

ARE BICULTURALS MORE THAN THE SUM OF THEIR PARTS? EXPLORING CONTEXT
SENSITIVITY IN RELATION TO CULTURAL FRAME SWITCHING AND WELL-BEING

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Abstract

Identifying with multiple cultures is increasingly common. In negotiating their two cultures, biculturals engage different cognitive systems depending on contextual cues – a phenomenon called cultural frame switching. Effective cultural frame switching likely requires biculturals to attend closely to the surrounding context, and as a result, biculturals may become especially context-sensitive. We experimentally tested whether cultural frame switching increases biculturals' context sensitivity (Part One) and whether greater context sensitivity relates to higher well-being for biculturals (Part Two). Part One results failed to demonstrate a consistent causal relationship between frame switching and context sensitivity, though exploratory analyses provided some evidence that biculturals' self-reported ability to frame switch between cultures may predict context sensitivity. Part Two results showed mixed support for a relationship between biculturals' context sensitivity and well-being. In addition to limitations and future directions, theoretical implications for the way biculturalism is conceptualized and studied are discussed.

For Roo.

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Are Biculturals More Than the Sum of Their Parts? The Unique Effect of Biculturalism on Context Sensitivity and Consequences for Well-being

The population of Canada represents of an ever-growing mosaic of cultures, and this diversity is evident not only between people but also within individuals. The number of biculturals, or people who are part of two cultures, has grown in recent decades and, according to the most recently available data, approximately 42% of Canadians identify with multiple ethnic origins (Statistics Canada, 2008, 2011). This multiculturalism has resulted in a rich diversity of languages, customs, values, and traditions that shape people's thoughts and behaviour. Biculturals navigate quite complex social worlds and may have unique psychological experiences as they switch between their cultures.

Cultural frame switching is a well-documented phenomenon that occurs when the system of knowledge associated with one culture is made salient, causing biculturals to shift their identity, thoughts, or behaviours accordingly (Hong & Khei, 2014; Hong, Morris, Chiu, & Benet-Martínez, 2000). Effective cultural frame switching likely relies on biculturals' context sensitivity, the ability to attend and respond to the surrounding context, because contextual cues indicate which cultural system is appropriate to engage. However, researchers have not yet directly tested whether there is a causal relationship between cultural frame switching and context sensitivity in biculturals. The present study tests whether cultural frame switching causes increased context sensitivity in biculturals, and explores whether individual differences in context sensitivity relate to consequences for biculturals' well-being. Furthermore, this research examines whether a novel conceptualization of biculturalism may better account for the unique experiences of biculturals.

Defining Biculturalism

In the broadest terms, biculturals can be defined as people who a part of two cultures where “culture” refers to a group that shares a system of knowledge (i.e., values, beliefs, traditions, social expectations) and can be represented by nationality, ethnicity, religion, social class, among many other forms (Cohen, 2009; Shweder, 1999). Biculturalism research, however, most commonly focuses on national cultures and defines biculturals as people who belong to both a heritage and a mainstream culture. While biculturals are part of a non-dominant group that represents their ethnic roots, called a heritage culture, they also live within a larger society with its own dominant culture, called a mainstream culture. The precursors to being bicultural are varied. It can result from immigration to a new country whether this was done by the biculturals themselves, their parents, or even their grandparents. Alternatively, the biculturals’ parents may be from different ethnic or racial backgrounds. Whatever their background, the key is that biculturals are regularly influenced by their two cultures.

This definition of biculturals, however, masks important variance in the extent to which biculturals maintain their heritage and mainstream cultures within themselves (Berry, 1997, 2005). In order to maintain their cultures, biculturals most commonly employ an integrative strategy in which they value and engage with *both* of their cultures (Berry, Phinney, Sam, & Vedder, 2006). Though those who use other strategies (e.g., adhering more strongly to one culture than the other) may still be considered bicultural, our research focuses on integrated biculturals because we are interested in the psychological effects of actively negotiating multiple cultures. Further, we distinguish biculturals from monoculturals who simply live in a multicultural society. Though it can be argued that many people in modern metropolises are in a sense multicultural through at least some knowledge of other cultures, it is less likely that their experiences are regularly guided

by well-formed, meaningful cultural knowledge systems as is typically the case for integrated biculturals. Therefore, we use the term “biculturals” in reference to people who have internalized their heritage and mainstream cultures through repeated and lengthy exposure.

Past Models of Biculturalism

Traditionally, much of the research conducted with biculturals has modelled their experiences as the sum of mainstream plus heritage cultures' influence. A seminal example of this additive approach to biculturalism is Berry's (1997) quadrant model of acculturation, which categorizes biculturals into one of four categories according to how much they maintain (high versus low) their mainstream and heritage cultures. Additive theories have largely focused on the extent to which biculturals are influenced by each culture and under what circumstances each culture's influence occurs (Benet-Martínez, Leu, Lee, & Morris, 2002; Berry, 2005; Hong et al., 2000; LaFromboise, Coleman, & Gerton, 1993), while paying less attention to the unique products that may come from the combination of two cultures.

There have been two dominant ways of studying biculturals within this traditional, additive approach. The first way has been to study biculturals as a group that falls intermediately between their two cultures (Heine, Lehman, Markus, & Kitayama, 1999), with characteristics that are a blend of some part of each culture. The research here shows, for example, that Asian Americans usually demonstrate thoughts and behaviours somewhere in-between those typical of European Americans (i.e., mainstream culture) and East Asians (i.e., heritage culture) (Heine et al., 1999). In terms of research on biculturals' context sensitivity, this approach has mainly led to findings of population differences. For example, classic cross-cultural research has shown that East Asians tend to pay more attention to contextual information than North Americans (Masuda & Nisbett, 2001; Nisbett, Peng, Choi, & Norenzayan, 2001). Building on these findings, Asian American

biculturals have also been shown to be more sensitive to context compared to American monoculturals, and this difference has been replicated across various types of context sensitivity (e.g., social context, visual scene perception) using a variety of methods (Goto, Yee, Lowenberg, & Lewis, 2013; Kitayama, Duffy, Kawamura, & Larsen, 2003; Masuda & Nisbett, 2001, 2006). There is also some evidence that Asian Canadians and Asian international students living in Canada, who have experience with both Canadian and East Asian cultures, display intermediate levels of context sensitivity, but results have been mixed as to whether they are less context sensitive than monocultural Asians, as this additive model would predict (Masuda, Wang, Ishii, & Ito, 2012).

The second common way that biculturals have been conceptualized within the additive theory is as cultural frame switchers. In this model, biculturals are seen as chameleons who change themselves according to their current cultural context. Biculturalism is still seen as the sum of mainstream and ethnic culture, but rather than being a static blend of the two, it involves a dynamic engagement of one or the other depending on situational demands (see alternation model from LaFromboise et al., 1993; also Hong, 2009 for review of cultural frame switching). In the case of Asian Americans, they can display typically Asian characteristics in Asian contexts and typically American characteristics in American contexts, rather than being culturally intermediate across situations. Guided by an additive theory of biculturalism, research within this framework has focused on how biculturals differ when engaging one cultural system versus the other. In terms of their context sensitivity, for example, studies of bicultural Asians (e.g., those living in North America and in Westernized areas in Asia) have demonstrated that their context sensitivity increases after priming Asian culture compared to Western culture (Lin & Han, 2009; Lin, Lin, & Han, 2008; Oyserman & Lee, 2008).

These two approaches to studying biculturals have yielded insight into group differences between biculturals and monoculturals, and into the processes that occur within bicultural individuals that allow them to be flexibly influenced by both of their cultures. Yet, these additive models may not adequately represent the whole picture of biculturals' experiences.

