ORIGINAL PAPER

Mindfulness Practice Makes Moral People More Moral

Qianguo Xiao[1] · Chunmei Hu[1] · Ting Wang[1]

Abstract

Objectives In prior studies, mixed results have been obtained regarding the relations between mindfulness, moral judgment, and prosocial behavior. We conducted two studies to better clarify the connections between mindfulness and several moral variables.
Methods In Study 1, a cross-sectional survey ($N = 554$) was conducted to test the possible associations between mindfulness, moral sensitivity, moral identity, and prosocial behavior. In Study 2, a randomized controlled experiment was conducted to examine the impact of a mindfulness intervention on moral identity and prosocial behavior. A total of 99 participants ($n = 49$, mindfulness group; $n = 50$, wait-list control group), all of whom were undergraduate students on an optional 11-week mindfulness-based self-exploration course, were recruited via the campus network system.
Results In Study 1, we found that mindfulness, moral sensitivity, moral identity, and prosocial behavior were all positively correlated. Results of the mediation analysis suggested that dispositional mindfulness had significant effects on prosocial tendencies both directly and indirectly via the mediator variables of moral sensitivity and moral identity. In Study 2, mindfulness practice was found to significantly improve the levels of mindfulness and self-compassion in participants but only had a significant effect on willingness toward prosocial behavior for those participants with existing high moral identity.
Conclusions Study 1 confirmed the predicted links between mindfulness, moral sensitivity, moral identity, and prosocial behavior. Study 2 suggested that moral identity influences the effect of mindfulness practice on willingness toward prosocial behavior. However, the underlying mechanisms and causes of this effect require further study.

Keywords Dispositional mindfulness · Moral sensitivity · Moral identity · Prosocial tendencies

In the Buddhist tradition, mindfulness is a richer and more profound concept than is currently understood and applied in psychology (Kang and Whittingham 2010). Developing wisdom, compassion, and an ethical outlook is the foundational intention of mindfulness in traditional meditative practice. According to the Noble Eightfold Path, mindfulness closely interweaves with morality and ethics. Ethical behavior is the basis for *right mindfulness*, which in turn relies on mindfulness (Kang and Whittingham 2010). Therefore, some scholars have argued that mindfulness necessarily includes ethical speech and action as part of a complex set of interrelated processes (Greenberg and Mitra 2015). However, in the current scientific approach, morality and ethics are no longer formally a part of *secular mindfulness*, which is popularly defined as a non-judgmental awareness of present events and experiences (Kabat-Zinn 2003). This has caused some scholars to worry that contemporary mindfulness has deviated significantly from traditional right mindfulness and thus may do more harm than good through its current use in numerous secular and clinical mindfulness interventions (Monteiro et al. 2015). However, other scholars have argued that the secular conceptualization of mindfulness does not necessarily imply that morality is irrelevant in different intervention situations (Krägeloh 2016). It is argued instead that the ethical foundation remains implicit in the definition of contemporary mindfulness and the process of mindfulness-based interventions (Baer 2015) as embodied by instructors throughout the program.

Although the question of whether ethics should be explicitly incorporated into mindfulness has not been resolved, some empirical studies have suggested that contemporary mindfulness (and practice) is associated with morality and altruistic behavior. For example, Baer (2015) posited that mindfulness interventions, as well as dispositional mindfulness, are associated

✉ Qianguo Xiao
xiaoqianguo2008@163.com

1 Laboratory of Emotion and Mental Health, Chongqing University of Arts and Sciences, Chongqing, China

with higher levels of moral reasoning. Pandey et al. (2018) observed a positive association between mindfulness and moral reasoning, which was mediated by compassion and egocentric bias. However, other research has shown that mindfulness (as defined by an awareness of and attention to present events and experiences) does not lead to more moral behavior (Eliseo 2016). Therefore, further investigation into the potential associations between mindfulness and morality, both theoretically and empirically, is necessary.

According to Rest's (1986) four-stage model of moral decision-making, moral sensitivity and moral motivation play important roles in the process of moral functioning. *Moral sensitivity* is the personal capacity to recognize the moral significance of a situation (Kim 2006), or one's ability to perceive and discern moral issues from other issues in that context (Sparks 2015). It refers to an individual's ability to achieve moral awareness (Reynolds 2008) and to examine the possible sequence of a moral decision pathway, which is viewed as the basis of moral judgment and conduct, having effects on moral judgment and prosocial behavior through activating the cognitive structure of moral identity (Sparks 2015).

Moral identity, according to Blasi's self-model, is central to one's sense of self as a powerful source of *moral motivation* (Blasi 1983; Blasi and Glodis 1995). The subjective identity component of the self plays a more organized and unified role in leading individuals to behave morally (Blasi 2004a). Damon and Hart (1992) viewed *moral identity* as the best predictor of moral commitment and moral action, an argument that is supported by empirical research. For example, some studies have suggested that moral identity can positively predict the involvement of teenagers in community activities (Pratt et al. 2003), as well as the prosocial behaviors of young adults (Kaplan 2017). The above findings indicate that there are close associations between moral awareness, moral identity, and moral conduct. In essence, the four-stage model of moral decision-making and the theory of moral self both underline the importance of awareness and self-understanding in the process of moral action, which inosculate with some ideas from mindfulness.

The awareness of a moral issue is the basis of moral conduct, while mindfulness emphasizes the awareness of self-cognitive schema and emotions, as well as environmental stimuli and cues. Theoretically, a mindful disposition is positively associated with moral identity and prosocial behaviors. If a situation is perceived keenly to entail the harm or violation of one's behavioral norms, a person with higher moral identity is likely to acknowledge that the situation contains moral content and consider it from a moral point of view, leading to more ethical judgment and action. This argument is supported by some preliminary empirical studies. For example, Ridderinkhof et al. (2017) suggested that more mindful individuals are more likely to use a principled approach to making decisions and behaving ethically.

Prior research has also indicated that mindfulness is associated with moral identity. For example, Ruedy and Schweitzer (2010) found that it is positively correlated with the internalization subscale of the self-importance of moral identity scale (Aquino and Reed 2003) indicating that individuals high in mindfulness place greater importance on upholding high moral standards. Other studies have inferred that dispositional mindfulness has positive effects on autonomous motivation (Brown and Ryan 2003; Fan 2016). Such findings suggest that mindfulness training may have the role of animating an individual's internalized values. A person with higher autonomous motivation will hold greater self-determination relating to their behavior and focus more on attaining their self-endorsed needs and values (Ryan and Deci 2002). As a person reduces their egocentric bias and improves their identification with others through the practice of mindfulness, they may also regulate their values and actions to be more concerned with the welfare of others. This line of reasoning is supported by some empirical research. For example, Sánchez-Flores (2017) found that mindfulness exercises can improve empathic identification with the position of others. Berry et al. (2018) further established that empathic concern mediates the relation between mindfulness and helping behavior outcomes. Chen and Jordan (2018) concluded that ethical mindfulness, relative to secular mindfulness, increases the prosocial behavior of donating money to a charity, and that this effect was moderated by trait empathy.

