problem or more than one perspective on an issue. Low differentiation is reflected by a tendency to focus on only one theme in the analysis and to rely without qualification on simple, one-dimensional rules for interpreting events or making choices (e.g., “abortion is cold-blooded murder”). By contrast, higher levels of differentiation are reflected by the recognition and acceptance of alternative perspectives or different dimensions on an issue as legitimate and valid (e.g., “Some people view abortion as a civil liberties issue—a woman’s right to choose to give birth. Others view abortion as the murder of helpless infants”). When differentiated elements are linked conceptually, evidence of integration is inferred.

Different types of integration exist. One common type of integration is the recognition of interactive causality—that is, the idea that how A affects B depends on levels of C (e.g., “which perspective one takes on abortion, whether it is a civil liberties issue or murder, depends on one’s view about when the developing organism becomes a human being”). A second type of integration involves the systematic effort to explain why reasonable people may view the same issue in different ways. A third type of integration involves the recognition of value trade-offs. The above are examples of lower-level integration, which is characterized by descriptions of the existence of a connection among differentiated aspects. Higher-level integration is reflected by the presence of an overarching principle or perspective pertaining to the nature (not merely the existence) of the relationship between alternatives.⁴

The assessment of integrative complexity typically proceeds on a 7-point scale in which 1 reflects the absence of both differentiation and integration, 3 indicates the presence of differentiation but the absence of integration, 5 reflects the presence of both differentiation and integration, and 7 indicates differentiation as well as the specification of higher-order integrative principles. Even numbers (i.e., 2, 4, and 6) are assigned as transitional scores when a response implies the next high level of complexity but does not explicitly meet the scoring criteria for that level (for additional details, see Baker-Brown et al., 1992).

Two trained coders, unaware of the hypotheses and research design, independently assessed the integrative complexity of responses to each of four open-ended questions. Two questions assessed cultural complexity (e.g., “What does it mean to you to be bicultural? Would you define yourself as a bicultural? Let’s say, on a scale from 1 (not at all) to 7 (completely), how would you rate yourself? Why?”). The other two questions assessed generalized complexity by probing perceptions of work (e.g., “Some people feel that organizations waste too much time listening to different points of view and opinions during group meetings. Others feel they don’t spend enough time. How do you feel? What do you think should be the right balance?”). Participants were asked to write at least two or three paragraphs in response to each question. Questions were randomized to prevent systematic cross-domain contamination.

Notably, to qualify as integrative complexity coders, individuals must first be certified. Consequently, two scorers participated in a weeklong online training workshop and completed an official test. In line with the reliability requirements (Baker-Brown et al., 1992),

both coders achieved interrater reliability of higher than .85 with an expert rater. For the present study, high interjudge agreement existed for both the culturally specific and general items (both $\alpha = .86$), with disagreements resolved by discussion. Internal reliabilities (Cronbach's α) for the cultural complexity and generalized complexity were lower (.31 and .44, respectively), but with only two items we did not expect high reliability. Nonetheless, because preliminary analysis of each question yielded the same pattern of results, we combined the two questions in each domain to avoid unnecessary repetition.

Results

Overview of Data Analysis

Hierarchical regressions were used to explore whether acculturation strategies, measured in terms of the cross-product interaction term for East Asian and American cultural identifications, significantly predicted the dependent variables, beyond what could be predicted from separate levels of identification with each culture and the control variables. All analyses controlled for gender, ethnic background, years in the United States, generation status, and grade point average. Neither English nor ethnic language ability had any effect and were deleted from analyses. It is important that multicollinearity assumptions were not violated, as indicated by acceptable correlations between covariates (ranging from $-.58$ to $.08$) and tolerance values well above $.01$ (Tabachnick & Fidell, 2001). Table 1 presents the means, standard deviations, reliability coefficients, and zero-order correlations between the core variables.

The Core Hypotheses

Cultural complexity. As can be seen in Table 2, East Asian cultural identification, American cultural identification, and the controls were entered in the first step of the analysis, with a resulting R^2 of $.15$, $F(7, 66) = 1.68$, *ns*. The addition of acculturation strategies in Step 2 yielded an increment in R^2 of $.05$, $F(1, 65) = 4.03$, $p = .049$. As expected, it was significant and positively related to cultural complexity ($\beta = .23$, $p = .049$), with a resulting R^2 of $.20$. Although strength of identification with culture was also significant ($\beta = .31$, $p = .016$), the positive beta weight for acculturation strategies suggests that the greater an individual's bicultural orientation, the greater the cultural complexity.

These findings are illustrated via the predicted mean values in Figure 1. Following Aiken and West (1991), these values were one standard deviation above and below the means of the relevant variables in the regression equation. For individuals strongly identified with American culture, simple slope analysis revealed that the stronger their identification with East Asian culture, the more culturally complex they are ($\beta = .31$, $p = .04$; see solid line in Figure 1a). Thus, relative to assimilated individuals, bicultural individuals rank higher on cultural complexity. Conversely, for individuals strongly identified with East Asian culture, the stronger their identification with American culture, the more culturally complex they are ($\beta = .52$, $p = .002$; see solid line in Figure 1b). Thus, relative to separated individuals, bicultural individuals rank higher on cultural complexity.

Additional evidence suggests that biculturals were not only more likely to differentiate between their native and host cultures but also were more likely to integrate these different

Table 1
Summary Statistics and Correlations Among Major
Variables and Controls (Study 1)

Measure	Range		Correlations									
	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. East Asian cultural identification (standardized)	0.00	1.00	(.89)									
2. American cultural identification (standardized)	0.00	1.00	.003	(.91)								
3. Acculturation Strategies (interaction East Asian and American cultural identifications)	0.00	1.09	.16	.11								
4. Cultural complexity	2.77	0.94	.15	.32**	.27*	(.31)						
5. Generalized complexity	2.43	0.90	.07	.26*	.31**	.38**	(.44)					
6. Gender (1 = <i>female</i>)	0.59	0.50	.02	-.15	-.02	-.12	-.15					
7. Ethnic background (1 = <i>Chinese</i>)	0.62	0.49	.09	-.02	.07	-.02	.23*	.06				
8. Years in the United States	15.0	6.97	-.33**	.30**	.11	-.03	.23*	.05	-.11			
9. GPA	3.49	0.35	.22	-.16	-.06	-.15	-.09	.08	.003	-.18		
10. Generation (1 = <i>1st</i>)	0.51	0.50	.29*	.04	.01	.13	-.01	-.12	.04	-.58**	-.08	

Note: Unstandardized alpha values are presented in parentheses on the diagonal. Unstandardized East Asian cultural identification ($M = 4.32$, $SD = 1.05$). Unstandardized American cultural identification ($M = 4.74$, $SD = 0.88$). Ethnic background was coded as a dummy variable: 1 if Chinese and 0 if the participant belonged to any other cultural group. Generation status was coded as a dummy variable: 1 if first generation and 0 if second generation.

* $p < .05$. ** $p < .01$.

perspectives. Specifically, responses indicative of integration (i.e., scores of 4 or higher) were coded as 1; all other responses were coded as 0. Comparison of the four acculturation strategies based on median split of the American cultural identification ($Mdn = 4.64$) and East Asian cultural identification ($Mdn = 4.45$) scales revealed that although biculturals were only 24% of the sample, they provided 60% of the integrated responses on the first cultural complexity question. The remaining 40% of responses scored 4 or higher were provided by marginal (30%) and assimilated individuals (10%). Similarly, biculturals provided 50% of the integrated responses for the second cultural complexity question. The remaining integrated responses were provided by marginal (20%), separated (20%), and assimilated individuals (10%).

Importantly some might argue that by virtue of their enhanced knowledge of their native and host cultures, biculturals should be better equipped to differentiate between these two cultures than assimilated or separated individuals (Kim, 1988). And yet, it appears that all participants meet Benet-Martinez et al.'s (2006) empirical definition of biculturalism. Specifically, participants indicated above-median-scale levels of identification with both East Asian and American cultures ($M = 4.53$, $M = 4.42$, respectively, single-item measures on a 6-point scale) as well as above-median-scale levels of ethnic and English-language ability ($M = 4.18$, $M = 6.57$, respectively, on a 7-point scale). This finding suggests that although all acculturation individuals are likely to have had sufficient knowledge of the two cultures, the key difference between them is the relative strength of their identification with each culture.

