Scaffolding Strategy and Gender Influence in Learning Social Psychology Concepts

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Abstract: The concept of scaffolding has consistently been a widely explored subject in the field of educational psychology. Though a great number of research had been done in science education, there was little known about social science. To address this gap, the current study examined the interplay between gender and scaffolding on students' learning of social psychology concepts. One hypothesis was that women would do better in understanding the target concept of the mere exposure effect than men did. Another hypothesis was that participants who were exposed to the scaffolding scenario designed to provide prior knowledge would be more resilient to learning the concept. In a sample of 47 young learners recruited online, aged from under 18 to 26, an anonymous online survey was used to test participants' comprehension, and the results were interpreted using ANOVA analysis. Unfortunately, the results showed no significant effects of gender and scaffolding on participants' understanding of the given concept. Further discussion about the possible influential factors and suggestions for future research were mentioned at the end.

Keywords: students, gender difference, education, scaffolding, social psychology

1. Introduction

Scaffolding serves as an effective technique to facilitate students' learning development and to understand cognition [1]. As one way of applying scaffolding instruction, students are provided with information to build on their prior knowledge so that they can internalize the concepts [2]. Scaffolding strategies have been prevalent in the research of understanding conceptual change, a challenging learning process as it involves substantial restructuring of concepts incompatible with pre-existing knowledge. It has been revealed that teaching children tangentially related content could assist them in forming complex conceptual structures [3]. In the domain of science education, prompts are proven to be useful scaffolding strategies [1]. In a recent study conducted by Ronfard et al., storybook intervention also induced successful results in helping children go through the process of conceptual change when learning the concept of natural selection [4].

However, most past studies were conducted on the topic of learning scientific concepts, which fits the explanation of conceptual change as children are exposed to knowledge incompatible with their prior understanding. Little is known in the field of learning social science, which requires a less profound shift in cognition. The interplay between gender and scaffolding in the learning process is also an intriguing topic that has not been explored. Therefore, future studies need to gather more information to obtain implications on future course design and the understanding of social science.

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This paper aims to discover the effect of scaffolding on the process of learning social psychology concepts and how it varies by gender. Two hypotheses are considered in the current study. One is that female participants will display more readiness to understand the new concept than male participants. Another is that participants who are exposed to scaffolding before testing the concept will be less resistant to challenges in learning.

2. Research Design

2.1. Theoretical Foundation

To examine the effect of scaffolding on young learners, the current study used two self-designed scaffolding scenarios and a comprehension post-test.

2.1.1. Scaffolding Scenarios

Two scenarios were used in the intervention before the final assessment. Both scenarios included detailed descriptions in layman's terms of certain social phenomena. One scenario was designed to scaffold students' learning of the targeted concept: the mere exposure effect, with a focus on the frequency of seeing someone (e.g., two strangers often see each other at multiple social events so they grow to become friends in the end) [5]. Another scenario told about a different social psychology concept of the halo effect, with a different focus on the attractiveness of a person (e.g., the person is good-looking, and everyone evaluates this person as being smart, sincere, and kind, even though the person is at the medium level of academic performance) [6]. The content of each scenario was unrelated to the other so participants would not be very likely to come to the same judgments in the following post-test.

2.1.2. Comprehension Post-test

The comprehension post-test was a self-designed questionnaire that contained five closed-ended questions and five open-ended questions to assess participants' understanding of the concept of different water states.

2.2. Procedure

Participants took the online survey through distributed anonymous survey links or QR codes from 1 to 4 September 2023, powered by www.wjx.cn, a crowdsourcing platform in mainland China. They were informed that their responses would be anonymous, and they could omit any questions or withdraw their participation at any time during the survey. After answering basic demographic questions, they were randomly assigned to one of the scenarios and were asked to describe their understanding of the situation. After that, participants answered 10 questions assessing their understanding of other given situations regarding the mere exposure effect. The overall scores of comprehension were calculated based on whether their choices fit the concept and whether their explanations mentioned the frequency of being exposed to something.

2.3. Data

The current study originally recruited 58 Chinese participants in total, aged from under 18 to over 60. 1 participant who preferred to self-describe the gender and 10 of the participants aged from 26 to over 60 were deleted as the gender information or age range did not fit the purpose of understanding the influence of binary gender and scaffolding effects on young learners. Among the 47 participants, all of them were Han nationals; 30 were single (63.8%), 16 were in a relationship (34%), and one

preferred not to reveal relationship status (2.1%). Most participants were students aged between 18 and 25. 23 were men (48.9%), and 24 were women (51.1%).

