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# Military Training and Personality Trait Development: Does the Military Make the Man, or Does the Man Make the Military?

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## Abstract

Military experience is an important turning point in a person's life and, consequently, is associated with important life outcomes. Using a large longitudinal sample of German males, we examined whether personality traits played a role during this period. Results indicated that personality traits prospectively predicted the decision to enter the military. People lower in agreeableness, neuroticism, and openness to experience during high school were more likely to enter the military after graduation. In addition, military training was associated with changes in personality. Compared with a control group, military recruits had lower levels of agreeableness after training. These levels persisted 5 years after training, even after participants entered college or the labor market. This study is one of the first to identify life experiences associated with changes in personality traits. Moreover, our results suggest that military experiences may have a long-lasting influence on individual-level characteristics.

## Keywords

personality, military, personality development, propensity score, agreeableness, adolescent development, life experiences, causal analysis, environmental effects

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Military experience is often viewed as a major turning point in people's lives that induces long-lasting changes (Elder, 1986; Elder, Gimbel, & Ivie, 1991). Indeed, a long-held sentiment exists that military experience socializes and matures individuals (James, 1910/1988). For example, the recruiting materials of military forces around the world bolster the idea of military experience as being a catalyst for change. For example, recent slogans in the United States, such as "Be all you can be," "Accelerate your life," and "Aim high," all imply that military experiences affect life trajectories. Despite the expectation that military experience influences character development, no studies have examined this effect directly. Accordingly, in the study reported here, we investigated the relation between military training and personality traits in a longitudinal study of German youth.

Although no study has examined the effect of military experience on personality traits, there is evidence that military experience affects the life course (Settersten, 2006). For example, divorce is less common among military veterans than among civilians, and military experience is also associated with less earning potential than among individuals who have never served (MacLean & Elder, 2007). Moreover, there appears to be a relation between military experience and good

health (Wilmoth, London, & Parker, 2010). These life-course outcomes are also predicted by personality traits (Ozer & Benet-Martinez, 2006). As such, it is possible that changes in personality traits mediate the relation between military experience and important life outcomes.

Few researchers go beyond examining life-course outcomes (e.g., divorce) to test whether changes in psychological constructs are associated with military experience. For example, there is some evidence that military experience affects political attitudes and values, though the effect is relatively small after controlling for attitudes prior to entering military service (French & Ernest, 1955; Jennings & Markus, 1977). Changes in the emotional health of military veterans can also occur, such as in the case of posttraumatic stress disorder (Aldwin, Levenson, & Spiro, 1994), though these changes typically arise from acute combat experiences and not from military experience in general. Given the millions of individuals around the world who participate in some form of military

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training (Hackett, 2008), we were interested in examining how military training affects psychological constructs, such as personality traits.

A major obstacle in our study was the possibility that people who choose military service and people who do not could differ on important preexisting variables. These differences, which reflect selection processes, could explain why military service is associated with important life outcomes. For most North Atlantic Treaty Organization countries, selection processes play a major role in deciding who serves in the military. For example, in the United States, individuals who have a lower socio-economic status and IQ, come from rural versus urban areas, are minorities, and associate with deviant peers are more likely to join the military than individuals who remain civilians (Elder, Wang, Spence, Adkins, & Brown, 2010; Johnson & Kaplan, 1991). Although values and attitudes appear to differ among people who intend to join the military and people who do not (Bachman, Sigelman, & Diamond, 1987), little is known about what personality characteristics are associated with enlistment. Personality traits predict leadership ability, dropout, satisfaction, and mental health during military service (Fiedler, Oltmanns, & Turkheimer, 2004; McCormack & Mellor, 2002), but to our knowledge, no study has prospectively examined personality traits among individuals who eventually choose to serve in the military and those who do not.

For those individuals who decide to join the military, military training is explicitly set up to change their patterns of behavior (Arkin & Dobrofsky, 1978). As such, military training combines a number of socialization processes that provide an ideal environment in which personality trait changes can occur (Roberts, Wood, & Caspi, 2008). First, expectations for specific behaviors and norms are made explicit. New recruits are immersed in an extensive boot-camp program, in which their civilian status is broken down and the new identity of military recruit is forged. Second, an incentive structure is set up that rewards recruits who fulfill the expectations of military culture and punishes those who do not. These external contingencies lead to changes in daily behavior that, over time, are thought to promote changes in personality traits (Roberts et al., 2008).

