Attainable and Relevant Moral Exemplars as Powerful Sources for Moral Education: from vantage points of virtue ethics and social psychology

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This is an unpublished conference paper for the 4th Annual Jubilee Centre for Character and Virtues conference at Oriel College, Oxford University, Thursday 7th – Saturday 9th January 2016.
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Introduction

The main purpose of the present study is to design and test more effective moral education programs utilizing moral stories based on virtue ethics, neuroscience and social psychology. Teachers and parents who are concerned about the moral development of their students and children are utilizing the stories of morally great people as means for moral education. In fact, ideas of moral education based on virtue ethics have proposed that the application of morally great people, moral exemplars, can contribute to the development of moral character among students through the mechanism of moral modeling and emulation (Kristjánsson, 2006; Sanderse, 2012). Furthermore, social psychological theories have explained why the presentation of moral exemplars can enhance moral motivation through at least these three mechanisms: vicarious social learning (Bandura, 1969), moral elevation (Haidt, 2000) and upward social comparison (Festinger, 1954). However, the mere presentation of moral exemplars, particularly that of extraordinary exemplars, can backfire; it may weaken motivation to engage in moral behavior. If presented moral exemplars are extremely distant, they are likely to induce negative emotional responses (e.g., extreme envy, resentment) (Monin, 2007) and even make people dislike the moral behavior presented by the exemplars (Monin, Sawyer, & Marquez, 2008). Also, from the perspective of virtue ethics, requiring extreme moral virtues possessed by moral ideals could not be morally justified (Curzer, 2015).

Given the positive as well as negative aspects of the application of the stories of moral exemplars to moral education, the present study aims at designing and testing a moral education program utilizing such stories while minimizing their negative influences on moral motivation. To achieve this aim, the present study conducts both neuroimaging and social psychological intervention experiments (Han, 2014). First, neuroimaging studies attempt to identify which psychological processes are fundamentally involved in moral affection and motivation that are psychological processes closely associated with the process of moral inspiration induced by moral stories. A meta-analysis of previously published neuroimaging experiments examining the neural correlates of moral functioning investigates the common neural activation foci of morality in general; this meta-analysis is performed in order to establish the basic hypotheses of the next experiment. In addition, a functional neuroimaging experiment is conducted to examine the interaction and influence between the neural activity in regions associated with moral functioning, particularly moral affection and motivation. Second, based on the findings from the neuroscientific studies, social psychological interventions designed to target and tweak the identified psychological processes are conducted. The present study conducts a lab-level experiment at first in order to investigate which type of exemplary stories effectively promote motivation to engage in moral behavior. Finally, this lab-level intervention design is applied to moral education in middle school to test whether such an intervention also effectively works in school settings.

Meta-analysis of Neuroimaging Studies of Moral Functioning

The present study examined the neural mechanism of moral functioning in general by meta-analyzing previously published neuroimaging experiments focusing on the neural correlates of diverse moral functions. This meta-analysis enables us to understand what are the common core regions associated with human moral functioning across diverse functional domains, including moral cognition, affection and motivation. To achieve this goal, the present study utilized the activation likelihood estimation (ALE) method that demonstrates the overlapping brain regions commonly activated across multiple experiments (Eickhoff et al., 2009; Eickhoff, Bzdok, Laird, Kurth, & Fox, 2012). Particularly, the presents study used the Ginger ALE package developed for the meta-analysis on computer system (Eickhoff et al., 2009, 2012; Laird, Lancaster, & Fox, 2005).

First, before executing the Ginger ALE program, the present study collected neural activity data from previously published articles. It searched for neuroimaging studies comparing the neural activity between moral-task and control conditions. As a result, a total of 45 experiments with 959 participants and 463 activation foci were extracted from 43 published articles. Second, the present study registered the collected data to the Ginger ALE database and performed the ALE analysis. Third, only common activation foci with $p < .05$ (FDR-applied) and $k > 95mm^3$ were identified.

