The Relations between Language Diversity and Similarity and Adults' Collaborative Creative Problem Solving

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Abstract : Diversity in individual problem-solving approaches, culture and nationality have been shown to have positive effects on collaborative creative processes in organizational and scholastic settings. For example, diverse graduate and organizational teams consisting of members with both structured and unstructured problem-solving styles were found to have more creative ideas on a collaborative idea generation task than teams that comprised solely of members with either structured or unstructured problem-solving styles. However, being different may not always provide benefits to the collaborative creative process. In particular, speaking different languages may hinder mutual engagement through impaired communication and thus collaboration. Instead, sharing similar languages may have facilitative effects on mutual engagement in collaborative tasks. However, no studies have explored the relations between language diversity and adults' collaborative creative problem solving. Sixty-four Singaporean English-speaking bilingual undergraduates were paired up into similar or dissimilar language pairs based on the second language they spoke (e.g., for similar language pairs, both participants spoke English-Mandarin; for dissimilar language pairs, one participant spoke English-Mandarin and the other spoke English-Korean). Each participant completed the Ravens Progressive Matrices Task individually. Next, they worked in pairs to complete a collaborative divergent thinking task where they used mind-mapping techniques to brainstorm ideas on a given problem together (e.g., how to keep insects out of the house). Lastly, the pairs worked on a collaborative insight problem-solving task (Triangle of Coins puzzle) where they needed to flip a triangle of ten coins around by moving only three coins. Pairs who had prior knowledge of the Triangle of Coins puzzle were asked to complete an equivalent Matchstick task instead, where they needed to make seven squares by moving only two matchsticks based on a given array of matchsticks. Results showed that, after controlling for intelligence, similar language pairs completed the collaborative insight problem-solving task faster than dissimilar language pairs. Intelligence also moderated these relations. Among adults of lower intelligence, similar language pairs solved the insight problem-solving task faster than dissimilar language pairs. These differences in speed were not found in adults with higher intelligence. No differences were found in the number of ideas generated in the collaborative divergent thinking task between similar language and dissimilar language pairs. In conclusion, sharing similar languages seem to enrich collaborative creative processes. These effects were especially pertinent to pairs with lower intelligence. This provides guidelines for the formation of groups based on shared languages in collaborative creative processes. However, the positive effects of shared languages appear to be limited to the insight problem-solving task and not the divergent thinking task. This could be due to the facilitative effects of other factors of diversity as found in previous literature. Background diversity, for example, may have a larger facilitative effect on the divergent thinking task as compared to the insight problem-solving task due to the varied experiences individuals bring to the task. In conclusion, this study contributes to the understanding of the effects of language diversity in collaborative creative processes and challenges the general positive effects that diversity has on these processes.
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