The above findings converge to suggested that mindfulness, moral awareness, and moral identity may be positively associated with moral action. However, there were relatively few extant empirical studies investigating these possible relations or making specific predictions or hypotheses about them. In the present research, we investigated the relations between mindfulness, moral sensitivity, moral identity, and prosocial behaviors—in two studies. In Study 1, a cross-sectional survey was conducted to test the possible associations between mindfulness, moral sensitivity, moral identity, and prosocial behavior. Based on our consideration of the literature, we posit the following hypothesis. Hypothesis 1: Moral identity will have a mediating effect on the relation between moral sensitivity (predictor variable) and prosocial tendencies. Hypothesis 2: Dispositional mindfulness (predictor variable) will have a positive effect on the relation between prosocial tendencies via moral sensitivity and moral identity (as two mediating variables).

In Study 2, we conducted a randomized controlled experiment to examine the impact of a mindfulness intervention on moral identity and prosocial behavior. Herein, we postulated mindfulness training would improve willingness toward prosocial behavior in people with a higher moral identity (Hypothesis 3).

Study 1

Methods

Participants

We recruited 566 undergraduates via the general education platform of a college located in the Chongqing municipality of China. Twenty-two participants failed to complete all of the questionnaire survey, so their data were considered invalid and removed from the analysis. Thus, the valid response rate was 96%, comprising 544 participants (201 males, 343 females) with an age range of 18 to 23 years ($M \pm SD = 20.41 \pm 1.37$). Of these, 27.2% ($n = 148$) of the participants identified as first-year students, 28.7% ($n = 156$) as sophomores, 27.4% ($n = 149$) as juniors, and 16.7% ($n = 91$) as seniors. None of the participants had any prior meditation experience.

Procedure

The survey was conducted via the general education platform of a college located in the municipality of Chongqing. Participants were asked to complete the survey as a self-assessment of personality. All participants took part voluntarily and did not receive payment.

Measures

Dispositional Moral Sensitivity Questionnaire (DMSQ) Based on Schmitt et al.'s (1995) Dispositional Sensitivity of Injustice Questionnaire, Xin and Cen (2008) developed the DMSQ for use in the Chinese context. *Dispositional moral sensitivity* is defined as a tendency toward reflection and the ability to detect and explain moral problems. The DMSQ is a 28-item self-report questionnaire that encompasses five factors, as follows: empathic guilt (seven items; e.g., "I would be ashamed if I did not stand on the side of justice"), punishment (five items; e.g., "I hope that those who are unwilling to help others will not get help from others"), intrusiveness of empathy (six items; e.g., "I am quick to become angry when hearing about unfair things"), frequency of perception (six items; e.g., "I've always found that some people work less and get more for no reason, and the reverse is also true"), and sympathetic imagination (four items; e.g., "When I see someone smoking, I often imagine the harm that might be done to those around the smoker"). The DMSQ has been found to have satisfactory reliability and validity (Cronbach's alphas range from 0.60 to 0.87 and test–retest reliability ranges from 0.74 to 0.85), and a good index of structural fit (GFI = 0.90; NNFI = 0.90; CFI = 0.90; RMSEA = 0.05) (Xin and Cen 2008). Items are rated on a 5-point scale, from 1 (*strongly disagree*) to 5 (*strongly agree*). A higher total score represents a greater disposition toward awareness and understanding of moral issues. Cronbach's alpha was .88 in the present study.

Five Facets of Mindfulness Questionnaire—Chinese Short Version (FFMQ-CS) The Five Facets of Mindfulness Questionnaire (FFMQ) developed by Baer et al. (2006) is a measure of dispositional mindfulness incorporating five factors: observing, non-reactivity to inner experience, acting with awareness, describing in words, and non-judgment of experience. A total of 39 items are rated on a scale of 1 (*never*) to 5 (*always*). The FFMQ-CS is the Chinese short version of the original FFMQ, as revised by Hou et al. (2014). In the FFMQ-CS, four items are used in relation to each factor, based on the original FFMQ (observing: 15, 20, 26, 31; describing: 2, 7, 27, 32; acting with awareness: 5R, 8R, 13R, 38R; non-judgment: 10R, 17R, 25R, 30R; non-reactivity: 19, 21, 24, 33). A higher total score represents a more mindful disposition. The FFMQ-CS has been found to be a reliable and valid measure of mindfulness in the Chinese population. Cronbach's alpha was .60 in the present study.

Moral Identity Scale (MIS) The 16-item MIS was developed by Xu and Ma (2014) based on Aquino and Reed's (2003) Moral Identity Measure. Xu and Ma (2014) retained the dimensional structure of the original instrument but added two items ("I'd like to be friends with someone who has these characteristics" and "I don't want to have any relationship with this kind of person") from Wan's (2008) earlier revision of the scale. They also revised the 10 moral traits to include Chinese characteristics as salience-inducing stimuli in order to better measure moral identity in the Chinese context and improve the cultural adaptability of the scale. These 10 traits are credibility, responsibility, filialness, care, fairness, honesty, authenticity, respect, incorruptness, and helpfulness. Participants are prompted to envision a person with these moral traits and respond to statements about those traits on a scale from 1 (*completely disagree*) to 5 (*completely agree*). Cronbach's alpha was .88 in the present study.

Prosocial Tendencies Measure—Revised (PTM-R) The 23-item PTM-R is a Chinese revision of the Prosocial Tendencies Measure developed by Carlo et al. (2003) to investigate prosocial behaviors in adolescents and young adults from the USA. The six factors of the PTM-R (emotional, altruism, dire, compliant, public, anonymous) have been found to provide a reliable and valid measure of different prosocial tendencies in the Chinese context (Kou et al. 2004). Cronbach's alpha was .85 in the present study.

Data Analyses

The descriptive statistics (*M* and *SD*) and Pearson correlations between the dependent variables were computed using SPSS

21.0. Structural equation modeling procedures using LISREL 8.80 were employed to test the fit index of the hypothesis model. The parcel technique (Little et al. 2002; Sass and Smith 2006) was implemented by compositing each component score of each scale as observed indicators to estimate the latent variables for the DMSQ, FFMQ-CS, MIS, and PTM-R measures, respectively. The fit of models is considered to be good when the GFI value, CFI value, and NNFI value are above 0.90 and the SRMR value is below 0.08 (Hu and Bentler 1999). Subsequently, we performed a mediation analysis using the PROCESS bootstrapping plugin (Model 4) for SPSS developed by Hayes and Preacher (2013) based on 5000 resamples with 95% bias-corrected standardized bootstrap confidence intervals simulated for each model.

Results

Table 1 presents the descriptive statistics (M and SD) for the four variables and the correlation coefficients. As predicted, dispositional mindfulness, moral identity, moral sensitivity, and prosocial tendencies were all positively correlated with each other ($r = .11$ to $.44$, $p < .001$).

First, a structural equation model was estimated with moral sensitivity as a predictor, moral identity as a mediator, and prosocial tendencies as the outcome variable (Hypothesis 1). The results suggested a good fit to the data: GFI = 0.92, CFI = 0.94, NNFI = 0.92, SRMR = 0.065. The mediating effect analysis showed that moral sensitivity had a statistically significant effect on moral identity ($b = .21$, $SE = 0.05$, $p < .001$), which, in turn, significantly affected prosocial tendency ($b = .31$, $SE = 0.03$, $p < .001$). The 95% bias-corrected confidence interval [0.03, 0.10] for the size of the indirect effect excluded zero, indicating that the indirect effect through moral identity was statistically significant, as shown in Fig. 1.