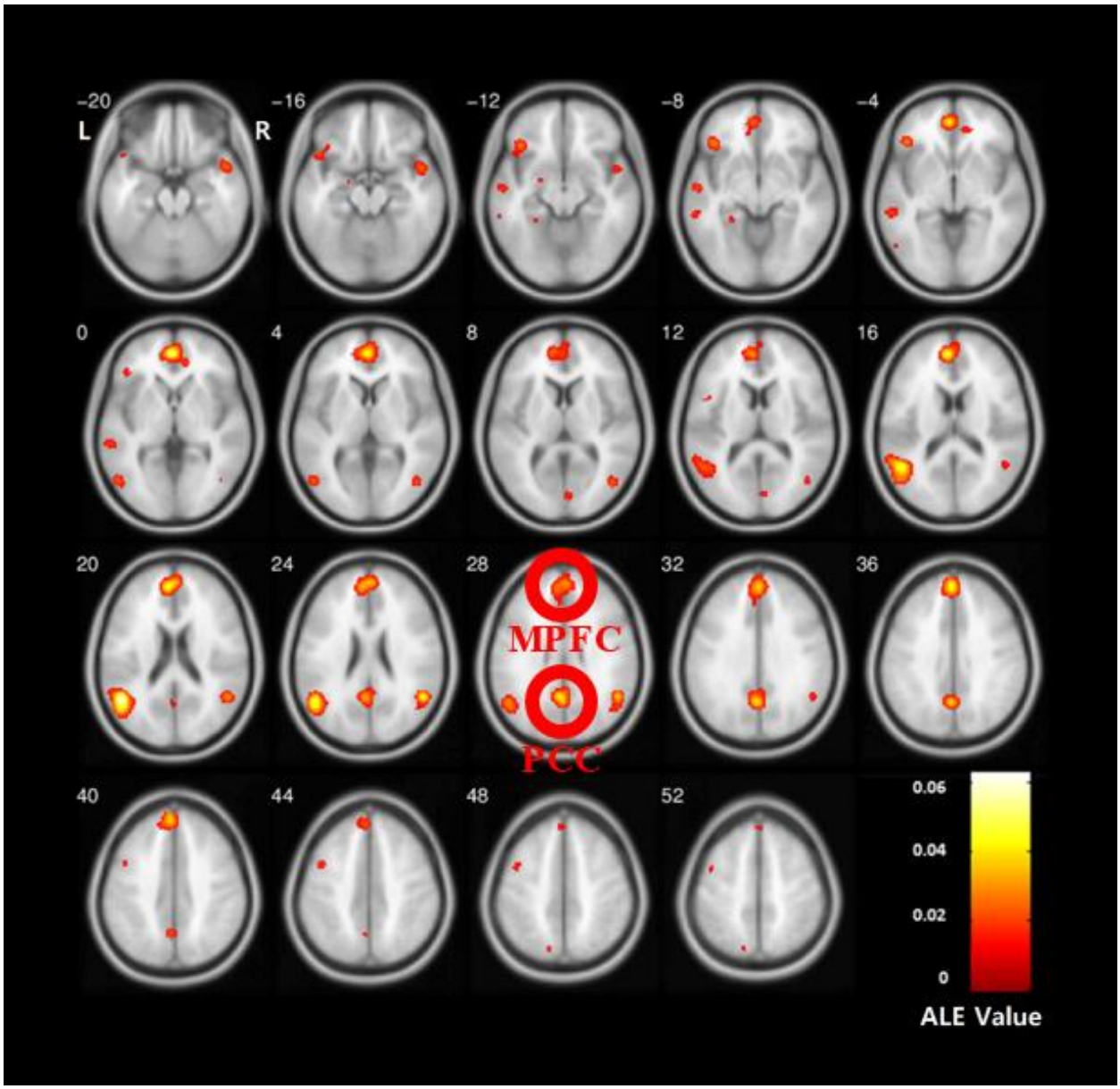

Figure 1 Calculated activation foci from the meta-analysis

As presented in the Figure 1, brain regions in the cortical midline structures (CMS), particularly the medial prefrontal cortex (MPFC) and posterior cingulate cortex (PCC), were commonly activated in the moral-task conditions. Previous neuroimaging studies have demonstrated that these regions are closely associated with selfhood-related processes, particularly autobiographical memory processing (Araujo, Kaplan, & Damasio, 2013; Araujo, Kaplan, Damasio, & Damasio, 2014; Buckner, Andrews-Hanna, & Schacter, 2008; Lou, Luber, Stanford, & Lisanby, 2010). Given these, the present study would conclude that selfhood is commonly involved in moral functioning in general, as proponents of the concept of moral self and moral identity in moral psychology have argued (Blasi, 1984; Damon, 1984; Hardy & Carlo, 2005). Also, the findings of this meta-analysis was coherent with previous neuroscientific studies demonstrating the relationship between specific

moral functioning and selfhood (Bzdok et al., 2012; Moll et al., 2007; Reniers et al., 2012; Sevinc & Spreng, 2014).

Selfhood-related Processes as the Moderators of Moral Affection and Motivation