Table 2
Summary of Hierarchical and Multiple Regression Analysis for
Cultural Complexity and Generalized Complexity (Study 1)

Predictor	Cultural Complexity (H1–H2)				Generalized Complexity (H3–H4)			
	<i>B</i>	<i>SE</i>	<i>b</i>	<i>R</i> ²	<i>B</i>	<i>SE</i>	<i>b</i>	<i>R</i> ²
Step 1				.15				.21*
Ethnic background (Chinese yes–no)	–.06	.22	–.03		.49	.21	.26*	
Gender	–.11	.22	–.06		–.27	.21	–.15	
Years in the United States	–.01	.02	–.09		.04	.02	.34*	
GPA	–.38	.34	–.14		–.03	.32	–.01	
Generation status	.01	.28	.00		.21	.26	.12	
East Asian cultural identification	.14	.12	.15		.12	.11	.13	
American cultural identification	.30	.12	.31*		.12	.11	.14	
Step 2				.20*				.26*
Ethnic background (Chinese yes–no)	–.09	.22	–.05		.46	.20	.25*	
Gender	–.09	.22	–.05		–.26	.20	–.14	
Years in the United States	–.02	.02	–.14		.04	.02	.30	
GPA	–.34	.33	–.12		.01	.31	.00	
Generation status	–.01	.27	–.01		.19	.26	.11	
East Asian cultural identification	.09	.12	.10		.07	.11	.08	
American cultural identification	.29	.12	.31*		.12	.11	.13	
Acculturation strategies (Interaction East Asian and American cultural identifications)	.20	.10	.23*		.19	.09	.23*	

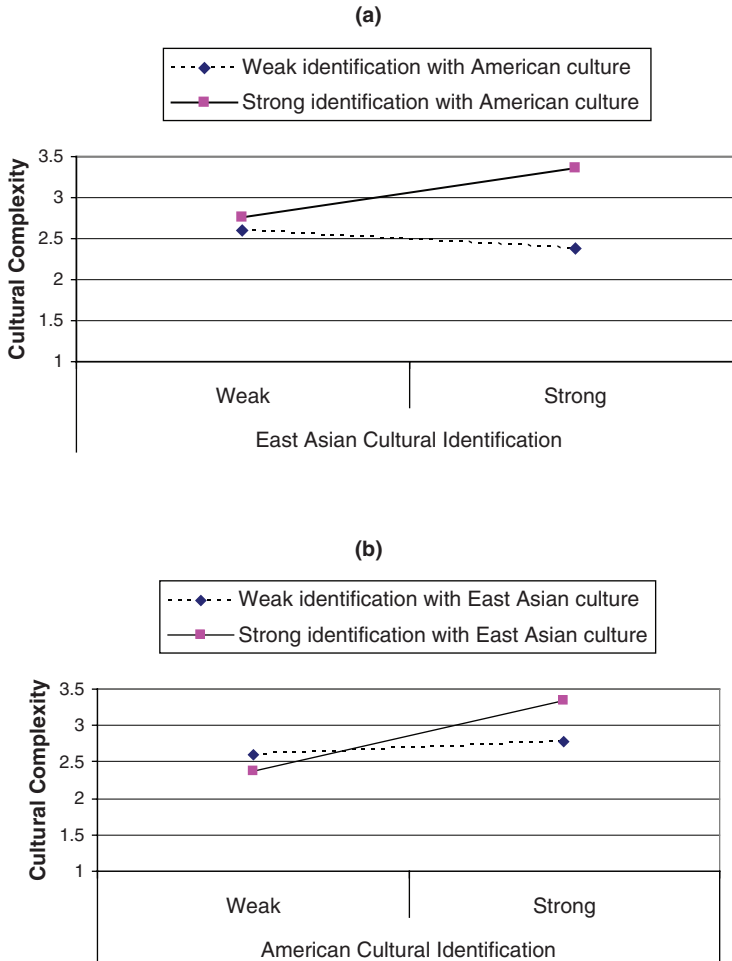
Note: *B* = unstandardized coefficient; *SE* = standard error; *b* = standardized coefficient.

* $p < .05$. ** $p < .001$.

Generalized complexity. Table 2 also summarizes the hierarchical regression that explored whether including acculturation strategies improved the prediction of generalized complexity beyond that afforded by the separate differences in level of East Asian cultural identification, American cultural identification, and the controls. Thus, these variables were entered in the first step of the analysis, with a resulting R^2 of .21, $F(7, 65) = 2.74$, $p = .028$. Including acculturation strategies in Step 2 yielded an increment in R^2 of .05, $F(1, 64) = 4.26$, $p = .043$. As expected, it was significant and positively related to generalized complexity ($\beta = .23$, $p = .043$), with a resulting R^2 of .26. The positive beta weight for acculturation strategies suggests that level of generalized complexity increases the more identified an individual is with both cultures.

These findings are illustrated by the predicted mean values in Figure 2. For individuals strongly identified with American culture, simple slope analysis revealed that the stronger their East Asian identification, the greater their generalized complexity ($\beta = .29$, $p = .045$; see solid line in Figure 2a). Thus, relative to assimilated individuals, biculturals rank higher on generalized complexity. Conversely, for individuals strongly identified with East Asian culture, the stronger their identification with American culture, the greater their complexity ($\beta = .34$, $p = .032$; see solid line in Figure 2b). Thus, relative to separated individuals, biculturals rank higher on generalized complexity.

Figure 1
Predicted Mean Values (Study 1) of Cultural Complexity as a Function of
Participants' Identifications With East Asian and American Cultures



It is interesting that ethnic background also predicted generalized complexity ($\beta = .25$, $p = .027$). The positive beta weight suggests that Chinese participants had higher generalized complexity than participants of other ethnicities, perhaps consistent with the strong tradition of naïve dialecticism in Chinese thought (e.g., Peng & Nisbett, 1999). Notably, generation status had no effect on either cultural or generalized complexity. Interestingly, however, that follow-up analysis of first-generation participants revealed that marginals scored higher on both cultural and generalized complexity than did separated individuals. Specifically, simple slope analysis (Aiken & West, 1991) revealed that for individuals weakly identified with American culture, the weaker their identification with East Asian

culture, the greater their cultural and generalized complexity ($\beta = -.46, p = .07$; $\beta = -.52, p = .044$, respectively). A similar but nonsignificant pattern was found for marginals relative to assimilated individuals ($\beta = -.52, ns$; $\beta = -.47, ns$, respectively, for cultural and generalized complexity).⁵

Comparing cultural complexity to generalized complexity. A one-way repeated-measures ANOVA compared scores on cultural and generalized complexity. As expected, there was a significant effect for type of complexity (Wilks's Lambda = .88; $F(1, 73) = 9.88, p = .002$). Participants' cultural complexity scores ($M = 2.8, SD = 0.92$) were significantly higher than their generalized complexity scores ($M = 2.43, SD = 0.90$).

Discussion

Study 1 links acculturation strategy to integrative complexity, both culturally specific and generalized, thereby providing support for key ACM predictions and their extension. The findings also suggest that mean levels of complexity are lower for generalized complexity than for cultural complexity across participants, supporting the notion that the further removed the context is from the specific cultural domain, the lower the effects of acculturation on complexity.

To test whether these results extend to a range of ethnic, age, and occupational strata, our second study focused on highly educated Israeli adults working in the United States.