Beyond Mainstream + Ethnic Cultures: Process Theory of Biculturalism

The traditional, additive theories of biculturalism focus on the cumulative influence of each culture but do not address how the *process* of negotiating two cultures may affect biculturals. Our research, in contrast, is guided by a process theory of biculturalism which assumes that the way biculturals negotiate their cultures affects their characteristics, beyond the sum of each culture's influence (West, Zhang, Yampolsky, & Sasaki, 2015). In additive theories, the independent influences of Culture 1 and Culture 2 are primary causal factors that result in biculturals' characteristics. Our process theory, in contrast, also includes the processes biculturals use to negotiate their cultures (e.g., cultural frame switching) as causal factors which may uniquely account for certain characteristics for biculturals. For instance, a process model of Chinese Canadians' characteristics might predict that these biculturals draw a certain amount of extraversion from their Canadian culture, and a certain amount of dialectical reasoning from their Chinese culture, and further gains creativity from their experiences of combining their cultures together. In this case, creativity is a characteristic these biculturals develop from a process they use to negotiate their cultures and is not attributable to the influence of either culture alone. Research on bilinguals and biculturals suggest that our process theory of biculturalism, which gives bicultural negotiation processes a causal role, may provide a more thorough understanding of biculturals than past additive models.

To understand the way negotiating two cultures may affect biculturals, it may be informative to review how negotiating two languages affects bilinguals. A large amount of research has associated bilingualism with advantages to different aspects of executive functioning (e.g., attention, memory, cognitive flexibility; see Adesope, Lavin, Thompson, & Ungerleider, 2010 for review). It is most commonly understood that these advantages result from the processes enabling bilinguals to use two languages (e.g., code switching) rather than either of the languages themselves (Adesope et al., 2010; Alladi et al., 2013; Bialystok, 2001; Bialystok, Craik, & Luk, 2012). This understanding of bilingual advantages parallels our theoretical approach to biculturalism and suggests that the processes that biculturals use to negotiate their cultures (e.g., cultural frame switching) may similarly result in lasting psychological changes for biculturals.

Recent biculturalism research increasingly supports this hypothesis. New evidence demonstrates that negotiating multiple cultural systems may confer biculturals with particular cognitive characteristics such as increased creativity, cognitive complexity, and reduced intergroup bias via lower need for cognitive closure (Benet-Martínez, Lee, & Leu, 2006; Tadmor, Galinsky, & Maddux, 2012; Tadmor, Hong, Chao, Wiruchnipawan, & Wang, 2012). Importantly, these benefits seem to arise from actively accessing, comparing, and switching between two cultural knowledge systems (Leung & Chiu, 2010; Leung et al., 2008) when both cultures are valued by the bicultural (Tadmor, Galinsky, & Maddux, 2012) and have been observed in participants of different cultural backgrounds (e.g., American, Israeli, Tadmor, Hong, et al., 2012). A challenge that biculturals constantly face is deciding which cultural system is most appropriate to use. In order to do so, biculturals need to attend to situational cues which carry culturally-relevant information that helps them make this decision. Engaging in this process may be a habitual aspect of biculturals' lives, and may heighten the extent to which biculturals generally pay attention to the

context. Therefore, our present research addresses the hypothesis that biculturals' experiences of negotiating their two cultural systems uniquely foster their context sensitivity.

Context Sensitivity as a Unique Product of Switching Between Cultures

There is already some evidence that biculturalism is linked to marked context sensitivity. Mok and Morris (2012) examined the effects of priming either a global or local processing style on the integration of cultural identities in Asian Americans. Global processing, which involves attending to connections between components and to the big picture (i.e., context sensitivity), is common among East Asians. Conversely, local processing involves considering details independently, and is more characteristic of North Americans (Navon, 1977; Nisbett et al., 2001). Mok and Morris (2012) found that priming global (versus local) processing increased how much Asian Americans felt their two cultural identities were well-integrated – how much they felt “truly” bicultural.

Importantly, an additive theory does not necessarily account for these results. If biculturalism is solely the sum of mainstream and ethnic cultural influences, there is no strong reason to predict that priming a processing style associated with one culture versus the other should lead to differences in the integration of *both* cultural identities. Rather, these results suggest that context sensitivity may be linked to the way two cultures are integrated within the bicultural. Further evidence comes from an unpublished pilot study we conducted prior to the present work. This study's results revealed that the more East Asian Canadians reported integrating their cultural identities, the worse they performed on a perceptual task (i.e., Flanker task) that required ignoring contextual information and focusing only on a target object (West & Sasaki, 2015). Together these studies suggest that the extent to which biculturals integrate their cultures may relate to context sensitivity.

Though past work has provided some support for a relationship between biculturalism and context sensitivity, these studies are limited by their correlational nature. Additionally, the mechanism by which biculturals' experiences may link to context sensitivity has not yet been examined. We posit that effective cultural frame switching requires biculturals to regularly attend to the context, and through the repetitive practice of cultural frame switching, context sensitivity is enhanced for biculturals. The relationship between frame switching and context sensitivity may actually be reciprocal: context sensitivity could increase biculturals' ability to frame switch, while frequently engaging in frame switching could also strengthen context sensitivity. However, our process theory is based on the proposition that the processes biculturals' use to negotiate their cultures can shape their characteristics and skills, so the present work focuses on how cultural frame switching affects context sensitivity. Therefore, the central aim of the present study was to experimentally test whether cultural frame switching increased biculturals' context sensitivity beyond that which could be accounted for by the influence of either culture alone.

Context Sensitivity as a Predictor of Well-being

In addition to elucidating the relationship between context sensitivity and cultural frame switching, the present research explores potential outcomes of context sensitivity in the lives of biculturals. Cultural frame switching may be a central process by which biculturals maintain both of their cultures, and the extent to which biculturals maintain and integrate their cultures has been related to various psychological and social consequences (Berry, 2005; Chen, Benet-Martínez, & Bond, 2008; Downie, Koestner, ElGeledi, & Cree, 2004). LaFromboise and colleagues (1993) argued that biculturals' ability to alternate between their cultures, or think and behave in culturally appropriate ways depending on the context, helps them maintain competency in both cultures (see also Chen, Benet-Martínez, & Bond, 2008; David, Okazaki, & Saw, 2009). Additionally, there is

evidence that biculturals who perceive themselves as more capable of functioning within both their cultures reap the benefits of better psychological well-being, including greater life satisfaction, and lower depression and anxiety (David, Okazaki, & Saw, 2009). Thus, it appears that cultural frame switching is an essential skill for biculturals, and, as previously argued, effective switching relies on biculturals' attention to context. Biculturals who are more context sensitive may therefore be more effective at maintaining their two cultures, and may experience benefits to social and psychological well-being.

Study Overview

The present study addressed two hypotheses: 1) cultural frame switching increases biculturals' context sensitivity, and 2) greater context sensitivity predicts better social and psychological well-being for biculturals. The study was conducted in two parts with the same Chinese Canadian participants. Part One aimed to experimentally test our hypothesis that cultural frame switching, beyond the influence of either culture alone, increases context sensitivity amongst biculturals. Based on past findings that East Asian biculturals' context sensitivity increases after exposure to primes associated with East Asian culture versus Western culture (Lin & Han, 2009; Lin et al., 2008; Oyserman & Lee, 2008), we predicted that participants primed with Chinese culture would show more context sensitivity than those primed with Canadian culture. We further anticipated, however, that participants primed with switching between Chinese *and* Canadian cultures would demonstrate the greatest context sensitivity.

Part Two of the study was conducted at least one day after Part One, in order to avoid any residual effects of the Part One priming manipulation. The objective of Part Two was to test whether individual differences in context sensitivity are associated with the psychosocial well-being of biculturals. As such, we measured individual differences in participants' context

sensitivity and in various aspects of their well-being. We anticipated that greater context sensitivity would predict higher well-being.

Method

Part One

Participants. One hundred and fifty-five Chinese Canadian undergraduates completed the study for course credit. Following random assignment to the three priming conditions, 48 participants were in the cultural frame switching condition, 53 in the Canadian control condition, and 53 in the Chinese control condition. To be eligible for the study, participants indicated that either they or at least one parent was Chinese. The sample consisted of 91 females and 63 males between ages 17 and 56 ($M_{\text{age}} = 20.73$, $SD_{\text{age}} = 4.95$). Seventy-one participants were born outside of Canada, and 82 were born in Canada with at least one parent born in China. One participant did not report their sex, age, or generational status, and one other did not report their generational status.