Based on the findings from the meta-analysis, the present study conducted a functional neuroimaging experiment in order to identify whether and how the identified commonly-involved psychological processes, i.e., selfhood-related processes, interacted with moral affection and motivation. Given the findings from the meta-analysis and previous moral psychological studies arguing the role of autobiographical moral self and identity in moral functioning, the present study hypothesized that activity in regions associated with selfhood and autobiographical memory processing, particularly the MPFC and PCC, would significantly interact with other regions associated with moral affection and motivation, such as the insula (Decety, Michalska, & Kinzler, 2012; Naqvi & Bechara, 2009), while participants were solving moral problems. In addition to the interaction, the MPFC and PCC would significantly influence the insula in moral task conditions. To test these hypotheses, the present experiment utilized a moral dilemma set consisting of moral-personal, moral-impersonal and non-moral dilemmas developed by previous neuroimaging studies of moral cognition (Greene, Nystrom, Engell, Darley, & Cohen, 2004; Greene, Sommerville, Nystrom, Darley, & Cohen, 2001; Han, Glover, & Jeong, 2014). While 16 participants were being presented with and solving the dilemmas, the present study was scanning their brain activity. The scanned brain images were analyzed using the psychophysiological interaction (PPI) analysis (Friston et al., 1997) and Granger Causality Analysis (GCA) (Granger, Huangb, & Yang, 2000; Seth, Barrett, & Barnett, 2015) methods.

