

Middle Ground Approach to Paradox:

Within- and Between-Culture Examination of the Creative Benefits of Paradoxical Frames

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Word counts: Abstract (250 words); Manuscript (15,198 words)

Date submitted: 3 May, 2017

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Author Note:

This research was supported by a grant from the Ministry of Education Academic Research Tier 1 Grant [grant number: C242/MSS14S006] and a grant from the Behavioural Sciences Institute of Singapore Management University [grant number: C256/13172] awarded to Angela K.-y. Leung. Shyhnan Liou and Ella Miron-Spektor share equal second authorship to this work. Please send correspondence to Angela K.-y. Leung, School of Social Sciences, Level 4, 90 Stamford Road, Singapore Management University, Singapore 178903 (email: [angelaleung@smu.edu.sg](mailto:angelaleung@smu.edu.sg); phone: (65)68280961; fax: (65)68280423).

### Abstract

Thriving in increasingly complex and ambiguous environments requires creativity and the capability to reconcile conflicting demands. Recent evidence with Western samples suggested that paradoxical frames, or mental templates that encourage individuals to recognize and embrace contradictions, could produce creative benefits. We extended the timely, but understudied, topic by studying the nuances of *for whom* and *why* creative advantages of paradoxical frames emerge. We suggest that people endorsing a middle ground approach are less likely to scrutinize conflict and reconcile with integrative solutions, thus receiving less creative benefits of paradoxical frames. Five studies that examined individual and cultural differences in middle ground endorsement support our theory. Study 1 found that paradoxical frames increased creativity, but failed to replicate that experienced conflict mediated the relationship in a Taiwanese sample. In both within- and between-culture analysis, we showed that the creative advantages of thinking paradoxically and experiencing conflict emerged among individuals who endorse lower (vs. higher) levels of middle ground (Study 2) and among Israelis whose culture predominantly endorses middle ground strategy less, but not among Singaporeans whose culture predominantly endorses middle ground more (Study 3). Study 4 further demonstrated the causal role of middle ground in the paradox—conflict—creativity link. To answer “why”, Study 5 situationally induced integrative complex thinking that sets distinctions and forms syntheses among contradictory elements, and found that low endorsers of middle ground performed more creatively when they engaged integrative complex thinking to cope with paradoxes. This program of studies offers important insights on harnessing paradoxical experiences to catalyze creativity.

Keywords: Paradox; creativity; middle ground; culture; integrative complex thinking

In a world of rapid changes, people are often embedded in environments with novel demands that are increasingly complex, ambiguous, and conflicting, which calls for individual adaptation (Chan, 2000; 2014). For example, recent shifts in the traditional in-group and out-group demarcation require more complex, multifaceted social identities (Kang & Bodenhausen, 2014; Crisp & Hewstone, 2007; Crisp & Meleady, 2012). It is increasingly common that global and demographic changes give rise to seemingly conflicting practices such as the simultaneous presence of competition and cooperation, control and autonomy, planning and flexibility, and individuation and team building (Smith & Lewis, 2011; Zhang et al., 2015).

Effective adaptation to these conflicting demands would require people to recognize tensions as paradoxes and to react to them in creative ways (Smith & Lewis, 2011; Smith & Tushman, 2005). Paradoxes are “contradictory yet interrelated elements that exist simultaneously” (Smith & Lewis, 2011, p. 382). Existing research on paradox postulates that when individuals deal with complex and ambiguous phenomena by simplifying or polarizing them into either/or categories, they miss recognizing the complex inter-relationships of these phenomena (e.g., Lewis, 2000; Smith & Lewis, 2011). In contrast, situations and mindsets that facilitate confrontation and reconciliation of complexity or ambiguity imbue noteworthy opportunities to destabilize fixed categories and to enhance creativity (Luscher & Lewis, 2008; Miron-Spektor, Ingram, Keller, Smith, & Lewis, 2017).

Research has suggested that the adoption of paradoxical frames – *mental templates that encourage individuals to recognize and embrace contradictions* (Smith & Tushman, 2005) – could produce creative benefits (Miron-Spektor, Gino, & Argote, 2011; Rothenberg, 1979). This is because paradoxical frames reframe the way people approach contradictions, and this reframing is beneficial for creativity. Paradoxical frames serve as mental filters that increase awareness to contradictions in one’s environment and affect the way individuals make sense of associated conflicts (Hahn, Preuss, Pinkse, & Figge, 2014; Smith & Tushman,

2005). In particular, researchers showed that sense of conflict is one mediating psychological mechanism that accounts for why inducing paradoxical frames can subsequently enhance creativity (Miron-Spektor et al., 2011). It is believed that the experience of conflict could facilitate an explorative and insight-oriented processing style to break away from commonplace assumptions and to search for novel associations (Fong, 2006; Huang & Galinsky, 2011; Schwarz & Bless, 1991). Consistent with this logic, recent research demonstrated that after individuals are confronted with counter-stereotypes, which are representations that defy or contradict stereotypic expectations, they adhere to a flexible thinking mindset and become more creative (Gocłowska, Crisp, & Labuschagne, 2012; see also Crisp & Turner, 2011; Ritter et al., 2012). Extensive exposure to different cultures, as a form of diversifying experiences that destabilize cognitive structures when people acquire alternative conceptions in other cultures, was shown to benefit both creative processes and outcomes (Leung, Maddux, Galinsky, & Chiu, 2008; Ritter et al., 2012). Research also revealed that individual differences could modulate these effects of counter-stereotypes or diversifying experiences, with people low in need for structure (Gocłowska, Baas, Crisp, & De Dreu, 2014), low in need for cognitive closure (Leung & Chiu, 2010), or high in openness to experience (Leung & Chiu, 2008) reaping more creative benefits. It is reasonable to argue that exposure to counter-stereotypes or diversifying cultural experiences requires one to recognize the inherent paradox in these situations. These recent findings offer important insights to the paradox – creativity link, but more research on this timely topic is needed (Miron-Spektor et al., 2011).

The current research is motivated by the overarching goal to expound on how Western and East Asian cultures approach paradoxical thinking and its accompanying conflict differently (see Chen, 2002; Peng & Nisbett, 1999). An important hallmark of good science concerns testing the replicability of findings across situations (Nosek, Spies, & Motyl, 2012). We take on this task and seek to contribute to the broader literature of culture and creativity

by demonstrating how members of Western and East Asian cultures tend to differ systematically in the way they interpret paradoxes. Specifically, Western approaches tend to follow the laws of Aristotle's formal logic and of Hegelian logic that emphasize (i) polarization and differentiation that seek to distinguish between contradictory elements and (ii) synergy and integration that seek to find higher-order solutions that enable the full existence of both elements simultaneously (Gaim & Wahlin, 2016b; Lewis, 2000). In contrast, East Asian dialectical approaches emphasize moderation, compromise, and middle-way solutions in which "both sides of the contradiction can be right and that the truth lies between the two perspectives" (Peng & Nisbett, 1999, p. 749).

Guided by this overarching goal to contribute to a culturally informed interpretation of paradox, the current research further enriches understanding by studying *for whom* and *why* the creative benefits of paradoxical frames can be harnessed. To answer the "for whom" question, we focus on the moderating role of the middle ground approach. We contend that it makes both theoretical and practical sense to study the construct of middle ground. Theoretically, adhering to a middle ground tactic may influence the strength and directionality of the postulated mediating effect of sense of conflict on creativity. As we will elaborate later, a high middle ground approach endorses two extreme positions to a moderate level and therefore emphasizes intermediate fulfillment of opposing interests (De Dreu, Evers, Beersma, Kluwer, & Nauta, 2001). It is reasonable to argue that because people endorsing higher middle ground assume that both contradictory perspectives are somewhat true, they are less likely to scrutinize and try to reconcile conflict, and thus show weaker creative benefit of paradox than people endorsing lower middle ground. Practically, the endorsement of middle ground is an important individual difference variable, as well as a normative strategy inherent in the dialectical approach more predominantly found in some cultures (e.g., East Asian culture) than others (Peng & Nisbett, 1999). Probing into the moderating role of middle ground approach carries real world significance in understanding how encountering paradoxes

has downstream consequences on individual creativity and even on aggregate levels of creativity across different cultures.

To investigate *why* endorsing a middle ground approach reduces the potential benefits of paradoxical frames, we examine whether a high middle ground approach reduces the tendency to engage in and benefit from integrative complex thinking (Suedfeld, Tetlock, & Streufert, 1992; Tadmor, Tetlock, & Peng, 2009) when coping with a paradoxical situation. We suggest that the creative benefits of paradoxical frames depend on the extent to which individuals confront conflict and engage in integrative complex thinking that sets distinctions and forms syntheses between contradictory elements. Our findings from five studies, conducted within and across cultures and using various creativity tasks, supported our theory.

### **Paradoxical Frames and Creativity**

Creativity is typically defined as the process of producing something that is both novel and useful (Amabile, 1996; Sawyer, 2006). The adoption of paradoxical frames might give rise to opportunities that reconcile and discover linkages between contradictory elements. Engaging in these cognitive efforts could lead one to reach creative insights, seeing the paradox in a completely new light (Garud, Gehman, & Kumaraswamy, 2011; Lewis, 2000; Luscher & Lewis, 2008). For example, to reconcile the paradox of the simultaneous practice of competition and cooperation in modern business management to generate economic rents, a “syncretic model” of strategic rent-seeking behavior is proposed, which conceptualizes competition and cooperation as distinct but interrelated strategic dimensions (Lado, Boyd, & Hanlon, 1997).

We posit that adopting paradoxical frames can contribute to higher creativity through inducing a sense of conflict and tension in at least three ways (see also Miron-Spektor et al., 2011; Patil & Tetlock, 2014; Smith & Berg, 1986; Vince & Broussine, 1996). First, paradoxical frames change the way people make sense of contradictions. Instead of either/or thinking, they elicit the more conflicting both/and thinking and consider contradictions

between multiple elements (Smith & Tushman, 2005). Thus, entertaining contradictory propositions with paradoxical frames increases the number of elements and ideas people consider. Accordingly, the more ideas people have, the more inputs they have for coming up with creative expansion (Simonton, 1999; Weisberg, 1999). Second, oftentimes paradoxes present the dynamic functions and multiple meanings of a specific idea, which are seemingly conflicting and incompatible (Galinsky, Maddux, & Ku, 2006). For example, the technology initially used by the Israeli defense industry to produce optical devices for rockets was applied to developing PillCam® capsule endoscopy, a pill-sized camera inserted in a capsule that can be swallowed by patients to allow their physicians to visualize the gastrointestinal tract in a non-invasive way. This presents an interesting paradox: the same technology can be life-taking when being applied in the military domain but life-saving in the medical domain. Third, and relatedly, a higher sense of conflict induced from recognizing paradoxes instigates a process that embraces and resolves incompatible elements, which helps to destabilize established conceptions and to give rise to unconventional, out-of-the-box thinking (e.g., developing a pill-sized camera for medical use; Luscher & Lewis, 2008; Suedfeld et al., 1992). Together, adopting paradoxical frames might incubate a general capacity to provoke exploration of incongruent concepts, facilitate higher levels of cognitive complexity, and provide the impetus to generate a creative synthesis of ideas (see also Leung, Chen, & Chiu, 2010; Leung et al., 2008).

We conjecture that the creativity-enhancing effect of paradox is a generic process (Miron-Spektor et al., 2011; Rothenberg, 1971) that makes people more adept at creative generations on tasks that might not be related directly to the considered paradox. In the present research, while some studies examined the effect of paradoxical frames that did not align (Studies 1-3) or aligned (Study 5) with the creativity tasks, one study (Study 4) included a between-participant variable that varied whether the paradox was linked to the competing criteria required for a creativity task or not. We predict that the creative benefit of

paradoxical frames could be transferable to tasks that are not directly related to the paradoxical elements per se.

### **Taking a Middle Ground Approach toward Paradox**

A dictionary definition denotes middle ground as “a standpoint or area midway between extreme or opposing positions, options, or objectives” (Merriam-Webster, 2004). Taking a middle ground expresses intermediate concerns for two issues or positions (De Dreu et al., 2001). For example, in conflict management, adopting a middle ground approach emphasizes intermediate concern for each of the parties; in contrast, adopting a problem solving approach emphasizes high concern for both parties (see the Dual Concern Theory; Pruitt & Rubin, 1986). In decision making, the middle ground option means “the middle option in an arbitrary set, which offers moderate levels of two attribute dimensions...Consider a set of three options  $\{x, y, z\}$  described by two attributes. Suppose the attributes are price and quality:  $x$  is the highest in quality and most expensive,  $z$  is the lowest in quality and least expensive, and  $y$  is the compromise option that falls between the other two on both attributes” (Briley, Morris, & Simonson, 2000, p. 160). We contend that people can adhere to middle ground as a general strategy in response to conflict, including interpersonal and idea-related conflict. In the present research, we define middle ground *as taking a mid-way position that acknowledges each of the two opposing elements or positions in a paradox to moderate levels, such that parts of these opposing aspects are preserved*. Notably, although middle ground is sometimes used interchangeably as compromise, the two are distinct concepts. Compromising might not always involve taking a mid-way approach between two extremes, but rather settling at the next best option available.