Materials and procedure. Participants were informed that the purpose of the study was to investigate how Chinese Canadians process images and themes. The study took place in two parts, between one day and 29 days apart ($M = 5.39$ days, $SD = 4.65$ days). Both parts took place in private testing rooms in a psychology laboratory.

Experimental manipulation.

Priming procedure. We adapted our priming procedure from past methods which primed only one culture per condition (Hong, Morris, Chiu, & Benet-Martínez, 2000), modifying the experimental condition to involve switching between two cultures in order to simulate the process of shifting activation from one cultural knowledge system to another (i.e., cultural frame switching). Participants were randomly assigned to one of three priming conditions: 1) cultural

frame switching (CFS), in which participants alternated between primes related to Chinese or Canadian cultures; 2) Chinese control, in which participants alternated between Chinese and neutral primes; and 3) Canadian control, in which participants alternated between Canadian and neutral primes. We included a switching aspect in the two control conditions in order to isolate the effects of *cultural* frame switching specifically by ruling out the possibility that switching between any two schemas would increase context sensitivity. Clouds were used as a neutral target for the control conditions based on the original version of this procedure (Hong, Morris, Chiu, & Benet-Martínez, 2000) and because they are a pan-cultural and dynamic target. We informed participants that we had randomly assigned them two themes to think about: Canadian and Chinese cultures in the CFS condition, Chinese culture and clouds in the Chinese control, and Canadian culture and clouds in the Canadian control. Priming involved two phases: viewing images related to the two themes, and writing descriptive statements about the two themes. In the viewing phase, participants saw a series of images related to each theme, which alternated between the two themes (see Appendix A for images). For example, participants in the Canadian control condition would see an image of a Tim Horton's, then a cloud, then hockey, then another cloud, etc. The viewing phase included 15 images per theme (30 total), presented for five seconds each for a total of two minutes and fifteen seconds. After the viewing the entire set of images, participants began the writing phase. In the writing phase, participants wrote statements describing each theme in their own words, alternating between the two themes. For example, participants in the CFS condition would see the prompt "Canadian culture..." and write a statement, then see the prompt "Chinese culture..." and write a statement, then see another "Canadian culture..." prompt, etc. until they wrote five statements about each theme. The primes were delivered via Qualtrics on a desktop computer while the experimenter waited outside the testing room.

Manipulation check. After the priming procedure, participants were given four manipulation check items ($\alpha = .84$) intended to gauge whether cultural frame switching was activated more in the experimental condition compared to control conditions (see Appendix B). Participants read statements regarding their perceived ability to switch between Canadian and Chinese cultures in terms of behaviour, thinking, and the ease/difficulty of switching (e.g., “I am able to switch between thinking in a Chinese way and thinking in a Canadian way”). They then indicated their extent of agreement with each statement on a 7-point Likert scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*).

Context sensitivity. Next, participants completed two tasks measuring distinct but complementary forms of context sensitivity. The Framed Line Test involved attending to or ignoring the relationship between an object and its context, while the Change Blindness task involved attending to focal versus contextual features in a scene.

Framed line test (FLT; Kitayama et al., 2003). In this paper-and-pencil task, participants viewed a square with a line inside, and then on a separate page, reproduced the line in a new square that may have differed in size from the original square. The experimenter used a stopwatch to give participants five seconds for each of the viewing and drawing phases. The FLT included two types of tasks, an absolute task and a relative task, given in counterbalanced order (see Figure 1 for examples). The *absolute* task involved drawing a line with the same *absolute* length as the original line regardless of the size of the new square; accuracy on this task required ignoring the context, and thus, greater context sensitivity interfered with performance. The *relative* task involved drawing a line with the same *relative* proportion to the new square as the original line and square; accuracy on this task required attending to context, and thus was facilitated by context sensitivity. Participants completed three practice trials followed by six experimental trials for each

task. Mean accuracy between the new and original lines was computed separately for the two tasks. The FLT was administered twice to each participant, once before and once after priming, in order to assess a change from baseline levels of context sensitivity. We scored participants' accuracy by measuring the lines (in millimeters) that participants drew and comparing their responses to the correct line lengths, calculating the absolute error of participants' responses. We then subtracted each participants' post-priming mean error from their pre-priming mean error to obtain difference scores for the two tasks that were lower (i.e., more negative) for participants whose accuracy improved more following priming.

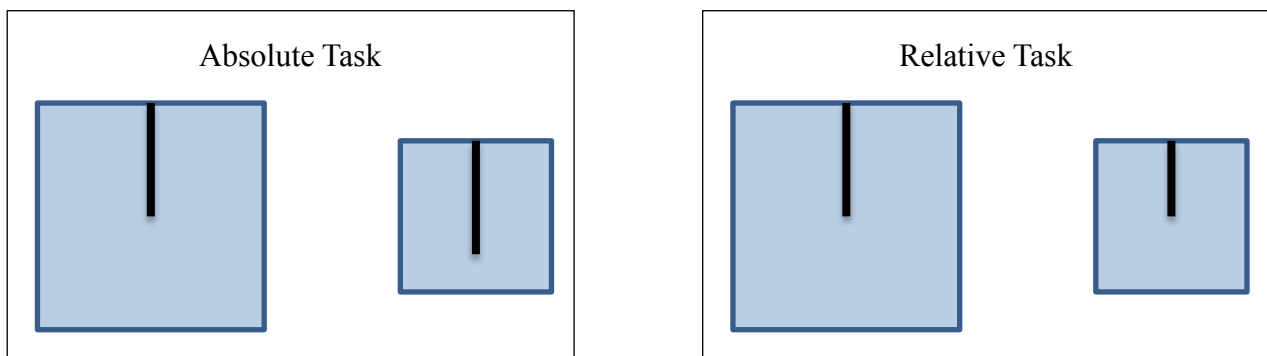


Figure 1. Examples of stimuli from the absolute and relative tasks of the Framed Line Test. Within each example, the square on the left represents the original and the square on the right depicts a correct response according to the type of task.

Change blindness (Masuda & Nisbett, 2006). This computer task involved viewing paired images that repeatedly alternated, and finding the difference between the images of each pair. There were 30 pairs in total, with half involving differences in a focal feature and half involving differences in a contextual feature (see Figure 2 for examples). The task was administered using DirectRT. Each trial (30 total) consisted of an alternating pair of images with each image presented for 560 ms and a grey mask visible for 80 ms between them. Participants pressed the spacebar when they found the difference and then reported the difference in an open-response box.

The next trial proceeded after the participants reported the difference or after one minute elapsed from the start of the trial. Data were analyzed only for trials in which participants correctly identified the difference between the images ($M = 95.84\%$, $SD = 4.63\%$), in accordance with prior use of this task (Masuda & Nisbett, 2006). The change blindness task was administered once following priming in counterbalanced order with the FLT.

