Social Psychological and Personality Science
2018, Vol. 9(1) 59-69

DOI: 10.1177/1948550617699255
journals.sagepub.com/home/spp

Education as an Antidote to Cynicism: A Longitudinal Investigation

Olga Stavrova[1] and Daniel Ehlebracht[2]

Abstract

Although cynical beliefs about human nature yield numerous adverse consequences for individuals' life outcomes and well-being, very little is known about factors that counteract the development of cynical beliefs. Drawing from the literature on the "education effect" describing the importance of education in overcoming close-mindedness and negative views of others, we propose that education can represent an antidote to cynicism. The results of two large-scale longitudinal studies showed that education was associated with lower levels of cynicism over time spans of 4 and 9 years. Longitudinal mediation analyses underscored the role of individual differences in perceived constraints, a facet of personal control, as the psychological mechanism underlying the education effect: Higher education is associated with a reduced perception of constraints, which is in turn related to less endorsement of cynical beliefs.

Keywords

cynical beliefs about human nature, educational attainment, personal control

Psychologists and social scientists alike have long been interested in lay beliefs about human nature (Kluckhohn, 1950; Rosenberg, 1956; Wrightsman, 1964, 1992). Are people inherently corrupt, deceptive, and motivated exclusively by self-interest or are they honest, trustworthy, and genuinely concerned about others' well-being? Research shows that individuals differ widely in their answers to these questions and, consequently, whether they endorse an idealist or a cynical view of human nature (Bond et al., 2004; Cook & Medley, 1954; Leung et al., 2002; Wrightsman, 1964). Following recent research (Chen et al., 2016; Stavrova & Ehlebracht, 2016), we define cynical beliefs about human nature (briefly referred to as cynicism) as a dispositional construct reflecting individual differences in core evaluations of human nature as good or evil. Cynical beliefs involve a negative appraisal of other people's intentions and motives and a tendency to view most people with suspicion and distrust.

Cynical beliefs about human nature have been shown to have negative consequences for a wide range of individuals' life outcomes. Cynicism has been found to be one of the most important predictors of bad health, including increased likelihood of coronary heart disease, dementia, depression, and risk of mortality (Everson et al., 1997; Neuvonen et al., 2014; Smith, 1992). Negative consequences of holding cynical beliefs extend to interpersonal relationships (Baron et al., 2007; Kaplan, Bradley, & Ruscher, 2004), self-esteem, subjective well-being (Chen et al., 2015), job satisfaction (Leung, Ip, & Leung, 2010), and career success (Stavrova & Ehlebracht, 2016). Cynicism is also thought of as a source of negative outcomes for whole societies, hindering national economic growth, undermining democracy and civic engagement, and providing fertile soil for crime and corruption (Knack & Keefer, 1997; Putnam, 2000; Rothstein & Uslaner, 2005; Uslaner & Brown, 2005).

Despite cynicism's deleterious consequences, very little is known about factors that prevent its development. Herein, we explore the role of educational attainment as an antidote to cynicism. Existing literature has promoted the idea of education as a means against close-mindedness, intolerance, and distrust of the differently minded (Coenders & Scheepers, 2003; Osborne & Sibley, 2015). In particular, education endows individuals with a sense of personal control (Lewis, Ross, & Mirowsky, 1999) and therefore might help them overcome feelings of vulnerability and suspiciousness. Although a moderate negative correlation between cynicism and education has been repeatedly reported in the literature (Carroll, Smith, Sheffield, Shipley, & Marmot, 1997; Gallo & Matthews, 2003; Stavrova & Ehlebracht, 2016), it remains to be investigated

[1] Department of Social Psychology, Tilburg University, Tilburg, the Netherlands
[2] University of Cologne, Cologne, Germany

Corresponding Author:
Olga Stavrova, Department of Social Psychology, Tilburg University, PO Box 90153, 5000 LE, Tilburg, the Netherlands.
Email: o.stavrova@uvt.nl

whether education is related to the development of cynical beliefs in the long run.

Theoretical Background

Education is often seen as an important factor promoting open-mindedness and tolerance. Highly educated individuals tend to score higher on measures of openness to experience (O'Connell & Sheikh, 2011; Van Eijck & De Graaf, 2004), are more likely to support minorities' rights, and are less likely to endorse prejudice and out-group stereotypes (Coenders & Scheepers, 2003; Fingerhut, 2011; Huang, den Brink, & Groot, 2011; Jenssen & Engesbak, 1994; Kuppens & Spears, 2014; Osborne & Sibley, 2015). Education provides individuals with better access to status and power and thus might diminish the perception of vulnerability to others' potentially malicious intentions. In addition, by developing cognitive skills, education can help individuals build a stronger sense of mastery and control over their lives (Schneeweis, Skirbekk, & Winter-Ebmer, 2014). Indeed, an increased perception of personal control represents one of the most important psychological consequences of education reported in the literature (Eshbaugh, 2009; Lewis et al., 1999; Schieman, 2001; Schieman & Plickert, 2008; Specht, Egloff, & Schmukle, 2013).