Simultaneously presenting two opposing elements in a paradox inevitably induces conflicting feelings. By facilitating explorative processing, experienced conflict enables unconstrained mental search, bolsters insights to go beyond preconceived assumptions, and enhances receptivity to novel associations (Huang & Galinsky, 2011; Miron-Spektor et al.,

2011; Proulx & Heine, 2009; Rothenberg, 1979). Yet, to realize this creative potential one needs to confront rather than avoid conflicts, see them as opportunities, and deeply explore the paradoxes (Eisenhardt & Westcott, 1988; Lewis, 2000). The mid-way approach to paradox, by assuming that both elements are true, and embracing only parts of the two opposing elements, might not sufficiently incentivize individuals to directly confront and scrutinize the experienced conflict. Consequently, they are less likely to engage in deep thought processes to reveal the distinctions between contradictory positions and to contemplate new linkages between them. Embracing both elements without first honoring their differences may lead to a false synergy that does not fully integrate both elements (Smith, 2014). Thus, to answer the question *for whom* paradoxical frames can benefit creativity, we argue that people who adopt the middle ground approach tend to *harmonize* conflict as opposed to directly confronting and reconciling conflict. Hence, a middle ground approach is likely to dampen the creativity-supporting mechanism of experienced conflict and hence creativity. Thus, we hypothesize that:

*Hypothesis 1:* There is an indirect effect of adopting paradoxical frames on creativity through sense of conflict, with endorsement of the middle ground approach moderating the relationship between sense of conflict and creativity. As such, the effect of conflict on creativity is stronger when individuals endorse lower (vs. higher) levels of the middle ground approach (second-stage moderation model; Figure 1).

We reckon that the two juxtaposed phenomena that make up the paradox, given their inconsistent and contested positions (Eisenhardt, 2000), would lead to the perception of conflict regardless of the adoption of the middle ground approach. However, a sense of conflict is positively related to creativity for those who endorse lower levels of middle ground, but not for those who endorse higher levels of middle ground. Therefore, our main prediction concerns the way middle ground affects how people reason about the experienced

conflict that arises from the activation of paradoxical frames and that produces downstream consequences on creativity (i.e., second-stage moderation). Nevertheless, we also test the alternative first-stage moderation model, which predicts an indirect effect of adopting paradoxical frames on creativity through sense of conflict, with endorsement of the middle ground approach moderating the relationship between paradoxical frames and conflict.

### **Cultural Differences in Adopting Middle Ground**

The middle ground approach to contradictions is deeply rooted in naïve dialecticism, a thinking style that is more predominant among the East Asian culture than the Western culture (Peng & Nisbett, 1999; see also Choi & Choi, 2002; Spencer-Rodgers, Williams, & Peng, 2010; Spencer-Rodgers, Peng, Wang, & Hou, 2004). Traditional wisdom preached in the East Asian culture valorizes the ideals of taking the middle way, avoiding the extremes, tolerating contradictions, and upholding harmony, whereas the tradition in the North American culture encourages analytical thinking and critical reasoning to seek for the truth. We can see the value of upholding middle ground in the important book of Confucian philosophy “Doctrine of the Mean” (“Zhongyong”): Confucius said: “The Superior Man actualizes the mean; the inferior man goes against it. The Superior Man actualizes the mean because he is always with it; the inferior man’s non-actualization is due to his heedlessness” and “Mean is the great root of all-under-heaven. Harmony is the penetration of the way through all-under-heaven. When the Mean and Harmony are actualized, Heaven and Earth are in their proper positions, and the myriad things are nourished” (translated by Muller, 2011).

Drawing upon the extant cultural psychology literature, we posit that the middle ground approach to paradox is more prevalent in East Asian than Western culture. With East Asians focusing more on the interrelatedness aspect of paradox and Westerners focusing more on the contradictory aspect (see Chen 2002, 2008), the practice of middle ground is more predominant in East Asian (vs. Western) culture because it helps to preserve the interrelatedness of elements by seeking a mid-way solution that harmonizes conflict. This

argument is in line with considerable evidence showing that East Asian culture is more prevention focused (e.g., Elliot, Chirkov, Kim, & Sheldon, 2001; Lee, Aaker, & Gardner, 2000). Taking the middle ground has the property of loss aversion, for it minimizes the maximum loss associated with forsaking one of the extreme options (Simonson & Tversky, 1992; Tversky & Simonson, 1993). East Asians' tendency to adhere to middle ground is also manifested in the well-documented moderate response style, with East Asians choosing more middle response option but less extreme options on self-report surveys than do their European-American counterparts (Chen, Lee, & Stevenson, 1995). As the middle ground approach is the more predominant cultural practice in East Asia, based on the logic of Hypothesis 1, we hypothesize that:

*Hypothesis 2:* There is an indirect effect of adopting paradoxical frames on creativity through sense of conflict, with culture moderating the relationship between sense of conflict and creativity. As such, the effect of conflict on creativity is weaker among East Asians than Westerners (second-stage moderation model; Figure 1).

### **Harnessing Creative Advantage of Paradox through Integrative Complex Thinking**

Next, to answer *why* paradoxical frames benefit creativity mainly for individuals with a low middle ground approach, we posit that a necessary though not sufficient condition to successfully reconcile conflict is for individuals to first thoroughly recognize discrepancies underlying the conflictual issues and then to synergize and integrate them. This process reflects integrative complex thinking, which involves *elaborative processing of contradictory positions and the integration of the contradiction* (Suedfeld et al., 1992; Tadmor et al., 2009; see also Langer, 1989; Smith & Tushman, 2005; Tadmor, Galinsky, & Maddux, 2012).

Differentiating and integrating incongruent experiences or ideas has been suggested as a crucial trigger for creativity (e.g., Cheng & Leung, 2013; Huang, Gino, & Galinsky, 2015; Suedfeld et al., 1992; Tadmor et al., 2009). For example, research on comparison mind-sets

examined how individuals compare a target with a standard or pertinent norm when making evaluations (see Mussweiler, 2003 for a review). When a dissimilarity mind-set is activated, it makes accessible dissimilarities between two comparison targets, highlighting the contrast between the two (Mussweiler & Damisch, 2008). Prior research revealed that when experiencing a culturally diverse environment, those individuals who recognize cultural discrepancies with a dissimilarity comparison mind-set can transform their diverse experiences into the currency of individual creativity (Cheng & Leung, 2013). Recent research on sarcasm provides another example. Sarcasm often involves contradictory expressions between stated and intended meanings (Huang et al., 2015; Pexman & Olineck, 2002). Possibly through recognizing and reconciling the discrepant notions (Shamay-Tsoory, Tomer, Berger, & Aharon-Peretz, 2003), research showed that exposure to and construction of sarcasm (vs. a sincere or neutral conversation) increased participants' sense of conflict and creativity (Huang et al., 2015; Miron-Spektor, Efrta-Triester, Rafaeli, & Schwatz-Cohen, 2011; see also Murdock & Ganim, 1993; Wicker, 1985).

In contrast, taking the middle ground approach has a tendency of settling at an average solution that recognizes each of the two contradictory positions only in part, thus potentially “de-paradoxifying” the contradictions, as Styhre (2002) puts it. As a result, endorsers of middle ground may fail to see the presence of a thesis and an antithesis and miss the opportunity to create a synthesis between the two (Paltez, Bogue, Miron-Spektor, & Spencer-Rodgers, in press).

Let us illustrate the potential contribution of integrative complex thinking to creativity with an example. In the late 90s, an innovative product called “Tamagotshi,” a handheld digital pet, hit the market with millions sold worldwide since its debut. “Tamagotshi” exemplifies the paradox that an electronic device is also a pet. This is paradoxical because (a) the fact that a pet is a living being and an electronic device is not is contradictory, yet (b) these contradictory categories are interrelated, with the functions of the electronic device

allowing people to raise the pet virtually by feeding and socializing with it. (c) Thus, being an electronic device and being a pet can exist simultaneously. Tamagotshi fully embraces the conflicting elements: It integrates well the boon of both a pet and an electronic device, and at the same time it removes the preconceptions that keeping a pet is a hassle and an electronic device is lifeless. Thus, by synthesizing the “pet” and “electronic” elements, Tamagotshi radically defies the prototype of a pet and fulfills people’s desire for keeping a pet that conveniently resides within a pocket-sized electronic device. Tamagotshi reflects the use of integrative complex thinking to arrive at a higher-order solution that is both radically novel and useful. Approaching the same paradox with middle ground, however, is likely to lead to relatively less creative ideas, say, a dog-shaped robot or a movable dog toy for kids. Ideas developed through the middle ground approach tend to hold onto the defining characteristics of the initial objects, thus the creation is often found to preserve attributes of its constituents (e.g., an electronic toy that is dog-shaped) rather than generating a higher-order synergy (Harvey, 2014; Gaim & Wahlin, 2016a).

Thus, we suggest that individuals adopting a low middle ground approach are more likely to harness conflict, because they tend to engage integrative complex thinking when coping with paradox. In contrast, individuals adopting a high middle ground approach tend to harmonize conflict without trying to synergize and deeply exploring it. We test our theory using situational inducement of integrative complex thinking. We suggest that in the high integrative complex thinking condition individuals will process more thoroughly the opposing positions and interests, thus leading to higher creativity. Yet, this effect will be stronger for individuals adopting a low rather than high middle ground approach. Put differently, we expect the interaction between conflict and middle ground on creativity (Hypothesis 1) to be stronger when individuals are induced to engage integrative complex thinking (i.e., differentiate and integrate contradictory perspectives). When individuals do not engage

integrative complex thinking (i.e., consider one perspective only), the difference in the ability of high and low middle ground endorsers to leverage conflict will decline. We hypothesize:

*Hypothesis 3.* Induced integrative complex thinking moderates the interaction between sense of conflict and middle ground approach on creativity. The effect of conflict on creativity is stronger for individuals who endorse lower (vs. higher) levels of the middle ground approach when they are experimentally induced to engage high integrative complex thinking, but not when they are induced to engage low integrative complex thinking.

In sum, based on the important insights offered by existing, but limited, research on the paradox theory of creativity, the present research draws upon individual and cultural variability in adhering to the middle ground approach. We argue that the effects of paradoxical frames and experienced conflict on creativity may be less positive for people or cultural groups that endorse a middle ground approach. If changes in the directionality of effects occur, it would be important not to construe sense of conflict as a mediator in the simple main effect of paradoxical frames on creativity, but to acknowledge the interaction effects of individual difference and culture. In addition, we probe further into integrative complex thinking (that reconciles conflict by in-depth elaboration of opposing issues and developing a synergistic solution) as a way to harness the creative advantage of paradox.

### **Overview of Studies**

The current research has been approved by the Institutional Review Board of the Singapore Management University (SMU) (Approval number: IRB-15-005-A005(215); Title of Research: Creative Cognition Study). The studies reported in this manuscript are in compliance with the SMU-IRB ethical standards in the treatment of participants.

We conducted five experimental studies to gain new insights as to for whom and why paradoxical frames trigger creativity. In Study 1, we tested the effect of paradoxical frames on creativity through sense of conflict with East Asian participants. We activated paradoxical

frames of Taiwanese students by framing two elements in product design – creativity and efficiency – as paradoxical and examined whether paradoxical frames enhanced creative generation through experienced conflict. As the Taiwanese participants belong to an East Asian culture with a higher general tendency to adopt middle ground, we did not expect their creativity to benefit from a heightened sense of conflict following the inducement of paradoxical frames.

Next, we tested whether middle ground moderates the indirect effect of paradoxical frames on creativity through conflict by examining the practice of the middle ground approach as an individual difference (Study 2) and as a cultural difference between a Singaporean (East Asian) and an Israeli (Western) sample (Study 3). Israelis tend to confront conflict and are less likely to endorse the middle ground approach relative to Singaporeans (Meyer, 2014). We used a different priming procedure by asking participants to recall paradoxical statements (or not) and a different creativity task to measure how well participants could flexibly switch their mental set in generating new captions for ambiguous drawings. We hypothesize that adopting paradoxical frames will produce *more* creative benefits for individuals who endorse lower (vs. higher) levels of the middle ground approach (Study 2) and for the Israeli (vs. Singaporean) individuals (Study 3). Study 4 extended Studies 2 and 3 by establishing the causal role of middle ground approach via experimentally priming participants to adopt high or low middle ground. We hypothesize that participants who receive the low (vs. high) middle ground prime will experience greater conflict and in turn show higher creativity in a business proposal task.