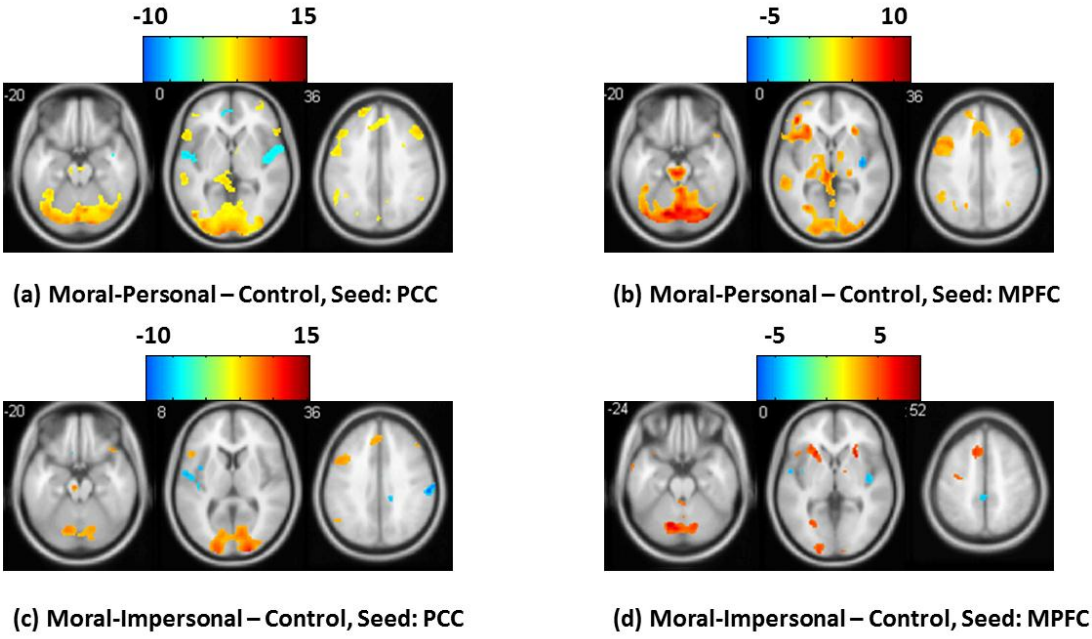

Figure 2 PPI analysis results

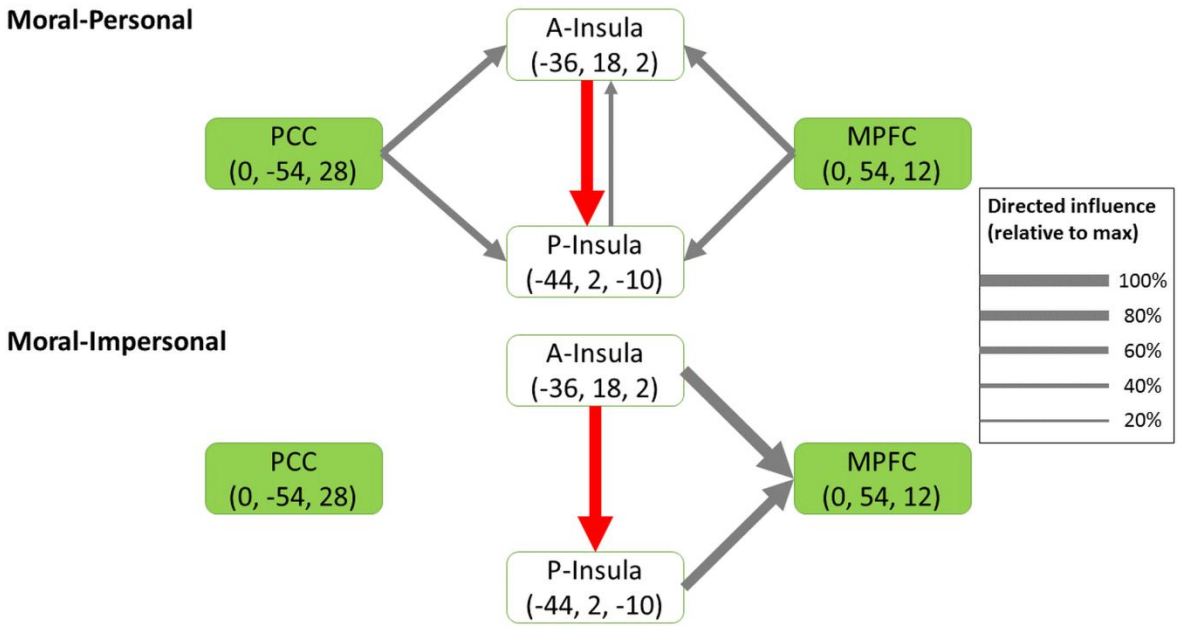

Figure 3 Granger causality analysis results

The findings successfully supported the hypotheses. First, as shown in the figure 2, two seed regions, the MPFC and PPC, significantly interacted with brain regions associated with affection and motivation, particularly the insula, in the morality-related task conditions. Second, the findings from the GCA indicated that significant influences from the MPFC and PCC to the insula regions were found in the moral-personal condition, but not in the moral-impersonal condition, as demonstrated in the figure 3. This difference in the causality between two conditions would emerge from that only the moral-personal dilemmas strongly provoked initial negative emotional responses and participants had to control these intuitive responses with self-evaluative processes associated with the MPFC and PCC to solve these dilemmas. Previous neuroscientific studies have demonstrated that the role of the insula regions in the monitoring of emotional responses (Decety et al., 2012; Wager & Barrett, 2004), integration of cognitive and affective processes (Craig, 2004; Jabbi, Bastiaansen, & Keysers, 2008; Naqvi & Bechara, 2010) and modulation of motivational forces (Dambacher et al., 2014; Silvers, Wager, Weber, & Ochsner, 2015). Given these, the present experiment was able to propose the moderating role of selfhood, particularly autobiographical memory, in moral affection and motivation at the neural level as a group of moral psychologists have underscored the importance of moral self and identity in moral functioning (Blasi, 1984; Damon, 1984; Hardy & Carlo, 2005).

Designing a Lab-level Social Psychological Intervention Utilizing Moral Exemplars