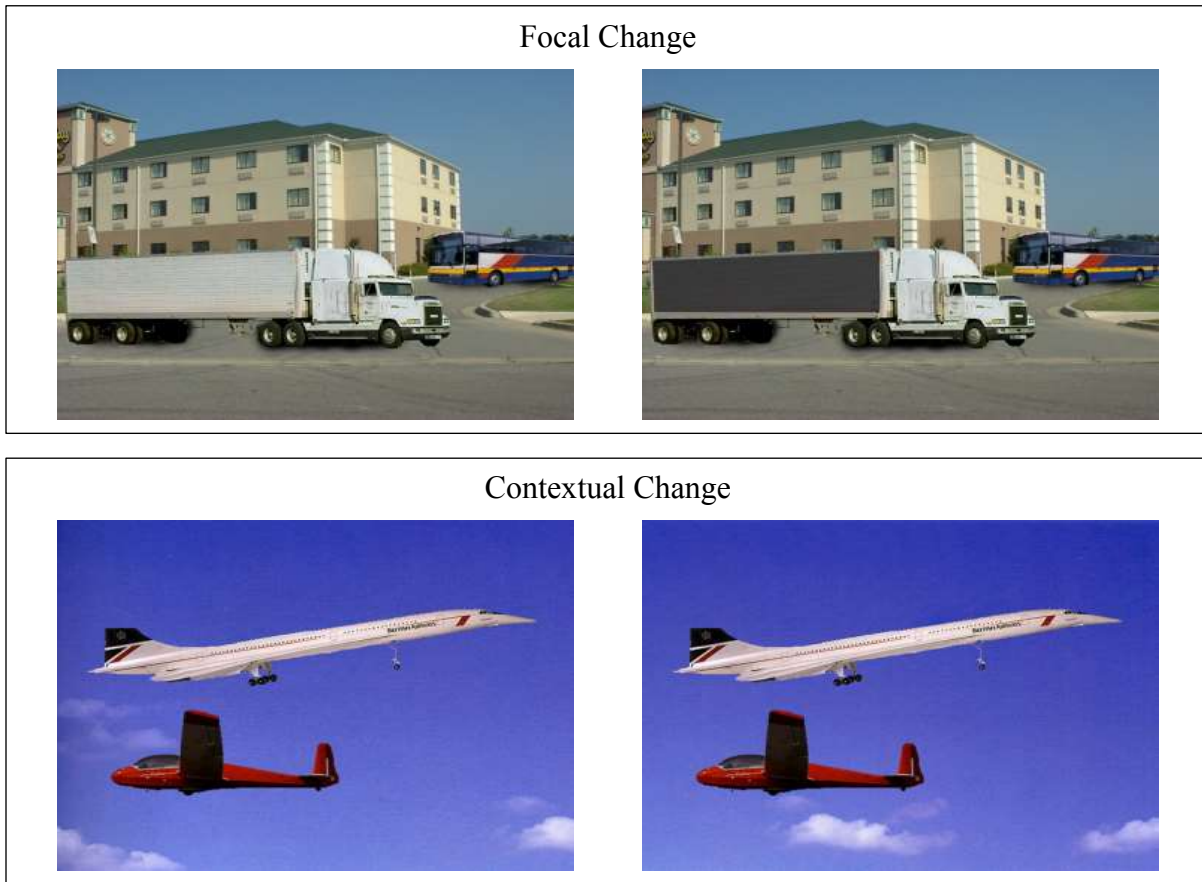


Figure 2. Examples of stimuli for focal and contextual changes on the change blindness task. In the focal change example, the colour of the truck has is different between the images. In the contextual change example, the position of the clouds is different between the images.

Mood and demographics. Following both context sensitivity measures, participants returned to Qualtrics to complete the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988), a 20-item measure of positive and negative emotions on five-point scales

ranging from 1 (*Very slightly or not at all*) to 5 (*Extremely*). This scale was included to check whether the priming manipulation systematically affected participants' mood, which could have conflated interpretations of the results. Finally, participants completed a demographic questionnaire assessing their cultural background, immigration status, age, gender, and socioeconomic status.

Part Two

Participants. One hundred and thirty-nine Chinese Canadian undergraduates from Part One returned to complete Part Two for additional course credit. The sample for Part Two consisted of 83 females and 55 males, with ages between 17 and 56 ($M_{\text{age}} = 20.88$, $SD_{\text{age}} = 5.19$). Sixty-six participants were born outside of Canada, and 71 were born in Canada with at least one parent born in China. As in Part One, one participant had not reported their sex, age, or generational status, and one other had not reported their generational status.

Materials and procedure.

Context sensitivity. Participants completed two additional measures of context sensitivity to assess individual differences without the influence of the Part One experimental manipulations.

Flanker task (Eriksen & Eriksen, 1974). This inhibition task required participants to ignore distracting contextual stimuli and focus on a focal object. The task was administered using E-prime 2.0 and two computer mice, one on either side of the keyboard. Participants clicked either the left or right mouse to indicate the direction of a target arrow presented in the center of the screen. During control trials, the target arrow either appeared alone or was “flanked” by neutral diamond shapes. During experimental trials, the target arrow was flanked by peripheral arrows that were either compatible (facing the same direction), or incompatible (facing the opposite direction) with the target arrow (see Figure 3 for examples). The position of the target arrow varied between

the center of the flanking shapes (i.e., diamonds or arrows) and towards the left or right, but always had at least one flanking shape on each side. The control trials and the experimental trials were each preceded by 10 practice trials. Both accuracy and response time were recorded, and the difference between compatible and incompatible trials was computed. Participants are typically faster and more accurate on compatible versus incompatible trials, a phenomenon called the flanker compatibility effect (FCE; Miller, 1987). FCEs, computed separately for reaction times and accuracy, refer to the difference between compatible and incompatible trials. Thus, FCEs increase as a function of attention to the flanking arrows (Lin & Han, 2009; Miller, 1987). Participants who are more context sensitive attend more to flanking arrows, which interferes more with performance on incompatible trials and results in larger FCEs (Lin & Han, 2009).

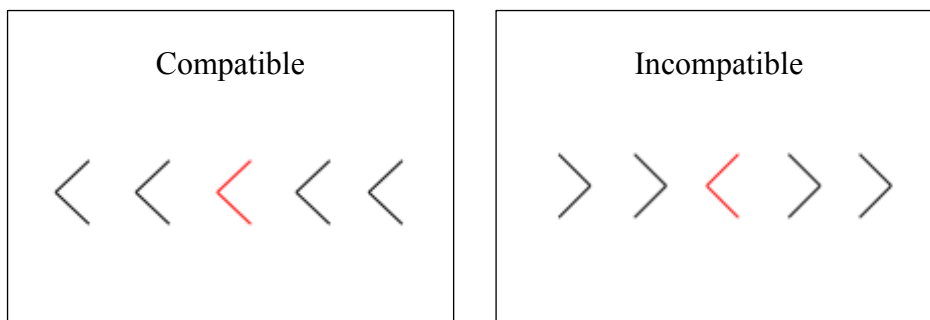


Figure 3. Examples of compatible and incompatible experimental trials on the Flanker task.

Analysis-Holism Scale (AHS; Choi, Koo, & Choi, 2007). This scale assessed the general tendency towards a holistic cognitive style, involving context sensitivity and dialectical thinking, versus an analytic cognitive style, involving context insensitivity and formal logic (see Appendix C). Participants responded to 24 statements using 7-point Likert scales ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The AHS measured general holism based on all items ($\alpha = .61$), and includes four factors measured by items grouped into subscales: 1) locus of attention, the degree to which an object is attended to as independent from or embedded within its context (e.g.,

“The whole is greater than the sum of its parts”); 2) causality, the complexity and degree to which causal explanations include contextual influences (e.g., “Everything in the world is intertwined in a causal relationship”); 3) attitude toward contradiction, the equal acceptance of contradicting views (i.e., naïve dialecticism) and desire for compromise (e.g., “It is more desirable to take the middle ground than to go to extremes”); and 4) perception of change, predictions of change (versus stability) and non-linearity (versus linearity) of how changes occur (e.g., “Current situations can change at any time”). Scores in line with a holistic style were taken to reflect greater context sensitivity.

Well-being. Participants also completed several scales assessing different aspects of their social and psychological well-being. The purpose of measuring well-being was to test the hypothesized relationship between greater context sensitivity and higher well-being.

Bicultural Self-efficacy Scale (BSES; David et al., 2009). This scale contained 26 items that assessed the extent to which biculturals were competently integrated into both their mainstream and heritage cultures. Bicultural competency is composed of 6 underlying factors – strength of social ties, ability to communicate effectively, positive attitudes, cultural knowledge, “role repertoire” or the ability to fit in, positive beliefs about biculturalism – all in terms of both mainstream and heritage cultures. Statements in each item were adapted to refer specifically to mainstream Canadian and Chinese cultures (e.g., “I am confident that I can learn new aspects of both Canadian culture and Chinese culture”). Participants indicated their agreement with these statements on 9-point scales ranging from 1 (*Strongly disagree*) to 9 (*Strongly agree*). The full set of items were internally consistent, $\alpha = .94$.