In Study 5, we used a situational inducement of integrative complex thinking by asking participants to consider a paradoxical negotiation situation from the perspective of both parties (high integrative complex thinking) or from the perspective of one party only (low integrative complex thinking). We hypothesize that in the high integrative complex thinking condition individuals adopting an approach of low rather than high middle ground

will process more thoroughly the opposing positions and interests, thus leading to higher creativity. Thus, this study seeks to identify the underlying cognitive process of integrative complex thinking as contributing to greater creative advantages of adhering to a low middle ground approach.

Together, with both between-person and between-culture analyses, we set out to conduct the first empirical investigation of who is more likely to benefit from adopting paradoxical frames, and why. We employed different methods to activate paradoxical frames. We also covered different manifestations of creativity with multiple measures, including product design, free association, insight creativity, business proposal, and negotiation. Some of these tasks capture both the novelty and usefulness facets of creativity. We included different East Asian (Taiwanese and Singaporean) and Western (Israeli and American) samples for our within- and cross-cultural analyses. With methodological triangulation, the five studies attest to the robustness and generalizability of the findings. In sum, our findings suggest that one's approach to paradox affects the ability to reap the creative benefit of paradoxical frames. Individuals and cultures that endorse the middle ground approach are less likely to leverage the enhanced sense of conflict, following the inducement of paradoxical frames, into improved creativity. To benefit from paradox, individuals need to confront conflict and engage in integrative complex thinking that sets distinctions and forms syntheses among contradictory elements.

## Study 1

### Participants and Procedures

Two hundred and sixty (104 males, 156 females;  $M_{\text{age}} = 22.63$ ,  $SD_{\text{age}} = 2.51$ ) Taiwanese students from a university in Tainan, Taiwan completed the study survey during class time as part of course requirement. Adapting Miron-Spektor and colleagues' (2011) procedure, the study used a between-participants design where participants were randomly assigned to either the paradoxical-frame condition or control conditions (paradoxical-frame

vs. creativity-frame and efficiency-frame). Participants first completed the priming task, then answered some conflict-related and emotion items, and finally performed a creativity task.

### **Task and Measures**

The survey was in Chinese. We followed back-translation procedures by having one bilingual individual translate the original English survey into Chinese and another bilingual individual independently back-translate the Chinese survey into English (Brislin, 1980).

*Priming task.* To prime cognitive frames (see Miron-Spektor et al., 2011), the participants were presented a picture and a description of a prototype for a table vehicle developed by a toy company. It was described that the prototype was chosen among 200 prototypes to represent the company in a prestigious competition of designers due to its (a) high creativity (*creativity-frame condition*), (b) low production cost (*efficiency-frame condition*), or (c) high creativity and low production cost (*paradoxical-frame condition*). The task further activated the different cognitive frames by reporting the product designers' impressions and explanations for choosing the prototype. These impressions and explanations varied across conditions such that they emphasized the prototype's uniqueness and novelty (*creativity-frame condition*: "This product is unique and creative. Especially I like the novel uses the designers found for the materials), the prototype's low cost and efficient production (*efficiency-frame condition*: "This product is very cheap. I can tell that the designer carefully chose the materials to assure that the final product would not be expensive), or both the creative and efficient aspects of the prototype (*paradoxical-frame condition*: "This product is both unique and efficiently built. The most difficult thing is to make creative products that are cheap"). By framing creativity and efficiency as paradoxical, we increased the participants' awareness to paradoxes in their environment. Next, we measured participants' sense of conflict by asking how much discomfort, conflict, and disorientation the task made them feel (1 = *not at all* to 11 = *very much*; adapted from Miron-Spektor et al., 2011). We aggregated these three items to form a composite conflict score ( $\alpha =$

.81). As part of the cover story, participants then wrote down their personal views about the table vehicle prototype.

*Emotion measure.* To test for the possibility that general negative affect rather than sense of conflict accounts for the effect of paradoxical frames, participants completed the 20-item PANAS (Crawford & Henry, 2004; 10 positive emotions, e.g., “enthusiastic,”  $\alpha = .86$  and 10 negative emotions, e.g., “irritable,”  $\alpha = .89$ ), which measured the extent to which they had felt positive and negative emotions at that moment (1 = *not at all* to 5 = *very much so*).

*Creativity task.* We used the chocolate design task developed by Ong and Leung (2013). Instructions for the participants read:

*“In light of revolution, chocolate confectioners are starting to move their designs away from traditional chocolate. “Chocolate in Belgium is an icon, like pasta in Italy. But why do we feel obliged by tradition? We must disturb the traditional shapes. We must create new combinations, new ingredients,” says Giovanna Massini, a researcher who is leading this chocolate design initiative in Brussels, Belgium. Suppose you are a member of Giovanna’s research lab, your task is to revolutionize the design of chocolate.”*

Participants then took approximately 10 minutes to draw and elaborate with descriptions one new chocolate design in the space provided.

Two independent coders, blind to the research purpose, coded the drawings across different design domains (see Ong & Leung, 2013). These domains include: (a) the chocolate is of unconventional overall shape (e.g., a microphone shaped chocolate), (b) the presence of unconventional shape within the chocolate itself (e.g., shapes of eyes and nose on the chocolate), (c) the presence of non-chocolate edible ingredients (e.g., chili), (d) the presence of inedible ingredients (e.g., a photograph), (e) whether the design implicates unconventional matter states of chocolate (e.g., chewable chocolate), (f) the presence of an additional function the chocolate serves (e.g., a greeting card made out of chocolate), (g) the presence of a filled

center (e.g., filled with syrup), and (h) whether there is an elaboration about the filling (e.g., the filling contains milk, caramel, or liquor). Participants score one point in the domain if the design fulfills the feature specified by the domain (inter-rater agreement = .82). Coding inconsistencies were identified by domain and a third coder re-coded them. The final domain score was the one agreed by two out of the three coders. We derived a creativity score (ranging from 0 to 8) by summing the points scored from each domain, with a higher score representing a chocolate design that deviates more from conventional designs.

Notably, this creativity coding procedure relied on a relatively objective approach as coders mainly identified the presence or absence of each unconventional attribute. As a cross-validation, we had two other independent raters judge the overall creativity level of each design based on their subjective evaluation (1 = *not creative at all* to 9 = *extremely creative*; ICC = .81) and their average score made up the overall creativity score. Results confirmed that the two ways of measuring creativity are positively correlated ( $r = .65, p < .0001$ ).

## Results and Discussion

Table 1 reports the descriptive statistics for the main variables in Study 1 and the subsequent studies. Before conducting our main analyses, we sought to confirm that the two control conditions that did not intend to prime paradoxical frames – the creativity- and efficiency-frame conditions – were not significantly different from each other in inducing a sense of conflict. Results revealed that participants in the creativity-frame condition ( $M = 4.57, SD = 2.63$ ) and efficiency-frame ( $M = 3.96, SD = 2.23$ ) condition did not differ in the degree conflict was experienced,  $F(1, 158) = 2.43, p = .12, \eta^2_p = .02$ . Therefore, we collapsed both creativity-frame and efficiency-frame conditions (*nonparadoxical-frame condition*) to compare against the paradoxical-frame condition<sup>1</sup>. In addition, we checked if general negative emotions rather than conflict differed between the paradoxical-frame and nonparadoxical frame conditions. Results indicated that participants in the paradoxical-frame and nonparadoxical-frame conditions did not differ in the extent to which positive emotions

( $M_{\text{paradoxical-frame}} = 3.05, SD = .78$  vs.  $M_{\text{nonparadoxical-frame}} = 3.04, SD = .76$ ) and negative emotions ( $M_{\text{paradoxical-frame}} = 2.05, SD = .79$  vs.  $M_{\text{nonparadoxical-frame}} = 2.09, SD = .82$ ) were felt,  $F(1, 258) = .002, p = .96$  and  $F(1, 258) = .15, p = .70$ , respectively.

Consistent with past finding (Miron-Spektor et al., 2011), participants reported experiencing significantly higher levels of conflict in the paradoxical-frame condition ( $M = 5.04, SD = 2.89$ ) than in the nonparadoxical-frame condition ( $M = 4.28, SD = 2.46$ ),  $F(1, 258) = 5.11, p = .03, \eta^2_p = .02$ . Also, participants in the paradoxical-frame (vs. nonparadoxical-frame) condition generated more creative chocolate design as measured by the (objective) design attribute creativity score ( $M = 2.85, SD = 1.27$  vs.  $M = 2.53, SD = 1.19$ ;  $F(1, 258) = 4.17, p = .04, \eta^2_p = .02$ ) as well as the (subjective) overall creativity score ( $M = 4.33, SD = 1.39$  vs.  $M = 4.00, SD = 1.17$ ;  $F(1, 258) = 4.20, p = .04, \eta^2_p = .02$ ).

Next, we tested whether a sense of conflict mediated the relationship between activating paradoxical frames and creativity with the bootstrapping procedure using 1000 bootstrap samples. In the first path, as reported in the ANOVA result above, the paradoxical frames manipulation significantly predicted conflict ( $b = .76, t = 2.26, p = .02$ ). However, in the second path, conflict did not significantly predict the attribute creativity score ( $b = -.01, t = -.43, p = .68$ ) and the overall creativity score ( $b = -.05, t = -1.68, p = .10$ ). Analyses yielded bootstrap 95% bias-corrected intervals of  $[-.08, .03]$  and  $[-.14, .007]$  for the indirect effects on the attribute and overall creativity scores, respectively, and both intervals contained zero, suggesting that the priming effect of paradoxical frames on creativity was not mediated by participants' experienced conflict.

Study 1 replicated prior findings by showing that making paradoxical frames more accessible induced higher levels of conflict and creativity. However, unlike prior findings observed in the West, a sense of conflict failed to mediate the link between paradoxical frames and creativity among our Taiwanese participants. This result is important because it contributes to the existing paradox literature by prompting us to examine how different

approaches to conflict explain why some people benefit creatively from paradox while others do not. To address this question, in Studies 2 and 3 we tested the moderated mediation models predicted by Hypotheses 1 and 2 by taking into account the moderating role of middle ground approach as an individual propensity (within-culture variance) and as a culturally predominant strategy (between-culture variance) in the relationship between experienced conflict and creative performance.

### **Study 2**

With an East Asian sample of Taiwanese, Study 1 did not replicate the past finding that individuals' sense of conflict mediates the effect of adopting paradoxical frames on creativity. This result sets the stage for examining potential individual differences in the degree to which a sense of conflict is conducive for creativity. In this light, Study 2 extended Study 1 in two important ways. First, in order to show robustness of Study 1's finding that conflict did not function as a mediator in an East Asian sample, we used a different priming manipulation of paradoxical frames and a different creative idea generation task. Second, and more importantly, we measured participants' attitude toward contradictions to assess how readily they sought the middle ground to deal with paradox.

#### **Participants and Procedures**

Participants were 304 Taiwanese (106 males, 198 females<sup>2</sup>) college students who participated in the study for course credit. The survey was conducted online and was back-translated from English to Chinese. Participants were ostensibly informed that the survey combined several studies. The study started with the "Recall Skills Task" in which we activated participants' paradoxical frames (or not), followed by scales measuring a sense of conflict, middle ground endorsement, and experienced emotions (i.e., PANAS), and then a creativity task.

#### **Task and Measures**

*Priming task.* To manipulate paradoxical frames, participants were asked to take a few minutes to recall their past experiences in a writing task (adapted from Miron-Spektor et al., 2011). Participants in the paradoxical-frame condition recalled and wrote at least three paradoxical statements that they encountered in the past or they thought are interesting. In the instructions, we defined “paradoxical” as seemingly contradictory but nonetheless possibly true and provided one sample statement “it is paradoxical that standing is more tiring than walking.” Those in the control condition received the same instructions with no mention of the word “paradoxical.” The sample statement given was “people often believe that standing is more tiring than walking.” Upon completion of the recall task, participants answered the same questions as in Study 1 assessing their sense of conflict ( $\alpha = .69$ ).