Personal control is widely recognized as a valuable personal resource, strengthening individuals' coping ability, subjective well-being, and health (Lachman, 2006; Rotter, 1966; Turiano, Chapman, Agrigoroaei, Infurna, & Lachman, 2014). Individuals with a strong sense of control tend to believe that they hold power over what happens to them and how their life unfolds, whereas individuals with a weak sense of control tend to feel powerless and believe that their life depends much on factors beyond their control, such as chance, fate, or other people (Ross & Sastry, 1999; Rotter, 1966; Skinner, 1996). Personal control is believed to include two facets—mastery and perceived constraints (Lachman & Weaver, 1998). Mastery refers to a belief in one's ability to achieve the desired outcomes, whereas perceived constraints describe a belief in one's dependence on factors beyond one's control (e.g., other people) in achieving the desired outcomes. In existing research, these facets of personal control are often combined into one scale, although in a couple of recent studies, they were analyzed separately (cf. Infurna & Mayer, 2015; Ward, 2013). Herein, we assume that a stronger sense of control (higher mastery and/or lower constraints) might help overcome feelings of vulnerability and thus reduce the use of self-protective strategies, such as suspiciousness, hostility, and distrust, which are central to cynicism (Pope, Smith, & Rhodewalt, 1990; Vranceanu, Gallo, & Bogart, 2006). Indeed, prior research has shown that feeling powerless and at others' mercy amplifies suspicion and distrust (Ross, 2011).

In the present research, we propose that educational attainment endows individuals with a stronger sense of personal control and therefore represents an antidote to the development of cynicism. We also investigate whether obtaining a higher level of education is associated with less cynicism even if one got off to a bad start in life. Existing research suggests that economic hardship in childhood promotes the development of cynicism in adulthood (Lynch, Kaplan, & Shema, 1997). In fact, individuals raised in low socioeconomic status (SES) households are less likely to show high educational attainment. Therefore, we investigated whether obtaining a high level of education is associated with less cynicism in adulthood regardless of one's starting conditions.

We explored these questions using a longitudinal methodology. In Study 1, we examined the role of individual differences in educational attainment in the endorsement of cynical beliefs using a two-wave longitudinal study of the American population. In Study 2, we replicated these findings in another longitudinal sample and explored the role of personal control as a potential mediator of the education effect. As differences in education are related to sociodemographic and economic characteristics, such as race or income, we included these variables as well as basic sociodemographic controls (gender and age) in the analyses in both studies.

Study 1

Method

We used the data from the American Changing Lives Study (House, 2014), a longitudinal study of the American population that started in 1986 and sampled about 3,000 individuals aged 25 and older. As cynicism was measured in Waves 4 (2002) and 5 (2011) only, we included only the data from these two waves. The final sample consisted of 1,087 individuals (mean age = 56.65, 39%[1] male). Data and materials can be accessed at the study's website (House, 2014).

Cynicism

Cynicism was measured with 3 items of the Cook–Medley Cynical Distrust Scale (as only 3 items were included in both waves; Greenglass & Julkunen, 1989): "Most people inwardly dislike putting themselves out to help other people," "Most people will use somewhat unfair means to gain profit or an advantage rather than lose it," and "I think most people would lie in order to get ahead" (4-point agree–disagree scale; Cronbach's $\alpha = .71$ at baseline and .72 at follow-up, respectively).

Education

Participants were asked to report the number of years of education they had when joining the panel in 1986 (ranging from 0 to 17). As the sample included individuals aged 25 and older and the maximum number of years possible was 17, most respondents would have been able to attain the maximum level of education by the time of joining the panel (assuming that primary education for most people in the United States starts at the age of 6–7 years).

Table 1. Means, Standard Deviations, and Correlations Among the Variables: Study 1.

Variable	*M*	Standard Deviation	1	2	3	4	5	6
1 Education	13.18	2.5	—	—	—	—	—	—
2 Cynicism at *t*1	2.55	0.74	−.22***	.69/.45***	—	—	—	—
3 Cynicism at *t*2	2.51	0.70	−.18***	.47***	.74/.46***	—	—	—
4 Gender (1 = male, 0 = female)	0.39	0.49	.14***	.08**	.08**	—	—	—
5 Age at *t*1	56.65	11.32	−.12***	−.06	−.04	−.09**	—	—
6 Race (1 = Caucasian, 0 = Other)	0.73	0.44	.13***	−.26***	−.23***	.06	.05	—
7 Income at *t*1 (log transformed)	10.26	0.88	.49***	−.16***	−.12***	.16***	−.33***	.15***

Note. *t*1 = Time 1; *t*2 = Time 2. The diagonal row shows Cronbach's αs/mean interitem correlations among scale items.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 2. Longitudinal Effect of Educational Attainment on Cynicism: Study 1.

