Supplementary information for “Trait psychopathy and utilitarian moral judgment: The mediating role of action aversion”

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Supplementary Text S1

Action/Outcome aversion questionnaire (Miller et al., 2014)

Action Items:

1. How much would it upset you to hold an empty gun, which both you and your friend know is empty, to your friend's head and pull the trigger?
2. How much would it upset you to stab a fellow actor in the neck during a play using a stage knife with a retractable blade?
3. How much would it upset you to volunteer to "saw a woman in half" as part of a realistic but safe magic trick?
4. How much would it upset you to shoot a bullet at a consenting friend while he's behind a bulletproof glass?
5. How much would it upset you to smash a very real-looking human baby doll on the wall?

Outcome Items:

1. How much would it upset you to see a stranger fall down the stairs?
2. How much would it upset you to listen to somebody have a tooth pulled when there is no anesthetic available?
3. How much would it upset you to see someone shut their own finger in a car door?

4. How much would it upset you to see someone step barefoot on broken shards of glass?
5. How much would it upset you to see a man accidentally spill boiling water on his hand?

Control Items:

1. How much would it upset you if you lose electrical power to your home for a day?
2. How much would it upset you if you accidentally break your favorite coffee mug?
3. How much would it upset you if you lose your cell phone?
4. How much would it upset you if you have to wait three hours in the waiting room at the doctor's office?
5. How much would it upset you if you drop a cake you made for your grandmother while taking it to her house?
6. How much would it upset you if you get caught in the rain at the park after planning a nice picnic for your family?
7. How much would it upset you if you learn that you only have one hour to study for a difficult final exam?
8. How much would it upset you if you get a flat tire on the way to your wedding?
9. How much would it upset you if you find a moth hole on your favorite shirt?

Supplementary Text S2

Standard Fumes (impersonal moral dilemma)

You work as the night caretaker in a small provincial hospital. During one of your rounds you realise that, because of a laboratory accident, some highly toxic fumes are spreading through the ventilation system towards a room in which there are five patients. In another room in the same ward there is just one patient.

You can activate a switch which allows the toxic fumes to be diverted away from the room with five patients. You know that the fumes will be directed to the single room where the patient will die, but the other five will be saved.

How appropriate is it for you to divert fumes to this room and sacrifice this one patient to save other five patients?

Footbridge (personal moral dilemma)

You are crossing a bridge which passes over the railway line and you see a fast-moving trolley on the track below. You notice that the trolley is out of control and that it will continue on its present course and collide with five people who are working ahead on the track, killing them. On the bridge next to you is a person you do not know and who happens to be very large.

You can throw this person off the bridge in such a way that this person's large body will block the oncoming trolley on collision. You know that this person will die, but the five workers will be unhurt.

How appropriate is it for you to push this stranger to death in order to save the five workers?

Supplementary Table S1

Psychopathy (LSRP) scores predicting moral judgments on moral dilemmas, action aversion, and outcome aversion controlling for age and gender.

Predictor variable	Logit coefficient [95% CI]			
	action	**outcome**	**impersonal**	**personal**
LSRP^	-0.048 [-0.070, -0.028]***	-0.052 [-0.077, -0.032]***	0.025 [0.001, 0.050]*	0.036 [0.012, 0.058]***
LSRP-1^	-0.095 [-0.123, -0.064]***	-0.091 [-0.121, -0.065]***	0.038 [0.005, 0.071]*	0.064 [0.026, 0.101]***
LSRP-2^	0.030 [-0.014, 0.071]	0.008 [-0.044, 0.052]	0.004 [-0.044, 0.050]	-0.010 [-0.062, 0.041]

Note: LSRP = Levenson Self-Report Psychopathy scale; LSRP-1 = the Interpersonal-Affective factor of psychopathy; LSRP-2 = the Lifestyle-Antisocial factor of psychopathy; CI = confidence interval.

^The logit coefficient for the total score LSRP are from multiple regression including total psychopathy scores, age, and gender as predictor variables, while logit coefficient values for the two factors LSRP-1,2 are from multiple regression *simultaneously* including both psychopathy factor scores, age, and gender to predict moral judgments and harm aversion scores. 95% bias corrected and accelerated confidence intervals for unstandardized logit coefficients were generated using 1000 bootstrap samples. Positive or negative value of logit coefficient denote that increase in value of predictor variable is associated with increased odds for *higher* or *lower* value of criterion variable, respectively.

*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

Supplementary Table S2

Action and outcome aversion scores predicting moral judgments on moral dilemmas controlling for age and gender.

	Logit coefficient [95% CI]	
	impersonal	**personal**
action	-0.067 [-0.205, 0.064]	-0.187 [-0.335, -0.033]**
outcome	0.032 [-0.142, 0.207]	-0.093 [-0.255, 0.077]

Note: The logit coefficient for the action and outcome aversion scores are from separate multiple regression models including either action or outcome aversion in addition to age and gender scores as predictor variables to predict moral judgments. 95% bias corrected and accelerated confidence intervals for unstandardized logit coefficients were generated using 1000 bootstrap samples. Positive or negative value of logit coefficient denotes that increase in value of predictor variable is associated with increased odds for *higher* or *lower* value of criterion variable, respectively.

*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

Supplementary Table S3

Mediation analysis results with action aversion as the mediator variable, psychopathy scores as independent variables, and moral judgments for impersonal and personal moral dilemmas as dependent variables with age and gender as covariates.

Inependent variable	Mediator variable	Dependent variable	Sobel's *Z*	Bootstrap [95% CI]
LSRP	action aversion	moral acceptibility of utilitarian option for *personal* moral dilemma	2.3341*	0.0064 [0.0018, 0.0138]
LSRP1			2.0910*	0.0095 [0.0010, 0.0200]
LSRP		moral acceptibility of utilitarian option for *impersonal* moral dilemma	1.0945	0.0028 [-0.0018, 0.0084]
LSRP1			0.9073	0.0040 [-0.0047, 0.0648]

Note: Mediation analysis with covariates was carried out using Preacher-Hayes bootstrapping method (Preacher & Hayes, 2008) implemented in PROCESS (model number 4, see: http://www.afhayes.com/public/templates.pdf). Bias corrected and accelerated 95% CIs from 20,000 bootstrap samples are reported for specific indirect effects. Effect size measures for indirect effect are not presented due to lack of availability of this option for mediation models with covariates.

*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

References

Miller, R. M., Hannikainen, I., & Cushman, F. A. (2014). Bad actions or bad outcomes? Differentiating affective contributions to the moral condemnation of harm. *Emotion*. 14(3), 573-587. doi: 10.1037/a0035361

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