*Middle-ground approach.* We administered the six-item subscale measuring attitude toward contradictions ( $\alpha = .67$ ) taken from the Analysis-Holism Scale (Choi, Koo, & Choi, 2007). Participants indicated their agreement to items such as “it is more desirable to take the middle ground than go to extremes” and “it is more important to find a point of compromise than to debate who is right/wrong, when one’s opinions conflict with other’s opinions” on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A higher score denotes stronger support for a middle ground approach ( $M = 5.13$ ,  $SD = .92$  in the current sample).

*Creativity task.* The task involved generating captions for ambiguous pictures called Doodles (Price, Lovka, & Lovka, 2002). Participants were presented with two Doodles, each of which was accompanied by a descriptive caption (see Leung, Kim, Polman, Ong, Qiu, Goncalo, & Sanchez-Burks, 2012). For example, one of the Doodle pictures depicts two lines in a V shape sticking out of a hole, with shorter lines extending from the top of each of those lines at an angle (like a line drawing of two chicken feet), and its caption is “A bird in a hole, upside down.” The participants’ task was to generate three new captions for each picture (i.e., a total of six captions). We measured participants’ creativity by determining how much their newly generated captions deviated from the provided captions. Two independent judges

coded the degree of deviation for each caption ( $ICC = .90$ ), using scales from 0 (*not at all different*) to 9 (*extremely different*). We composed an idea flexibility score for each participant by averaging his or her mean deviation scores of the six captions from the two judges.

## Results

Consistent with Study 1, results of the PANAS revealed that feelings of both positive emotions ( $\alpha = .83$ ;  $M = 2.82$ ,  $SD = .74$  vs.  $M = 2.82$ ,  $SD = .68$ ;  $F(1, 302) = .001$ ,  $p = .97$ ) and negative emotions ( $\alpha = .90$ ;  $M = 2.15$ ,  $SD = .84$  vs.  $M = 2.26$ ,  $SD = .91$ ;  $F(1, 302) = 1.33$ ,  $p = .25$ ) were not different across the paradoxical-frame and control conditions.

*Mediation analyses.* To confirm support for the absence of mediation found in Study 1, we obtained the bootstrap 95% bias-corrected interval to test if mediation exists between activating paradoxical frames and idea flexibility (the degree of deviation from the given captions) through sense of conflict. The confidence interval for the indirect effect  $[-.01, .06]$  contains zero. Therefore, with a different priming procedure of paradoxical frames and a different creative generation task, Study 2 replicates Study 1 that the priming effect of paradoxical frames on creativity was not mediated by experienced conflict among the Taiwanese sample.

*Moderated mediation analyses.* Next, we fitted the hypothesized second-stage moderation model with a series of linear regressions (see Edwards & Lambert, 2007) using PROCESS developed by Hayes (2013; SPSS macro). The model tested the mediating effect of adopting paradoxical frames on idea flexibility via experienced conflict, with middle ground moderating the link between experienced conflict and idea flexibility (Figure 1). The first regression confirmed a significant positive effect of adopting paradoxical frames on sense of conflict ( $b = .54$ ,  $t = 2.25$ ,  $p = .03$ ; see Table 2). In line with Study 1 and past finding (Miron-Spektor et al., 2011), participants in the paradoxical-frame condition ( $M = 5.17$ ,  $SD =$

2.05) reported higher ratings of conflict than those in the control condition ( $M = 4.63$ ,  $SD = 2.13$ ).

The second regression showed significant main effects of both sense of conflict ( $b = .30$ ,  $t = 2.71$ ,  $p = .01$ ) and middle ground ( $b = .24$ ,  $t = 2.17$ ,  $p = .03$ ) on idea flexibility, with these main effects being qualified by a significant interaction between sense of conflict and middle ground ( $b = -.05$ ,  $t = -2.58$ ,  $p = .01$ ). Follow-up analyses revealed that experienced conflict was positively associated with idea flexibility among participants who were less supportive of the middle ground approach (1  $SD$  below the mean),  $b = .07$ ,  $t = 2.30$ ,  $p = .02$  (Figure 2). Among participants who were more supportive of the middle ground approach (1  $SD$  above the mean), no relationship between experienced conflict and idea flexibility was detected,  $b = -.03$ ,  $t = -1.07$ ,  $p = .28$ . As an alternative way to understand the interaction, among participants experiencing higher levels of conflict (1  $SD$  above the mean), lower endorsement of the middle ground approach was associated with higher idea flexibility ( $b = -.14$ ,  $t = -1.93$ ,  $p = .05$ ); among those experiencing lower levels of conflict (1  $SD$  below the mean), endorsement of middle ground was not associated with idea flexibility ( $b = .09$ ,  $t = 1.36$ ,  $p = .18$ ).

To confirm this moderated mediation pattern, we obtained bootstrap confidence intervals for the conditional indirect effect. Using a bootstrap procedure with 1000 bootstrap samples, the analysis yielded a bootstrap 95% bias-corrected confidence interval of [.001, .09] at lower values of middle ground (1  $SD$  below the mean). As the confidence interval excludes zero, the result suggests that experienced conflict mediated the link between adopting paradoxical frames and idea flexibility for participants who were less likely to seek middle ground for reconciling conflicts. When middle ground was centered at higher values (1  $SD$  above the mean) or at the mean level, analyses yielded a bootstrap 95% bias-corrected intervals of [-.08, .01] and [-.02, .05] respectively, suggesting that the same mediation did not occur for participants who were more likely to endorse the middle ground approach.

We also tested the alternative first-stage moderation model, which examined the mediating effect of adopting paradoxical frames on idea flexibility via experienced conflict, with middle ground moderating the link between adopting paradoxical frames and experienced conflict. The first regression reported a significant main effect of recalling paradoxical vs. control statements ( $b = 3.25, t = 2.39, p = .02$ ) and a significant interaction between recall condition and middle ground on conflict ( $b = -.53, t = -2.03, p = .04$ ). For participants indicating stronger support for seeking middle ground (1 *SD* above the mean), there was no effect of recall condition on experienced conflict,  $b = .05, t = .15, p = .88$ . In contrast, for participants indicating weaker support for middle ground (1 *SD* below the mean), recalling (vs. not recalling) paradoxes significantly enhanced sense of conflict,  $b = 1.02, t = 3.03, p = .003$ . There was no simple main effect of middle ground on experienced conflict among participants in the paradoxical-frame ( $b = -.30, t = -1.59, p = .11$ ) and control conditions ( $b = .23, t = 1.27, p = .21$ ). However, the second regression did not indicate a significant relationship between experienced conflict and idea flexibility ( $b = .02, t = .91, p = .37$ ) nor between recall condition and idea flexibility ( $b = .001, t = .01, p = 1.00$ ). The first-stage moderation model was not supported.

## **Discussion**

Confirming Hypothesis 1, the results of Study 2 supported the second-stage moderation model, showing preliminary evidence that adopting paradoxical frames generally triggers a sense of conflict and conflict is particularly conducive for creativity if individuals endorse lower (vs. higher) levels of the middle ground approach to settle conflict. This suggests that the finding of prior research about sense of conflict mediating the relationship between paradoxical frames and creativity was replicated mainly among those East Asians with lower endorsement of the middle ground approach but not for those with higher endorsement.

### Study 3

By taking an individual difference approach in Study 2, results showed that only individuals who adopt lower levels of the middle ground approach to deal with opposing demands and the accompanying conflicts, receive creative benefits. In Study 3, we extended this individual difference finding to a cross-cultural analysis by examining whether members in an East Asian culture (Singapore) where the middle ground strategy is more predominantly endorsed are less likely to reap the creative benefits of experiencing conflicts than members in a Western culture (Israel) where confrontation is more highly emphasized (Mayer, 2014) and the middle ground strategy is less predominantly endorsed. In other words, we set out to test whether such between-culture differences would mirror the between-individual differences in adopting the middle ground approach found in Study 2. If our prediction is confirmed, the findings will provide generalizability evidence of the link between paradoxical frames and creativity in a different Western cultural context and more importantly buttress our hypothesized moderating effect of middle ground in such a link.

#### Participants and Procedures

Participants were 99 Singaporean (34 males, 65 females;  $M_{age} = 21.22$ ,  $SD_{age} = 1.71$ ) and 66 Israeli (28 males, 38 females;  $M_{age} = 24.77$ ,  $SD_{age} = 2.03$ ) college students who participated in the study for course credit. The survey was conducted online and was back-translated from English to Hebrew for the Israeli sample. The Singaporean sample answered the survey in English.

Participants were ostensibly informed that the survey combined several studies. The first part involved completing some individual difference measurements (creative cognitive style, attitude toward contradictions), followed by the recall skills task for manipulating paradoxical frames (or not), three conflict items, the PANAS, and finally the creativity task of generating Doodle captions. The recall skills task and items on sense of conflict ( $\alpha_{Singaporean} = .84$  and  $\alpha_{Israeli} = .75$ ) were identical to those used in Study 2. The Doodle creativity task was

also used in Study 2, with one minor change to the instructions. Instead of requiring participants to generate three captions for each Doodle, we told them to generate *up to* three captions for each Doodle.

### Measures

*Creative cognitive style.* We included five items on individuals' creative cognitive style as a covariate measure to control for cross-cultural differences in baseline creativity. Participants indicated on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) their degree of agreement to questions such as "I have a lot of creative ideas" and "I often take risks in doing things differently" ( $\alpha_{\text{Singaporean}} = .79$  and  $\alpha_{\text{Israeli}} = .86$ ; Miron-Spektor, Erez, & Naveh, 2004).

*Middle ground approach.* To confirm the expected between-culture differences in how likely individuals from Singapore and Israel adopt the middle ground approach, we included the six-item subscale on the attitude toward contradictions<sup>3</sup> used in Study 2 (Choi et al., 2007) and added five items from Spencer-Rodgers and colleagues (2010)<sup>4</sup>. Similar to the attitude toward contradictions subscale, these five items measure individuals' tendency to endorse middle ground (e.g., "When two sides disagree, the truth is always somewhere in the middle") and their receptiveness to two different sides of an argument as implicated in the middle ground approach (e.g., "When I hear two sides of an argument, I often agree with both," "There are always two sides to everything, depending on how you look at it"). We derived a composite score measuring endorsement of the middle ground approach ( $\alpha_{\text{Singaporean}} = .76$  and  $\alpha_{\text{Israeli}} = .67$ ), with a higher score representing a higher propensity to embrace middle ground.

As predicted, analysis confirmed that Singaporean participants endorsed a higher level of middle ground in the face of opposing demands ( $M = 4.70$ ,  $SD = .60$ ) than did Israeli participants ( $M = 4.43$ ,  $SD = .60$ ),  $F(1, 163) = .8.36$ ,  $p = .004$ ,  $\eta^2_p = .05$ . Notably, in Study 2, the indirect effect of engaging in paradoxical frames on creativity via experienced conflict is moderated by individuals' endorsement of middle ground. Given the current and past

empirical support for cultural differences in the general receptivity to endorsing the middle ground approach, one might reasonably predict that the same indirect effect could also be moderated by differences in individuals' cultural background. We test this hypothesis (Hypothesis 2) next.

## Results

Consistent with Studies 1 and 2, both Singaporean ( $\alpha = .89$ ;  $M_{\text{paradoxical-frame}} = 2.51$ ,  $SD = .78$  vs.  $M_{\text{control}} = 2.64$ ,  $SD = .82$ ;  $F(1, 97) = .59$ ,  $p = .44$ ) and Israeli participants ( $\alpha = .89$ ;  $M_{\text{paradoxical-frame}} = 2.37$ ,  $SD = .70$  vs.  $M_{\text{control}} = 2.40$ ,  $SD = .88$ ;  $F(1, 64) = .03$ ,  $p = .87$ ) did not differ in their feelings of positive emotions between the paradoxical-frame condition and control condition. Similarly, Singaporean ( $\alpha = .89$ ;  $M_{\text{paradoxical-frame}} = 1.55$ ,  $SD = .68$  vs.  $M_{\text{control}} = 1.51$ ,  $SD = .56$ ;  $F(1, 97) = .09$ ,  $p = .77$ ) and Israeli participants ( $\alpha = .86$ ;  $M_{\text{paradoxical-frame}} = 1.33$ ,  $SD = .58$  vs.  $M_{\text{control}} = 1.25$ ,  $SD = .36$ ;  $F(1, 64) = .51$ ,  $p = .48$ ) did not differ in their feelings of negative emotions between the paradoxical-frame condition and control condition.

Using the PROCESS analytical framework, we fitted the second-stage moderation model to test the presence of an indirect effect of activating paradoxical frames on idea flexibility<sup>5</sup> (the degree of deviation from the given captions) through experienced conflict, with culture moderating the link between experienced conflict and idea flexibility and controlling for creative cognitive style (Figure 1 and Table 3). The first set of regression confirmed a significant positive effect of adopting paradoxical frames (vs. control) on sense of conflict ( $b = 1.58$ ,  $t = 3.74$ ,  $p = .0003$ ;  $M_{\text{paradoxical-frame}} = 5.70$ ,  $SD = 2.71$  vs.  $M_{\text{control}} = 4.12$ ,  $SD = 2.34$ ).