Study 2

Method

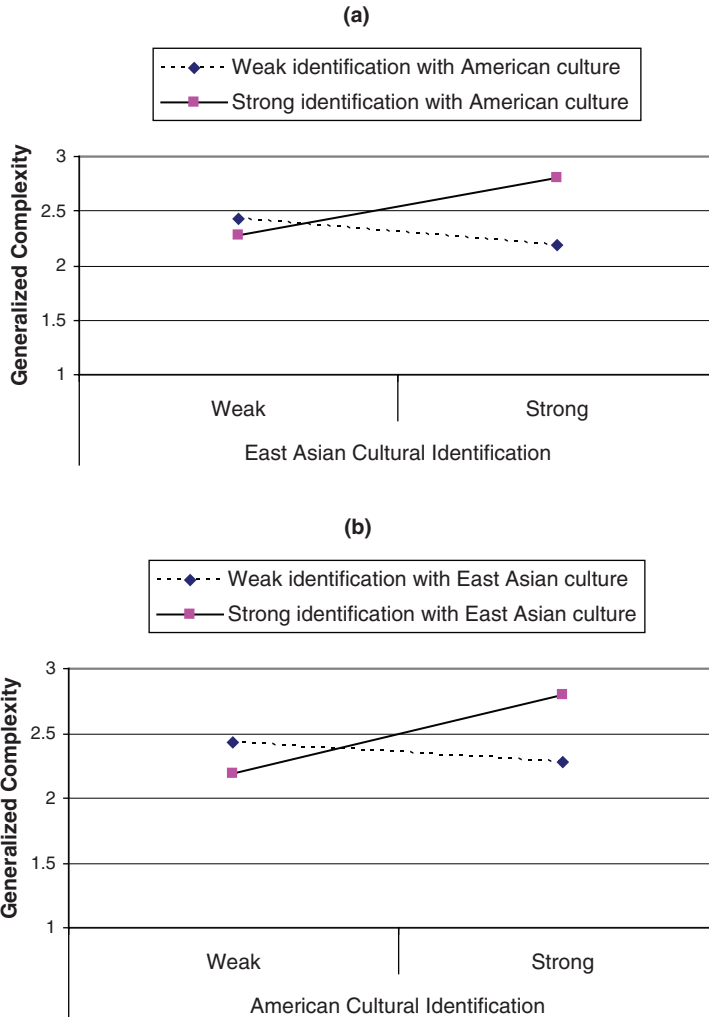
Participants

Our sample included 100 Israeli participants (76 males and 24 females; age $M = 42.61, SD = 8.85$) who moved to the San Francisco Bay Area from Israel to pursue business opportunities. All participants were first-generation U.S. immigrants. Of the participants, 39% held bachelor's degrees, 39% held master's-level degrees, 17% held PhDs, and the rest had high school diplomas. Participants had lived an average of 10.32 years in the United States ($SD = 8.28$). Using measures similar to those in Study 1, we found participants' English and Hebrew abilities to be 6.13 ($SD = 0.69$) and 6.84 ($SD = 0.48$), respectively, on 7-point scales.

Materials and Procedure

The procedures used in Study 2 were similar to those used in Study 1. However, rather than having participants respond to open-ended essay questions, we conducted in-depth interviews, for two main reasons. First, as we have suggested, the low internal reliabilities for the cultural complexity and generalized complexity scores found in Study 1 likely resulted from the use of only two questions to code for each. Interviews allowed us to include more questions than if participants had to write their responses by hand. Consequently, in Study 2, responses to 12 predetermined questions were analyzed for integrative complexity. These questions were selected in advance from a larger list of questions

Figure 2
Predicted Mean Values (Study 1) of Generalized Complexity as a Function of
Participants' Identifications With East Asian and American Cultures



asked during the interviews. Second, we expected much higher response rates to requests for interviews, which working adults find less tedious than written surveys. Indeed, 85% of the individuals approached agreed to participate.

We conducted the interviews during 2005, initially approaching participants through several contacts. We then asked each participant to contact at least two other people who would be willing to participate in the study of “acculturation and overseas job performance.”

During the first part of the interview, participants completed a variety of written questionnaires that included requests for demographic information and an acculturation strategy questionnaire. Given permission to respond in the language of their choice, most opted for Hebrew. The first author, a native speaker of both Hebrew and English, translated all questionnaires into Hebrew. To verify accuracy of translation, the Hebrew version was then retranslated into English by another bilingual individual. The few inconsistencies were resolved through discussion.

In the second part of the study, participants were interviewed, and their responses were taped and transcribed. Interviews (98%) were conducted in Hebrew and lasted an average of 2.42 hours. Several precautions were taken to reduce the likelihood of biased responses. First, to eliminate the risk of bias introduced by multiple interviewers, the first author interviewed all 100 participants. Second, all complexity questions were structured, and participants were allowed to reply for as long as they liked. Aside from asking questions and showing interest in the responses, the interviewer did not speak during this portion of the interviews. Third, because previous research has shown that one's complexity score is significantly correlated with verbosity (Suedfeld et al., 1992), number of words spoken was included as a covariate in all analyses.⁶ The measures are described below.

Acculturation strategy. To assess acculturation styles, similar to Study 1, participants were given Ward and Kennedy's (1994) AI. Participants separately rated their similarity to members of each cultural group, Israelis and Americans. This approach resulted in two scores: Israeli cultural identification and American cultural identification. Internal reliabilities (Cronbach's α) for the Israeli cultural identification and American cultural identification scales were .91 and .93, respectively. As expected, the scales were orthogonal ($r = -.02$).

To test the convergent validity of Ward and Kennedy's AI, we again included Benet-Martinez et al.'s (2006) two single-item measures of overall identification with American and Israeli cultures. As expected, there were substantial positive correlations between (a) the single-item measure of identification with American culture and Ward and Kennedy's measure of American cultural identification ($r = .57, p = .0001$) and (b) the single item of identification with culture of origin and Ward and Kennedy's measure of identification with Israeli culture ($r = .46, p = .0001$).

Integrative complexity. As in Study 1, transcribed open-ended responses were coded for integrative complexity. Two trained bilingual coders, blind to the hypotheses, independently assessed the integrative complexity of responses to each of the 12 open-ended questions. Of the questions, 6 were used to assess cultural complexity and 6 were used to assess generalized complexity (see examples in Study 1; for a complete list of questions, see Tadmor, 2006). Participants were asked the questions in random order. Internal reliabilities (Cronbach's α) for cultural complexity and generalized complexity were acceptable (.79 and .68, respectively). High interrater agreement existed for both the culturally specific items ($\alpha = .85$) and the more general ones ($\alpha = .81$). Disagreements were resolved by discussion. Importantly, as in Study 1, coders first participated in an online complexity-coding workshop and achieved interrater reliability of higher than .85 with an expert rater.

Personal need for structure. A widely used alternative measure of cognitive style, the Personal Need for Structure (PNS) scale, has been shown to be negatively correlated with integrative complexity (Tetlock, 1998). Given that the PNS is designed to capture the chronic preference for cognitive simplicity and structure (Thompson, Naccarato, & Parker, 1989), its inclusion allowed us to triangulate on hypotheses regarding biculturals' complexity. Because items from the PNS scale correspond to generic coping strategies and preferences, we expected that it would serve as a proxy measure of domain-general integrative complexity. We further expected it would correlate with cultural complexity, as we hypothesized that acculturating individuals' levels of complexity will cross domains. All participants completed a PNS scale (Thompson et al., 1989) that consisted of 11 of the original 12 scale items (Item 5 was dropped; see Neuberg & Newsom, 1993). For each item, participants rated their agreement using a 6-point scale. Scores can range from 11 to 66, with higher scores indicating greater PNS. The scale has shown good reliability (Cronbach's $\alpha = .85$) as well as good convergent and discriminant validity (Neuberg & Newsom, 1993).

Results

Testing Measurement Equivalence

Before testing whether results from the East Asian American sample of Study 1 replicate in the Israeli sample of Study 2, it is important to establish the cross-sample equivalence of Ward and Kennedy's AI and the integrative complexity measures. Some evidence for functional equivalence in the AI measure would be provided by findings showing that the AI's cultural identification scales were highly and *similarly* correlated with items intended to measure the same constructs across samples (Schmitt, Allik, McCrae, & Benet-Martinez, 2007). Pearson's correlations between Benet-Martinez et al.'s cultural identification scales and the respective Ward and Kennedy's cultural identification scales were transformed to Fisher's z scores and compared (Blalock, 1972). As expected, the difference between the correlation of identification with culture of origin and Ward and Kennedy's culture of origin identification scale was not significant between the East Asian and Israeli samples ($z = 1.68, ns$). Similarly, the difference between the correlation of American culture identification and Ward and Kennedy's American culture identification was not significant between the two independent samples ($z = 0.71, ns$).

For additional evidence of functional equivalence, we relied on testing factor similarity using Tucker's phi (Van de Vijver, 2007). Theoretical accounts suggest that the AI scale is composed of two factors: American cultural identification and culture of origin identification (Ward & Kennedy, 1994). In line with theoretical expectations, an inspection of the scree plot following a principal component analysis in both samples revealed a clear break after the second component. Structural equivalence was examined per scale by comparing the factor solution in the East Asian sample with the factor solution in the Israeli sample. The Tucker's phi coefficients were .95 for American cultural identification and .94 for culture of origin identification, which implies that the scales were equivalent and had the same psychological meaning across samples (Van de Vijver, 2007).

Unlike the Israeli sample, in the East Asian sample only two questions were used to assess integrative complexity scores in each of the two domains (i.e., culture and work).

Consequently, to determine the cross-sample equivalence of these measures, we computed the significance of the difference between the correlations of the two cultural complexity items between samples as well as the significance of the difference between the correlations of the two generalized complexity items. Neither difference was significant ($z = -0.20$, ns ; $z = -0.28$, ns ; respectively), providing further evidence for measurement equivalence.