In the study reported here, we tested both selection and socialization processes that lead to different life-course outcomes using a longitudinal sample of young adult German males. First, we tested whether personality traits assessed in high school predict who eventually chooses to join the military. Second, we tested whether individuals who received military training were more likely to show changes in personality traits than individuals in a control group were. If changes associated with military experiences were found, we were additionally interested in whether these changes persisted after military recruits went to college or entered the labor market. Given that retrospective reports suggest that people view the military as a time when they became more mature (Dar & Kimhi, 2001; Elder, 1986), we hypothesized that military

recruits would experience changes in the personality traits associated with maturity: Specifically, they would show higher levels of conscientiousness and agreeableness, and lower levels of neuroticism (Roberts et al., 2008). However, changes in these traits already occur in young adulthood independent of military training (Lüdtke, Trautwein, & Husemann, 2009; Robins, Fraley, Roberts, & Trzesniewski, 2001), though it should be noted that not all studies have found increases in agreeableness. Given these changes, reports of increases in maturity due to military training may be misattributed to normative developmental trends.

Another difficulty in estimating the effect of military training on personality traits is that participation in the military is not randomized. If selection processes exist, they may bias the interpretation that military experience leads to changes in personality. As a result, it becomes necessary to control for any confounding preexisting differences, which we did using a regression-based covariate model and propensity-score matching. Propensity-score methods are slowly being incorporated in psychological research (Thoemmes & Kim, 2011), but thus far, they have not been used to investigate changes in personality traits.

## Method

### Participants

Participant data came from a large, ongoing German study (Transformation of the Secondary School System and Academic Careers, or TOSCA) initiated by the Max Planck Institute for Human Development and now conducted at the University of Tübingen. The data were collected from two different cohorts of students at randomly selected upper secondary schools; there were 149 schools in the first cohort and 157 in the second cohort. The initial assessments of each cohort were conducted 4 years apart. The schools are representative of the traditional and vocational secondary schools (Gymnasiums) attended by college-bound students. Schools and students were randomly selected to ensure that the data were representative of the population at large. Among the first and second cohorts, 99% and 97% of the schools, respectively, participated in the study. More than 80% of the students in each school participated. Participants were first assessed in their final year of high school prior to conscription (Time 1; average age = 19.5 years) and then reassessed on average 2 years later (Time 2). In the first cohort, participants were assessed at two additional time points, each occurring roughly 2 years after the previous assessment (Times 3 and 4, respectively; see Trautwein, Neumann, Nagy, Lüdtke, & Maaz, 2010, for more information regarding the sample).

Germany is an ideal setting in which to examine the effect of military training because of the laws that governed the conscription of male citizens at the time of data collection. By default, all physically able male citizens of Germany are drafted into military service. However, German males may

refuse military service (i.e., conscientiously object) by choosing to perform civilian community service (e.g., work in a hospital) instead. Accordingly, young adults who participated in civilian community service served as a control group. At the time of the first two TOSCA assessments, the conscription law stated that all males were obligated to serve 9 months in the military or participate in 9 months of civilian community service, though some exemptions were granted (e.g., medical reasons, having a brother in the military). Military service time consisted of 3 months of combat training and 6 months at an assigned post. Individuals who chose civilian community service were required to work at institutions that provide public services, such as hospitals and childcare centers. Military service members are assigned to dormitories in barracks, whereas participants who choose civilian community service often live close to home or stay at home with their family.

Using data from both TOSCA cohorts, we extracted all male participants who performed either military service or civilian community service between the first assessment and the second assessment. A number of TOSCA participants ( $N = 715$ ) performed neither military nor civilian community service and were thus not included in the primary analyses. The final analytic sample included a total of 1,261 male participants, of which 245 performed military service and 1,016 performed civilian community service.

## Measures

We measured the Big Five personality dimensions at Times 1 through 4 using the German version of the NEO Five-Factor Inventory (Borkenau & Ostendorf, 1993). Coefficient alpha reliabilities were above .70 for all Big Five traits at all time points.