The second set of regression showed a significant main effect of culture on idea flexibility ( $b = .98$ ,  $t = 6.03$ ,  $p < .0001$ ), with Israeli participants ( $M = 5.57$ ,  $SD = 1.28$ ) generating captions that were more deviant from the given ones than Singaporean participants ( $M = 4.56$ ,  $SD = .85$ ). The main effect of conflict, however, was not significant ( $b = -.05$ ,  $t = -1.35$ ,  $p = .18$ ). The culture main effect was qualified by an interaction between sense of

conflict and culture ( $b = .17, t = 2.97, p = .003$ ). To interpret this two-way interaction, follow-up analyses showed that at both lower (1 *SD* below the mean) and higher (1 *SD* above the mean) levels of experienced conflict Israeli participants performed significantly more creatively in terms of idea flexibility than Singaporean participants ( $b = .50, t = 2.21, p = .03$  and  $b = 1.46, t = 6.30, p < .0001$ , respectively; see Figure 3). More importantly, experienced conflict was significantly positively associated with idea flexibility for Israeli participants ( $b = .12, t = 2.74, p = .007$ ), but not for Singaporean participants ( $b = -.05, t = -1.39, p = .17$ ).

Further, we obtained the bootstrap confidence intervals with 1000 bootstrap samples for the conditional indirect effect. The analysis yielded a bootstrap 95% bias-corrected confidence interval of [.04, .43] for Israeli participants, suggesting that the indirect effect of adopting paradoxical frames on idea flexibility via experienced conflict emerged for Israelis. For Singaporean participants, analyses yielded a bootstrap 95% bias-corrected interval of [-.21, .01], suggesting that the same indirect effect did not occur for Singaporeans.

In addition, we tested the alternative first-stage moderation model to confirm that the second-stage moderation model better represents the data. This alternative model tested the presence of an indirect effect of activating paradoxical frames on idea flexibility through experienced conflict, with culture moderating the link between engaging in paradoxical frames and experienced conflict. The first regression only showed a main effect of recall condition (paradoxical-frame vs. control) on sense of conflict ( $b = 1.82, t = 3.36, p = .001$ ), but no main effect of culture ( $b = -.32, t = -.53, p = .60$ ) and no interaction between recall condition and culture ( $b = -.60, t = -.69, p = .49$ ). In the second regression, both the main effect of conflict ( $b = .01, t = .15, p = .88$ ) and recall condition ( $b = .02, t = .09, p = .93$ ) were not significant on idea flexibility. Therefore, the first-stage moderation was not supported. Consistent with Study 2, the second-stage moderation model as opposed to the first-stage model shows a better fit with the data.

## **Discussion**

Together, the results of Study 3 supported that although the activation of paradoxical frames induces a higher sense of conflict for people in both Singaporean and Israeli culture, culture moderates the relationship between feelings of conflict and creativity (in terms of idea flexibility). That is, feelings of conflict mediate the positive relationship between the situational inducement of paradoxical frames and creativity mainly for Israeli individuals, but not their Singaporean counterparts. This supports Hypothesis 2. Thus, Study 3 further corroborated Study 2's finding that in Israeli culture where the middle ground approach is less predominant, the experience of conflict following adoption of paradoxical frames is more likely to result in creative benefits than in Singaporean culture where the middle ground approach is more predominant.

#### **Study 4**

In Study 4, we sought to extend the findings of Studies 2 and 3 by establishing the causal role of the middle ground approach via experimental manipulation. Additionally, Study 4 pushed the boundary of relying on context-free standard creativity tests in prior studies by using a task that has ramifications on real-world innovations. Specifically, the creativity task required participants to propose business concepts for an available space within the campus by considering not only the novelty of the proposal, but also the practicality of sustaining the business. Participants were exposed to a paradoxical scenario that presented two contradictory positions and were asked to write a persuasive argument prioritizing one position over another (low middle ground condition) or endorsing moderately both positions (high middle ground condition). We argue that the middle ground approach harmonizes sense of conflict. Therefore, we hypothesize that people who are induced to take a high (vs. low) middle ground approach will reason that the experienced conflict is less intense, thereby coming up with less creative business proposal.

## Participants

Participants were Singaporean college students ( $N = 144$ ; 55 males, 89 females;  $M_{\text{age}} = 21.76$ ,  $SD = 1.67$ ) who took part in the study for course credits. We removed 19 responses because these participants did not follow task instructions to propose actual creative business ideas but instead proposed business tactics (e.g., cost analyses, surveying the demand). The resultant sample consisted of 125 participants.

## Procedures and Measures

*Middle ground manipulation.* Participants read one of two scenarios that contained a situation with contradictory positions. In developing the first scenario we based on research that acknowledges that the novelty and practicality dimensions of creativity can be viewed as contradictory and paradoxical (Berg, 2014; DeFillippi, Grabher, & Jones, 2007; Ford & Gioia, 2000; Miron-Spektor & Beenen, 2015; Miron-Spektor & Erez, in press; Mueller, Goncalo, & Kamdar, 2011). One scenario reads as follows:

“Increasingly, organizations have pushed their research and design department to pursue excellence in product novelty. This promotes branding of the company as the highly novel products become more distinguishable from other competitive enterprises. However, the pursuit of novelty often comes at the cost of practicality. Very often, it is not practical to produce and implement highly novel ideas.”

Depending on their random assignment to the low or high middle ground condition, participants then received instructions to spend 3-5 minutes to write a persuasive argument:

“It is challenging to attain high novelty and high practicality at the same time. Promoting novelty can come at the expense of practicality, and vice versa.  
[Low middle ground condition with two versions] In the space below, please write a persuasive message to argue and explain why pursuing high product

novelty (practicality) is more important than high practicality (product novelty).

[High middle ground condition] In the space below, please write a persuasive message to argue and explain why it is more important to take a middle ground by pursuing moderate product novelty and moderate practicality.”

The other scenario reads as follows:

“The nature of parenthood is often to shower children with love and care. Children who experience love and protection show higher happiness and develop more pleasant personalities later in life. However, parents who raise their children in protected environments also reduce their children’s exposure to challenging situations. Therefore, they receive less learning opportunities to build resiliency and stress tolerance as they grow up.”

Similarly, participants were randomly assigned to the low or high middle ground condition and wrote a persuasive argument based on the following instructions:

“It is difficult to raise children in a highly protected environment and a highly challenging environment at the same time. Raising children in a highly protected environment may limit their opportunities to build resiliency, whereas challenging environments harm their happiness.

[Low middle ground condition with two versions] In the space below, please write a persuasive message to argue and explain why raising children in a protected environment (challenging environment) is more important than raising them in a challenging environment (protected environment).

[High middle ground condition] In the space below, please write a persuasive message to argue and explain why it is important to take a middle ground by raising children in a moderately protected and a moderately challenging environment.”

Across the two scenarios, we made salient two contradictory positions. We sought to manipulate low middle ground by instructing participants to prioritize one position over another and to manipulate high middle ground by instructing them to endorse both positions moderately. Note also that the two scenarios emphasized contradictory demands of a different nature (novelty vs. practicality for product design; raising children in a protected vs. challenging environment for childrearing). Therefore, the product design scenario concerns a paradox that is directly linked to the creativity criteria (novelty and practicality) in a later business idea generation task, but it is not the case for the childrearing scenario. We sought to test if the nature of contradictory elements matters in transferring the creative advantage of feeling conflicted about a paradox to a later creativity task.

*Sense of conflict.* Participants rated the extent that they were bothered by each of the three emotions (conflict, disorientation, and discomfort) when writing the persuasive arguments on an 11-point scale. We composed the conflict score by averaging the three ratings of conflict ( $\alpha = .92$ ).

*Creativity task.* We used a creative business idea proposal task ostensibly presented as a “decision making task” to measure participants’ creativity. Adapting from Goncalo and Staw (2006), the task assesses both the novelty and practicality components of creativity with instructions below:

“After years of mismanagement and poor quality food, a restaurant has finally gone bankrupt and is being shut down. The school administration is trying to decide what new business should go into that space. You have 8 minutes to come up with as many solutions to their problem as possible. Your solutions should be both novel and practical.”

Within 8 minutes, participants generated as many business ideas as possible. First, we assessed the levels of novelty by scoring the ideas in terms of fluency and categorical flexibility. Fluency is the sheer number of ideas generated by the participants. Flexibility is

the number of different categories that broadly describes participants' ideas. Three coders sorted the business ideas into representative categories and achieved an initial 76% agreement. Disagreements were discussed and recoded into a category that at least two coders agreed until there was perfect agreement. Coders were blind to participants' condition throughout the entire coding process.

Second, we assessed the levels of usefulness by examining the degree to which the ideas were practical and useful for implementation. After submitting their pool of ideas, participants were given a chance to review their list of ideas and select one idea that they evaluate would be the most popular amongst the students in the university. To derive a practicality score, we compiled the list of selected ideas (after removing repetitions and rephrasing some ideas to increase clarity) and conducted a rating study with a sample of students ( $N = 113$ ) who would be the target consumers of these business ideas. These participants rated 10 randomly assigned business ideas to the extent that (a) they found the idea practical, (b) they would patronize the business, and (c) they judged the business to be popular amongst their peers on a 1 = *not at all* to 7 = *extremely* scale. On average, 16 student raters evaluated each selected idea and the raters' aggregated mean represented each idea's practicality score ( $SE = 0.39$ ). Although *ICC* is not applicable as each idea received a different number of ratings due to random assignment, the relatively high number of raters per idea and low standard errors support the ratings' validity of assessing the business ideas' practicality, as judged by the would-be consumers. Finally, following prior research, we also derived an overall creativity index by multiplying the flexibility and practicality scores (see Hoever, van Knippenberg, van Ginkel, & Barkema, 2012; Zhou & Shalley, 2011).

## Results

In Study 4, we tested the effect of manipulating high (vs. low) middle ground within a paradoxically framed scenario on creativity, with the amount of experienced conflict as the mediator. This model was tested with four dependent measures: fluency, categorical

flexibility, practicality, and an overall creativity index (see Table 4 for a summary). Indirect paths were examined in these models with bias-corrected confidence intervals based on 1000 bootstrapped iterations.

*Sense of conflict.* As hypothesized, in the first path the middle ground manipulation predicted sense of conflict,  $F(1,123) = 5.43, p = .02, R^2 = .04$ . Specifically, participants in the low (vs. high) middle ground condition experienced a higher sense of conflict toward the contradictory positions ( $b = 1.13, t = 2.33, p = .02$ ;  $M_{\text{low middle ground}} = 4.59, SD = 2.90$  vs.  $M_{\text{high middle ground}} = 3.46, SD = 2.51$ ). In turn, sense of conflict predicted indices of creativity as reported below.

*Novelty.* In the second path, conflict positively and significantly predicted fluency ( $b = .34, t = 2.34, p = .02$ ) and categorical flexibility ( $b = .25, t = 2.44, p = .02$ ). The direct paths of middle ground manipulation on fluency ( $b = .02, t = .02, p = .98$ ) and flexibility ( $b = .18, t = .31, p = .76$ ) were insignificant. For fluency, the obtained bootstrapped 95% CI for testing the indirect path barely bounded zero at the lower tail [-0.002, 1.29], but the 90% CI did not bound zero [0.04, 1.18], indicating a marginally significant mediation by sense of conflict ( $p < .10$ ); for flexibility, the obtained bootstrapped 95% CI did not bound zero [.003, 0.91], confirming a significant mediation ( $p < .05$ ).

*Practicality.* In the second path, sense of conflict did not predict practicality, ( $b = -.03, t = -1.35, p = .18$ ), neither did the middle ground manipulation directly affect practicality ( $b = -.03, t = -.13, p = .84$ ). Overall, the mediation model was insignificant for practicality.

*Overall creativity index.* Conflict predicted overall creativity ( $b = 1.04, t = 2.10, p = .04$ ), supporting that participants who experienced more conflict were more creative. The partialled direct path from middle ground manipulation to overall creativity did not reach significance ( $b = .82, t = .30, p = .76$ ). Whereas the bootstrapped 95% CI [-0.10, 4.54] marginally bounded zero, we repeated the bootstrapping at 90% CI [0.02, 4.23] which did not

bound zero, suggesting that the mediation between middle ground manipulation and overall creativity via sense of conflict was marginally significant ( $p < .10$ ).