Second, we tested Hypothesis 2 using a structural equation model with dispositional mindfulness as a predictor, moral sensitivity, and moral identity as a mediator, and prosocial tendencies as the outcome variable. The results suggested a good fit to the data: CFI = 0.93, NNFI = 0.91, SRMR = 0.068. We then tested the effect of dispositional mindfulness (FFMQ-CS) on moral sensitivity, moral identity, and

prosocial tendencies, using the chain intermediate model (Model 6) of the bootstrapping procedures. FFMQ-CS had significant effects on moral functioning both directly and indirectly, as illustrated in Fig. 2. FFMQ-CS had significant indirect effects on prosocial tendencies through the mediating variables of moral sensitivity (indirect effect = 0.04; effect size (ab/c) = 0.18) and moral identity (indirect effect = 0.14; effect size (ab/c) = 0.61). FFMQ-CS had a significant direct effect on prosocial tendencies ($b = .22$, $SE = 0.04$, $p < .001$). The mediation analysis showed that moral identity (indirect effect = 0.14; effect size (ab/c) = 0.61) was an important mediator variable between dispositional mindfulness and prosocial tendencies.

Study 2

Methods

Participants

Participants were 99 undergraduate college students (mindfulness group, $n = 49$; control group, $n = 50$) who had a mean age of 18.90 years ($SD = 0.92$). The sample was 76% female ($n = 75$). All of the students provided their informed consent for participation in the study upon arrival at the psychology laboratory. Of these, 49 participants were randomly assigned to the mindfulness intervention group and divided into two smaller parallel classes (class 1, $n = 24$; class 2, $n = 25$). The remaining 50 participants were assigned to the wait-list control group. However, eight experimental participants and five control participants failed to complete the post-intervention assessment. Six experimental participants and five control participants failed to complete the follow-up assessment. In total, 35 mindfulness participants and 40 control participants completed all three assessments (see Fig. 3 for the procedure flow chart). A G*Power analysis indicated that we needed 86 participants to achieve 80% power (to detect a small effect, $f = 0.25$). We over-recruited as many undergraduates ($N = 99$) as possible, to allow for attrition.

Table 1 Means, standard deviations, and the correlation matrix for moral identity, mindfulness, prosocial tendencies, and moral sensitivity

	$M \pm SD$	Mindfulness	Prosocial tendencies	Moral sensitivity
Moral identity	3.73 ± .55	.39**	.44**	.19**
Mindfulness	3.48 ± .37		.34**	.11*
Prosocial tendencies	3.34 ± .44			.38**
Moral sensitivity	3.17 ± .49			

**Correlation significant at the 0.01 level (two-tailed)

*Correlation significant at the 0.05 level (two-tailed)

Fig. 1 The mediating effect of moral identity on the relationship between moral sensitivity and prosocial tendencies
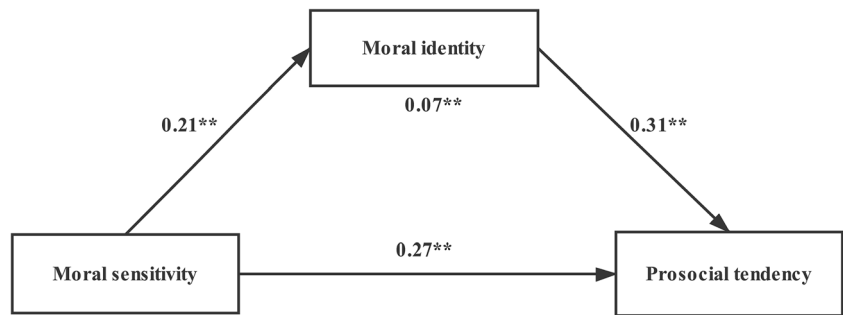
Procedures

This study was conducted in the psychology department at Chongqing University of Arts and Sciences in China. All ethical standards were adhered to and no adverse events were reported throughout the course of the study. We recruited undergraduate students attending an optional course on mindfulness-based self-exploration (MSEC) via the campus network system. All participants were informed that the questionnaire survey would be conducted three times (i.e., before, during, and after the course, to quantitatively measure teaching effectiveness for reflection work), and that we hoped that all students would participate and provide accurate responses. It was emphasized that participation was voluntary and entirely independent of students' course grades. A battery of assessments (pre-intervention, post-intervention, and follow-up) was administered. The follow-up assessment was conducted 4 weeks after the intervention via e-mail and a remuneration of RMB 15 per participant was paid.

Mindfulness-Based Self-Exploration Course The course consisted of 11 weekly sessions, with a duration of 150 min per session. It included preparation and a summary session, as well as the pre-intervention and post-intervention assessments, respectively. The MSEC was developed according to the authorized curriculum guide of the mindfulness-based stress reduction (MBSR) program, with some integration of components from mindfulness-based cognitive therapy (MBCT) (Segal et al. 2004) and mindful self-compassion approaches (Germer and Neff 2013).

The first class of the 11-week MSEC was an introduction, in which an overview of the course, explanation of the possible risks and benefits of the program, and a brief history of mindfulness were provided, and the pre-intervention assessment was conducted. The sessions from the second to the sixth week mainly followed the authorized curriculum guide of the MBSR program (from class one to class five). In the seventh week, we began with an introduction to self-compassion (20 min), followed by the practice of compassionate body scanning (40 min) and self-compassion writing practice (30 min) according to the mindful self-compassion course developed by Germer and Neff (2013). The remaining time (about 60 min) was mainly allocated to group discussion and home practice arrangement. The theme of the eighth week was self-acceptance meditation, which explored how to accept difficult situations/emotions with an attitude of allowing, self-compassion, and "doing nothing." The formal practice included sitting meditations on emotion (40 min) and compassion outreach meditation from self to others (30 min), as well as group discussion and home practice arrangement (80 min). The theme of the ninth week was mindful communication, which aimed to cultivate an awareness of self-other connections with an attitude of compassion and mindfulness. The formal practice included mindfulness observation face to face in pairs (15 min), mindfulness talking and listening with each other (40 min), mindfulness conversation and responding (20 min), as well as group discussion and home practice arrangement (80 min). The tenth week was a silent meditation over 2 h, including sitting meditation (40 min while attending to breath, body, sounds, and thoughts and emotions as