Satisfaction with Life Scale (Suh, 2002). This cross-culturally validated scale assessed participants’ general satisfaction with life, including important others’ perceived approval. The

scales' 7 items ($\alpha = .86$) included statements such as "If I could live my life over, I would change almost nothing" and "I feel that I live up to the expectations of people close to me." Participants recorded their agreement with such statements using 9-point Likert scales ranging from 1 (*Very strongly disagree*) to 9 (*Very strongly agree*).

Perceived Stress Scale (PSS; Cohen & Williamson, 1988). In completing the PSS, participants indicated how often in the past month they experienced situations that caused stressful feelings such as uncontrollability and unpredictability. The scale posed 10 questions (e.g., "In the last month, how often have you been able to control irritations in your life?") to which participants responded using 5-point scales ranging from 0 (*Never*) to 4 (*Very often*). The internal consistency of the items was good, $\alpha = .87$.

Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982). The BSI measured the presence of various psychological and physical symptoms along 9 dimensions (e.g., somatization, depression, hostility). Participants indicated the extent to which 53 symptoms have "distressed or bothered" them during the past 7 days (e.g., "trouble falling asleep"). Responses were recorded on 5-point scales ranging from 0 (*Not at all*) to 4 (*Extremely*). The scale items demonstrated very high internal consistency ($\alpha = .97$).

Beck Depression Inventory II (BDI-II; Beck, Steer, & Brown, 1996). This scale assessed the presence and severity of depressive symptoms. Each of the 21 items ($\alpha = .91$) addressed a symptom of depression, and was composed of four statements that described escalating levels of severity. Participants selected which statement in each item best described their situation over the past two weeks. For instance, for the item assessing feelings of sadness, participants could select "I do not feel sad," "I feel sad much of the time," "I am sad all the time," or "I am so sad or unhappy that I can't stand it." Items were coded from 0 to 3 with increasing severity.

Interpersonal Support Evaluation List – Short Form (Peirce, Frone, Russell, & Cooper, 1996). This scale assessed the extent to which participants believe that various forms of social support (e.g., instrumental, emotional, self-affirming) are readily available to them. Participants read 12 statements regarding the availability of social support and indicated their extent of agreement with the statements using 4-point response scales ranging from 1 (*Definitely False*) to 4 (*Definitely True*). The items showed good internal consistency, $\alpha = .86$.

Results

Part One

Manipulation check. We anticipated that participants in the CFS condition would report the highest ability to frame switch, followed by those in the Chinese and then Canadian conditions. Counter to this expectation, a one-way ANOVA revealed that participants' self-reported frame switching ability did not differ significantly between the CFS ($M = 4.80$, $SD = 1.25$), Chinese ($M = 5.00$, $SD = 1.25$), and Canadian ($M = 4.84$, $SD = 1.23$) conditions, $p = .69$, and pairwise comparisons showed all $ps > .42$.

Positive and negative affect. One-way ANOVAs on the positive and negative affect subscales of the PANAS ruled out any affective differences between priming conditions. The differences in positive affect between the CFS ($M = 2.67$, $SD = 0.86$), Chinese ($M = 2.64$, $SD = 0.72$), and Canadian ($M = 2.50$, $SD = 0.86$) conditions were not significant, $p = .53$. The CFS ($M = 1.33$, $SD = 0.38$), Chinese ($M = 1.37$, $SD = 0.52$), and Canadian ($M = 1.42$, $SD = 0.45$) conditions also did not significantly differ in negative affect, $p = .65$.

Context sensitivity.

Framed line test. Difference scores between participants' pre- to post-priming accuracy were analyzed using a 2×3 mixed-design ANOVA with task type (relative vs. absolute) as a

within-subjects factor, and priming condition (CFS vs. Chinese vs. Canadian) as a between-subjects factor. The model also included FLT task order (absolute vs. relative first) and post priming task order (change blindness vs. FLT first) as covariates to control for any order effects that may have unintentionally impacted participants' performance. Within this model, there was no significant main effect of priming condition, $F(2, 142) = 1.57, p = .21, \eta^2 = .02$. However, there was a main effect of task type such that greater reductions in error were seen on the absolute task ($M_D = -3.84$ mm, $SD = 8.16$ mm) compared to the relative task ($M_D = -1.70$ mm, $SD = 6.34$ mm), $F(1, 142) = 6.26, p = .013, \eta^2 = .04$, and this main effect was qualified by a marginal two-way interaction between task type and priming condition, $F(2, 142) = 2.66, p = .07, \eta^2 = .03$. Examining the simple effects showed a significant difference between conditions in the absolute task, $F(2, 142) = 2.98, p = .05, \eta^2 = .04$. Pairwise LSD comparisons reveal that on the absolute task, participants in the Canadian condition ($M_D = -5.86$ mm, $SE = 1.10$) were significantly more accurate after priming than those in the Chinese condition ($M_D = -2.55$ mm, $SE = 1.09$), $p = .03$, and those in the CFS condition ($M_D = -2.56$ mm, $SE = 1.27$), $p = .04$, while the CFS and Chinese conditions did not differ, $p = .99$. In the relative task, the differences between the Canadian ($M_D = -1.41$ mm, $SD = 5.88$ mm), Chinese ($M_D = -2.52$ mm, $SD = 7.93$ mm), and CFS ($M_D = -1.09$ mm, $SD = 8.32$ mm) conditions were not significant, $p = .48$.

Change blindness. The amount of time participants took to identify the changes between images was analyzed using a 2×3 mixed-design ANOVA with type of change (contextual vs. focal) as a within-subjects factor and priming condition (CFS vs. Chinese vs. Canadian) as a between subjects factor. We also included post priming task order (change blindness vs. FLT first) as a covariate within the model so as to control for any unintentional order effects. Reaction times (RTs) were analyzed only for trials in which participants correctly reported the change between the

two images. There was a significant main effect of change type such that participants across conditions were faster at finding focal ($M = 12.64$ s, $SD = 5.70$ s) compared to contextual ($M = 15.09$ s, $SD = 6.11$ s) changes, $F(1, 147) = 61.75, p < .001, \eta^2 = .04$. Priming condition did not significantly affect RTs overall, $F(2, 147) = 0.50, p = .61, \eta^2 = .00$. Contrary to our hypotheses, the two-way interaction between type of change and priming condition, controlling for post priming task order, was not significant, $F(2, 147) = 0.01, p = .99, \eta^2 = .00$, see Table 1 for descriptive statistics.

Table 1

Descriptive Statistics for Change Blindness Task by Change Type (Contextual vs. Focal) and Priming Condition (CFS vs. Chinese vs. Canadian)

	<i>n</i>	<i>M</i> (ms)	<i>SD</i> (ms)
Contextual Changes			
CFS	48	14527.28	6364.52
Chinese	52	15016.40	5943.34
Canadian	53	15670.42	6104.79
Focal Changes			
CFS	48	12129.51	5522.77
Chinese	52	12579.08	5760.23
Canadian	53	13170.42	5846.13

Part Two

Flanker task. Flanker compatibility effects (FCEs) represent the cost to performance associated with incompatible versus compatible trials, with greater FCEs indicating that more

attention was given to the flanking arrows (i.e., greater context sensitivity). FCEs were computed for accuracy and RT by taking the mean differences between compatible and incompatible trials. We then tested Pearson's correlations for FCEs for accuracy ($M = 7.07\%$, $SD = 8.72\%$) and RT ($M = 53.63$ ms, $SD = 35.88$ ms) with each of the well-being measures (see Table 2 for full results). Correlations between the FCEs and well-being were not significant, $r_s < .14$, $p_s > .12$.