Based on the findings from the previous neuroimaging studies, the presents study designed a social psychological intervention utilizing the stories of moral exemplars in order to examine which type of stories effectively promoted moral motivation. The neuroimaging studies showed that selfhood significantly moderated the processes of moral affection and motivation. Given that, the present study hypothesized that the perceived connectivity between the presented exemplars and participants' selfhood would significantly moderate the motivational effect of the exemplars. Moreover, attainable exemplars that seemed closer to participants' selfhood would more strongly promote moral motivation compared to extraordinary exemplars that seemed distant to participants' selfhood. In fact, previous social psychological studies have demonstrate that the presence of attainability significantly promoted the motivational effect of stories although they did

not directly focus on moral motivation as dependent variable (Cialdini, 1980; Lockwood & Kunda, 1997). To test these hypotheses, the present study conducted a lab-level intervention experiment with 57 college students. These students were randomly assigned to one of these groups: attainable, unattainable and control groups. First, before the intervention session, all participants completed the pre-test survey measuring their previous voluntary service participation in hours per week as a proxy to moral motivation. Second, a 30-minute long intervention session was performed. Participants assigned to either the attainable or unattainable group were presented with their peer college students' stories regarding voluntary service engagement. Attainable groups were presented with stories with voluntary service activity experience less than three hours per week; on the other hand, unattainable stories conveyed service experience more than nine hours per week. Third, six weeks after the intervention session, the present study performed the post-test survey that measured participants' voluntary service engagement during the period between the pre-test and post-test survey.

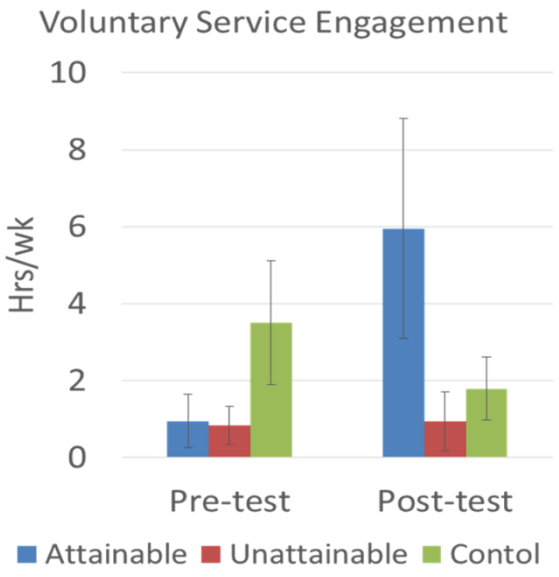

Figure 4 Longitudinal change in voluntary service engagement (in hrs/wk)