Fig. 2 The chain mediating effect for dispositional mindfulness on moral sensitivity, moral identity, and prosocial tendencies
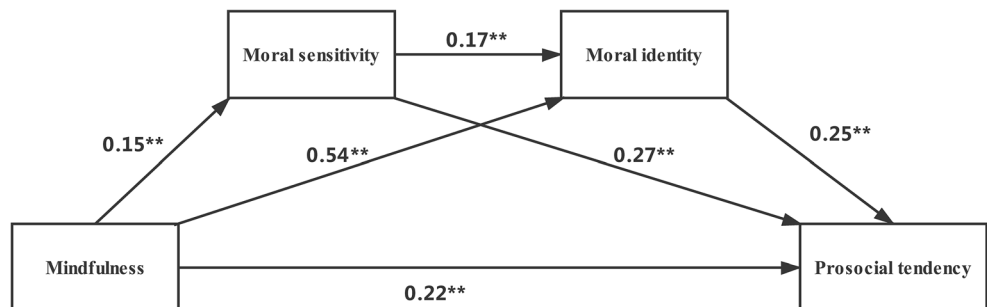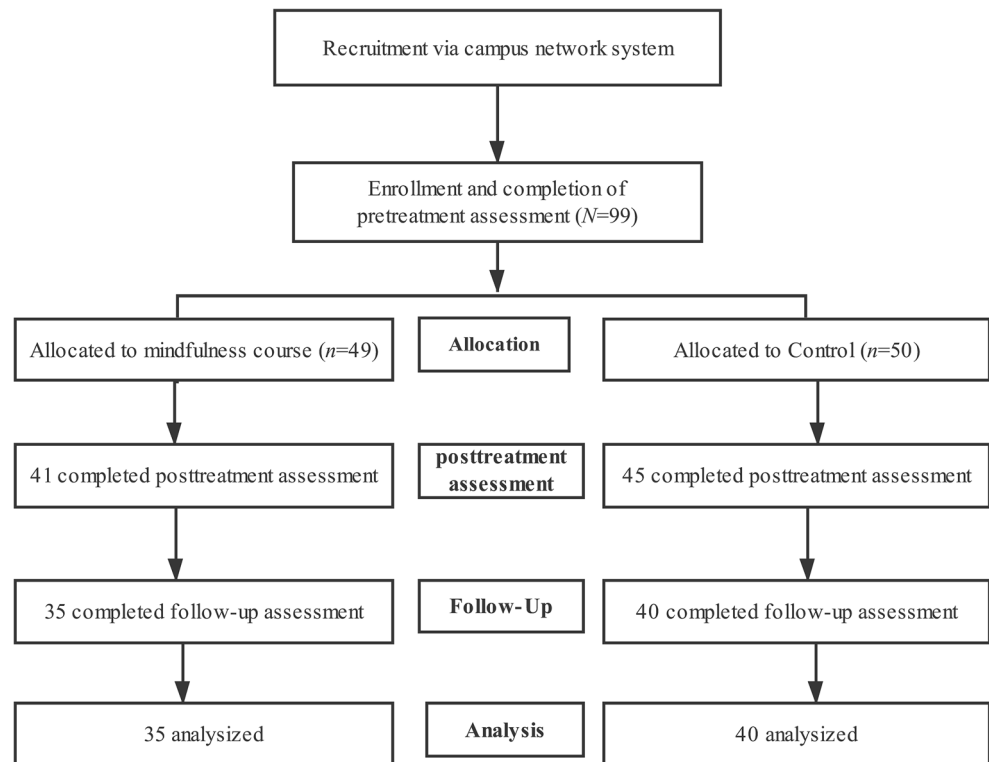
Fig. 3 Flow chart of the randomized controlled experimental intervention study

"events" in consciousness), walking meditation (15 min), a compassionate body scan (40 min), and group discussion. The last week consisted of a summary (120 min) and post-intervention assessment (30 min), in which each participant shared their experience of the course with the whole group.

The MSEC course retained the basic structure of the MBSR program and adhered to the authorized curriculum guide. The key difference between this course and MBSR was the extended practice of self-acceptance and self-compassion meditation. These topics were covered as two separate themes in more detail. Logistically, the main body of the MSEC course comprised two modules. The first was designed to cultivate mindful awareness of the self (including classical breathing awareness practice), static and dynamic body awareness practice, and thoughts and emotions meditation. The second module was formulated to cultivate awareness of self-other connections encompassing an attitude of compassion, equal or in the perspective of common humanity underlined by self-compassion, including self-compassion practice and mindful communication practice. *Compassion* is viewed as embodied and embedded in the interpersonal social context involving the welfare of both the self and others (Khoury 2019). It has been suggested that compassion is not only associated with higher levels of perceived self-other similarity to weak or vulnerable others (Oveis et al. 2010) and greater motivation toward prosocial behavior (Batson 2011), but also with higher levels of moral identity and greater moral flexibility. Hence, we postulated that this integration of mindful self-compassion into the MBSR program was appropriate.

MSEC Facilitator The facilitator of the MSEC was a doctor in applied psychology (the first author of the present paper), who was qualified to facilitate the program. He had previously completed an 8-week MBSR course with an MBSR teacher from Taiwan, a 5-day teacher-training curriculum program of MBCT with an MBCT teacher from Italy (including supervision), a 5-day silent meditation with a Chan master from Taiwan, and a 3-day continuous training program on acceptance and commitment therapy with a certified teacher from the USA. In addition, the facilitator had completed a doctoral dissertation on the topic of mindfulness and self.

Measures

FFMQ-CS The psychometric information regarding this rating scale is presented in relation to Study 1, above. Cronbach's alpha was .60 in the current study.

MIS Likewise, the psychometric information on this rating scale is detailed above, with regard to its use in Study 1. Cronbach's alpha was .88 in the present study.

PTM-R The psychometric information pertaining to this measure, too, is given above in relation to Study 1. Cronbach's alpha was .85 in the present study.

Chinese Interpersonal Reactivity Index (C-IRI) The Interpersonal Reactivity Index (IRI) developed by Davis

(1983) is a well-validated measure of empathy, and, similarly, the C-IRI has been confirmed to be a good measure of empathic ability in the Chinese context. It comprises four subscales, as follows: fantasy, which relates to the participant's emotional and behavioral involvement in fictional works such as novels, television, and movies; empathic concern, which corresponds to the affective experience of feeling compassion for the misfortune of others; perspective taking, which measures an individual's cognitive ability to comprehend another's point of view; and personal distress, which relates to one's feelings of anxiety or discomfort when aware of the anguish of others. The C-IRI items are rated on a 5-point Likert scale with seven items in each factor. The construct reliability of the C-IRI subscales range from .59 to .75, and the test–retest reliability of the subscales ranges from .59 to .78 (Rong et al. 2010). In the present study, the total score of the C-IRI was used for all analyses. Cronbach's alpha was .63, .76, and .78 at the pre-intervention, post-intervention, and follow-up assessments, respectively.

Prosocial Scenarios Following previous studies (e.g., Nelson and Norton 2005), willingness to help others and frequency of helping were used as an index to measure the effect of mindfulness practice on prosocial behavior through reference to the following moral scenario:

Lilly is a volunteer at a college. She has engaged in one-to-one voluntary activities to care for a left-behind child. Unfortunately, her father suffered a broken leg last week, so she has had to give up this voluntary activity and come back home to help take care of her father. If she drops out of this voluntary activity, the child she was paired with will be left unattended. Therefore, Lilly hopes some other college students would like to help care for the left-behind child.

After reading this scenario, participants were asked two questions—"How willing would you be likely to be to help the paired child?" and "How many times would you be likely to help the paired child?"—which were both answered according to a scale of 0 (*very unwilling*/zero times) to 7 (*very willing*/seven times). The mean score of the two questions was calculated and used to represent willingness toward prosocial behavior in the subsequent data analysis.

Self-Compassion Scale—Short Form (SCS-SF) The Self-Compassion Scale (SCS; Neff 2003) is a 26-item self-report measure designed to assess self-compassion in six domains—self-kindness, self-criticism, common humanity, isolation, mindfulness, over-identification—using a Likert-type scale ranging from 1 (*rarely*) to 5 (*almost always*). The total score represents an individual's overall level of self-compassion. The condensed 12-item SCS-SF was developed based on the original SCS, and supports the same six-factor structure, as well as the single higher-order factor of self-compassion (Raes et al. 2011). The SCS-SF can be effectively and efficiently

used as an economical alternative to the full SCS and is highly correlated with the long-form version ($r \geq .97$ for all samples). In the present study, the total score for the SCS-SF was used for all analyses pertaining to hypotheses testing. Cronbach's alpha was .80, .75, and .50 at the pre-intervention, post-intervention, and follow-up assessments, respectively.