The Core Hypotheses

Hierarchical regressions were used to explore whether acculturation strategies, measured in terms of the cross-product interaction term for Israeli and American cultural identifications, significantly predicted the dependent variables beyond what could be predicted from separate levels of identification with each culture and the control variables. All analyses controlled for gender, age, years in the United States, highest academic degree, English ability, and number of words spoken in complexity responses. Table 3 presents the means, standard deviations, reliability coefficients, and zero-order correlations between the core variables.

Cultural complexity. Table 4 summarizes the hierarchical regressions. Israeli cultural identification, American cultural identification, and the controls were entered in the first step, producing a significant R^2 of .34, $F(8, 91) = 5.87$, $p = .0001$. The addition of acculturation strategies in Step 2 yielded a significant increment in R^2 of .16, $F(1, 90) = 29.61$, $p = .0001$. As expected, acculturation was positively related to cultural complexity ($\beta = .44$, $p = .0001$), with a resulting R^2 of .50. Although American culture identification was also significant ($\beta = .23$, $p = .016$), the positive beta weight for acculturation strategies suggests that the more identified the individual is with both cultures, the greater the cultural complexity.

For individuals strongly identified with American culture, the predicted mean values (Aiken & West, 1991) in Figure 3 show that the stronger their identification with Israeli culture, the greater their cultural complexity ($\beta = .40$, $p = .0001$; see solid line in Figure 3a). Thus, relative to assimilated individuals, biculturals are more culturally complex. Conversely, for individuals strongly identified with Israeli culture, the stronger their identification with American culture, the greater their cultural complexity ($\beta = .62$, $p = .0001$; see the solid line in Figure 3b). Thus, relative to separated individuals, biculturals are more culturally complex.

As in Study 1, a further analysis was carried out to determine whether biculturals' greater cultural complexity was because of a greater tendency to differentiate their responses or whether they were also more likely to integrate them. Thus, responses indicative of integration (i.e., scores of 4 or higher) were coded as 1; all other responses were coded as 0. Comparison of the four acculturation strategies based on median split of the American cultural identification ($Mdn = 4.1$) and Israeli cultural identification ($Mdn = 5.3$) scales revealed that biculturals gave the largest percentage of integrated responses for each of the 12 cultural complexity subquestions (ranging from 34.6% to 100.0%), though they represented only 29.0% of the sample; moreover, biculturals provided more than 50.0% of all integrated responses for eight of these questions. These findings suggest that biculturals were not only more likely to differentiate their responses but also more likely to integrate them, lending further support for the hypothesized relationship between biculturalism and cultural complexity.

Table 3
Summary Statistics and Correlations Between Major Variables
and Controls (Study 2)

Measure	Range		Correlations										
	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Israeli cultural identification (standardized)	0.00	1.00	(.91)										
2. American cultural identification (standardized)	0.00	1.00	-.02	(.93)									
3. Acculturation strategies (Interaction Israeli and American cultural identifications)	-0.02	1.11	.18	.03									
4. Cultural complexity	2.58	0.64	.14	.24*	.47**	(.79)							
5. Generalized complexity	2.37	0.70	.04	.21*	.42**	.67**	(.68)						
6. Age	42.61	8.85	-.04	.34**	-.08	.02	.10						
7. Gender (1 = male)	0.76	0.43	-.01	-.07	.22*	.21*	.28**	.16					
8. Years in United States	10.32	8.28	-.19	.53**	-.16	-.04	.08	.70**	-.01				
9. Highest academic degree	1.68	0.82	-.08	.14	.08	.02	.13	.25*	-.02	.28**			
10. English ability	6.13	0.69	-.18	.33**	.10	.23*	.29**	-.01	-.03	.22*	.21*		
11. Number of words in complexity responses	2,884.37	1,520.94	.10	.15	-.02	.47**	.46**	.21*	.15	.11	.07	.19	

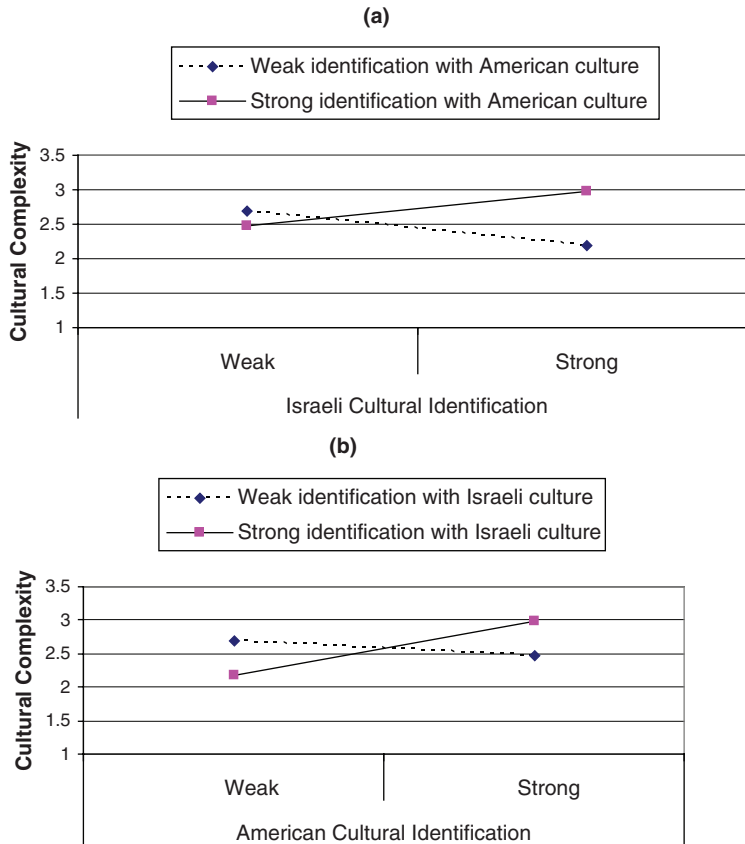
Note: Unstandardized alpha values are presented in parentheses on the diagonal. Unstandardized: Israeli cultural identification ($M = 5.26, SD = 0.83$); American cultural identification ($M = 4.21, SD = 0.99$).
 * $p < .05$. ** $p < .01$.

Table 4
Summary of Hierarchical and Multiple Regression Analysis for Cultural Complexity and Generalized Complexity (Study 2)

Predictor	Cultural Complexity (H1–H2)				Generalized Complexity (H3–H4)			
	<i>B</i>	<i>SE</i>	<i>b</i>	<i>R</i> ²	<i>B</i>	<i>SE</i>	<i>b</i>	<i>R</i> ²
Step 1				.34**				.32**
Gender	.25	.13	.17		.39	.15	.24*	
Age	-.00	.01	-.02		-.00	.01	-.03	
Years in the United States	-.02	.01	-.23		-.01	.01	-.08	
Highest academic degree	-.00	.07	-.00		.07	.08	.08	
English ability	.12	.09	.13		.19	.10	.18	
# words complexity	.00	.00	.40**		.00	.00	.37**	
Israeli cultural identification	.05	.06	.08		.02	.06	.03	
American cultural identification	.18	.07	.29*		.11	.08	.15	
Step 2				.50**				.45**
Gender	.09	.12	.06		.24	.14	.15	
Age	-.00	.01	-.03		-.00	.01	-.03	
Years in the United States	-.01	.01	-.12		.00	.01	.02	
Highest academic degree	-.04	.06	-.05		.03	.07	.03	
English ability	.06	.08	.06		.13	.09	.13	
# words complexity	.00	.00	.45**		.00	.00	.41**	
Israeli cultural identification	.00	.05	.00		-.03	.06	.04	
American cultural identification	.15	.06	.23*		.07	.07	.10	
Acculturation strategies (interaction Israeli and American cultural identifications)	.25	.05	.44**		.24	.05	.38**	

Note: *B* = unstandardized coefficient; *SE* = standard error; *b* = standardized coefficient. **p* < .05. ***p* < .001.