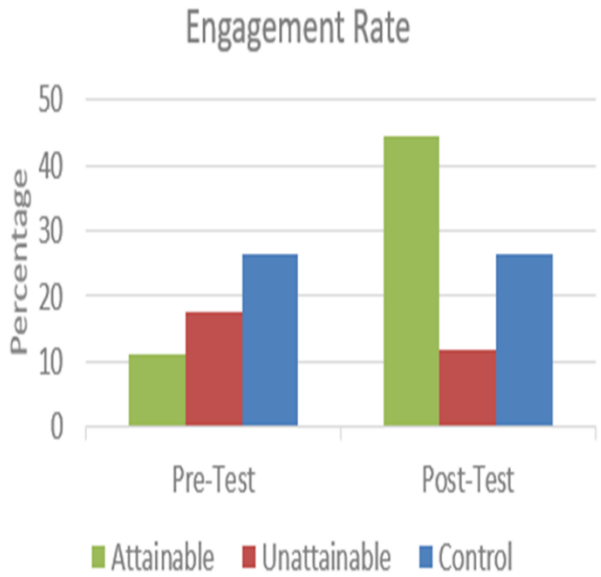

Figure 5 Longitudinal change in voluntary service engagement rate (%)

The ANCOVA (see figure 4) and logistic regression analysis (see figure 5) demonstrated several significant findings. First, the attainable group showed significantly greater improvement in voluntary service engagement measured in hours per week compared to the control group; on the other hand, the unattainable group did not show greater improvement in service engagement compared to the control group. Second, the logistic regression analysis demonstrated significant difference in the voluntary service engagement rate quantified in percentage between groups. The attainable group showed significantly greater improvement in the rate compared to two other groups. Meanwhile, the unattainable group showed a slight decrease in the participation rate between the pre- and post-test period. This result would support previous social psychological studies proposed that the presentation of extreme exemplars may backfire in terms of motivation (Monin et al., 2008; Monin, 2007). Given these, the hypotheses of the present experiment were successfully confirmed. Attainable exemplars that seemed more imitable and closer to participants' selfhood more effectively motivated moral engagement compared to extraordinary exemplars.

Applying the Lab-level Social Psychological Intervention in a Classroom

The present study applied the lab-level moral educational intervention to a classroom setting in order to test whether such an intervention design was also effective in school settings. Furthermore, on top of the effect of attainability, this experiment also tested how relevance (Lockwood & Kunda, 1997; Walton, Cohen, Cwir, & Spencer, 2012) between students and presented exemplars moderated the promotion of moral motivation. Thus, a total of 107 8th graders from a middle school were recruited for this classroom-level experiment. They were randomly assigned to one of these two groups: peer exemplar and extraordinary exemplar groups. First, before the beginning of the intervention period, the present study conducted the pre-test survey in order to investigate students' initial voluntary service engagement. Second, intervention sessions were conducted once a week for eight weeks. Students assigned to the peer exemplar group discussed and praised moral virtue and behavior of their peers, such as friends and family members. On the other hand, the extraordinary exemplar group was requested to discuss the moral virtue and character of extreme moral saints, such as Mother Teresa. Third, 12 weeks after the pre-test survey, the present study conducted the post-test survey.

