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Modeling influences on divergent thinking and artistic creativity

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ABSTRACT

Despite widespread evidence of modeling effects across a wide range of human behaviors, empirical support for the role of modeling on creativity has been mixed and limited. In this study, 138 Chinese middle school students were separated into two groups, with one completing divergent thinking (DT) tasks and the other completing artistic creativity tasks. Half of each group were exposed to highly creative models beforehand, and half were exposed to no models. Results provide evidence of significant and large modeling effects on both DT and artistic creativity, although post hoc analyses suggest that the DT effects are largely restricted to verbal DT tasks.

1. Introduction

Most human behaviors are learned by observation through modeling (Bandura, 1986). Modeling has drawn many psychologists' attention over the decades, including as a social factor important for creative behavior (Amabile, 1983; Kaufman, Butt, Kaufman, & Colbert-White, 2011). Social learning theory (Bandura, 1986) posits that modeling can provide cognitive and behavioral tools for innovation. According to this theory, individuals, by identifying relevant features and grasping underling rules, are more likely to perform a creative behavior after a visual demonstration of the behavior. Sometimes the demonstration can be unintentional, with the observed behavior of others affecting creative performance even when those others are unaware that they are a source of influence (Amabile, 1983). It is difficult to imagine a highly creative individual who is completely isolated from other creative people, or, more broadly speaking, isolated from other creative behaviors or a creative environment. Therefore, from a social-cognitive perspective, creativity as an ability can been viewed as a set of relations that are actualized through dynamic transactions among individuals, environments, and social cultural relations (Glăveanu, 2011a, 2011b; McWilliams & Plucker, 2014; Plucker & Barab, 2005; Plucker, Beghetto, & Dow, 2004).

1.1. Evidence that modeling generally increases creativity

Evidence supporting the existence of creative modeling effects comes from a variety of sources. Several experimental studies were devised as straightforward tests of social learning theory applications (Amabile, 1983), and many have found positive effects of modeling on creativity test performance, especially divergent thinking test scores (Zimmerman & Dialessi, 1973).

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For example, Belcher (1975) assigned fourth and fifth grade students into four groups: Those watching an original model, watching an unoriginal model, reading a booklet, and a control group. Results suggested that the original-model group had the highest fluency and originality scores on a divergent thinking measure, with the unoriginal model group scoring second highest (i.e., even children who watched unoriginal models performed better than those who did not watch any models).

Although most studies appear to support the hypothesis that seeing a model who exhibits creative behaviors or a set of written examples which presents creative responses can increase the amount of creative behavior over that shown by a control group, the effects of viewing a rigid, convergent, or unoriginal model are somewhat inconsistent. (Anderson & Yates, 1999; Harris & Evans, 1973, 1974; Harris & Fisher, 1973; Harris, 1975; Mueller, 1978; Shalley & Perry-Smith, 2001). In Harris and Fisher's (1973) first study, groups exposed to flexible and inflexible models were both found to solve problems more flexibly than control groups. Harris and O'Donnell (1974) extended the findings of previous studies to artistic tasks, asking two experimental groups (creative and uncreative) to look at a model's doodles then give responses. In both groups was there an apparent tendency for seeing a model's doodles to strengthen the probability of imitating his creative or noncreative responses.

Historiometric and case study research also provides evidence of positive modeling effects on creativity. In these studies, researchers are interested in the influence of models on individuals with outstanding achievement. They have found an increased likelihood of creativity behavior following individuals' observation of creative models (Simonton, 1975, 1984) and junior scientists' observation of senior scientist mentors (Hooker, Nakamura, & Csikszentmihalyi, 2003). Zuckerman (1977, cited in Amabile, 1983) studied Noble Laureates who received their prizes between 1901 and 1972 and found evidence of the critical role of modeling in scientific creativity. The Laureates felt that the contacts through which apprentices see how their mentors operate, think and go about things, not the specific knowledge imparted, constitute the major influence of models in scientific settings. Not only mentors, but peers and professional colleagues can also serve as sources of expertise and thus supplement many of the roles traditionally thought to belong to mentors alone (Hooker et al., 2003).

1.2. Evidence that modeling generally does not increase creativity

Although the results regarding the effects of uncreative modeling were somewhat inconsistent across the studies reviewed above, from these studies there seems to be consistent results on the effects of creative modeling. However, this view has been challenged by studies conducted by Landreneau and Halpin (1978) and Halpin, Halpin, Miller, and Landreneau (1979). Using a similar procedure to Zimmerman and Dialessi (1973), Landreneau and Halpin (1978) found that subjects who observed a highly original model gave fewer original responses on DT tasks than subjects in the control group, and that modeling effects were highly dependent on sex, race, and traits measured. In the other study, the most fluent and flexible responses were given by the children who had observed a videotaped model giving fluent but not original or flexible responses (Halpin et al., 1979). Interestingly, the most original responses came from the group who observed no models.

Using a different scoring method, Smith, Ward, and Schumacher (1993) found that observation learning could hinder subjects' creativity performance in DT tasks. In two tasks, creature generation and toy generation, the subjects were asked to sketch and label as many novel ideas as possible. Half of them (the experimental group) were shown example designs prior to the first task. The generated designs were scored in terms of the critical features of the examples and then compared to that of the example designs. Smith found that examples could cause subject to predominately generate ideas that are similar to the given examples and thus constrain novelty and creativity. Furthermore, neither a 23-min time-delay nor explicitly instructing subjects to generate ideas that were very different from the examples significantly decreased the similarities. Smith et al. used the term *conformity effect* to describe this unintentional tendency caused by recent experience. Taking a step further on the basis of the previous study, Ward (1994) argued that not only recent experience, but existing knowledge could influence creative thinking more or less, which was described as "structured imagination." Ward used a similar task with no example. He compared the extraterrestrials drawn by subjects to typical animals on earth or those developed by science fiction writers, and the results provided evidence that there are similar structures and processes underling the animals with which we are familiar and those created by subjects.

1.3. Present study

The majority of the evidence supports the view that certain types of creativity can be learned through modeling, but that even positive models can have negative implications for creativity in some contexts. In the present study, we sought to examine modeling effects on both general and artistic creativity in Chinese educational settings. In contrast to previous studies, we included both divergent thinking and artistic models and assessments, and the use of the Chinese sample helped control for some of the demographic factors suggested by Landreneau and Halpin (1978).

2. Method

2.1. Participants

Researchers recruited 138 Grade 8 students (64 females and 74 males) from one junior middle school in the Liaoning Province of China. The mean age for the students was 12.92 (SD = .99). The average class size was 56 students per class in