

# INPLASY PROTOCOL

## Culture–Sex Interaction in Trait Empathy—A Meta-Analysis

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submission:** Data analysis.

**Conflicts of interest:**  
None.

**Review question / Objective:** Culture–sex interaction effect in trait empathy was a newly proposed sociopsychological phenomenon initially identified with Australian and Chinese participants. According to this theory, the Australian–Chinese cultural differences in the trait was significant for the two female cohorts (i.e., Australian females > Chinese females), but was comparable for the two male cohorts (i.e., Australian males v.s. Chinese males). Consistently, researchers have pointed out that the sex gap in empathy was more depolarized for Westerners than Asians (i.e., females > males). Nevertheless, the accumulated results regarding the Western–Asian cross-cultural difference in trait empathy were inconsistent (the sex ratio recruited by each study deserved attention). Hence, the current author reviewed and conducted a meta-analysis on Western–Asian cross-cultural comparisons of trait empathy. Results of the meta-analysis suggested that the cultural difference was significant upon the female (i.e., Westerners > Asians) but not the male contrasts (i.e., Westerners > Asians). Furthermore, although the cultural difference in light of mixed-sex reports also appeared to be significant (i.e., Westerners > Asians), the cultural difference positively correlated with the female ratios of the samples. In other words, the Western–Asian cross-cultural difference in empathy was likely to be widened for studies recruiting more female relative to male participants. The above three-fold meta-analysis results were concurrent with the theory of the culture–sex interaction effect in empathy. This interaction effect requires attention by future cross-cultural communications and cross-cultural investigations of empathy. Furthermore, the cultural and genetic basis of the culture–sex interaction effect is worth investigation.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 November 2020 and was last updated on 22 November 2020 (registration number INPLASY2020110097).

### INTRODUCTION

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phenomenon initially identified with Australian and Chinese participants. According to this theory, the Australian–Chinese cultural differences in the trait was significant for the two female cohorts (i.e.,

Australian females > Chinese females), but was comparable for the two male cohorts (i.e., Australian males v.s. Chinese males). Consistently, researchers have pointed out that the sex gap in empathy was more depolarized for Westerners than Asians (i.e., females > males). Nevertheless, the accumulated results regarding the Western-Asian cross-cultural difference in trait empathy were inconsistent (the sex ratio recruited by each study deserved attention). Hence, the current author reviewed and conducted a meta-analysis on Western-Asian cross-cultural comparisons of trait empathy. Results of the meta-analysis suggested that the cultural difference was significant upon the female (i.e., Westerners > Asians) but not the male contrasts (i.e., Westerners > Asians). Furthermore, although the cultural difference in light of mixed-sex reports also appeared to be significant (i.e., Westerners > Asians), the cultural difference positively correlated with the female ratios of the samples. In other words, the Western-Asian cross-cultural difference in empathy was likely to be widened for studies recruiting more female relative to male participants. The above three-fold meta-analysis results were concurrent with the theory of the culture-sex interaction effect in empathy. This interaction effect requires attention by future cross-cultural communications and cross-cultural investigations of empathy. Furthermore, the cultural and genetic basis of the culture-sex interaction effect is worth investigation.

**Condition being studied:** We examined the effect size of Western-Asian cultural differences in trait empathy (self-report empathy). All participants in the studies were healthy individuals. We studied publications on the topic of Western-Asian cultural differences in trait empathy, which satisfied three groups of criteria (to be introduced in the next box).

## METHODS

**Search strategy:** Three groups of keywords were used for the search, and they were: (1) Keywords for trait empathy, namely, Empath\* OR Empathy Quotient OR

Interpersonal Reactivity Index OR EQ OR IRI; (2) Keywords for Western culture, namely, Western OR Caucasian OR America OR Australia OR Britain OR British OR English OR Europe OR German; and (3) Keywords for the Asian culture, namely, Asia OR China OR Chinese OR Japan OR Korea OR culture OR cultural.

**Participant or population:** Western healthy individuals.

**Intervention:** None.

**Comparator:** Asian healthy individuals.

**Study designs to be included:** Cross-cultural studies of trait empathy with both Western and Asian participants.

**Eligibility criteria:** (1) satisfied the three groups of criteria; (2) mean age of participants was equal or larger than 18; (3) the trait empathy was evaluated using a valid self-report questionnaire.

**Information sources:** Articles investigating cultural differences in trait empathy based on Western and Asian participants were searched on PubMed, Web of Science, Scopus, and EBSCO (Academic and Library). The literature searching period was from the earliest date of each database to November 11th, 2020; the searched area of these articles was restricted to title and abstract or topic; the language of the articles was restricted to English. In addition, when necessary, we will also have a contact with the original author to enquire the details regarding the cultural differences in empathy.

**Main outcome(s):** Three points of results were identified: (1) there were significant cultural difference between Western females and Asian females (i.e., the former > the latter,  $p < .001$ ); (2) there were no significant difference between Western males and Asian males (i.e., the former = the latter); the cultural difference up on the overall mixed-sex samples were regressed on the sex ratio (i.e., female%; a positive correlation,  $p < .001$ ).

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**Quality assessment / Risk of bias analysis:**

The risk of publication bias will be evaluated using the funnel plot.

**Strategy of data synthesis:** We will use the CMA software to examine the effect size of cultural differences in empathy. We will record the sample size, mean, and SD (or equivalent information) for each study, as well as the sex ratio (female %) for each overall mixed-sex sample. Besides, the nationality, ethnicity, country of origin will be recorded according to the original publication.

**Subgroup analysis:** The Western-Asian cultural differences in trait empathy will be evaluated based on the overall mixed-sex sample, females only, and males only, respectively.

**Sensibility analysis:** The sensibility will be processed using the "remove one" analysis to gauge the sensibility of the meta-analysis.

**Country(ies) involved:** China.

**Keywords:** meta-analysis, culture–sex interaction, cross-cultural, empathy, Westerners, Asians.

**Contributions of each author:**

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