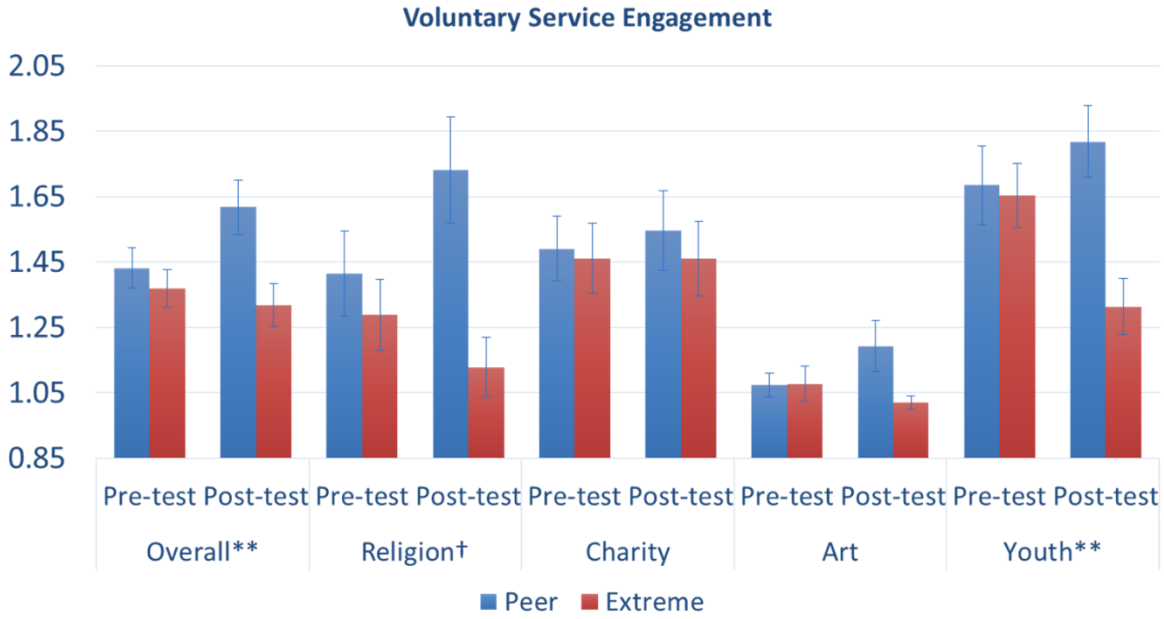

Figure 6 Longitudinal change in students' voluntary service engagement

The findings (see figure 6) from the ANCOVA indicated that the peer exemplar group showed significantly greater improvement in the overall service engagement compared to the extraordinary exemplar group. Moreover, the peer group also demonstrated significantly greater improvement in participation to activity in youth-related organizations among the diverse domains of voluntary service activity. Meanwhile, the extraordinary group showed a slight decline in voluntary service engagement during the period; this finding was coherent with previous social psychological studies that proposed the potential harmful effect of extraordinary moral exemplars on moral motivation (Monin et al., 2008; Monin, 2007). In conclusion, this classroom-level experiment was able to demonstrate that the moral educational intervention utilizing attainable and relevant exemplars can also enhance the effectiveness of moral education not only in lab settings but also in school settings.

Concluding Remarks

The present study designed more effective moral educational interventions using the stories of moral exemplars. It applied multidisciplinary approaches, i.e., neuroimaging and social psychological intervention methods, to achieve the purpose. The neuroimaging experiments demonstrated that selfhood significantly moderated moral affection and motivation constituting the foundation of moral inspiration. The intervention experiments showed that attainable and relevant exemplars, which were more likely to have strong connectivity with students' selfhood, more effectively promoted moral motivation among students compared to extraordinary exemplars. In addition, extraordinary exemplars backfired in terms of moral motivation.

Given these findings, the present study was able to identify types of moral stories that can effectively promote moral motivation while minimizing negative outcomes; attainable and relevant exemplars, instead of extraordinary exemplars, showed significantly greater effectiveness. However, there are several limitations in the present study. First, the functional neuroimaging study did not use moral stories for visual stimuli; instead, it used hypothetical moral dilemmas. Second, this neuroimaging study suffered from the small sample size. Third, intervention studies only focused on one domain of moral behavior (i.e., voluntary service) and limited populations (college and middle school students). Fourth, the longitudinal effect of interventions were investigated for a relatively short period (i.e., one semester). Thus, future studies should be conducted to address these limitations. By doing so, neuroimaging and intervention experiments will provide more useful insights to psychologists and educators who are seeking effective moral educational models using moral stories for students' moral development.

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