3. Results

A 2x2 between-measures analysis of variance (ANOVA) was conducted to examine the effects of gender and scaffolding strategy on the comprehension of the concept of mere exposure effect. The results revealed that there were no statistically significant main effects of gender, F(1, 43) = .81, p = .373, $\eta^2 = .02$ or scaffolding influence, F(1, 43) = .02, p = .903, $\eta^2 = .00$. Additionally, there was no significant interaction effect between gender and scaffolding, F(1, 43) = .77, p = .386, $\eta^2 = .02$. Post-hoc tests were not conducted due to the lack of significant effects.

It was interesting to note that, while no significant effects were observed, overall, female participants showed more understanding in the post-test than male participants as we can see in figure 1. However, these trends did not reach statistical significance in the current analysis.



Figure 1: Comprehension of the mere exposure effect in the context of gender influence and scenario scaffolding.

Note: a bar graph displaying the relationship between knowledge comprehension and scaffolding under different gender conditions.

4. Discussion

The original hypotheses were that women would face less difficulty in understanding the social psychology concept and that participants who were exposed to the scaffolding scenario would score higher on the comprehension test. However, the findings from the current study did not support them. The mean score from each group did not differ much from the others. It was possible that gender and scaffolding strategies did not always play very important roles in students' understanding of social psychology as they did in understanding complex scientific facts, which might require going through the process of conceptual change, like other previous studies implicated [3, 4, 7]. The findings from the present study might suggest a different case in the field of education in social science. Women might not have better academic performance in learning social psychology than men. The utilization

of scaffolding strategies might also be different. However, based on pure observation of the results, whether with scaffolding or not, female participants did have a higher mean score in the comprehension test than male participants did. It was still possible that scaffolding or gender could impact their understanding, but the effect was not explicit due to various potential limitations of the current study.

Several explanations in the research design might also contribute to the results mentioned above. It could be that the sample choice was not so representative of young learners. Individual differences might have some influence in this case. Though the participants' ages were close to each other, it was unknown how much previous knowledge they had about social science. Some of them might be better at learning the target concept than others because they were taught about related content at school. Moreover, it was difficult to assess students' understanding of social science in the same way as scientific knowledge. Their judgments of the given hypothetical situations were subjective, and designing an adequate comprehension exam proved challenging due to the absence of a clear foundation. It was possible that this problem could be solved by adding more related scenarios and more generalization questions in the post-test examination. In the study conducted by Ronfard et al., a pre-test examination was administered as a written group test to check participants' prior knowledge about the target concept of natural selection (adaptation and speciation) and to make sure that none of them knew about the concepts prior to the test [4]. The observed effect might change if future educational psychologists conducted similar research on a larger sample and included a pretest section and a more detailed post-test. Additionally, the demographic factors had yet to be explored. Since all participants were Chinese learners, it could be that they were not sensitive to cues of the mere exposure effect, which was a concept derived from Western scholars [5]. Also, most participants were single. It was possible that relationship status could also serve as a prior knowledge condition to potentially influence their comprehension, suggesting a future direction for research. Data from the current study were too limited to interpret demographic factors as the number of participants could not effectively represent and demonstrate these influences. Additionally, the mere exposure effect concept might be too limited to expand to more comprehension questions. Changing the target concept to "conformity" might be a good alternative option because it described the tendency of individuals to adjust behaviors, attitudes, or beliefs to fit into the expectations of the group [8]. It had more specific cognitive judgments to tell and more observable behaviors to understand. If these elements were included in the comprehension post-test, it might produce more significant results.

5. Conclusion

To sum up, though from the present study, neither gender nor scaffolding strategy was found to significantly impact students' understanding of the social psychology concept of the mere exposure effect, its implications and possible suggestions for improvement could still contribute to future research. Future researchers could consider expanding the sample size, adding more comprehension questions in the method design, and exploring demographic factors as potential confounds. These measures could help improve the validity of the study. The present findings were not sufficient to conclude whether there was a gender difference in understanding social psychology and whether scaffolding strategies were effective in their learning.

Moreover, future research could try to combine one of the other demographic factors with scaffolding strategies to test young learners' comprehension of other social science concepts. For instance, the interplay of relationship status and scaffoldings could also be an interesting topic. It was possible that individuals in a relationship were more successful in learning social science concepts, and scaffolding strategies were proven effective no matter whether participants were single or not.

Although more explorations were to be done, with efforts of future studies and the current findings, researchers could add insights into the complicated roles of gender and scaffolding strategies in the

education field. It would also provide educators and course designers with considerations of gender differences and appropriate scaffolding strategies when trying to foster students' learning so that educators could improve students' learning environment.

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