## Analyses

Some of the outcome variables and covariates had missing data because of nonresponses or attrition. To fill in missing data, we employed a multiple imputation scheme. We generated a total of 10 imputations using a fully conditional model with a total of 67 social environmental and psychological variables (Table S1 in the Supplemental Material available online lists these variables).

A major obstacle to investigating the effects of military training on personality is that military training is not randomized; thus, preexisting differences between military recruits and people who chose civilian community service may be responsible for observed differences at later points in time. We addressed this problem using several analytic approaches. First, a standard regression-based covariate model was used to control for levels of the Big Five personality traits before entrance into the military. Second, propensity-score matching was used to control for a large number of potentially confounding covariates. In this approach, each participant receives an estimated propensity score, which is the conditional

probability that a given participant would be exposed to the treatment condition (i.e., military training) given certain values on observed covariates. By matching participants that have or have not been exposed to the treatment on this estimated propensity score, we created pairs of participants that were balanced on all observed covariates (a situation that would be expected in a randomized experiment). This matching process created two balanced distributions (with regard to observed covariates) that differed only in terms of the treatment they received (military training or civilian community service).

In the first step of the model, we estimated propensity scores for each individual by regressing the Time 1 social environmental and psychological covariates on the binary outcome variable (i.e., military service or civilian community service). Next, we fitted this propensity-score model within each of the 10 imputations (Hill, 2004). Within each imputation, we conditioned the data on the estimated propensity score by using a nearest-neighbor matching scheme, in which we matched each person who participated in military service with up to 2 persons who participated in civilian community service. To ensure close matches, we employed a caliper width of .2 standard deviations of the logit of the estimated propensity score using the MatchIt package in R (Ho, Imai, King, & Stuart, 2007). The matched samples were screened for balance across main effects, interactions, and quadratic terms. The matching algorithm produced adequate balance in each of the 10 imputations (see Table S2 in the Supplemental Material). We estimated a treatment effect within each of the imputed and matched samples, and we averaged this effect and the associated standard errors (von Hippel, 2007). Across the 10 imputations, the average total number of participants was 867, with an average of 241 participants who performed military training and an average 628 who performed civilian community service.

Additionally, to assess whether differences in personality persisted once participants entered college and the labor market, we examined the longitudinal trajectories of personality traits using latent growth models. The first cohort included two additional waves of data compared with the second cohort—for a total of four waves of personality measures across a 6-year time span. The matched sample for this extended longitudinal data set included 106 participants who performed military service and 433 who performed civilian community service. We used service type as an explanatory variable of latent growth to see whether the trajectories of personality in young adulthood differed between the two groups.

In a second-order latent growth model, the repeated personality measures were modeled as latent variables as opposed to manifest variables. To test long-term personality differences between groups, we scaled the intercept parameter to represent personality traits at Time 4. Fixing all loadings to unity identified the intercept parameter, and the slope parameter was set to  $-3$  at Time 1,  $-2$  at Time 2,  $-1$  at Time 3, and  $0$  at Time 4. Item parcels were used to identify the repeated measures of the

latent personality traits. Furthermore, the model was constrained for strict measurement equivalence across all time points. Item loadings and residual variances were constrained to be equal across the four waves of data, and the residual variances for each item were allowed to correlate across all time points.

**Results**

**Who chooses military service?**

To examine selection effects in the matched samples, we tested personality trait differences between the military-service group and the civilian-community-service group at Time 1, before the participants started service (see Table 1 for results). Adolescents who eventually opted for military service were initially less agreeable ( $d = -0.29, p < .05$ ), less open ( $d = -0.15, p < .05$ ), and less neurotic ( $d = -0.14, p < .05$ ) than adolescents who selected civilian community service. These results suggest that personality traits played a moderate but significant role in the decision to select military training instead of civilian community service.

**Is military training associated with changes in personality traits?**

Before assessing whether military training is associated with changes in personality, it is necessary to take into account the existing pattern of personality trait development that occurs

during young adulthood. Specifically, people tend to increase in conscientiousness, decrease in neuroticism, and sometimes increase in agreeableness (Caspi, Roberts, & Shiner, 2005). Results were consistent with these normative changes, in that both people who chose civilian community service and military recruits showed increased levels of conscientiousness ( $d = 0.33, d = 0.39$ , respectively,  $ps < .05$ ) and agreeableness ( $d = 0.32, d = 0.21$ , respectively,  $ps < .05$ ), and decreased levels of neuroticism ( $d = -0.36, d = -0.39$ , respectively,  $ps < .05$ ; see Table 2 for mean levels of the Big Five personality traits for the two groups).