Data Analyses

Data were analyzed using SPSS 21.0. First, we carried out an independent samples t test to check the homogeneity of participants in the experimental group and the control group. One-way repeated measures analysis of variance (ANOVA) was carried out to test the effect of the 11-week mindfulness practice, using the data from the pre- and post-intervention and 4-week follow-up assessments.

Results

The results in Table 2 show that there were no significant differences between the control and experimental groups for any of the variables at pre-intervention. The one-way repeated measures ANOVA revealed that the mindfulness course increased participants' mindfulness, as reported through the FFMQ-CS, in comparison with the control group, $F(1, 73) = 3.91$, $p = .05$, $\eta^2 = .05$. The mindfulness course participants also reported increased self-compassion. The interaction effect between group and time point (pre-intervention and post-intervention) was significant, $F(1, 73) = 4.12$, $p = .04$, $\eta^2 = .05$. The simple effects analysis showed that self-compassion in the mindfulness group increased significantly at post-intervention, compared to the control group, $F(1, 73) = 4.69$, $p = .03$, $\eta^2 = .06$, although there was no difference at pre-intervention. However, compared to participants in the control groups, mindfulness practice did not improve the scores for prosocial tendencies (PTM-R), moral identity (MIS), empathy (C-IRI), or willingness to help others.

Study 1 revealed that the factors measured through the FFMQ-CS had a significant indirect effect on prosocial tendencies via the mediator variable of moral identity, suggesting that mindfulness practice can improve prosocial behavior in people already high in moral identity. Therefore, we analyzed the data for participants in both the mindfulness and control groups with higher moral identity scores ($M \geq 45.56$; $n = 42$, in total; $n_{\text{control group}} = 27$) to explore the effects of a mindfulness intervention on people with a higher moral identity. One-way repeated measures ANOVA showed that the interaction between group and time was significant, $F(2, 80) = 3.26$, $p = .05$, $\eta^2 = .08$. The simple effects analysis showed that willingness toward prosocial behavior in the control group decreased significantly at post-intervention and follow-up, $F(1, 2) = 9.57$, $p < .001$, $\eta^2 = .33$. However, willingness toward

Table 2 Descriptive statistics at the pre- and post-intervention and follow-up assessments

	Group	Pre-intervention $M \pm SD$	Post-intervention $M \pm SD$	Follow-up $M \pm SD$	F^a (1, 73)	F^b (2, 80)
Self compassion	Control	37.80 ± 7.10	38.57 ± 5.52	40.75 ± 4.31	4.12*	
	Mindfulness	38.67 ± 10.25	41.37 ± 5.64	41.91 ± 4.10		
Mindfulness	Control	62.77 ± 5.06	61.50 ± 6.86	61.62 ± 5.65	3.91*	
	Mindfulness	62.45 ± 8.39	66.60 ± 10.93	66.31 ± 9.11		
Prosocial tendency	Control	74.57 ± 8.88	74.77 ± 8.55	76.82 ± 8.08		
	Mindfulness	74.28 ± 8.25	75.91 ± 10.64	77.91 ± 10.92		
Empathy	Control	95.47 ± 7.01	94.47 ± 9.82	93.72 ± 8.90		
	Mindfulness	96.00 ± 8.79	94.02 ± 10.87	94.85 ± 10.11		
Moral identity	Control	46.32 ± 4.90	45.85 ± 5.27	46.77 ± 5.23		
	Mindfulness	44.68 ± 5.37	45.00 ± 6.64	46.60 ± 5.96		
Prosocial willingness	Control	5.91 ± 1.17	5.00 ± 1.45	4.88 ± 1.65		3.26*
	Mindfulness	5.82 ± 1.26	5.45 ± 1.54	5.30 ± 1.44		

[a] *F*-test for pre- and post-intervention assessments (all participants)

[b] *F*-test on participants with higher moral identity scores in the mindfulness and control group

*$p < 0.05$

prosocial behavior in the mindfulness group did not decrease significantly, $F (1, 2) = 0.76$, $p = .47$, $\eta^2 = .04$ (see also Fig. 4).

Discussion

The two studies reported here investigated the relations between mindfulness and some important moral variables. Results from Study 1 indicate that dispositional mindfulness is positively correlated with moral sensitivity, moral identity, and prosocial tendencies. We further found that dispositional mindfulness influences prosocial tendencies both directly and indirectly via the mediator variables of moral sensitivity and moral identity. Study 2's results suggest that the specified 11-

Fig. 4 The effects of an 11-week mindfulness intervention on willingness towards prosocial behavior

week mindfulness intervention significantly improved the levels of mindfulness and self-compassion for the whole experimental group, but only had a significant effect on willingness toward prosocial behavior for those people with above-average scores for moral identity at the first assessment.

Our findings from Study 1 suggest that dispositional mindfulness is directly associated with prosocial tendencies, as well as indirectly associated with moral identity. This process may be associated with the functions and attitudes that implicitly underlie mindfulness (such as decentering and self-compassion). It has been posited previously that mindfulness can result in decentering or psychological distancing from one's thoughts and emotions (Kabat-Zinn 2011), which may increase the psychological resources that are available to recognize the presence of a moral issue and help an individual apply moral self-schema to justify a particular behavior in a given situation. Other prior studies have suggested that adolescents with higher levels of self-compassion might experience higher levels of relatedness in social situations, which, in turn, leads them to be more likely to engage in prosocial behaviors (Yang et al. 2019). The findings from Study 2 support this assertion by showing that mindfulness practice significantly improves self-compassion. Taken together, these research findings converge to suggest that the involvement of mindfulness in the process of moral cognition is beneficial. The development of morality first depends on acquiring a firm sense of self and self-awareness, as well as learning moral rules and norms (Sparks and Hunt 1998). In social contexts, non-judgmental observing and larger attentional capacities may increase the awareness and understanding of the needs of others and thus allow for greater responsiveness to the needs of others (Condon 2017).
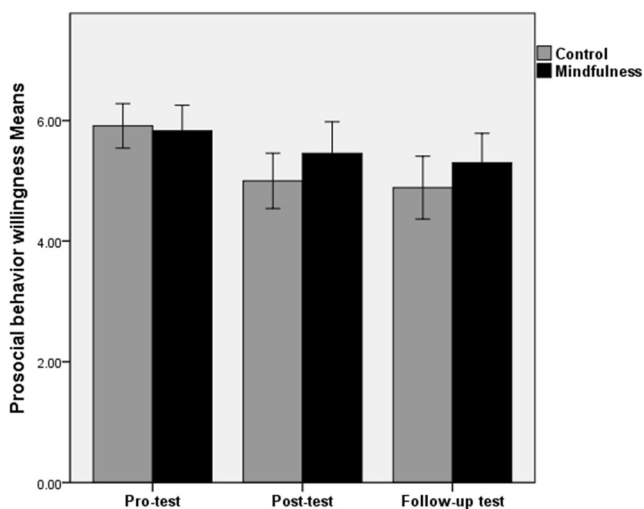
In Study 2, an 11-week mindfulness course significantly improved levels of mindfulness and self-compassion in participants. However, this improvement in mindfulness was not found to be associated with increases in prosocial tendencies (PTM-R), moral identity (MIS), empathy (C-IRI), or a willingness to help others overall. These findings are also consistent with previous studies. For example, Galantino et al. (2010) observed no significant changes in empathy levels after a mindfulness meditation intervention for healthcare professionals when assessed using the IRI. Birnie et al. (2010) found MBSR to be successful at increasing participants' levels of self-compassion but that this occurred in the absence of significant changes in empathic concern. As Birnie et al. (2010) inferred, this observation might be associated with the different components of mindfulness and what the IRI specifically measures. For instance, some items in the personal distress subscale of the IRI imply that an individual high on this scale may feel overwhelmed or paralyzed in the face of strong emotion. In contrast, mindfulness training aims to strengthen the acceptance of a non-rigid attitude when experiencing emotion.