Table 2

Pearson's Correlations for Flanker (FCE) with Well-being

	FCE for Accuracy	FCE for RT
Bicultural Self-Efficacy	-.03	-.00
Satisfaction with Life	.13	-.12
Perceived Stress	-.04	.06
Symptoms (Brief Symptoms Inventory)	-.03	-.05
Interpersonal Support	-.04	.10
Depression (Beck's Depression Inventory)	-.04	.03

Analysis Holism Scale. Mean scores were calculated for the full Analysis Holism Scale (AHS; holism), and the four subscales: locus of attention, causality, attitude toward contradiction, and perception of change (see Table 3 for descriptive statistics). We then tested the Pearson's correlations for the overall scale and subscales with each of the well-being measures (see Table 4 for full results). Holism, as measured by the full scale, significantly correlated with greater

bicultural self-efficacy, $r(134) = .20, p = .02$. Other correlations between holism and well-being were not significant, $r_s < .12, p_s > .17$. In terms of the causality subscale, greater context sensitivity in considering causal relationships significantly predicted higher satisfaction with life, $r(137) = .27, p = .002$, and greater bicultural self-efficacy, $r(136) = .17, p = .04$, and marginally predicted lower perceived stress, $r(137) = -.15, p = .09$. More acceptance of contradiction (i.e., naïve dialecticism), as measured by the attitude toward contradiction subscale, was marginally related to greater satisfaction with life, $r(137) = .16, p = .06$, and bicultural self-efficacy, $r(136) = .15, p = .09$. For the perception of change subscale, greater predictions of change (versus stability) and anticipating non-linear change correlated with higher depression, $r(137) = .20, p = .02$, lower satisfaction with life, $r(137) = -.19, p = .03$, more perceived stress, $r(137) = .17, p = .04$, and more self-reported symptoms, $r(137) = .15, p = .07$. Correlations between the locus of attention subscale with well-being were not significant, $p_s > .18$ (see Table 4).

Table 3

Descriptive Statistics for Analysis Holism Scale and Its Subscales (Attention, Causality, Contradiction, and Change)

	<i>M</i>	<i>SD</i>
Analysis Holism Scale	4.85	0.42
Attention	4.68	0.85
Causality	5.24	0.73
Contradiction	4.76	0.78
Change	4.66	0.81

Table 4

Pearson's Correlations for Analysis Holism Scale with Well-being

	Analysis				
	Holism Scale	Attention	Causality	Contradiction	Change
Bicultural Self-Efficacy	.20*	.00	.17*	.15 [†]	.13
Satisfaction with Life	.12	.11	.27**	.16 [†]	-.19*
Perceived Stress	.01	-.07	-.15 [†]	-.03	.17*
Symptoms (BSI)	.06	-.05	-.01	.00	.15 [†]
Interpersonal Support (ISEL)	.03	-.07	.00	.10	.07
Depression (BDI)	.01	-.11	-.04	-.05	.20*

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$

Exploratory Analyses

After finding that the priming manipulation failed to affect either the manipulation check scale or the context sensitivity measures in Part One, we conducted exploratory analyses substituting the manipulation check scale as a self-reported measure of participants' ability to culturally frame switch in order to assess whether individual differences in cultural frame switching ability predicted context sensitivity. We included both the Part One and Part Two

measures of context sensitivity because neither had been affected by the priming manipulation and therefore may feasibly indicate pre-existing differences in participants' context sensitivity.

Change blindness. We tested participants' cultural frame switching ability, as measured by the manipulation check scale, as a predictor of the time it took them to find contextual and focal changes. Partial correlations were computed separately for contextual and focal trials, controlling for post priming task order (change blindness vs. FLT first after priming). Self-reported frame switching ability ($M = 4.87$, $SD = 1.24$) was significantly correlated with RTs on contextual and focal trials such that participants who were better able to frame switch were faster at finding contextual changes, $r(149) = -.22$, $p = .007$, and focal changes, $r(149) = -.18$, $p = .03$.

Framed line test. In order to best capture baseline individual differences in FLT performance, we examined only the pre-priming administration of the FLT in relation to frame switching ability. Performance was measured by the mean absolute difference between participants' responses and the correct responses, with higher scores indicating more error, or worse performance. Partial correlations between participants' reported frame switching ability and FLT error were calculated separately for the relative task ($M = 7.83$ mm, $SD = 6.67$ mm) and the absolute task ($M = 14.94$ mm, $SD = 8.86$ mm), controlling for FLT task order (relative vs. absolute first). Results failed to reveal a significant relationship between the ability to frame switch and FLT error on either the relative task, $r(150) = .13$, $p = .11$, or absolute task, $r(150) = -.01$, $p = .90$.

Flanker task. We examined the relationship between participants' ability to culturally frame switch and their FCEs in terms of accuracy and RT, with greater FCEs indicating worse performance and greater context sensitivity. Frame switching ability was marginally correlated with FCEs for accuracy, in that greater ability to frame switch was associated with greater FCEs

(i.e., more context sensitivity), $r(135) = .16, p = .07$. Frame switching ability was not significantly related to FCEs for RT, $r(135) = -.09, p = .32$.

Analysis Holism Scale. We computed correlations for frame switching ability with overall holism and the four AHS subscales: locus of attention, causality, attitude toward contradiction, and perception of change. Participants' ability to frame switch was marginally correlated with more dialectical views of contradiction, $r(137) = .14, p = .10$, but did not correlate with overall holism or the other subscales of the AHS, $ps > .30$.

Discussion

This study investigated two sequential hypotheses: first, that cultural frame switching would increase biculturals' context sensitivity beyond the influence of either culture alone, and second, that greater context sensitivity would predict higher well-being for biculturals.

The results were generally unresponsive of our first hypothesis, as we failed to observe the predicted effect of priming cultural frame switching on biculturals' subsequent context sensitivity using the experimental design in Part One of this study. For instance, though the cultural frame switching condition did evoke worse performance on the absolute task of the Framed Line Test (i.e., more context sensitivity) compared to the Canadian control condition as predicted, there were no differences between the cultural frame switching and Chinese control conditions on this task or between any of the three conditions on the relative task. There are multiple possibilities for why we did not observe a consistent causal relationship between frame switching and context sensitivity, which we discuss later in this section. Our exploratory analyses, however, provide some evidence of a relationship between cultural frame switching and context sensitivity. Specifically, these analyses explored the correlations between biculturals' responses on the manipulation check items, which gauged their self-reported ability to switch between their

cultures, and the four different measures of context sensitivity completed in Parts One and Two. Results revealed that for three of the four context sensitivity tasks, biculturals' self-reported ability to frame switch was related to greater context sensitivity. This suggests that the processes biculturals use to negotiate their cultures may in fact be associated with their cognitive and behavioural characteristics.

The relationship between frame switching and context sensitivity may not be as straightforward as we assumed, and certain nuances in the results might provide new information about the complexities of this relationship. For example, on the change blindness task, self-reported frame switching ability was related to faster RTs on focal as well as contextual trials. This calls into question whether the operationalization of context in our study was an accurate representation of context in biculturals' everyday lives. In this study, context generally relied on the differentiation between a focal object and anything else around it, and both object and context were within a visual scene external to the viewing bicultural. In a biculturals' real life, however, context may more typically rely on the differentiation between the bicultural themselves and everything around them, regardless of what is object or background in their external environment. Thus, it may be that frame switching ability predicted context sensitivity to focal and background features of a visual scene because both types of features are normally included in relevant contexts to biculturals, carrying information that indicates when and how biculturals should switch between cultures.

Another nuance in the results was that on the Flanker task, self-reported frame switching ability was marginally associated with context sensitivity only in terms of biculturals' accuracy and not their RTs. There are usually trade-offs between accuracy and RT for cognitive tasks like Flanker, and in our results, it seems that biculturals who frame switch may be more distracted by

contextual information to the detriment of accuracy in identifying central information, but not necessarily at the expense of speed. One possible explanation for this distinction may be that these biculturals, rather than attending to the flankers overtly by shifting their eyes, are attending to the flankers covertly (i.e., without eye movements; Beauchamp, Petit, Ellmore, Ingeholm, & Haxby, 2001; Jonides, 1981). Biculturals, regardless of context sensitivity, may use the same strategy of focusing their eyes only on the target and trying to respond as fast as possible, but context sensitive biculturals may be covertly attending to the flankers, and this contextual information might have affected their accuracy as they moved through the task quickly. Further research on this issue could provide insight into the nature of a possible relationship between cultural frame switching and context sensitivity.