To test whether military training was associated with changes in personality traits, we next ran a series of models. First, we examined the differences in personality traits between groups at Time 2 after controlling for personality during high school (Time 1). The results of these socialization analyses are presented in Table 1. Military training was associated with lower levels of agreeableness than civilian community service was ( $d = -0.19, p < .001$ ). No other personality traits were significantly different between the two groups after controlling for personality traits in high school. Adding males who did not participate in any form of service to the control group did not significantly change the results. Furthermore, when using these nonservers rather than people who chose civilian community service as a control group, the effect of military service on agreeableness remained similar in magnitude ( $d = -0.13, p < .05$ ). In contrast, examining the effect of civilian community service on agreeableness by using the nonservers as a control group yielded no significant findings ( $d = 0.06,$

**Table 1.** Results of Three Models Testing Personality Trait Differences Between the Military-Service Group and the Civilian-Community-Service Group

Personality trait and statistic	Selection model	Socialization model	Propensity-score model
<b>Extraversion</b>			
Raw difference	0.01 (0.03)	0.00 (0.03)	-0.01 (0.04)
Cohen's <i>d</i>	0.03	0.00	-0.02
<b>Agreeableness</b>			
Raw difference	-0.10 (0.04)	-0.07 (0.02)	-0.06 (0.03)
Cohen's <i>d</i>	-0.29*	-0.19*	-0.15*
<b>Conscientiousness</b>			
Raw difference	0.06 (0.03)	0.05 (0.03)	0.05 (0.04)
Cohen's <i>d</i>	0.13	0.11	0.11
<b>Neuroticism</b>			
Raw difference	-0.06 (0.03)	-0.05 (0.03)	-0.05 (0.04)
Cohen's <i>d</i>	-0.14*	-0.11	-0.11
<b>Openness to experience</b>			
Raw difference	-0.07 (0.04)	-0.03 (0.03)	-0.01 (0.04)
Cohen's <i>d</i>	-0.15*	-0.07	-0.01

Note: Data from 1,261 participants were included in the selection and socialization models. Data from 867 participants were included in the propensity-score model. Standard errors are given in parentheses. The selection model tested differences in the Big Five traits between the two groups at Time 1. The socialization model tested these differences at Time 2, controlling for all personality traits at Time 1. The propensity-score model equated the two groups on social environmental and psychological variables at Time 1. All reported values are based on pooled estimates across multiple imputations.

\* $p < .05$ .



**Table 2.** Mean Personality Trait Ratings and Standardized Change Scores of the Two Groups

Personality trait and group	Time 1	Time 2	Cohen's <i>d</i>
<b>Extraversion</b>			
Civilian community service	2.80 (0.40)	2.83 (0.42)	-0.07
Military service	2.81 (0.39)	2.84 (0.42)	-0.07
<b>Agreeableness</b>			
Civilian community service	2.89 (0.35)	3.00 (0.35)	0.32*
Military service	2.79 (0.36)	2.87 (0.40)	0.21*
<b>Conscientiousness</b>			
Civilian community service	2.84 (0.47)	2.98 (0.48)	0.33*
Military service	2.90 (0.44)	3.08 (0.41)	0.39*
<b>Neuroticism</b>			
Civilian community service	2.17 (0.41)	2.01 (0.47)	-0.36*
Military service	2.11 (0.44)	1.92 (0.47)	-0.39*
<b>Openness to experience</b>			
Civilian community service	2.70 (0.46)	2.76 (0.46)	0.14
Military service	2.63 (0.42)	2.68 (0.44)	0.11

Note: The civilian-community-service group consisted of 1,016 participants, and the military-service group consisted of 245 participants. Standard deviations are given in parentheses. Participants were assessed during their final year of high school, prior to conscription (Time 1), and then, on average, 2 years later (Time 2). All values are based on pooled estimates across multiple imputations.

\* $p < .05$ .

