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# What is the source of cultural differences? – Examining the influence of thinking style on the attribution process

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ABSTRACT

The present research is intended to find out whether individuals with analytic or holistic thought have different attribution processes. Cross-cultural research has suggested that East Asians, who tend to have a holistic thought pattern, differ in cognitive process from Westerners, who tend to engage in analytic thought. However, studies that found cultural difference in attribution process may have non-equivalence problems that make it hard to interpret the causal relationship between thinking style and attribution process. The present research extends this by measuring participants' thinking style within a single culture in order to ensure equivalence on potentially confounding variables such as prior knowledge and cognitive capacity. Two experiments demonstrate that both types of thinkers have identical attribution processes and suggest different thinking styles might relate to different tendencies toward situational information, but not to the attribution process itself.



## 1. Introduction

Until recently, it was believed that fundamental cognitive processes are universal for all human beings. Cross-cultural research, however, suggests that individuals who were fostered by different cultures may have different thinking styles or habits that shape their cognitive processes in different ways (Nisbett, 2003; Nisbett, Peng, Choi, & Norenzayan, 2001). According to the mainstream viewpoint in this field, Westerners and East Asians are usually termed as analytic and holistic thinkers, respectively, to explain the cultural differences found in various cognitive domains, such as attribution (e.g., Choi & Nisbett, 1998; Morris & Peng, 1994), attention (e.g., Ji, Peng, & Nisbett, 2000; Masuda & Nisbett, 2001), categorization (e.g., Norenzayan, Smith, Kim, & Nisbett, 2002), and perceptual habits (e.g., Masuda & Nisbett, 2001). Analytic thinkers are characterized as more object-centered whereas holistic thinkers are more field-centered, so the former would pay more attention to focal objects, make more dispositional attributions, tend to believe the essence of an object is unchanged over time, and be more likely to adopt a rule-based approach to categorize things or resolve contradictions than would the latter. Few studies have directly examined the causal link between thinking styles and the cognitive process that are claimed to differ across cultures until recently. Choi and his colleagues have measured participants' thinking styles between West and East Asian cultures or within an East Asian culture, and found that analytic and holistic thinkers differ on categorization and the data collection stage of causal reasoning (Choi, Dalal, Kim-Prieto, & Park, 2003; Choi, Koo, & Choi, 2007). However, other issues remain unexplored.

The purpose of the current work is to re-examine the relationship between thinking style and attribution process because a consensus has not resulted from previous cross-cultural studies. Specifically, we investigate whether people with different thinking styles have different attribution processes, as previous studies proposed, when we control for the participants' prior knowledge regarding the target behavior and cognitive capacity required for processing multiple pieces of information.

People often make attributions in situations where multiple factors result in the final inference, making it difficult to determine underlying causal relations. The influence of prior knowledge and information selection on attributions have been emphasized in attribution theories (e.g., Cheng & Novick, 1990; Hansen & Donoghue, 1977; Hilton, Smith, & Kim, 1995; Jones & Davis, 1965; Kelley,

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1967; Lowe & Kassin, 1977; Novick, Fratianne, & Cheng, 1992). It would not be surprising to find that people with different cultural backgrounds perform differently on various attribution tasks. For example, it has been found that East Asians on an average generate more situational inferences than Westerners when making attributions (Choi & Nisbett, 1998; Miller, 1984; Morris & Peng, 1994) and are more sensitive to the diagnosticity of socially-constrained behaviors when deciding whether the behavior corresponds to the actor's true attitude (Miyamoto & Kitayama, 2002). Two studies, although inconsistent with each other, further demonstrated that Westerners differ from East Asians in the tendency to take situational information into account when participants' cognitive load and the types of situational information provided for attribution were manipulated (Knowles, Morris, Chiu, & Hong, 2001; Lieberman, Jarcho, & Obayashi, 2005). Whether these differences result from East Asians and Westerners having different attribution processes remains unclear, since subjects from different cultures are likely to be different on other variables (such as prior knowledge about the target behavior, as mentioned), which might be relevant to attributional judgments as well. These non-equivalences between groups will lead to sample bias or incomparability of samples and render conclusions difficult (Heine & Norenzayan, 2006; Leung & van de Vijver, 2008; Matsumoto & Yoo, 2006; Norenzayan & Heine, 2005; van de Vijver & Tanzer, 2004). The basic design of cross-cultural comparison allows us to find differences between cultures; however, it makes it difficult to discover what causes these differences since matching of samples on all relevant attributes is practically impossible.