In examining correlations between biculturals' reported ability to frame switch and their responses on the Analysis Holism Scale, we found that frame switching ability was not associated with overall holism or with the factors of holism that seem more directly related to context sensitivity (i.e., locus of attention, causality) but to a factor more typically associated with naïve dialecticism (i.e., attitude toward contradiction). It may be that biculturals' experiences of their own cultural duality may include times when they perceived their two cultures to stand in contradiction yet were both correct in different ways. As biculturals' ability to frame switching increases, thereby allowing them to be more fully immersed within each of their cultures, they might adopt increasingly holistic views of contradiction that acknowledge the merits of opposing viewpoints.

The Part Two results provided some support for our second hypothesis, that biculturals' context sensitivity is related to their well-being. These results were mixed, however, as we failed to detect significant correlations between Flanker task performance and any of the well-being

measures. In contrast, biculturals' responses on the Analysis Holism Scale did correlate with certain aspects of their well-being, though the specifics and sometimes even the direction of this relationship depended on the aspect of the Analysis Holism Scale being investigated with some of these relationships being only marginal in strength. For instance, holism overall was associated with greater bicultural self-efficacy, but not other aspects of well-being. In terms of the Analysis Holism Scale factors, causality and attitude toward contradiction predicted higher life satisfaction, bicultural self-efficacy, and lower stress consistent with our hypothesis, but more holistic perceptions of change related to lower well-being (e.g., depression, stress). The inconsistencies between Analysis Holism Scale factors suggest that different aspects of holism are related to different well-being outcomes in the lives of biculturals. It may be, for example, that while holding more context-sensitive views of causality helps biculturals to be more effective in navigating their cultures, perceiving changes and the future as less linear and predictable detracts from biculturals' well-being.

Methodological Limitations

The results of this study were inconclusive with regard to whether cultural frame switching fosters biculturals' context sensitivity. While the experimental evidence did not support the hypothesis, the correlational exploratory analyses suggest that there may still be a relationship between cultural frame switching and context sensitivity. There are several potential explanations as to why we may have failed to capture a causal effect of cultural frame switching on context sensitivity. We discuss issues surrounding two limitations in particular: manipulating cultural frame switching and measuring context sensitivity.

Even if a causal relationship between cultural frame switching and context sensitivity exists, we may not have evoked this effect because of issues with our frame switching

manipulation. One reason why our manipulation of frame switching may have failed to affect biculturals' context sensitivity could be due to problems with the manipulation check scale and its placement in the experimental procedure. Participants completed the manipulation check items right after priming, before the context sensitivity measures, and doing so may have nullified any effect of the priming procedure in a few ways. First, the manipulation check items could have primed cultural frame switching for participants in all three conditions because the items asked all participants about their ability to switch between their cultures. Responding to the manipulation check scale could have brought all participants up to similar activation levels of frame switching regardless of whether they had been assigned to the cultural frame switching, Canadian control, or Chinese control conditions. The high face validity of the scale may have contributed to this unintended effect. Second, in completing the manipulation check, participants may have focused on stable levels of their ability to switch between their cultures in real life, rather than limiting the scope of their responses to how they currently felt, despite being instructed to do so. For biculturals who don't normally use frame switching to negotiate their cultures, or for those who don't do so easily, reflecting on their ability to frame switch in general may have counteracted the intended priming effects. This explanation, that the manipulation check scale was inadvertently tapping stable individual differences in frame switching ability, could be consistent with the possible relationship between cultural frame switching and greater context sensitivity suggested by the exploratory findings of some correlations between the manipulation check scale (i.e., self-reported frame switching ability) and context sensitivity measures.

A second reason why our manipulation may not have affected context sensitivity is because the priming procedure may have failed to activate cultural frame switching as intended. Though our priming procedure has face validity and is based on established cultural priming

methods, it may not accurately simulate cultural frame switching the way it actually occurs for biculturals. For one, in the real world cultural frame switching is probably most often social in nature. The purpose of frame switching is to enable biculturals to function effectively in multiple social environments that change in terms of dominant culture. Doing so enables biculturals to fit in and maintain social ties to important people within both of their cultural in-groups. As such, the process of cultural frame switching, from impetus to consequence, may be inherently social for biculturals. Our priming procedure contained little in terms of a social component – only a few of the images depicted people in cultural settings, and the writing task did not require reflection on social aspects of the two cultures. It is possible that a manipulation involving a clear social component may have more closely resembled real cultural frame switching and had the information necessary to activate this process in our bicultural participants. Another way our priming procedure may have lacked external validity is that the participants' role in the frame switching may have been too passive. When biculturals frame switch in real life they change many aspects of themselves (e.g. cognitive style, values, behaviour) according to changing cultural contexts, and this may at least partly be an active and purposeful process (Doucerain et al., 2013; Perunovic et al., 2007). Though previous priming procedures have used the viewing of cultural icons and writing about cultures successfully in order to prime a single culture, it may be that a more active procedure is necessary to evoke frame switching between two cultures. Therefore, our priming procedure may have been too passive and not socially relevant enough to activate cultural frame switching in the way we intended.

Beyond the possible issues with our manipulation, we may not have observed an effect of frame switching on context sensitivity because of the way we operationalized and measured context sensitivity. The context sensitivity tasks we used may not have tapped into the type of

context sensitivity that biculturals build through cultural frame switching. Both the change blindness and Framed Line Test are limited to measuring context sensitivity in the form of visual attention – change blindness gauges which aspects of a scene receive attention (object versus background), and Framed Line Test assesses attention to an object in relation to or independent of its background. While such visual attention tasks have previously been used to show differences in context sensitivity when comparing cultures, this may not be the same form of context sensitivity that biculturals draw on when navigating their two cultures. The pattern of results in Part Two of the present study may support this interpretation. In terms of the Part Two context sensitivity measures, Flanker conforms to this same reliance on visual attention by assessing how well you can ignore context and focus solely on an object. In comparison, the Analysis Holism Scale assesses multiple forms of context sensitivity that may be broader and more complex than just visual attention (e.g., holism, causal attributions). The Part Two results suggested that the Analysis Holism Scale but not Flanker task may be related to well-being, thus we may have to carefully reconsider which forms of context sensitivity are relevant to biculturals' lives. Notably, out of the Analysis Holism subscales, significant results were not observed for the locus of attention subscale which theoretically maps most closely onto a visual attention form of context sensitivity. We instead saw that the causality factor was related to multiple well-being outcomes. Importantly, the causality factor represents a form of context sensitivity that involves the acknowledgment of complex external influences on an actor/event and may have broader reaching implications for how biculturals understand their own behaviour and that of others around them.

Additionally, our context sensitivity measures may have lacked external validity because the type of context sensitivity that biculturals build through cultural frame switching may be inherently social. Though past research has reliably used non-social measures of context sensitivity

to demonstrate cultural differences (e.g., Kitayama et al., 2003; Masuda & Nisbett, 2006), it is possible that the contextual information in real life that is most salient and impactful to biculturals comes from the people they interact with rather than the environmental features of a situation. For example, when meeting with a Canadian friend in a Chinese restaurant, the fact that the friend is Canadian may convey more pertinent information and act as a stronger cue to a bicultural to switch into a Canadian frame than the Chinese cultural setting of the restaurant would be to switch into a Chinese frame. In Part One of the current study, neither of the context sensitivity tasks presented social information and this may have been why they were not affected by the cultural frame switching manipulation.

A similar limitation is that biculturals' sensitivity may be restricted to culturally relevant contextual information and not generalize to other types of contextual information. Biculturals may not attend more to everything about a situation, only the features that typically carry cues as to which cultural frame to switch to. For example, if trying to notice the change between two visual scenes involving a building with a flag flown on top, a bicultural may not notice a window change from open to closed but could notice that the flag has changed from Canadian to Chinese. Perhaps we may have observed an effect of cultural frame switching on context sensitivity had the context sensitivity tasks involved culturally relevant contextual information.