Figure 3
Predicted Mean Values (Study 2) of Cultural Complexity as a Function of
Participants' Identifications With Israeli and American Cultures



Some evidence that biculturals' greater cultural complexity is not merely because of an informational effect comes from findings that all Israeli participants met Benet-Martinez et al.'s (2006) empirical definition of biculturalism. Specifically, as in Study 1, Israeli participants also indicated above-median-scale levels of identification with both Israeli and American cultures ($M = 4.99$, $M = 3.48$, respectively, measured by single items) as well as above-median-scale levels of Hebrew- and English-language ability ($M = 6.84$, $M = 6.13$, respectively).⁷

Generalized complexity. Table 4 also summarizes the hierarchical regressions that examined the relationship between acculturation strategy and generalized complexity. Thus, Israeli cultural identification, American cultural identification, and the controls were entered in the first step of the analysis, with a resulting R^2 of .32, $F(8, 91) = 5.45$, $p = .0001$. Including acculturation strategies in Step 2 yielded a significant increment in R^2 of .13, $F(1, 90) = 19.97$,

$p = .0001$. Again, acculturation strategies was positively related to generalized complexity ($\beta = .38, p = .0001$), with a resulting R^2 of .45. The positive beta weight suggests that the more identified people are with both cultures, the greater their generalized complexity.

These findings are illustrated via the predicted mean values in Figure 4. For individuals strongly identified with American culture, simple slope analysis revealed that the stronger their identification with Israeli culture, the greater their generalized complexity ($\beta = .31, p = .004$; see solid line in Figure 4a). Thus, relative to assimilated individuals, biculturals rank higher on generalized complexity. Conversely, for individuals strongly identified with Israeli culture, the stronger their identification with American culture, the greater their generalized complexity ($\beta = .45, p = .0001$; see solid line in Figure 4b). Thus, relative to separated individuals, biculturals rank higher on generalized complexity.⁸

Follow-up analysis revealed that marginals had higher scores on both cultural and generalized complexity than did separated individuals. Specifically, simple slope analysis revealed that for individuals weakly identified with American culture, the weaker their identification with Israeli culture, the greater their cultural and generalized complexity ($\beta = -.39, p = .001$; $\beta = -.38, p = .003$; respectively). A similar pattern was found for marginals relative to assimilated individuals but was only of borderline significance for generalized complexity ($\beta = -.17, ns$; $\beta = -.24, p = .07$; respectively).

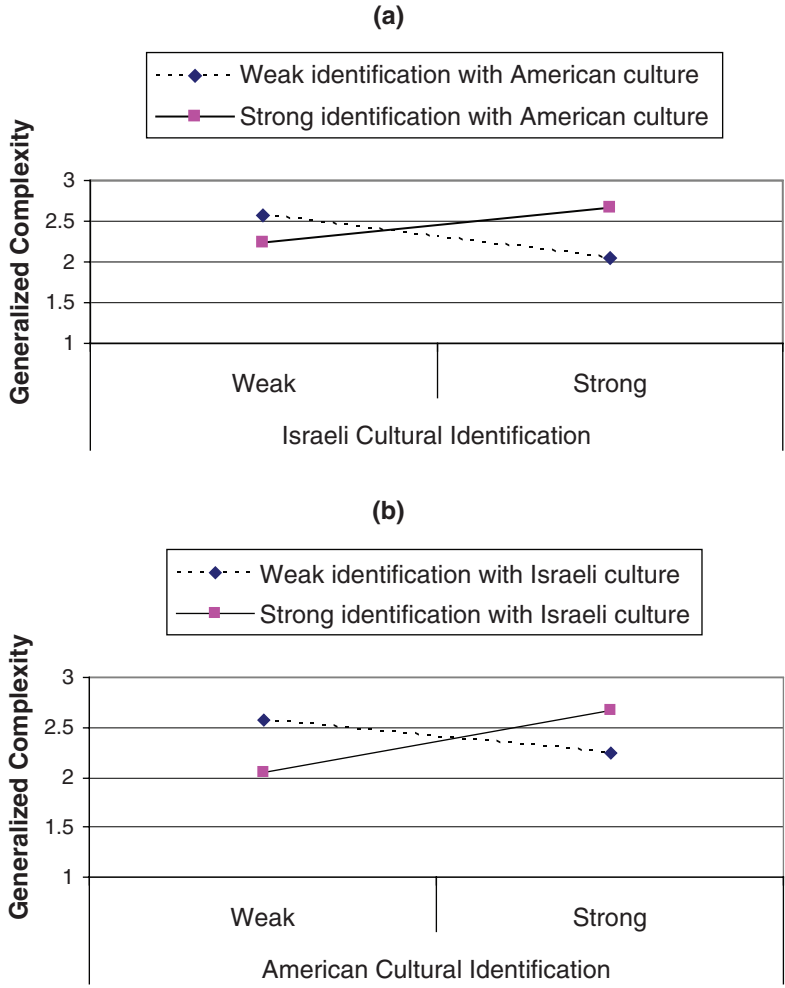
Comparing cultural complexity to generalized complexity. A one-way repeated-measures ANOVA compared scores on cultural complexity and on generalized complexity. As expected, there was a significant effect for domain (Wilks's Lambda = .88; $F(1, 99) = 13.46, p = .0001$). Cultural complexity scores ($M = 2.58, SD = 0.06$) were significantly higher than generalized complexity scores ($M = 2.37, SD = 0.07$).

Personal need for structure. As expected, scores on the PNS scale were significantly and negatively correlated with scores for both cultural and generalized complexity ($r = -.31, p < .001$; $r = -.31, p < .002$; respectively). More important, a hierarchical regression that examined the relationship between acculturation strategies and PNS yielded the same pattern of results found for cultural and generalized complexity. Specifically, Israeli culture identification and American cultural identification were entered in the first step, yielding an R^2 of .05, $F(2, 97) = 2.52, ns$. Including acculturation strategies in Step 2 yielded a significant increment in R^2 of .04, $F(1, 96) = 3.1, p = .046$. Acculturation strategies was significant and negatively related to level of PNS ($\beta = -.20, p = .046$). The negative beta weight suggests that the more identified an individual is with both cultures (bicultural), the lower his or her PNS score (Aiken & West, 1991).

Discussion

Study 2 replicated all the findings of Study 1. Like their Asian American student counterparts, Israeli adult biculturals were more integratively complex in both the high and low cultural relevance domains than either separated or assimilated individuals. Biculturals also rated lower on their PNS scores. The question remains, however, whether becoming bicultural leads to greater complexity or whether initially greater complexity leads to biculturalism. Although tests of causality typically require a longitudinal assessment, we propose

Figure 4
Predicted Mean Values (Study 2) of Generalized Complexity as a Function of
Participants' Identifications With Israeli and American Cultures



an alternative strategy: priming the specific acculturation strategy and then measuring complexity.

Priming is conducted through procedures that stimulate or activate stored knowledge. It has been used extensively within both the constructivist approaches to culture and contemporary research on the dynamics of knowledge activation (Higgins, 1996). Empirically, priming has been used to determine which cultural identity will be activated in acculturating individuals (Hong et al., 2000). However, constrained by the assumption that biculturals are guided by only one cultural system at any moment, past studies have primed either

one culture or the other in acculturating individuals, never both. Specifically, Hong et al. (2000) reasoned, "Individuals can acquire more than one . . . cultural meaning system, even if these systems contain conflicting theories . . . they simply cannot simultaneously guide cognition" (p. 710).

And yet, in real life, biculturals are likely to face situations in which both their native and their host cultures are activated simultaneously. Imagine a Chinese American child going to school with his Chinese mother to meet his American teacher. Indeed, simultaneous arousal of both cultural networks may well lie at the heart of the conflict and distress often described in ethnographic accounts of the bicultural experience (e.g., Gil, Vega, & Dimas, 1994). By failing to prime both cultures simultaneously, researchers have artificially limited the possibility of exploring the cognitive integration of clashing cultural themes and networks in acculturating individuals. We close this gap by priming one experimental condition to think in terms of both cultures simultaneously.

Study 3 is based on the concept that, by randomly assigning individuals who have been exposed to a second culture to conditions that prime different acculturation strategies and holding all else constant, it is possible to demonstrate one direction in the flow of causation—namely, the impact of acculturation on various facets of cognitive style (e.g., complexity of cognitive functioning and tolerance for ambiguity). Notably, however, rather than measuring integrative complexity via the traditional approach of coding open-ended responses, we used the PNS scale, which, in line with past research (Tetlock, 1998), we have shown is negatively correlated with integrative complexity. Because PNS is sensitive not only to chronic preferences but also to situational changes such as time pressure (Chiu et al., 2000; Kruglanski & Webster, 1996), it seemed an appropriate measure for testing our ACM hypotheses. We chose to use the PNS scale to further triangulate our hypotheses regarding biculturals' complexity by using converging methodologies. And because priming effects are short lived (5 to 10 min; see Higgins, 1996), the PNS scale offered a proxy measure of complexity that avoided the risk that the manipulation would wear off before participants completed the lengthier process required to assess integrative complexity.