The analyses of Study 2's data showed that willingness toward helping others in the control group decreased significantly over the three time points of assessment, whereas willingness toward helping others in the mindfulness group did not decrease over time. The decrease found in the control group may be due to factors relating to the time of testing in this study. The post-intervention assessment was conducted near the end of a semester and the follow-up was conducted during the winter vacation and close to the Spring Festival, the most important traditional festival in China. In other words, willingness toward helping others in the control group may have been influenced by some external and important events, such as preparing for final exams and celebrating the Spring Festival. However, willingness toward helping others in college students with higher moral identity in the mindfulness group did not appear to have been influenced by these potential factors.

One possible explanation for this finding is that mindfulness practice maintained willingness toward helping others at a relatively stable level for those college students with higher moral identity, such that it was not influenced by external psychosocial factors. Given our results from Study 1, as well as the existing finding that the relation between mindfulness and moral reasoning is fully mediated by compassion and egocentric bias (Pandey et al. 2018), it is reasonable to propose that mindfulness training is an effective and easy way to facilitate prosocial behaviors in people with higher prosocial traits, such as moral identity. This is perhaps unsurprising, because mindfulness emphasizes non-judgmental awareness, whereas many prosocial behaviors are more motivated by one's level of internalization (Winterich et al. 2013). Although the importance of moral identity may be somewhat stable, to some extent, the sense of moral identity may be

constructed "moment to moment" (Monin and Jordan 2009) and might be more or less activated by particular situations (Aquino et al. 2009). If this is the case, mindful awareness can provide an important "reminder" of the moral self, thus improving moral awareness or moral sensitivity in people with higher moral identity. However, the current data cannot elucidate whether mindfulness practice improves the awareness of self-responsibility or self-consistency, or improves the accessibility of the moral self-schema in consciousness, or has an effect on negative emotion regulation for those people with a higher moral identity. This is a question worthy of further study.

A related issue pertains to the content of the integrated mindfulness course, the MSEC. As described earlier, the content of the MSEC was an integration of existing MBSR, MBCT, and SCS courses, organized as two main modules: the practice of self-awareness and awareness of self-other connections with an attitude of compassion. We contend that this integration was appropriate and significant to understanding our findings.

First, the MSEC did not include any explicit ethical or moral educational components. Instead, we emphasized compassion (including self-compassion and compassion for others). The results indicate that the course improved self-compassion and willingness toward prosocial behavior, but not moral identity or empathy. This implies to some extent that the explicit discussion of morality or ethics is not obligatory or prerequisite in improving prosociality. Chen and Jordan (2018) found that a short-term (8 days, 10 min a day) ethical, relative to secular, mindfulness intervention can increase prosocial behavior (as assessed, in their study's case, through the amount of money donated to a charity). Equally, the current study revealed that an 11-week secular mindfulness course had the same benefits for people with higher levels of moral traits. Thus, the length of engagement in mindfulness practice may be an important factor in changing the implicit attitudes and explicit conduct of individuals. Indeed, this may be why veteran mediation masters always advise on the need for practice, practice, and more practice.

Second, the current 11-week mindfulness program was not found to improve empathy, but it did improve prosocial willingness. This is consistent with existing research findings. For example, Lim et al. (2015) concluded that mindfulness-enhanced compassionate behavior does not stem from an increase in empathic accuracy, as assessed using a rapid test of emotion recognition ability (Emotion Recognition Index; Scherer and Scherer 2011). Thus, there may be different mechanisms or paths for how mindfulness relates to prosocial behaviors in comparison to empathy. This is an additional question worthy of further study, and we suggest that the effects of ethical mindfulness and secular mindfulness (such as that taught during the MSEC program) should be compared with regard to the effects on prosocial behavior.

Limitations and Future Research Directions

The current research has some limitations. Study 1 may have suffered from common method bias due to the use of multiple self-reported rating scales (Podsakoff et al. 2003). Furthermore, as all the participants had no meditation experience, there could have been semantic understanding deviations for some key words and terms frequently used in mindfulness measures (e.g., "paying attention," "awareness," "acceptance," "judging").

For Study 2, an inherent limitation concerns the wait-list control designs. A wait-list design is a weak experimental design that has some risk of expectation bias. Some intervention effects could have resulted from non-specific factors such as quality of therapeutic alliance and relationship, empathy, and so on. A related limitation pertains to the supervision and evaluation of the process of mindfulness intervention, as we did not have a suitable environment to carry out some after-class practices (e.g., formal sitting meditation) with the college participants. The completion rates and timing of the mindfulness practice as it occurred after class may not meet the requirements of the curriculum guide, and this may also have influenced the results.

Another limitation is the finding that the 11-week mindfulness course did not improve the levels of altruistic traits, such as prosocial tendencies, moral identity, or empathy. One possible reason for this may be that such traits represent relatively stable facets of disposition that are not easy to change in adults. For example, *moral identity* has been described as a trait-like individual difference (Blasi 2004b) and as an altruistic personality (Maxwell 2011), with unified personal values and a sense of moral self, associated with the generation a set of "other" oriented tendencies and moral schemas. Thus, it is more entrenched. Another possibility is that the measures used here were not adequate and/or not sensitive to change. Self-report measures may only grasp a small part of our essence of moral identity (Hardy and Carlo 2011), and explicit and implicit moral identity processing is associated with different attitudes and behaviors, which can predict different moral actions (Perugini and Leone 2009). Therefore, more sensitive assessment techniques may be needed in future research to assess the possible changes in moral identity and empathy.

A related limitation concerns the means of scoring for the scales. As most previous studies have done, we computed the total score of each scale according to the suggestion of the original without any conversion or standardization, which may have an impact of precision of the instrument (Stucki et al. 1996). For example, Medvedev et al. (2017) suggested the total interval level FFMQ score converting from the ordinal level would be more appropriate for assessing mindfulness as a higher-order construct. However, there were no more empirical psychometric studies addressing this issue for the additional scales, such as the C-IRI, the DMSQ, and the FFMQ-CS, used in this study, for which is worth extending study in the future, following Medvedev et al. (2017). In addition, the selection of a sufficiently large sample of heterogeneous participants will be an important consideration for forthcoming intervention studies. Therefore, further study is needed by providing better experimental environments and more effective monitoring of intervention processes, as well as more reasonable choices of participants.