*Differences in scenario.* As there were two manipulation scenarios (product design and childrearing), we also entered the scenario variable as a first stage dichotomous moderator. Consistent with our hypotheses, the results showed that taking a low middle ground approach indirectly increased creativity, fully mediated through a sense of conflict. Although the induced sense of conflict tended to be greater in the childrearing scenario, a bootstrapped index of moderated mediation did not reach significance for all measures of creativity. This indicates that the indirect path to creativity through conflict did not differ between the two scenarios, thus suggesting that the nature of contradictory elements presented in the paradox had no effect on the creativity outcomes. This also supports our collapsing of the scenarios in the analyses.

## **Discussion**

Study 4 established the causal role of middle ground such that participants were less likely to reap the creative benefits if they approached contradictory positions with a stance endorsing a high (vs. low) middle ground. We argue that participants who were experimentally induced to adhere to a high middle ground position in the face of paradoxical demands are motivated to harmonize conflict. As such, they were less likely to differentiate and integrate the conflicting elements and thus produced less novel business proposals. Notably, the creative benefit of higher conflict in the low middle ground situation was stronger on the novelty aspect than the practicality aspect of creativity. Furthermore, we obtained the creative effect from inducing low middle ground regardless of the nature of the manipulation scenario (i.e., whether the scenario concerned two contradictory elements that aligned with the creativity criteria in the business proposal task or not). This finding suggests that the creative advantage of paradoxes could be largely generalizable, that is, the beneficial effect is not constrained by a direct mapping of the contradictory demands in the paradox on

the evaluation criteria of the creativity task. Therefore, thinking in terms of paradoxical frames might enable a generic process to enhance creativity through heightening a sense of conflict.

### Study 5

Study 5 sought to examine why individuals endorsing a middle ground approach benefit less from paradox and conflict than those who less likely endorse this approach. We suggested that a middle ground approach motivates individuals to harmonize conflict rather than confront and scrutinize it. To benefit from paradoxical frames individuals must set distinctions between opposing perspectives and seek to integrate the different perspectives, as manifested in integrative complex thought processes (Suedfeld et al., 1992). Engaging in integrative complex thinking promotes new insights and stimulates creativity (Tadmor et al., 2012).

To test whether integrative complex thinking aids individuals to leverage paradox, in this study we employed a negotiation task with real-world relevance that simulates a paradoxical situation (Sebenius, 1992). In this task, we induced integrative complex thinking by prompting participants to process more thoroughly the opposing interests of the buyer and the sellers. Specifically, we manipulated the degree of participants' integrative complex thinking by instructing them to take the perspective of both the buyer and the sellers who have incompatible interests (high integrative complex thinking condition) or the interests of either the buyer or the sellers (low integrative complex thinking condition). The high integrative complex thinking condition activates the processing of contradictory interests of the two negotiation parties, which subsequently affords an integration of these interests, as reflected in participants' deal-closing solutions that creatively synergize the contradictory interests between the two parties (see Sebenius, 1992).

We hypothesize that individuals under the high integrative complex thinking condition will deeply consider both contradictory interests, and thus receive greater creative benefits

from experienced conflict. We also hypothesize that this effect will be stronger among individuals who show lower (vs. higher) levels of middle ground endorsement. Individuals who are used to adopting a high middle ground approach are less motivated to differentiate the opposing interests (Chen, 2002) and may reach a false synergy (Smith, 2014) that harmonizes the conflict without fully satisfying each of the opposing interests.

### **Participants**

Participants were recruited via Amazon Mechanical Turk for US\$0.80. We collected a total of 178 participants, but removed eight of them because coders unanimously identified their responses as invalid. Five respondents provided responses that were not sensible and cannot be attributed to typographical errors, suggesting that they did not read the scenario properly. Three others provided responses that were too vague, incomplete, or could not be viewed as a serious response. The final sample consisted of 170 participants (89 males, 81 females;  $M_{\text{age}} = 37.9$ ,  $SD_{\text{age}} = 12.8$ ). The mean length of work experience is 17.72 years ( $SD = 11.70$ ) and 98.9% of them reported speaking English for more than seven years. Participants were informed that the study examined thinking processes and involved several questionnaires and a business negotiation task.

### **Procedures and Measures**

*Middle ground approach.* We again measured participants' endorsement of middle ground ( $\alpha = .78$ ;  $M = 5.02$ ,  $SD = 0.89$  in the current sample) with the attitude toward contradictions subscale taken from the Analysis-Holism Scale (Choi et al., 2007)<sup>3</sup>

*Negotiation task.* Participants were then administered a creative negotiation task adapted from Galinsky, Maddux, Gilin, and White (2008). The task depicts the negotiation on a gas station that is at a deadlock. Although it is the primary interest of both parties to close the deal, the buyer cannot afford the sellers' asking price, yet the sellers are unwilling to lower the price further. This integrative negotiation task emphasizes creative deal-making because it is very difficult for participants to close a win-win deal if they only focus on

absolute monetary value, which is the typical mindset in a negotiation. However, participants who exercise divergent thinking can gain creative insight to other solutions, notably by identifying some less accessible strategic terms that are of high value to the sellers and that the buyer's company might be in an advantageous position to provide at low costs. We modified the scenario in a way that would elucidate paradoxical frames, as follows:

“This task presents a paradox. Both the buyer and sellers want to maximize their profits, however, the only way to resolve the conflict is to find a common solution that satisfies the interests of both parties. The buyer company is willing to pay at most \$500,000, but the sellers are asking for a minimum of \$553,000. As a representative of the buyer [the sellers], you will have to resolve the contradictions in order to successfully close the deal.”

Participants were randomly assigned to the high integrative complex thinking condition or the low integrative complex thinking condition. As instructed, participants in the high integrative complex thinking condition took the perspective of both the buyer and sellers in the negotiation (although half of them were asked to represent the buyer and half to represent the sellers):

“...On one hand, it is important that you take the perspective of the buyer in the negotiation. Try to understand what the buyer will be *thinking*, and the *interests* and *purposes* of buying the station. On the other hand, it is also important that you take the perspective of the sellers in the negotiation. Try to understand what the sellers will be *thinking*, and the *interests* and *purposes* of selling the station. In other words, you try to imagine what you will be thinking in both roles.”

In the low integrative complex thinking condition, participants were randomly assigned to take either the perspective of the buyer or the sellers and read these instructions:

“It is important that you take the perspective of the buyer [sellers] and focus on your own role in the negotiation. Try to understand what the buyer [sellers] will be *thinking*, and the *interests* and *purposes* of buying [selling] the station.”

Except for these integrative complexity instructions, all participants were given identical information about the scenario, which documented the potential value of the station, the budget limit of the buyer, and the specific needs of the sellers that dictate their asking price. Next, participants generated an open-ended negotiation proposal in order to close the deal.

Guided by the negotiation case’s model solutions (Galinsky et al., 2008), two coders assessed the free-response answers for the presence of key solutions and also judged whether the deal would have been successful. In the scenario, the sellers are selling the gas station to finance a two-year dreamed boat trip, but the funds they require exceed the buyer’s budget. To resolve the negotiation deadlock, creative solutions would go beyond fixating on the monetary price of the gas station, but considering offering the sellers things that are of high value for their boat trip (e.g., insurance coverage, boat repairs, gas) which the buyer’s international oil company can furnish at a low cost. After an initial round of coding, coders agreed at 89%. We refined the coding definitions, and two other coders coded the data until there was perfect agreement. To derive the creativity score, the coding followed a point scoring matrix: -1 = violated negotiation budget; 0 = failed to close deal; 1 = closed deal with an uncreative proposal that typically fixates on cash terms (e.g., payment by profit commissions or future bonuses, delaying payments); 2 = closed deal by offering to hire the sellers as station managers upon their return; 3 = closed deal with a creative proposal that offers high value terms to sellers but are of low costs to the buyer (e.g., providing boat parts, gas); 4 = very innovative proposal not even considered in the solution scheme (e.g., the buyer’s company serves as landlord for the sellers’ apartment during their two-year boat trip,

the buyer company sets up the boat in a way that the sellers can work wirelessly to run an electronic store and manage inventory during their trip).

*Sense of conflict.* After reading the negotiation case, participants rated how much discomfort, conflict, and disorientation the case made them feel on an 11-point scale ( $\alpha = .76$ ).

## Results

To examine how endorsement of the middle ground approach, experienced conflict, and the integrative complex thinking manipulation influenced success of creative deal-making, we tested for the three-way interaction in a multiple linear regression analysis, followed by a focal probe of simple slopes. Following Aiken & West (1991), the predictors of middle ground and sense of conflict were mean-centered and integrative complex thinking condition was dummy coded (1 = high, 0 = low). The predictors and interaction terms were entered in three steps (main effects in Step 1, two-way interactions in Step 2, and three-way interaction in Step 3), and  $\Delta R^2$  was tested (see Table 5). The results revealed a significant three-way interaction in Step 3,  $F(1, 162) = 5.11, p = .025, \Delta R^2 = .03$ .

The three-way interaction was decomposed by the simple slopes method, by re-centering variables at specific levels of interest (Preacher, Curran, & Bauer, 2006). The simple two-way conflict  $\times$  middle ground interaction was only significant for the high integrative complex thinking condition ( $b = -0.19, t = -2.44, p = .02$ ), but not for the low integrative complex thinking condition ( $b = 0.02, t = 0.43, p = .67$ ) (see Figure 4 and Table 6). Simple slope analyses for sense of conflict were further conducted at three levels of middle ground endorsement (1 *SD* below mean, mean, and 1 *SD* above mean). Within the high integrative complex thinking condition, sense of conflict increased creative deal-making at only lower levels of middle ground ( $b = .26, t = 2.68, p = .01$ ), but neither at the mean ( $b = .09, t = 1.47, p = .14$ ) nor higher levels of middle ground ( $b = -0.08, t = -.92, p = .36$ ).

Probing the confidence region of the interaction with the Johnson-Neyman technique showed that sense of conflict benefits creativity at the critical value of 4.81 and below ( $< 0.05 SD$  below mean). In descriptive terms, participants below the 42<sup>th</sup> percentile of middle ground endorsement were able to benefit from the creativity boost induced by sense of conflict.

### **Discussion**

Confirming Hypothesis 3, the results of Study 5 suggest that after exposure to a paradoxical situation, participants with a lower endorsement of the middle ground approach were more likely to creatively close a deal after they had recognized disparate perspectives pertinent to the buyer and the sellers and experienced higher conflict. Thus, acknowledging the perspective of two opposing roles facilitates integrative complex thinking to process more deeply the tensions that arise from the contradictory interests and to forge connections between these interests, thus arriving at a unified creative solution. As predicted, participants with high middle ground approach were less likely to engage integrative complex thinking and thus benefited less from the conflict they experienced in the paradoxical situation. The current study also demonstrates that the creative benefits of encountering paradoxes have real-world implications (e.g., business planning, negotiation).

### **General Discussion**

Current findings from the five studies and four cultures enrich interpretations from previous research on the creative advantage of adopting paradoxical frames. In line with previous findings and using various manipulations of paradoxical frames and different creativity tasks, we showed that paradoxical frames enhance creativity and sense of conflict in different cultures. Yet, whereas prior research identified sense of conflict as the mediating psychological process through which paradoxical frames enhance creativity in Western samples (Miron-Spektor et al., 2011), the present research failed to show the same mediation among our Taiwanese samples (Studies 1 and 2). We sought to reconcile this inconsistency by explicating the nuances of *for whom* and *why* paradoxical frames stimulate creative

performance. With a between-person and a between-culture analysis, we demonstrated in a moderated mediation theoretical framework that the hypothesized process in which adoption of paradoxical frames leads to feelings of conflict, which in turn spurs creativity is mainly applicable to individuals and cultural groups that do not endorse the middle ground approach. Interestingly, individual differences in middle ground endorsement affected the ability to benefit from conflict, both in Eastern (Studies 2 and 4) and Western samples (Study 5). These findings highlight low middle ground approach as a key to unlocking the creative potential of paradoxical frames in various cultures.

People with higher tendencies to exhibit the middle ground approach (Study 2) and cultural groups with a predominant practice to adhere to middle ground (Study 3) are less likely to reap the creative benefits brought about by higher experienced conflict as induced by a paradoxical mindset. Study 4 further qualified with experimental manipulation that low (vs. high) middle ground caused higher levels of experienced conflict in the face of paradox, which in turn benefitted creativity. To further illuminate the psychological underpinning of why paradoxical situations bring about creative benefits, we showed that integrative complex thinking transforms the conflict experience to catalyze higher creativity. Specifically, in Study 5 when experimentally inducing high (vs. low) integrative complex thinking, we found that experienced conflict increased creativity among individuals with low endorsement of the middle ground approach. Together, the five studies leapfrog understanding of the nuances of harnessing the benefits of creativity through embracing contradictory possibilities with a paradoxical frame of mind.