Study 3

Method

Participants

Our sample included 75 East Asian participants. Four participants were dropped from the analysis because they did not answer the bicultural prime question. One participant was dropped because he did not complete the questionnaire in the intended sequence. The final sample included 70 students (48 females and 22 males; age $M = 21.29$) from the University of California, Berkeley. Our participants included 60% of Chinese descent, with the remainder self-identifying with various other East Asian nationalities. They had lived in the United States for an average of 12.68 years ($SD = 7.06$); 61.4% were first-generation East Asian Americans, and the rest self-identified as second generation. Participants' English-language ability was 6.25 ($SD = 1.15$) on a 7-point scale. Some participants were recruited through campus flyers and were paid; the rest were recruited through an introductory psychology class and received course credit.⁹

Materials and Procedure

As is typical of priming studies (Schwarz & Clore, 1996), the experimenter informed participants that they would be participating in two unrelated research projects: The first would assess how they think about culture, and the second would assess how people form impressions of others based on various types of information. The priming manipulations were introduced during the first project. Participants also completed a filler task in which they were asked to provide demographic information. After concluding the first project, participants proceeded to the second project, which they were told dealt with impression formation and decision-making tasks concerning boarding school applicants. The tasks were the same across experimental groups. Participants were asked to fill out the PNS scale as part of background information for the second project. At the end of the study, participants were asked to provide additional demographic information.

Priming acculturation strategies. Participants were randomly assigned to one of four priming conditions: (a) American identity (assimilated), (b) East Asian identity (separated), (c) both East Asian and American identities (bicultural), and (d) a control group consisting of a neutral prime. In each acculturation priming condition, participants were told that the experimenter was interested in learning about their experiences either with their culture of origin, American culture, or both (depending on experimental group). Control participants were told the study dealt with their personal achievements.

Each priming condition used two mutually reinforcing primes. Specifically, each participant was asked to list four things he or she most identified with his or her culture of origin, American culture, or both (depending on the experimental condition). Control group participants were asked to describe four accomplishments. As a second priming manipulation, participants in the priming conditions were asked to write about an experience that made them feel proud to be part of their culture of origin, American culture, or both, depending on the condition. Control group participants were asked to write about an achievement of which they felt proud.

Priming manipulation check. To ensure that the priming manipulation was effective, two coders read the open-ended essays and judged whether participants described an experience that made them feel proud to be part of their culture of origin, part of American culture, or both; coders could also code responses as being unrelated to culture. Coders were not only blind to the hypotheses but also read the essays without reading the question stem. Therefore, they did not know in what context participants were supposed to describe pride. If the priming manipulation was effective, we hypothesized that coders would rate most responses in the bicultural condition as describing experiences that invoked pride in two cultures while rating most participants' responses in the assimilated condition as describing experiences invoking pride only in American culture and rating most responses in the separated condition as describing experiences invoking pride only in culture of origin. High interrater agreement existed between the two coders ($\alpha = .90$); disagreements were resolved by discussion.

Personal need for structure. As in Study 2, all participants completed a PNS scale (Thompson et al., 1989) that consisted of 11 of the original 12 scale items (Item 5 was dropped; see Neuberg & Newsom, 1993). Cronbach's α was .77.

Results

Manipulation Check

Across the four priming manipulations, coders accurately identified the condition associated with 92.9% of the open-ended responses. In the bicultural condition, coders rated 89.5% of the participants' responses as describing experiences that involved pride in two cultures. In the assimilated condition, coders rated 93.8% of responses as describing experiences that made participants feel pride only in American culture. In the separated condition, coders rated 95.2% of responses as describing experiences that made participants feel proud only of their culture of origin. And in the control condition, coders rated 92.9% of participants as describing pride in achievements unrelated to culture. Thus, the priming manipulations successfully activated the relevant cultural frameworks.

Priming and Complexity

A one-way, between-group ANCOVA assessed the effects of priming condition (bicultural, separated, assimilated, and control) on level of complexity, as measured by the PNS scale. Additional controls measured sociodemographic variables (gender, age, ethnic background, generation in the United States, years in the United States, English-language ability, field of study, grade point average, and year of study at university).

As expected, results revealed a significant main effect for priming condition, $F(3, 49) = 4.71$, $p = .006$, partial $\eta^2 = .22$. Post hoc comparisons with the Bonferroni correction revealed that participants in the bicultural prime condition scored significantly lower on the PNS scale ($M = 3.27$, $SE = 0.16$) than did participants in the separated prime condition ($M = 3.91$, $SE = 0.15$, $p = .039$) and participants in the assimilated prime condition ($M = 4.06$, $SE = 0.18$, $p = .012$). Participants in the bicultural prime condition also scored significantly lower on the PNS scale than did participants in the control group ($M = 4.02$, $SE = 0.19$, $p = .034$).¹⁰

Discussion

Study 3 shows that the impact of second-culture exposure on level of complexity hinges on the acculturation strategy adopted. Given that acculturating individuals were randomly assigned to priming conditions, no preexisting differences in cognitive style should have existed. The fact that the type of acculturation strategy primed affected participants' levels of PNS supports the hypothesis that acculturation strategy can, in itself, affect cognitive functioning.

General Discussion

In an increasingly interdependent world, understanding the interplay of acculturation and sociocognitive functioning has become critical. In Study 1, we found that biculturals were more integratively complex than assimilated and separated individuals in culturally related domains and that this relationship extended to other domains as well. Moreover, integrative complexity for all acculturating groups decreased for issues further removed

from the cultural domain, lending some support to the notion of a continuum of “generalizability.” Study 2 replicated these results using older participants from a different cultural group.

In both studies, we were further able to show that biculturals’ greater levels of integrative complexity in the cultural domain were not merely because of their greater ability to differentiate between competing cultural perspectives but were also because of their greater ability to integrate them relative to assimilated or separated individuals. It is also noteworthy that virtually all of our study participants could be considered bicultural (Benet-Martinez et al., 2006). These findings suggest not only that we used a conservative sample to test our hypotheses but also that not all biculturals are equally complex, which suggests that biculturalism and complexity should not be viewed as synonymous and are distinct continuous variables.

In Study 3, we further tested the underlying assumption of the model: that biculturals’ greater integrative complexity is a consequence of second-culture internalization. Using priming manipulations, we showed that biculturals’ increased complexity does indeed result from the acculturation process. The results of this study—the first to directly assess the direction of causality between acculturation and complexity—mesh well with ACM’s claim that biculturalism demands more flexible, multidimensional forms of thinking.

Taken together, these findings provide strong support for the hypotheses but should be viewed with caution because of methodological limitations. First, although we extended our findings from college-aged Asian Americans to working Israeli adults, our inductive base of knowledge remains thin; future research should continue to explore cultural boundary conditions. Second, although we have shown that results for complexity can be generalized, we tested only one domain—that of work. Evidence from Benet-Martinez et al. (2006) suggests that complexity may well not generalize to the domain of neutral physical surroundings. Future research should explore where exactly along the continuum of cultural relatedness complexity ceases to generalize.

Finally, three issues remain with regard to the priming and testing of the direction of causality. The first is a methodological concern about priming manipulations. Diverging from typical cultural priming studies, we appear to have successfully primed not just assimilation and separation but also biculturalism directly. Moreover, rather than relying on pictures of cultural icons to elevate the accessibility of a specific cultural network (e.g., Hong et al., 2000), thereby leaving the investigator open to criticism regarding the viability of the manipulation, the approach used here allowed us to directly assess whether the manipulation was effective. And yet, although our manipulations of identification and stories of personally relevant cultural pride were successful, we do not have direct evidence that they did indeed activate the intended acculturation strategy (e.g., describing an experience of pride to be part of American culture elicits an assimilation strategy).

Recent research, however, has provided some circumstantial support for the validity of our manipulations. Specifically, Verkuyten and Pouliasi (2006) showed that cultural group identification partly mediates the effects of cultural priming via cultural icons on perceptions and attitudes. Following self-categorization theory (Turner et al., 1987), Verkuyten and Pouliasi argued that exposure to cultural icons leads to greater cultural identity salience. They found, for example, that the use of Dutch primes in Dutch–Greek biculturals led to greater identification with Dutch culture and then led to a more positive evaluation

of the personal self. In our manipulations, we attempted to directly influence cultural group identification levels rather than rely on the indirect approach of using cultural pictures as primes. It is important that given that all participants in Study 3 met Benet-Martinez et al.'s (2006) empirical definition of biculturalism (see Note 10), we expected the priming manipulations to temporarily elevate identification with either one or both cultural groups, depending on the experimental conditions, and then to influence cognitive style. Nonetheless, given the novelty of this approach, future research should include cultural identification measures as a direct test of whether primes successfully activated the desired acculturation strategy.