$p > .05$ ). These results suggest that military training is associated with changes in agreeableness.

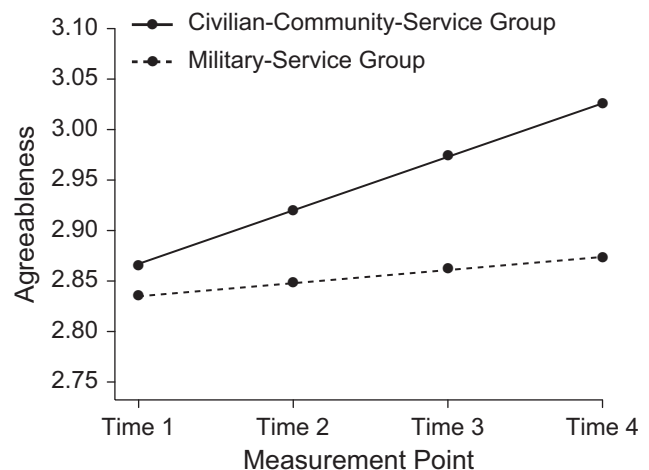
To provide a more stringent test of the effect of military training on personality, we next ran a propensity-score analysis, in which we controlled for a large number of potentially confounding covariates (Table 1). As in the previous analysis, results showed that military recruits had lower levels of agreeableness than individuals who chose civilian community service ( $d = -0.15, p < .05$ ). The similar effect size between this more stringent analysis and the covariate regression model suggests that the effect of military training on agreeableness is robust and not likely due to unmeasured preexisting differences.

### Does the effect of military training persist?

We next tested whether differences in agreeableness persisted after military recruits and participants who chose civilian community service went to college or entered the labor force. A second-order latent growth model was fit to a subsample of participants who were assessed four times over a 6-year time span. This subsample was matched on the propensity score at baseline following the procedure used in the previous set of analyses.

The base model fit well,  $\chi^2(112, N = 539) = 162.4$ , comparative fit index = .98, root-mean-square error of approximation = 0.03. Significant variance existed around the slope parameter, suggesting that people changed at different rates or in different directions across the four waves. A dummy variable in which civilian community service was set to 0 and military training

was set to 1 was included to test the long-term effects of military training. As Figure 1 shows, military recruits had significantly lower levels of agreeableness 4 years after completing military training (at Time 4) than did young adults who participated in civilian community service ( $b = -0.16, SE = 0.04, p < .05$ ). Similarly, the slope for agreeableness over time was shallower for military recruits than for people who chose civilian community service ( $b = -0.04, SE = 0.01, p < .05$ ). Together, these results



**Fig. 1.** Linear-growth-model estimates of agreeableness as a function of time of measurement and group. The initial assessment occurred during participants' final year of high school, prior to conscription (Time 1), and the follow-up assessments (Time 2–Time 4) were completed on average at 2-year intervals.

indicate that military training is still associated with changes in agreeableness after military service is completed and participants enter college and the labor market.

## Discussion

The study reported here is the first to examine the relation between military training and the development of personality traits. Results indicated that personality traits play an important role in military training. First, personality traits prospectively influenced who chose to join the military, as individuals lower in agreeableness, neuroticism, and openness to experience were more likely to enter military service. Second, military training was associated with changes in agreeableness. These changes were not temporary, as military recruits continued to display lower levels of agreeableness than people who chose civilian community service even after both groups entered college and the labor market. These findings are especially notable, as no prior study has used propensity-score matching to identify life experiences associated with changes in personality traits.

In both military recruits and people who chose civilian community service, changes in personality traits resulted in greater maturity, as defined by increases in conscientiousness and agreeableness, and decreases in neuroticism (Caspi et al., 2005). Thus, the maturation often attributed to military training (e.g., Dar & Kimhi, 2001) may actually be best ascribed to the specific time period of young adulthood. However, even though both military recruits and people who chose civilian community service increased in maturity-related traits, military recruits were significantly lower in agreeableness than people who chose civilian community service after training. Given that this difference persisted after military training was completed, the results of our study suggest that military recruits are not “late bloomers” who eventually catch up in levels of agreeableness but, instead, continue to be less agreeable after entering the civilian world. Given that lower levels of agreeableness are associated with greater levels of conflict in romantic relationships, difficulties in getting along with friends, and aggression (Ozer & Benet-Martinez, 2006; Wilkowski, Robinson, & Meier, 2006), our findings suggest that military training may be potentially detrimental. However, lower levels of agreeableness are not completely negative, as they also predict greater occupational attainment (Ozer & Benet-Martinez, 2006).