### **Theoretical and Practical Contributions**

The current research makes a number of theoretical and practical contributions to the literature on paradox and creativity in particular and the cultural perspective of creativity in general. First, the series of studies extend research on paradoxical frames and creativity by examining boundary conditions, explaining who is more likely to benefit from adopting

paradoxical frames from both a between-individual and a between-culture perspective.

Specifically, the present research replicated prior findings on the interrelationships between paradoxical frames, conflict, and creativity among those individuals who tend to endorse low middle ground, but not those who endorse high middle ground. These findings contribute to the existing paradox literature by explaining why some people benefit creatively from paradox while others do not. In this light, we examine different approaches to paradoxes, and show that individuals' or the culture's normative approach to paradox determines whether the creative benefit of the sense of conflict, triggered by paradox, can be harnessed or not.

We also contribute to the broader paradox literature. Although early research has focused on the individual experience of paradoxes, most research on paradox primarily explores organization and team contexts (Andriopolous & Lewis, 2009; Schad et al., 2016) and senior leadership (Smith, 2014; Zhang et al., 2015). Our research advances knowledge on the cognitive and emotional processes associated with paradoxical thinking of individuals, and distinguishes between different approaches to paradox. Recent research suggests that the ability to accept and feel comfortable with tensions (i.e., paradox mindset) is positively associated with individual creativity and innovation (Miron-Spektor et al., 2017). Extending this work, our study shows that increased acceptance of contradictions as a result of adopting paradoxical frames contributes to creativity only when people confront conflict by engaging integrative complex thinking. Accepting paradoxes may not trigger creativity if instead of scrutinizing conflict, individuals are motivated to harmonize it and search for middle ground solutions. More broadly, by considering the role of culture in shaping one's approach to paradox, we add to recent findings that cultures vary in their cultivation of paradoxical frames (Keller et al., 2016) and show that cultures shape sense-making processes when adopting such frames.

By considering the culturally normative approach to paradox, we shed further light on existing research about how dialectical thinking is related to creativity. We posit that the

main difference between Western post-Hegelian dialecticism and East Asian naïve dialecticism may be the emphasis placed on differentiation and integration (see also Paletz et al., in press). The Western analytic logic emphasizes analysis, differentiation and separation together with synthesis and integration (Chen, 2002). For example, Hegelian dialectical thinking involves contradictory elements (thesis and antithesis) that are resolved through synthesis (Cosier & Dalton, 1982; Smith & Lewis, 2011). In contrast, in East Asian naïve dialectical thinking, oppositions co-exist and are ever-present, which should be harmonized rather than differentiated and synthesized (Paletz & Peng, 2009). Our finding that the differentiation and integration of contradictions by engaging in integrative complex thinking gives rise to creativity, while harmonizing contradictions (through middle ground) impedes creativity suggests a novel perspective to reconcile the inconsistent findings in the relationship between dialectical thinking and creativity (Arlin, 1989; Lun, Fischer, & Ward, 2010; Paletz & Peng, 2009; Rothenberg, 1996; Yang, Wan, & Chiou, 2010).

Second, this cultural perspective also bears important practical contribution to enhancing creative thinking across cultures. The current findings suggest that potential interventions aimed at increasing awareness to paradoxes will be more or less effective, depending on the extent to which individuals confront paradoxes and engage integrative complex thinking, or harmonize paradoxes through middle-way solutions. To the extent that East Asians, particularly those who endorse the middle ground tactic less, are encouraged to interpret paradoxes as requiring adequate differentiation and integration of contradictory demands, they will receive higher creative advantage than harmonizing and merely acknowledging each of the contradictory demands in moderate degrees.

Third and more broadly, our research illustrates the theoretical significance of developing a culturally motivated theory of creativity. Existing research comparing creativity in Western and East Asian cultures attributes observed differences between cultures to different values (e.g., individualism-collectivism; Goncalo & Staw, 2006; Nouri et al., 2015),

the extent to which the societies are tight or loose (Gelfand, Nishii, & Raver, 2006), different levels of tolerance for conflict (Paletz, Miron-Spektor, & Lin, 2014) and concern for face (Miron-Spektor, Paletz, & Lin, 2015), and different emphasis on the novelty and usefulness aspects of creativity (Erez & Nouri, 2010; Loewenstein & Mueller, 2016; Nouri et al., 2015; Paletz & Peng, 2008). Our research suggests middle ground as another possible explanation for cross-cultural variations in creativity. We found that unlike Westerners, members of East Asian culture who endorse a middle ground mentality are less likely to capitalize on conflict and paradoxical tensions to benefit their creative thoughts. Engaging in integrative complex thinking, that requires deep exploration and scrutinizing paradoxes enables individuals to realize the creative potential of a paradoxical lens. Given that organizations are increasingly diverse and multinational, future research could examine whether middle ground also manifests at the organizational level, and how individual and organizational cultural preferences for middle ground interact to affect creativity.

This culturally motivated theory of creativity also offers an understudied explanatory account for why Eastern and Western cultures differ in their lay conception of creativity. The present research measured creativity mainly with divergent idea generation tasks, which tend to reward ideas that are novel or out-of-the-box, but not those ideas that are merely incremental. Previous research and theorizing has shown cultural differences in the conception of creativity. Americans are more likely to expect creative products to be novel and groundbreaking, whereas Chinese are more likely to expect creative products to embody qualities that are consistent with social and traditional norms (Yue, 2004). Indeed, recent findings suggest that Americans mainly associate creativity with “breakthrough” and “surprise”, whereas for Chinese creativity also means “harmony”, “social approval” and “wide use” (Loewenstein & Mueller, 2016). This conception of Eastern creation is in line with what Lubart called “successive reconfigurations” (1999, p. 34), which captures a creative process that is more dynamic and incremental rather than completely frame-breaking and

radical (see also Gilson & Madjar, 2011; Raina, 1999). In this regard, the present findings shed light on how these cultural differences in the conception of creativity might emerge at the first place. Given their culture cherishes the value of adhering to the middle ground, East Asians might have been socialized to refrain from creating something that goes against traditions or preexisting ideas when attempting to reconcile contradictory elements. Over time, this evolves into their normative belief of creativity being more incremental as opposed to more groundbreaking or radical. It will be interesting to examine in future research the potential effect of the adoption of paradoxical frames on other forms of creativity that is more incremental in nature.

Finally, our research advances knowledge on the conflict – creativity link. Despite research demonstrating an overall negative effect of conflict on performance (De Dreu & Weingart, 2003), several studies suggested that conflict can improve performance in tasks that require creative thinking (Jehn, 1995; De Dreu, 2006; Miron-Spektor, Erez & Naveh, 2011). A sense of conflict resulting from contradictory goals, ideas, or emotions has been shown to hinder creative thinking in some studies (Boudreaux & Ozer, 2012; De Dreu & Nijstad, 2008; Emmons & King, 1988), but enhance creativity in other studies (Estes & Ward, 2002; Gocłowska et al., 2012; Huang & Galinsky, 2011; Leung & Chiu, 2010; Miron-Spektor et al., 2011; Wan & Chiu, 2002). By focusing on the use of the middle ground approach as a moderator of the conflict–creativity link, we provide a possible explanation for prior studies' mixed findings. Our results suggest that conflict contributes to creativity when people are motivated to scrutinize and reconcile experienced conflict, by differentiating contradictory elements and finding higher-order integrative solutions. However, individuals are less likely to reap the creative benefits of conflict when they apply a compromised middle ground approach.

### **Limitations and Future Directions**

Our contributions should be considered in light of the research limitations, and addressing them identifies directions for future research. First, all our data were collected in a controlled laboratory setting with students (Studies 1-4) or through online survey with volunteers (Study 5), suggesting caution when generalizing our findings to real life situations (e.g., organizations). However, the controlled setting allowed us to take advantage of random assignment, to test the effect of paradoxical frames on creativity in different cultures, and to minimize differences resulting from different occupations. We encourage future research to test the robustness of the current findings in field settings.

Second, although our findings verified that creativity in the West is associated with paradoxical frames and conflict, they have not identified the drivers of creativity in East Asia. We showed that East Asians adopt the middle ground approach to a greater extent than do their Western counterparts and thus they reap less creative benefits of paradoxical tensions. We also showed that East Asian participants endorsing low middle ground approach displayed higher creativity under paradoxical frames. Future research should further examine drivers of creativity among East Asians and test whether previously observed antecedents of creativity have similar effects across cultures.

Third, although Study 4's business proposal task also revealed the practicality or usefulness dimension of the business concept and Study 5's integrative negotiation task required a novel and practical solution to close the deal. We acknowledged that the present research employed creativity tasks that rely more on the novelty than the usefulness aspect of creativity. In addition, in Study 4 sense of conflict did not significantly predict practicality. More research is needed to understand the effects of paradoxical frames and their accompanying conflicts on the usefulness facet of creativity.

Relatedly, as our creativity tasks focused on novel generation and association of ideas, the present research made more apparent the effect of paradox on cognitive flexibility.

Research, however, suggests that higher creativity can also be achieved through cognitive persistence reflected by focused cognitive efforts and perseverance (De Dreu, Baas, & Nijstad, 2008; Nijstad, De Dreu, Rietzschel, & Baas, 2010; Roskes, De Dreu, & Nijstad, 2012). Studies by Jung and Lee (2015) showed that relationship conflict had positive effects on creativity through the mediation of cognitive persistence when the relational self was made salient. It is because under a conflictual relationship situation people high on relational self would persist in detailed thinking in order to understand why conflict originates and how to resolve it creatively. Future research can be extended to examine whether activating paradoxical frames can foster creativity through heightening cognitive persistence.

### **Conclusion**

Creativity management requires embracing tensions and paradoxes. Given increasing globalization and prevalence of cross-cultural interactions in everyday social transactions and at the workplace, it is essential to understand how people from different cultures manage tensions and conflicts. We showed that framing a situation as paradoxical fuels the creativity of Westerners or lower endorsers of middle ground, but has weaker effects on creativity among East Asians or higher endorsers of middle ground. We attribute this inconsistency to the different approaches in how people make sense of and handle paradoxes. Under the situations where we intend to foster creativity through encouraging paradoxical inquiry or inducing paradoxical frames, we should be aware of the individual and cultural differences in how people approach paradoxes. The current research offers an important insight: Paradox is less beneficial to creativity when individuals are motivated to harmonize conflict and to compromise contradictory perspectives by finding a middle ground; paradox is more beneficial to creativity when individuals confront and scrutinize the conflict and search for integrative solutions that simultaneously fulfill competing elements.

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### Footnotes

1. When we analyzed with three conditions (paradoxical-frame, creativity-frame, efficiency-frame), the mean differences were in the expected direction, with the paradoxical-frame condition invoking the highest levels of conflict and creativity, and the creativity- and efficiency-frame conditions showing similar levels of conflict ( $p = .44$ ) and creativity (attribute creativity:  $p = .53$  and overall creativity:  $p = .48$ ). Specifically, pairwise comparisons revealed that the levels of conflict and creativity in the paradoxical-frame condition were significantly higher than those in the efficiency-frame condition (conflict:  $p = .02$ ; attribute creativity:  $p = .04$  and overall creativity:  $p = .04$ ), but similar to those in the creativity-frame condition (conflict:  $p = .66$ ; attribute creativity:  $p = .83$  and overall creativity:  $p = .87$ ). One plausible explanation for the lack of significant difference between the creativity-frame and the paradoxical-frame could be that the creativity-frame might have also primed conflict and contradiction. As Byer (2007) explains: “There is an “incompatibility” at the base of any creative situation. There is a conflict, something that does not work, that is contradictory or paradoxical.” To increase robustness of our findings and overcome this possible limitation, in Studies 2 and 3 we used a different manipulation to induce a paradoxical frame and we found consistent results.
2. Due to a glitch, the age information of the participants was not collected. The participants came from the same university as those in Study 1 and we would expect their age characteristic to be comparable to the Study 1 participants.
3. We removed the reverse scored item (“Choosing a middle ground in an argument should be avoided”) of the Attitude toward Contradictions subscale from further analyses in Study 3. Removing this item boosted the internal consistency of the scale particularly for the Israeli sample ( $\alpha$  increases from .39 to .55; for the Singaporean sample,  $\alpha$  increases from .72 to .75). The same was done in Study 5 ( $\alpha$  increased from .59 to .78).