Importantly, that more research is also needed to understand the underlying psychological processes involved in cultural frame switching and to draw clearer causal inferences about its effects in real life (Verkuyten & Pouliasi, 2006). Although to have supraliminal priming work in the psychological lab the participants are usually made unaware of the relation between priming and its intended effects (Schwarz & Clore, 1996), in real life, bicultural individuals are constantly reminded of their bicultural identities. It seems almost impossible for them not to know which parts of the bicultural continuum are targeted. Thus, future research would greatly benefit from longitudinal studies assessing the hypothesized direction of causality as it unfolds in real life.

A second issue related to the priming study is that rather than directly assess integrative complexity, we used the PNS scale as a proxy. Previous researchers have commented on the connection between the two constructs. For example, Neuberg and Newsom (1993) noted that "all low-complexity individuals share the desire to create simple structure" (p. 122). Support for the relationship between the two measures comes from previous empirical evidence that the two measures do indeed overlap (e.g., Tetlock, 1998). Indeed, in line with this research, in Study 2 we found significant and negative correlations between PNS scores and integrative complexity scores in both the cultural and work domains. Yet, Study 3 could have been improved by the inclusion of an integrative complexity measure to allow a direct cross-check.

The third issue regarding the direction of causality study is more theoretical. We found support for the idea that acculturation strategy leads to changes in complexity. However, we did not test for the opposite direction of causality: that those disposed toward integrative complexity will become bicultural. As previously noted, we believe the direction of causality is likely to be reciprocal, but only reverse-priming or longitudinal studies can resolve this issue. Initial support comes from a cross-cultural study by Chiu et al. (2000), who found that under high time pressure (when high NCC is made salient) Chinese, and American participants tend to rely more on the attribution biases of their respective cultures. Future research should examine these results in the context of acculturating individuals. It would also be instructive to examine the boundary conditions of the model. Specifically, Tadmor and Tetlock (2006) suggested that there may be an inverted *U*-shaped relationship between the size of the differences between two cultures and the amount of cognitive change that could be expected. At the extreme difference end, even those high in trait complexity may feel overwhelmed by the massive differences between certain pairwise combinations of cultures—indeed, there may just be little integrative potential (e.g., Swedish social democrats and the Afghan Islamists). At the low difference end, even those with high trait complexity may feel underwhelmed by the subtle differences between

cultures (e.g., liberals in Northern vs. Southern California). Future research should investigate these potential interactions.

Despite these limitations, this study extends our understanding of the bicultural and acculturation experience in several ways. First, it demonstrates the differential effects of acculturation strategies on individuals' information-processing capabilities in both the cultural domain and beyond. The finding of greater levels of integrative complexity in bicultural individuals but not in assimilated or separated individuals further suggests that mere exposure to a second culture is insufficient to bring about the cognitive benefits associated with multiculturalism. Rather, it is how individuals internally represent the different cultures that is key. Particularly informative in this regard is that, to some extent, all of our participants could be classified as bicultural. The key difference between the types of biculturals in our sample lies in the size of the gap between the strength of their identification with each culture. Those considered assimilated and separated show a clearer preference for one culture over the other. According to the ACM, this pattern of relative subordination of one culture to the other, when the values of the two cultures are held with unequal strength, leads to less dissonance and lower complexity (Roccas & Brewer, 2002; Tetlock, 1986). By contrast, classic biculturals in our samples more equally identify with both cultures. As a result, they experience sharper dissonance between the values of the two cultures and greater pressure to be integratively complex.

Our differentiation of biculturals is not new. Indeed, past research has found large variations in how people manage and experience dual cultural identities (e.g., LaFromboise et al., 1993; Phinney & Devich-Navarro, 1997; Tsai, Ying, & Lee, 2000). Benet-Martinez et al. (2006), for example, suggested that "biculturals can differ . . . in the extent to which they perceive their cultural identities as largely integrated and compatible (high BII) or dissociated and difficult to integrate (low BII)" (p. 395). They found that low BIIIs are more culturally complex than high BIIIs and attributed this to the greater cultural conflict experienced by low-BII individuals. According to the ACM, it is possible that low-BII individuals are still in the process of becoming bicultural and have not yet resolved the tension between the two cultures. Therefore, they experience more severe conflicts than high-BII individuals, who may be further down the road of biculturalism. Suggestive here is evidence that low BIIIs have spent less time in the United States than high BIIIs (Benet-Martinez et al., 2006). We add another factor that distinguishes among various types of biculturals and affects complexity levels: the size of the gap between the relative identification strength with each culture.

This study also contributes to existing research by providing a potential explanation to prior findings that have linked multicultural experiences to things such as greater flexibility (Chiu & Hong, 2005) and greater creativity (Leung & Chiu, in press; Leung et al., 2008). For example, past research has shown that exposure to ideas from two cultures can increase creativity, but only for individuals with a lower NCC (which is closely related to PNS; Leung & Chiu, in press). We have shown that biculturals who integrate their dual cultural identities will have lower PNS or higher integrative complexity. Hence, they should be better able to integrate seemingly incompatible cultural ideas to form novel, creative ideas (also see Tadmor, 2006). It is interesting that Leung and Chiu also found that European American monoculturals who were simultaneously exposed to ideas from both Chinese and American cultures were more creative than European Americans who were

exposed to ideas from only Chinese culture. It is noteworthy that the latter group should have also had internal access to American ideas. Therefore, it appears it is the simultaneous juxtaposition of the two cultural networks that is essential for elevating creativity, not mere exposure to cultural knowledge. Thus, it seems that for both bicultural and monocultural individuals alike, it is not enough to have access to competing cultural information, but it is how the information is presented that is crucial to be able to capitalize on the benefits of multicultural experiences.

Notably, only recently have researchers begun to investigate the effects of simultaneously activating competing cultural networks (Chiu & Cheng, 2007). To our knowledge, we are the first to prime both cultural perspectives simultaneously in acculturating individuals. Future research may benefit from continuing to utilize the dual-activation approach, as it likely has greater ecological validity and opens up new theoretical issues for empirical investigation. For example, in many situations, biculturals probably are confronted with heterogeneous audiences that embody conflicting cultural expectations or cross-pressures. The priming technique presented here allows us to test how biculturals are likely to react to such circumstances and to compare their reactions to those of participants primed to be assimilated or separated.

This study also has implications for the study of marginalization. Marginalization is typically viewed as the worst acculturation strategy, an opinion rooted in evidence marginals suffer more acculturation stress than other groups (e.g., Berry et al., 1987). Our findings suggest a more qualified assessment. Follow-up analysis of first-generation participants in Studies 1 and 2 revealed that marginals scored higher on cultural and generalized complexity than did separated individuals and that a similar, albeit weaker, pattern was found for marginals relative to assimilated individuals. The question remains, what might make first-generation marginals more complex? Although the ACM does not make specific predictions regarding marginals, we expect this is because of their relatively equal levels of identification with both cultures. Specifically, even though their overall identification levels are lower than those of biculturals, they similarly show a pattern of equal preference for both cultures. According to the ACM, this will create an experience of stronger dissonance relative to both assimilated and separated individuals and, consequently, will lead to greater levels of integrative complexity.

The distinction that Bourhis et al. (1997) made between two types of marginal individuals further helps explain this result. The first type, "anomic" individuals, reject both cultures and consequently suffer from alienation, stress, and low self-esteem. They tend to be relatively maladjusted and to have problems with employment and school. As such, these individuals likely were not a big part of this sample. By contrast, "individualists," the second type of marginals, do not feel marginalized but simply prefer to identify themselves as individuals rather than as members of one culture or another. They are likely to function well (e.g., Moghaddam, 1992). Responses to open-ended questions in which participants describe their bicultural experiences offer some indirect evidence that these are the type of marginals who participated in our studies. For example, one marginal East Asian participant said, "I don't consider myself Chinese. I mean, I am, but that's not how I look at myself. I look at myself as me. I define myself by who I am, not by my genes or ancestors." Such individuals are likely to pick and choose what they deem to be appropriate from each culture rather than allowing society to dictate ascribed expectations. One Israeli marginal woman described this process,

I think that in every culture there are the good things and the bad things and you don't have to adopt the bad things. . . . Bicultural means giving up some behaviors that I'm used to but keeping others; it all depends what's more important and what's less important. (translated)

The process of choosing one's own values likely requires active cognitive effort that might lead such individualists toward greater integrative complexity. Such individuals may represent a bicultural personality type that self-consciously seizes control of its own acculturation process.