Lower levels of agreeableness are likely to be especially beneficial in a military context. For example, aggressive behavior has long been associated with the training of soldiers, as a number of aggression-related skills (e.g., marksmanship) constitute specific training goals. Given that aggression is associated with lower levels of agreeableness, higher levels of agreeableness may interfere with effective training and performance. Indeed, individuals with higher levels of agreeableness are slower and less likely to react aggressively after

being presented with aggression cues (Meier, Robinson, & Wilkowski, 2006). Thus, soldiers who are higher in agreeableness may not react quickly in life-or-death situations. In this view, lower levels of agreeableness are likely beneficial for soldiers and do not necessarily reflect low levels of maturity.

The current findings are especially intriguing because personality traits are highly consistent and, therefore, difficult to change (Roberts & Jackson, 2008). Despite the many studies that have identified changes in personality traits (e.g., Jackson et al., 2009; Lüdtke et al., 2009), few studies have attempted to identify the specific experiences associated with such changes (Roberts et al., 2008). The studies that have are fraught with selection biases resulting from their observational design, whereas in the study reported here, we attempted to control for these biases using propensity-score matching. Moreover, past studies have examined changes in personality traits across experiences that vary from person to person (e.g., work experiences; Roberts, Caspi, & Moffitt, 2003). The current study was unique, however, in that we focused on changes in personality traits across participants who had very similar experiences: For example, military training is uniform in time (i.e., all subjects are conscripted for the same duration) and in content (e.g., all military recruits are expected to meet the same standards and are given the same performance reviews). Accordingly, the results reported here constitute some of the best evidence to date that changes in personality traits are associated with social experiences.

Although the current study used a large sample and employed advanced methods to investigate changes in personality traits, these findings must still be considered in light of some limitations. For example, despite the relatively large sample size, there still may be questions concerning the generalizability of these results. Given that our sample consisted of students on an upper-level track in the German educational system, our results may not apply to students on lower-level tracks. Similarly, selection effects may differ in countries without conscription. Moreover, even though we attempted to control for selection biases, the observational nature of the study's design prohibits strong conclusions to be drawn; unmeasured confounds may still exist.

Although a number of studies have found increases in agreeableness during young adulthood (e.g., Vaidya, Gray, Haig, Mroczek, & Watson, 2008), a number of them have not (Roberts, Walton, & Viechtbauer, 2006); this suggests the possibility that civilian community service was responsible for increases in agreeableness. However, although not every study has found normative changes in agreeableness, our results must be interpreted with respect to the sample we used. Past analyses of this data set found a normative trend toward increases in agreeableness for all individuals (both males and females; Lüdtke et al., 2009). Moreover, individuals who did not participate in either military or civilian community service had levels of agreeableness that were more similar to people who chose civilian community service than to military recruits. These

findings suggest that changes in agreeableness were likely a response to military service, not to civilian community service.

It is possible, however, that the experiences driving our results did not occur in the military. That is, military experiences may not affect the development of agreeableness. Instead, differences in agreeableness may be attributable to an absence of important developmental experiences within military service. Future research on the mechanisms responsible for these changes is needed to tease apart these different interpretations. Moreover, future research needs to examine the reasons why some studies have found changes in agreeableness during young adulthood, whereas others have not.

In conclusion, our results suggest that personality traits play an important role in military training. We found evidence for both selection and socialization effects. Individuals who eventually chose military training had lower levels of neuroticism, agreeableness, and openness to experience than individuals who chose civilian community service. Moreover, participation in military training was associated with changes in agreeableness. As agreeableness is associated with important life outcomes, military training may impair some aspects of the lives of soldiers even if they never engage in combat. Overall, it thus appears that the man makes the military *and* the military makes the man.

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### Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

### Supplemental Material

Additional supporting information may be found at <http://pss.sagepub.com/content/by/supplemental-data>

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