Implications for Theories of Biculturalism

Despite the mixed results and limitations of the current study, there may be at least a few interesting findings that bear on the relative merits of process versus additive theories of biculturalism. In general, the results seem to favour a process theory more so than past additive models. The Part Two results, for example, provided some challenge to the predictions of an additive conceptualization of biculturalism. Previous cross-cultural research has often shown that

East Asian cultures, on average, report lower well-being than Western cultures (Diener, Suh, Smith, & Shao, 1995; Diener, Oishi, & Lucas, 2003). It is also well established that these cultures tend to differ in cognitive style, with East Asians adopting a holistic style that involves, in part, greater context sensitivity, and North Americans adopting an analytic style with less context sensitivity (Masuda & Nisbett, 2001; Nisbett et al., 2001). Therefore, in considering the possible influence of Chinese Canadians' cultures in this study, an additive theory of biculturalism would focus on Chinese culture's tendency toward higher context sensitivity and lower well-being, and Canadian culture's tendency toward lower context sensitivity and higher well-being. In contrast, a process theory of biculturalism emphasizes the processes biculturals use to negotiate their two cultures, and based on this we proposed that context sensitivity facilitates biculturals' ability to effectively navigate their cultures and hypothesized that context sensitivity would predict higher rather than lower well-being for our Chinese Canadian biculturals. The results of Part Two generally showed that more holism correlated with higher well-being, counter to predictions from an additive theory and instead consistent with a process model. Overall holism and multiple factors of the Analysis Holism Scale were associated with greater well-being, suggesting that holism, and certain aspects of holism in particular, may play an important role in biculturals' lives, potentially fostering their well-being. Only one factor, perceptions of change, followed the predictions of an additive theory by showing more holistic thinking to be associated with lower well-being. It remains unknown, however, why this factor alone conforms to additive predictions. Rather than being an additive outcome of participants' cultural influences, it may be that holding a holistic view of change has some uniquely detrimental effect in biculturals' negotiation of their cultures. For instance, viewing the future as unpredictable may go along with a perceived lack of control over one's life, which may undermine biculturals' self-efficacy and dissuade them from

actively trying to adapt to their changing cultural environments. This interpretation would support a process over additive theory of biculturalism. Further research into the nuances of how different aspects of context sensitivity might impact biculturals' well-being would help determine whether this relationship is best captured by additive or process theories.

Future Directions for Research

The results of this study provoke numerous possibilities for future research. In light of the possible methodological limitations outlined previously, we can reconsider and revise certain procedures and measures used here. For example, we plan to adapt our priming manipulation to include a stronger social component and require more active switching (e.g., describing actual experiences of switching between cultures). Pre-testing this adapted procedure with the manipulation check scale in order to check its functionality may help us avoid the issues we faced here surrounding the placement of the manipulation check scale in the study proper. In a revised version of this study, we could also replace or modify the context sensitivity measures to include more socially and culturally relevant stimuli in order to increase external validity.

Beyond fine tuning the methods in a replication of the present study, we also plan to delve further into the relationships suggested by these results. Part Two of this study provided some support that biculturals' context sensitivity predicts their well-being. In all likelihood, this relationship has multiple intermediating steps as well-being seems a distal potential consequence of context sensitivity. One possible mediator is social connectedness – biculturals who are more context sensitive may adapt themselves better to their cultural environments, which allows them to maintain stronger social connectedness to each culture, and it is this connectedness to their cultures that fosters their well-being (Berry, 2005; David et al., 2009). In future studies, we will

experimentally test a mediated relationship between context sensitivity, social connectedness, and well-being in biculturals.

Within its largely exploratory design, the present study also used a mix of explicit and implicit methods for the two main variables of interest, cultural frame switching and context sensitivity. For example, our cultural frame switching manipulation involved first exposing participants to images that were implicitly associated with Canadian or Chinese culture, and then getting participants to explicitly engage with these cultures by writing their own descriptions of each culture. Here we treated the writing phase as a part of the priming procedure, consistent with cultural priming methods (Hong et al., 2000), and did not analyze the content of participants' written statements, but future research may examine whether prior implicit frame switching (via images) might affect subsequent explicit frame switching (via writing). In addition, we assessed context sensitivity using implicit measures (e.g., change blindness, Flanker) and explicit measures (e.g., Analysis Holism Scale) following our mixed implicit–explicit priming, but did not consider how implicit and explicit levels of frame switching and context sensitivity may relate. It is possible that using only implicit priming of frame switching matched with implicit measures of context sensitivity, for instance, might have resulted in different, possibly clearer, results. Future research that intentionally matches implicit and explicit forms of cultural frame switching and context sensitivity may yield deeper insights into how these two variables relate for biculturals.

Finally, we plan to explore new potential unique products of biculturals' lived experiences and to identify the specific causes of these products. The present study focused on the process of cultural frame switching as a way biculturals negotiate their cultures. We hypothesized that context sensitivity may be one unique product of biculturals' use of frame switching, but frame switching may result in other products as well. For example, biculturals who are practiced at frame

switching may build their cognitive flexibility in general and may be better at switching between tasks that involve different sets of rules because of their ability to switch between cultural frames. In another line of research, we have begun to explore a causal relationship between cultural frame switching and increased general cognitive flexibility.

Conclusion

This study constitutes an initial test of whether specific processes that biculturals use to negotiate their cultures may result in unique products that go beyond an additive understanding of biculturalism. Though the results of this study were far from conclusive, multiple interesting findings emerged, with tentative support for a process theory of biculturalism. Through improving upon the current study and building new lines of research, we hope to better understand the ways in which biculturals are more than the sum of their parts.

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Appendices

Appendix A: Priming Images by Condition

Cultural Frame Switching Condition







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Chinese Control Condition









Canadian Control Condition









Appendix B: Manipulation Check Scale

Below are a few statements that may be relevant to your experiences as a Chinese Canadian.

Respond according to how you feel RIGHT NOW, IN THE PRESENT SITUATION. Please indicate how much you agree or disagree with each statement by selecting the response that you believe best represents the extent of your agreement using the following as a guide:

1-Strongly Disagree

5-Somewhat Agree

2-Disagree

6-Agree

3-Somewhat Disagree

7-Strongly Agree

4-Neutral/Neither Agree or Disagree

1. I am able to switch between *thinking* in a Chinese way and *thinking* in a Canadian way.
2. I am able to switch between *behaving* in a Chinese way and *behaving* in a Canadian way.
3. I find it easy to switch between Chinese culture and Canadian culture.
4. I find it difficult to switch between Canadian culture and Chinese culture.

Appendix C: Analysis Holism Scale (Choi, Koo, & Choi, 2007)

Please indicate how much you agree or disagree with each statement by selecting the response that you believe best represents the extent of your agreement using the following as a guide:

- | | |
|-------------------------------------|------------------|
| 1-Strongly Disagree | 5-Somewhat Agree |
| 2-Disagree | 6-Agree |
| 3-Somewhat Disagree | 7-Strongly Agree |
| 4-Neutral/Neither Agree or Disagree | |

1. We should avoid going to extremes.
2. It is more important to pay attention to the whole context rather than the details.
3. Future events are predictable based on present situations.
4. The whole is greater than the sum of its parts.
5. Everything in the world is intertwined in a causal relationship.
6. An individual who is currently honest will stay honest in the future.
7. Choosing a middle ground in an argument should be avoided.
8. Any phenomenon entails a numerous number of consequences, although some of them may not be known.
9. A person who is currently living a successful life will continue to stay successful.
10. It is important to find a point of compromise than to debate who is right / wrong, when one's opinions conflict with other's opinions.
11. Nothing is unrelated.
12. We should consider the situation a person is faced with, as well as his/her personality, in order to understand one's behavior.

13. It is more desirable to take the middle ground than go to extremes.
14. Current situations can change at any time.
15. It is more important to pay attention to the whole than its parts.
16. If an event is moving toward a certain direction, it will continue to move toward that direction.
17. Any phenomenon has numerous numbers of causes, although some of the causes are not known.
18. Every phenomenon in the world moves in predictable directions.
19. When disagreement exists among people, they should search for ways to compromise and embrace everyone's opinions.
20. It is not possible to understand the parts without considering the whole picture.
21. Even a small change in any element of the universe can lead to significant alterations in other elements.
22. The whole, rather than its parts, should be considered in order to understand a phenomenon.
23. It is desirable to be in harmony, rather than in discord, with others of different opinions than one's own.
24. Everything in the universe is somehow related to each other.