At a societal level, this study has implications for multiculturalism research. Specifically, although many have touted the benefits of multiculturalism (e.g., Fowers & Richardson, 1996), few studies have investigated its effects. Moreover, researchers have rarely explicated the cognitive underpinnings of these suggested benefits. Our findings suggest that integrative complexity may represent such an underlying mechanism. We have shown that biculturals' complexity develops in part as they learn to blend new and old cultural identities. Complexity, in turn, may help to explain why multiculturalists are likely to enjoy heightened imagination, intellectual flexibility, and open-mindedness (Tetlock, 1998) as well as greater levels of managerial success, creativity, and ability to deal with ambiguity (e.g., Tadmor, 2006, 2008). These potential benefits of multiculturalism may not be limited to immigrants alone. Members of mainstream culture could also reap the long-term benefits of complexity if they are willing not merely to expose themselves to other cultures but to truly become immersed in them. Admittedly, complexity is not always a good thing; in some settings, it has been linked to unwillingness to take risks and make tough decisions (Tetlock, 1992, 2005). Yet, integratively complex individuals may be able to avoid these potential pitfalls by cultivating the metacognitive capacity to switch between simple and complex reasoning depending on the situation.

Notes

1. Creative bicultural solutions to cross-cultural conflict may be transparently integratively complex when they are invented but then slowly become part of the normative fabric of the Diaspora community—or of the larger society within which that community is embedded. One era's flash of integrative insight can evolve into another era's truism or cliché.

2. Interestingly that research on bilingualism has also explored the cognitive effects of multicultural experiences. For example, Bialystok (1999) found that, compared to monolingual children, bilinguals were more successful in solving a card-sorting task that required an understanding of conflicting rules. She explained that bilinguals' advantage could be attributed to their greater ability to selectively attend to specific aspects of a situation, allowing them to exercise greater control, particularly when confronted with conflicting information. Their more advanced use of higher-order rules allows bilinguals to see things from different perspectives and understand that different judgments are appropriate for different situations (Frye, Zelazo, & Burack, 1998). Nonetheless, Bialystok (1999) argued that it is still unclear why bilingualism affects cognitive development in such a way. The acculturation complexity model provides one explanation.

3. Given that a significant portion of the sample consisted of first-generation Americans who were nonnative English speakers, it is possible that they may be reacting to the research materials in a different way than participants born and raised in the United States. To address this concern, a series of one-way ANOVAs was conducted to compare first-generation American participants to U.S.-born participants on a variety of measures (e.g., age, GPA, number of years in the United States, English and ethnic language abilities, identifications with American culture and culture of origin, integrative complexity scores, and the Big Five personality characteristics measured using Benet-Martinez and John's [1998] Big Five Inventory). Results revealed that

first-generation participants differed from participants born and raised in the United States in predictable ways. Specifically, first-generation immigrants had lived less time in the United States, $F(1, 74) = 37.65$, $p = .0001$, were more fluent in their ethnic language, $F(1, 74) = 13.37$, $p = .0001$, and were less fluent in English, $F(1, 74) = 6.2$, $p = .015$. First-generation immigrants, however, did not differ from the other participants on any other measure, including identification levels with each culture as well as integrative complexity scores. It is furthermore important to note that although first-generation immigrants were less fluent in English, their mean English scores were nonetheless extremely high ($M = 6.37$, $SE = 0.13$), and on average, they had lived in the United States for 11.01 years ($SE = 0.109$). Moreover, the finding that GPA scores were not significantly different between participants suggests that first-generation participants were able to function as well as participants born and raised in the United States in a highly competitive university environment. Finally, analysis of first-generation participants' responses to cultural identification with American and East Asian cultures as well as English and ethnic language abilities reveal that they rated above the median scale levels on all measures ($M = 4.27$, $M = 4.72$, $M = 6.36$, $M = 4.92$, respectively). These findings suggest that first-generation participants meet Benet-Martinez, Lee, and Leu's (2006) empirical definition of biculturalism and, consequently, that they should have been able to understand the research materials in ways similar to those of U.S.-born biculturals. Taken together, these results provide guarded support that first-generation participants and U.S.-born participants were responding to the materials in similar ways.

4. Examples were taken from Baker-Brown et al. (1992).

5. A similar analysis for second-generation East Asians revealed no differences in complexity among marginals, separated individuals, and assimilated individuals. This pattern of results is consistent, however, with previous findings suggesting that, compared to first-generation immigrants, people born in the new culture are significantly less exposed to their native culture and only in specific contexts (Tsai, Ying, & Lee, 2000). As a result, they should experience less areas of conflict and, consequently, should have lower complexity than first-generation immigrants, particularly in the cultural domain. This is what was found (first-generation marginals $M = 3.0$, second-generation marginals $M = 2.5$). More research, however, is needed to draw definitive conclusions.

6. Although reliance on a single interviewer may have successfully prevented some of the biases that may have been introduced through the use of multiple interviewers, it is impossible to completely eliminate the risk of experimenter bias. Nonetheless, several factors may have helped mitigate some of this risk. First, the interviewer was military trained in interview techniques with special emphasis placed on bias reduction. Second, the interviewer was not privy to participants' responses to questionnaires until after the interview had ended. Consequently, she did not have access to information such as participants' acculturation strategies prior to the interview. Finally, having just posed the complexity questions and then remaining silent, further bias should have been removed. And yet, other sources of interviewer bias may have remained and must be taken into account.

7. A separate analysis for each of the four acculturation strategies (based on median split) further supports this analysis.

8. It is important that analyses of the differences between the correlations of acculturation strategy and cultural and generalized complexity, respectively, did not reach significance across the Israeli and East Asian samples. Specifically, using Fisher's r to z transformation, results indicate that the correlation between acculturation strategy and cultural complexity was not significantly different between the two independent samples ($z = -1.5$, ns), nor was the difference between the correlation between acculturation strategy and generalized complexity significant ($z = -0.82$, ns). These results suggest not only that results replicated Study 2 but also that the pattern of relationships between acculturation strategy and integrative complexity was similar across samples.

9. As in Study 1, given that a significant portion of the sample was first-generation Americans who were nonnative English speakers, it is possible that they may have reacted to the protocols in a different way than participants born and raised in the United States. To address this concern, a series of one-way ANOVAs was conducted to compare first-generation American participants to U.S.-born participants on a variety of measures (i.e., age, gender, GPA, number of years in the United States, English and ethnic language abilities, and identifications with American culture and culture of origin). Results revealed that first-generation participants differed from participants born and raised in the United States in predictable ways. Specifically, first-generation immigrants had lived less time in the United States, $F(1, 69) = 84.03$, $p = .0001$, were more fluent in their ethnic language, $F(1, 68) = 23.58$, $p = .0001$, and were less identified with American culture, $F(1, 69) = 5.35$, $p = .024$.

Although first-generation participants were less fluent in English, $F(1, 69) = 15.88, p = .0001$, their mean English scores were nonetheless high ($M = 5.85, SE = 0.21$), and they had lived in the United States for a substantial amount of time ($M = 8.43, SE = 0.77$). It is important that first-generation immigrants did not differ from the other participants on any other measure, including GPA. This finding for GPA suggests that first-generation participants were able to function as well as participants born and raised in the United States in a highly competitive university environment. Finally, analysis of first-generation participants' responses to cultural identification with American and East Asian cultures as well as English and ethnic language abilities reveals that they rated above the median scale levels on all measures ($M = 3.6, M = 4.3, M = 5.85, M = 5.67$, respectively). These findings suggest that first-generation participants meet Benet-Martinez et al.'s (2006) empirical definition of biculturalism and, consequently, that they should have been able to react to the research protocol in ways similar to those of U.S.-born biculturals. Taken together, these results provide guarded support that first-generation participants and U.S.-born participants were responding to the materials in similar ways.

10. It is important that after the priming manipulations had worn off (more than an hour; Higgins, 1996), participants were asked to provide additional biographical information as part of the second study, including Benet-Martinez et al.'s (2006) cultural identification scales. Similar to results found in Studies 1 and 2, participants in Study 3 too indicated above-median-scale levels of identification with both East Asian and American cultures ($M = 4.21, M = 3.87$, respectively) as well as above-median-scale levels of ethnic and English-language ability ($M = 4.88, M = 6.25$, respectively), thereby meeting Benet-Martinez et al.'s empirical definition of biculturalism.

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