Author Contributions The design and writing of this paper were mainly completed by QX. CH and TW contributed to data analysis, the discussion of findings, and revision of the manuscript.

Compliance with Ethical Standards

This study was carried out in accordance with the guidelines from the Ethics Committee of Chongqing University of Arts and Science, at which the researchers are based, and in accordance with the 1964 Declaration of Helsinki, its later amendments, and comparable ethical standards. All participants provided written informed consent.

Conflict of Interest The authors declare that they have no conflict of interest.

References

Aquino, K., & Reed, A. (2003). The self-importance moral identity. *Journal of Personality and Social Psychology, 83*(6), 1423–1440. https://doi.org/10.1037/0022-3514.83.6.1423.

Aquino, K., Freeman, D., Reed, A., Lim, V. K. G., & Felps, W. (2009). Testing a social-cognitive model of moral behavior: the interactive influence of situations and moral identity centrality. *Journal of Personality and Social Psychology, 97*(1), 123–141. https://doi.org/10.1037/a0015406.

Baer, R. (2015). Ethics, values, virtues, and character strengths in mindfulness-based interventions: a psychological science perspective. *Mindfulness, 6*(4), 956–969. https://doi.org/10.1007/s12671-015-0419-2.

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27–45. https://doi.org/10.1177/1073191105283504.

Batson, C. D. (2011). *Altruism in humans*. Oxford: Oxford University Press.

Berry, D. R., Cairo, A. H., Goodman, R. J., Quaglia, J. T., Green, J. D., & Brown, K. W. (2018). Mindfulness increases prosocial responses toward ostracized strangers through empathic concern. *Journal of Experimental Psychology: General, 147*(1), 93–112. https://doi.org/10.1037/xge0000392.

Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress and Health, 26*(5), 359–371. https://doi.org/10.1002/smi.1305.

Blasi, A. (1983). Moral cognition and moral action: a theoretical perspective. *Developmental Review, 3*(2), 178–210. https://doi.org/10.1016/0273-2297(83)90029-1.

Blasi, A. (2004a). Neither personality nor cognition: an alternative approach to the nature of the self. In C. Lightfoot, C. Lalonde, & M. Chandler (Eds.), *Changing conceptions of psychological life* (pp. 3–25). Mahwah: Lawrence Erlbaum Associates.

Blasi, A. (2004b). Moral functioning: moral understanding and personality. In D. K. Lapsley & D. Narvaez (Eds.), *Moral development, self, and identity* (pp. 335–347). Mahwah: Lawrence Erlbaum Associates.

Blasi, A., & Glodis, K. (1995). The development of identity: a critical analysis from the perspective of the self as subject. *Developmental Review, 15*(1), 167–175. https://doi.org/10.1006/drev.1995.1017.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822.

Carlo, G., Hausmann, A., Christiansen, S., & Randall, B. (2003). Sociocognitive and behavioral correlates of a measure of prosocial tendencies for adolescents. *Journal of Early Adolescence, 23*(1), 107–134. https://doi.org/10.1177/0272431602239132.

Chen, S., & Jordan, C. H. (2018). Incorporating ethics into brief mindfulness practice: effects on well-being and prosocial behavior. *Mindfulness, 11*(1), 18–29. https://doi.org/10.1007/s12671-018-0915-2.

Condon, P. (2017). Mindfulness, compassion, and prosocial behaviour. In J. C. Karremans & E. K. Papies (Eds.), *Mindfulness in social psychology* (pp. 124–138). New York: Routledge. https://doi.org/10.4324/9781315627700-9.

Damon, W., & Hart, D. (1992). Self-understanding and its role in social and moral development. In H. M. Bornstein & E. M. Lamb (Eds.), *Developmental psychology: an advanced textbook* (3rd ed., pp. 421–464). Mahwah: Lawrence Erlbaum Associates.

Davis, M. H. (1983). Measuring individual differences in empathy: evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44*(1), 113–126. https://doi.org/10.1037/0022-3514.44.1.113.

Eliseo, M. S. (2016). *Mindfulness and moral behavior in the organization: the role of awareness of and attention to morality* (Doctoral dissertation). University of Washington, Seattle.

Fan, L. H. (2016). *Self-determination theory: the roles of emotion and trait mindfulness in motivation (Master's thesis)*. Sweden: Linnaeus University.

Galantino, M. L., Baime, M., Maguire, M., Szapary, P. O., & Farrar, J. T. (2010). Association of psychological and physiological measures of stress in health-care professionals during an 8-week mindfulness meditation program: mindfulness in practice. *Stress and Health, 21*(4), 255–261. https://doi.org/10.1002/smi.1062.

Germer, C. K., & Neff, K. D. (2013). Self-compassion in clinical practice. *Journal of Clinical Psychology, 69*(8), 856–867. https://doi.org/10.1002/jclp.22021.

Greenberg, M. T., & Mitra, J. L. (2015). From mindfulness to right mindfulness: the intersection of awareness and ethics. *Mindfulness, 6*(1), 74–78. https://doi.org/10.1007/s12671-014-0384-1.

Hardy, S. A., & Carlo, G. (2011). Moral identity. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (pp. 495–513). New York: Springer. https://doi.org/10.1007/s11031-006-9034-9.

Hayes, A. F., & Preacher, K. J. (2013). Conditional process modeling: using structural equation modeling to examine contingent causal processes. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling: a second course* (2nd ed., pp. 219–266). Charlotte: Information Age Publishing.

Hou, J., Wong, S. Y.-S., Lo, H. H.-M., Mak, W. W.-S., & Ma, H. S.-W. (2014). Validation of a Chinese version of the Five Facets of Mindfulness Questionnaire in Hong Kong and development of a short form. *Assessment, 21*(3), 363–371. https://doi.org/10.1177/1073191113485121.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice, 10*(2), 144–156. https://doi.org/10.1093/clipsy.bpg016.

Kabat-Zinn, J. (2011). Some reflections on the origins of MBSR, skillful means, and the trouble with maps. *Contemporary Buddhism, 12*(1), 281–306. https://doi.org/10.1080/14639947.2011.564844.

Kang, C., & Whittingham, K. (2010). Mindfulness: a dialogue between Buddhism and clinical psychology. *Mindfulness, 1*(3), 161–173. https://doi.org/10.1007/s12671-010-0018-1.

Kaplan, U. (2017). Moral motivation as a dynamic developmental process: toward an integrative synthesis. *Journal for the Theory of Social Behaviour, 47*(2), 195–221. https://doi.org/10.1111/jtsb.12116.

Khoury, B. (2019). Compassion: embodied and embedded. *Mindfulness, 10*(11), 2363–2374. https://doi.org/10.1007/s12671-019-01211-w.

Kim, L. (2006). Developing the concept of moral sensitivity in health care practice. *Nursing Ethics, 2*(13), 187–196. https://doi.org/10.1191/0969733006ne837oa.

Kou, Y., Ma, Y., & Tan, C. (2004). Chinese college students' prosocial tendencies, prosocial moral reasoning and their correlation patterns. *Psychological Science, 27*(2), 329–332.

Krägeloh, C. (2016). Importance of morality in mindfulness practice. *Counseling & Values, 61*(1), 97–110. https://doi.org/10.0000/j.0000-0000.2013.00000.x.