We attempt to clarify this issue and avoid the above-mentioned non-equivalence problems by: (a) examining the causal linkage between thinking style and attribution process directly; (b) adopting a mono-cultural approach to ensure the equivalence of potential confounding variables; and (c) measuring participants' cognitive capacity (i.e., working memory capacity), which is known to be critical for the tasks that manipulate cognitive load (to be explained later). In the next section, three current hypotheses about the attribution process relevant to cultural or thinking style are briefly reviewed, namely: (a) the dual-process model of attribution (Gilbert, Pelham, & Krull, 1988); (b) the automatized situational correction hypothesis (Knowles et al., 2001); and, (c) the controlled situational-heuristic hypothesis (Lieberman et al., 2005), followed by our rationale and two experiments conducted to test them.

### 1.1. Models of the attribution process

The dual-process model of attribution suggests that attribution about the causes of another's behavior is a multiple-stage process that includes both an automatic, effortless stage and a controlled, effortful stage (Gilbert et al., 1988; Krull, 1993). For example, when observing someone behaving anxiously, a perceiver first would make an automatic dispositional inference corresponding to the behavior (e.g., she must be an anxious person). In the subsequent controlled stage, the inference might be adjusted in different directions based on the properties of available situational (i.e., external) information. When the perceived situational factor promoting the observed behavior (e.g., she is talking about anxiety-provoking topics) indicates the dispositional cause should be discounted, the perceiver may correct the initial inference and make a weaker dispositional attribution. Alternatively, when the situational factor is not likely to cause the observed behavior (e.g., she is talking about relaxing topics), the perceiver is believed to augment the initial inference and to make an even stronger dispositional attribution. However, the controlled correction stage may be disrupted when adequate cognitive resources are not available (Gilbert et al., 1988).

The distinction between automatic and controlled stages of attribution processes is consistent with, or could be taken as an exemplar of, the dual-process theory of cognition, which has received considerable attention in the domain of human thinking during the past decade (e.g., Evans, 2003; Sloman, 1996; Smith & DeCoster, 2000; Stanovich & West, 2000). It suggests that the human mind has two distinct systems of cognitive processing. The heuristic system relies on prior belief and operates in an automatically associative manner without capacity limits, while the analytic system is assumed to operate in a rule-based manner and is influenced by working memory. In attribution, the heuristic system is believed to be involved in the automatic inference stage of the attribution process whereas the analytic system is believed to be exerted in the controlled correction stage (Smith & DeCoster, 2000). The two systems often act in concert. However, when lacking adequate cognitive resources, the belief-based system becomes prepotent, which may hamper or limit the rule-based processing system.

The generality of the dual-process model of attribution has been challenged and re-examined in the arena of cross-cultural studies by assuming that East Asians, the supposed holistic thinkers, are more sensitive to situational information than are Westerners. Two studies have found that the East Asians' attribution process deviated from this model; nevertheless, the two studies arrived at different conclusions (Knowles et al., 2001; Lieberman et al., 2005).

Knowles and his colleagues (2001) provided their US and Hong Kong participants discounting information that promoted the occurrence of the target behavior. They found that US participants made stronger dispositional inferences when under an increased load condition by using a concurrent task than under a normal load condition. This result indicates that the controlled correction stage in attribution was interrupted by the manipulation of cognitive load, which is consistent with the dual-process model of attribution. However, the model failed to explain the judgments of Hong Kong participants. Under both normal and increased load conditions, their dispositional inferences were identical and also were weaker than those of the US participants under the increased load condition. Knowles et al. concluded that because East Asians are more apt to attribute behavior to situational factors and are well-practiced at situational corrections, they automatically correct their inference and, thus, are resource-independent for both the inference and correction stages.

On the contrary, Lieberman et al. (2005) found that when both cognitive load and the type of situational information were manipulated, the performance of Westerners still was consistent with the prediction of the dual-process model, but the East Asian participants always made weaker dispositional attributions under normal load condition than when under an increased load condition, regardless of whether the situational information given was discounting or augmenting for dispositional cause. Similar to Gilbert et al. (1988), they concluded that East Asians also have an automatic inference and a controlled stage in their attribution process. However, based on the data they obtained, they further argued that East Asians are not sensitive to the type of situational information, neither do they explicitly take it into account and simply apply a situational causality heuristic when adequate processing resources are available. Therefore, weaker dispositional inference was made regardless of the types of information in the normal load condition. The explanation by Lieberman et al. nevertheless contradicts the general assumption that East Asians or holistic thinkers are more sensitive to situational information than are the Westerners. Also note that the condition in which the situational heuristic is used (i.e., the normal load condition) is contradictory to the general finding in the studies of human reasoning that the belief-based or heuristic system is more prepotent when cognitive resource is lacking than when it is available (e.g., Evans, 2003; Gilhooly, Logie,