4. We initially included nine items based on its face validity as reported in the main text. Four items were then removed due to their low corrected item-total correlation ( $r < .20$ ), so as to improve the reliability of the composite measure.
5. As we asked participants to generate up to three captions for each doodle picture, we also analyzed idea fluency (the sheer number of ideas generated by participants) as another dependent measure. Unlike idea flexibility, the second-stage moderation model did not yield a significant interaction between conflict and culture on idea fluency ( $b = .01, t = .30, p = .76$ ). We speculate two reasons for this. First, there was not sufficient variance in the fluency variable, with 84.9% of the participants generating a total of 5 ideas or above for the two doodle items ( $M = 5.34, SD = .74$ ). Second, the flexibility score tends to be a more sensitive measure of creative performance than the fluency score. It is not uncommon that individuals can manifest high fluency by generating a large number of ideas, but the ideas themselves are not being particularly unusual or creative (De Dreu, Baas, & Nijstad, 2008; Förster, Friedman, & Liberman, 2004).

## Tables

Table 1. Descriptive statistics and correlations for the main variables in Studies 1-5.

		Study 1							
		Mean	SD	1	2				
1	Sense of Conflict	4.57	2.65						
2	Design Attribute Creativity	2.65	1.23	-.01					
3	Overall Creativity	4.12	1.26	-.08	.65**				
		Study 2							
		Mean	SD	1	2				
1	Middle Ground Endorsement	5.13	.92						
2	Sense of Conflict	4.90	2.10	-.01					
3	Idea Flexibility	5.73	.84	-.01	.05				
		Study 3							
		Singapore				Israel			
		Mean	SD	1	2	Mean	SD	1	2
1	Middle Ground Endorsement	4.70	.60			4.43	.60		
2	Sense of Conflict	5.16	2.69	.09		4.46	2.54	-.04	
3	Idea Flexibility	4.56	.85	-.03	-.16	5.57	1.28	-.01	.12
		Study 4							
		Mean	SD	1	2	3	4		
1	Sense of Conflict	4.00	2.75						
2	Fluency	6.33	4.28	.22*					
3	Categorical Flexibility	5.38	3.18	.23*	.94**				
4	Practicality	4.55	0.73	-.13	-.04	-.03			
5	Overall Creativity Index	24.40	15.05	.20*	.91**	.95**	.24		
		Study 5							
		Mean	SD	1	2				
1	Middle Ground Endorsement	5.02	0.89						
2	Sense of Conflict	6.23	2.31	.11					
3	Creative Deal-making Score	0.76	1.19	.02	-.02				

Note: \*  $p < .05$ ; \*\*  $p < .01$

Table 2. Summary of the second-stage moderation results, Study 2.

	Dependent variables	
	Sense of conflict	Idea flexibility
Recall condition (Paradoxical-frame vs. Control)	.54* (.24)	-.02 (.10)
Sense of conflict		.30** (.11)
Middle ground approach		.24* (.11)
Sense of conflict × Middle ground approach		-.05** (.02)
$R^2$	.017	.025
Delta $R^2$		.008

Note: The entries are unstandardized coefficient estimates with standard errors in parentheses.

\* $p < .05$ ; \*\* $p \leq .01$

Table 3. Summary of the second-stage moderation model results, Study 3.

	Dependent variables	
	Sense of conflict	Idea flexibility
Recall condition (Paradoxical-frame vs. Control)	1.58*** (.42)	.01 (.17)
Creative cognitive style		.15 <sup>+</sup> (.08)
Creative cognitive style × Sense of conflict		-.08* (.03)
Sense of conflict		-.05 (.04)
Culture		.98*** (.16)
Sense of conflict × Culture		.17** (.06)
$R^2$	.08	.27
Delta $R^2$		.19*

Note: The entries are unstandardized coefficient estimates with standard errors in parentheses.

<sup>+</sup> $p < .10$ ; \* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$

Table 4. Summary of linear regression mediation analysis, Study 4.

	Sense of conflict		Dependent variables							
			Fluency		Flexibility		Practicality	Overall creativity		
Middle ground condition (0=high, 1=low)	1.12*	(0.48)	0.02	(0.77)	0.18	(0.57)	-0.03	(0.13)	0.82	(2.72)
Sense of conflict			0.33*	(0.14)	0.25*	(0.10)	-0.03	(0.02)	1.04*	(0.50)
<i>F</i>	5.43*		3.01*		3.33*		1.03		2.50*	
<i>R</i> <sup>2</sup>	.04		.05		.05		.02		.04	
Bootstrap 95% CI			[-0.002, 1.29]		[0.003, 0.91]*		[-0.13, 0.008]		[-0.10, 4.54]	
Bootstrap 90% CI			[0.04, 1.17] <sup>+</sup>				[-0.10, 4.54]		[0.02, 4.23] <sup>+</sup>	

Note: The entries (unless specified) are unstandardized coefficient estimates with standard errors in parentheses. <sup>+</sup> $p \leq .10$ ; \* $p \leq .05$

Table 5. Summary of three-way multiple linear regression, Study 5.

	Dependent variable: Creative deal-making		
	Step1	Step 2	Step 3
Conflict	-0.01	-0.01	0.01
Middle ground approach (MG)	0.01	0.02	0.03
Integrative complex thinking (ICT) (1=high, 0=low)	-0.26	-0.26	-0.22
Conflict × MG		-0.04	-0.08 <sup>+</sup>
Conflict × ICT		0.16 <sup>+</sup>	0.16 <sup>+</sup>
MG × ICT		-0.02	0.04
Conflict × MG × ICT			-0.21*
$R^2$	0.01	0.04	0.07
Delta $R^2$		0.03	0.03*

Note: The entries are unstandardized coefficient estimates. MG = Middle ground approach,

ICT = Integrative complex thinking. <sup>+</sup> $p < .10$ ; \* $p \leq .05$

*Table 6.* Coefficients for simple slopes analysis showing conditional effects of sense of conflict, Study 5.

Condition	Middle ground approach	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
High integrative complex thinking	Low	0.26**	.10	2.68	0.008
	Mean	0.09	.06	1.47	0.144
	High	-0.08	.09	-0.92	0.357
Low integrative complex think	Low	-0.09	.07	-1.36	0.175
	Mean	-0.07	.05	-1.29	0.199
	High	-0.05	.08	-0.64	0.525

Note: Predictor = Sense of conflict, dependent outcome = Creative deal-making score.

Coefficient estimates are unstandardized. \*\* $p \leq .01$

Figures

Figure 1. Schematic representation of the hypothesized second-stage moderation model with endorsement of the middle ground approach moderating the relationship between sense of conflict and creativity.

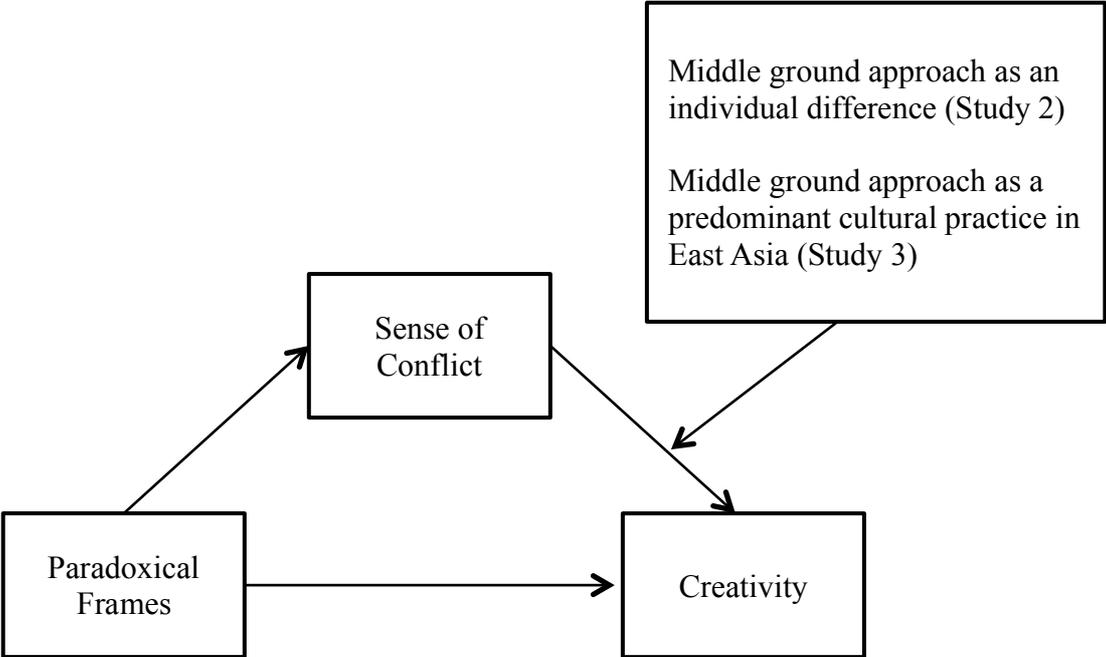


Figure 2. Idea flexibility as a function of sense of conflict and endorsement of the middle ground approach, Study 2.

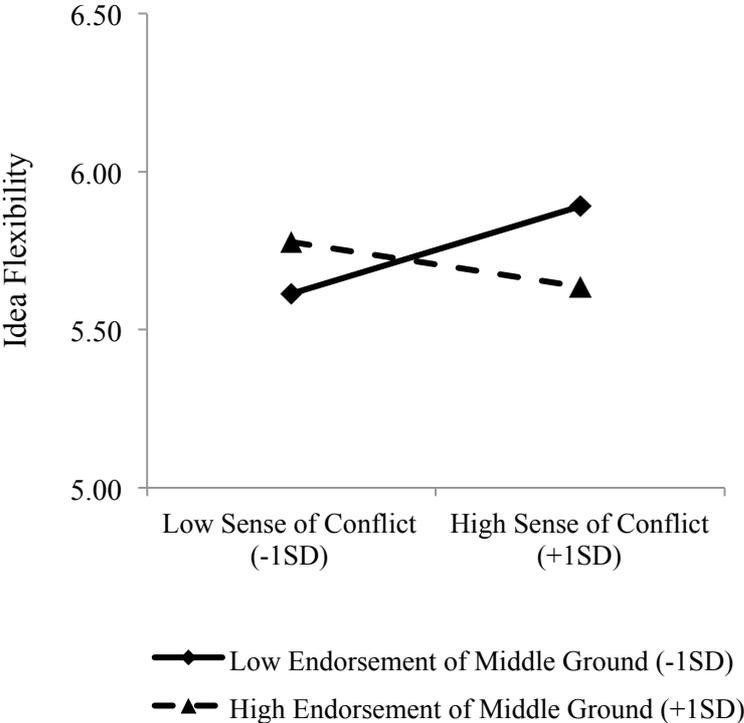


Figure 3. Idea flexibility as a function of sense of conflict and culture, Study 3.

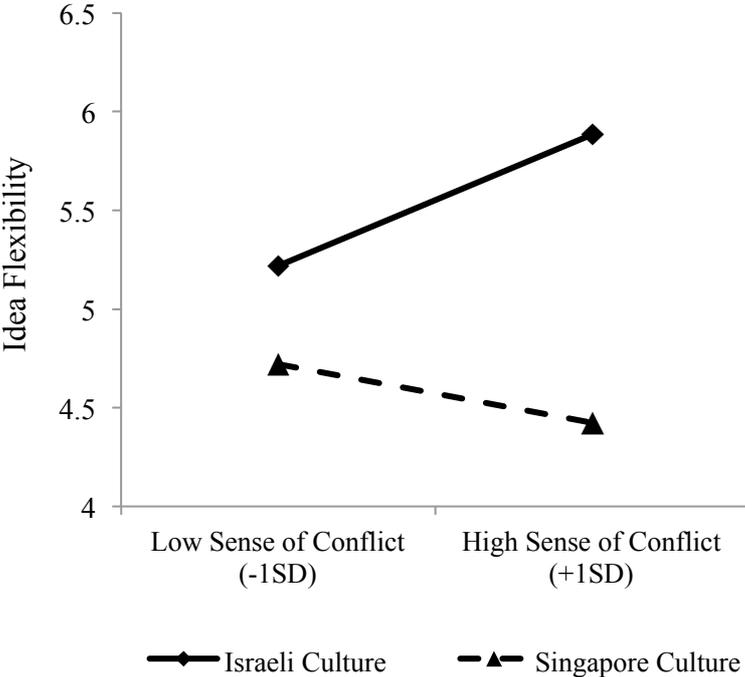


Figure 4. Creative deal-making as a function of sense of conflict and endorsement of the middle ground approach in the low vs. high integrative complex thinking condition, Study 5.