Lim, D., Condon, P., & Desteno, D. (2015). Mindfulness and compassion: an examination of mechanism and scalability. *PLoS One, 10*(2), e0118221. https://doi.org/10.1371/journal.pone.0118221.

Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. (2002). To parcel or not to parcel: exploring the question, weighing the merits. *Structural Equation Modeling: A Multidisciplinary Journal, 9*(2), 151–173. https://doi.org/10.1207/S15328007SEM0902_1.

Maxwell, B. (2011). Personality, identity, and character: explorations in moral psychology. *Journal of Moral Education, 40*(1), 136–138. https://doi.org/10.1080/03057240.2011.541998.

Medvedev, O. N., Siegert, R. J., Kersten, P., & Krägeloh, C. U. (2017). Improving the precision of the Five Facets of Mindfulness Questionnaire using a RASCH approach. *Mindfulness, 8*(4), 995–1008. https://doi.org/10.1007/s12671-016-0676-8.

Monin, B., & Jordan, A. H. (2009). The dynamic moral self: a social psychological perspective. In D. Narvaez & D. K. Lapsley (Eds.), *Personality, identity, and character: explorations in moral psychology* (pp. 341–354). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511627125.016.

Monteiro, L. M., Musten, R. F., & Compson, J. (2015). Traditional and contemporary mindfulness: finding the middle path in the tangle of concerns. *Mindfulness, 6*(1), 1–13. https://doi.org/10.1007/s12671-014-0301-7.

Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*(3), 223–250. https://doi.org/10.1080/15298860309027.

Nelson, L. D., & Norton, M. I. (2005). From student to superhero: situational primes shape future helping. *Journal of Experimental Social Psychology, 41*(4), 423–430. https://doi.org/10.1016/j.jesp.2004.08.003.

Oveis, C., Horberg, E. J., & Keltner, D. (2010). Compassion, pride, and social intuitions of self-other similarity. *Journal of Personality and Social Psychology, 98*(4), 618–630. https://doi.org/10.1037/a0017628.

Pandey, A., Chandwani, R., & Navare, A. (2018). How can mindfulness enhance moral reasoning? An examination using business school students. *Business Ethics: A European Review, 27*(1), 56–71. https://doi.org/10.1111/beer.12171.

Perugini, M., & Leone, L. (2009). Implicit self-concept and moral action. *Journal of Research in Personality, 43*(5), 747–754. https://doi.org/10.1016/j.jrp.2009.03.015.

Podsakoff, P., MacKenzie, S., Lee, J.-Y., & Podsakoff, N. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*, 879–903. https://doi.org/10.1037/0021-9010.88.5.879.

Pratt, M. W., Hunsberger, B., Pancer, S. M., & Alisat, S. (2003). A longitudinal analysis of personal values socialization: correlates of a moral self-ideal in late adolescence. *Social Development, 12*(4), 563–585. https://doi.org/10.1111/1467-9507.00249.

Raes, F., Pommier, E., Neff, K. D., & Gucht, D. V. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy, 18*(3), 250–255. https://doi.org/10.1002/cpp.702.

Rest, J. (1986). *Moral development: advances in research and theory.* New York: Praeger.

Reynolds, S. J. (2008). Moral attentiveness: who pays attention to the moral aspects of life? *Journal of Applied Psychology, 93*(5), 1027–1041. https://doi.org/10.1037/0021-9010.93.5.1027.

Ridderinkhof, A., de Bruin, E. I., Brummelman, E., & Bögels, S. M. (2017). Does mindfulness meditation increase empathy? An experiment. *Self and Identity, 16*(3), 251–269. https://doi.org/10.1080/15298868.2016.1269667.

Rong, X., Sun, B.-H., Huang, X.-Z., Cai, M.-Y., & Li, W.-J. (2010). Reliabilities and validities of the Chinese version of the interpersonal reactivity index. *Chinese Journal of Clinical Psychology, 18*(2), 158–161.

Ruedy, N. E., & Schweitzer, M. E. (2010). In the moment: the effect of mindfulness on ethical decision making. *Journal of Business Ethics, 95*(1), 73–87. https://doi.org/10.1007/s10551-011-0796-y.

Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: an organismic-dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3–33). Rochester: University of Rochester Press.

Sánchez-Flores, M. (2017). Mindfulness and complex identities in equity training: a pilot study. *European Review of Applied Sociology, 10*(14), 20–33. https://doi.org/10.1515/eras-2017-0002.

Sass, D. A., & Smith, P. L. (2006). The effects of parceling unidimensional scales on structural parameter estimates in structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal, 13*(4), 566–586. https://doi.org/10.1207/s15328007sem1304_4.

Scherer, K. R., & Scherer, U. (2011). Assessing the ability to recognize facial and vocal expressions of emotion: construction and validation of the emotion recognition index. *Journal of Nonverbal Behavior, 35*(4), 305–326. https://doi.org/10.1007/s10919-011-0115-4.

Schmitt, M. J., Neumann, R., & Montada, L. (1995). Dispositional sensitivity to befallen injustice. *Social Justice Research, 8*(4), 385–407. https://doi.org/10.1007/BF02334713.

Segal, Z. V., Teasdale, J. D., & Williams, J. M. G. (2004). Mindfulness-based cognitive therapy: theoretical rationale and empirical status. In S. C. Hayes, V. M. Follette, & M. Linehan (Eds.), *Mindfulness and acceptance: expanding the cognitive-behavioral tradition* (pp. 45–65). New York: Guilford Press.

Sparks, J. R. (2015). A social cognitive explanation of situational and individual effects on moral sensitivity. *Journal of Applied Social Psychology, 45*(1), 45–54. https://doi.org/10.1111/jasp.12274.

Sparks, J. R., & Hunt, S. D. (1998). Marketing researcher ethical sensitivity: conceptualization, measurement, and exploratory investigation. *Journal of Marketing, 62*(2), 92–109. https://doi.org/10.2307/1252163.

Stucki, G., Daltroy, L., Katz, J. N., Johannesson, M., & Liang, M. H. (1996). Interpretation of change scores in ordinal clinical scales and health status measures: the whole may not equal the sum of the parts. *Journal of Clinical Epidemiology, 49*(7), 711–717. https://doi.org/10.1016/0895-4356(96)00016-9.

Wan, Z. K. (2008). The revision of the Moral Self-Identity Scale for Chinese adolescents. *Science of Social Psychology, 50*(5), 41–45.

Winterich, K. P., Aquino, K., Mittal, V., & Swartz, R. (2013). When moral identity symbolization motivates prosocial behavior: the role of recognition and moral identity internalization. *Journal of Applied Psychology, 98*(5), 759–770. https://doi.org/10.1037/a0033177.

Xin, Z., & Cen, G. (2008). Research on college students' dispositional moral sensitivity structure. *Psychological Science, 31*(5), 1026–1030.

Xu, Z. X., & Ma, H. (2014). Moral identity in Chinese context: construction and validation of an objective measure. *Research on Humanities and Social Sciences, 4*, 34–45.

Yang, Y., Guo, Z., Kou, Y., & Liu, B. (2019). Linking self-compassion and prosocial behavior in adolescents: the mediating roles of relatedness and trust. *Child Indicators Research, 12*(6), 2035–2049. https://doi.org/10.1007/s12187-019-9623-2.