	Model 1			Model 2		
Predictor	Path Coefficient (Unstandardized)	Partial *r*	95% CI for Partial *r*	Path Coefficient (Unstandardized)	Partial *r*	95% CI for Partial *r*
Model 1						
Cynicism *t*1	.58***	.44	[.39, .49]	.53***	.40	[.35, .45]
Education	−.01*	−.10	[−.16, −.04]	−.02*	−.08	[−.14, −.02]
Model 2						
Gender (male = 1, female = 0)	—	—	—	.06*	.07	[.01, .13]
Age *t*1	—	—	—	−.001	−.02	[−.08, .04]
Income *t*1 (log transformed)	—	—	—	.001	−.01	[−.07, .05]
Race (Caucasian = 1, Other = 0)	—	—	—	−.12**	−.13	[−.18, −.07]

Note. *t*1 = Time 1; *t*2 = Time 2. Model 1, fit: $\chi^2(10) = 93.27$, $p < .001$, CFI = .95, RMSEA = .088, SRMR = .06; Model 2, fit: $\chi^2(30) = 258.05$, $p < .001$, CFI = .88, RMSEA = .08, SRMR = .08. CI = confidence interval; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residuals.
*$p < .05$. **$p \leq .01$. ***$p < .001$, based on structural equation model results.

Control variables included age, gender (1 = male, 0 = female), race (1 = Caucasian, 0 = Other), and log-transformed income at Time 1 (*t*1; own and spouse's joint income before taxes, in U.S. dollars, adjusted for the presence of a spouse. If the income value referred to the joint own and spouse's income, it was divided by 2.).

Results and Discussion

Means, standard deviations, and zero-order correlations among the variables are shown in Table 1. Educational attainment was negatively correlated with cynicism in both waves ($r = -.22$ at *t*1 and $r = -.18$ at Time 2 [*t*2], $p < .001$).

To better account for measurement error in cynicism, we conducted a series of structural equation models (SEMs) modeling cynicism at *t*1 and *t*2 as latent constructs. We used the lavaan package of R (version 3.3.1; Rosseel, 2012). We report model-based parameter estimates along with their *p* values. As estimates of effect sizes, we additionally report the respective partial correlations and their 95% confidence intervals [CIs]. To evaluate model fit, we used comparative fit index (CFI ≥ .90), root mean square error of approximation (RMSEA ≤ .08), and standardized root mean square residuals (SRMR ≤ .08; Hu & Bentler, 1999; Marsh, Hau, & Grayson, 2005).

First, we assessed the measurement model by letting the three indicators of cynicism at *t*1 and *t*2 load on their respective latent constructs (that were allowed to correlate with each other). The model included longitudinal correlations between the same items measured at *t*1 and *t*2 (Cole & Maxwell, 2003). The model yielded a very good fit, $\chi^2(5) = 20.77$, $p = .001$, CFI = .99, RMSEA = .05, SRMR = .02. Second, we tested the measurement invariance of cynicism over time by comparing the model with free factor loadings to the constrained model in which factor loadings of the same items were fixed to be equal over time. The constrained model showed a good fit as well and did not significantly differ from the model with free factor loadings, $\chi^2(2) = 1.25$, $p = .54$ (for fit indices, see Supplemental Table S1), providing evidence for metric invariance of cynicism between *t*1 and *t*2 (Little, Preacher, Selig, & Card, 2007).

To examine the longitudinal effect of education on cynicism, we fitted an SEM in which cynicism at *t*2 was predicted by education and cynicism at *t*1 (Model 1, Table 2). Cynicism as *t*1 and *t*2 were modeled as latent factors. The model fits the data reasonably well, $\chi^2(10) = 93.27$, $p < .001$, CFI = .95, RMSEA = .088, SRMR = .06. Educational attainment negatively predicted cynicism at *t*2 when controlling for cynicism at *t*1 ($b = -.01$, $p = .046$, partial $r = -.10$, 95% CI [−.16, −.04]).[2] In Model 2, to examine whether the effect of education on cynicism holds when

controlling for basic sociodemographic and economic characteristics, we additionally modeled age, gender, race, and income at *t*1 as predictors of cynicism at *t*2. This model showed a substantially worse fit, $\chi^2(30) = 258.05$, $p < .001$, CFI = .88, RMSEA = .08, SRMR = .08. Most importantly though, it showed that the effect of education was robust against controlling for these sociodemographic and economic indicators ($b = -.02$, $p = .031$, partial $r = -.08$, 95% CI [−.14, −.02]).

The results of Study 1 showed that educational attainment predicted a decreasing endorsement of cynicism over time. This effect was independent of participants' sociodemographic characteristics, such as age or race, and their income, suggesting that a lack of education rather than economic disadvantage contributes to cynicism. However, experiencing economic hardship already in childhood might be more important for the development of cynicism than economic conditions later in adulthood (Lynch et al., 1997). Growing up in a financially disadvantaged household, in an underprivileged, dangerous environment might evoke a mind-set of suspiciousness and feelings of vulnerability and have a formative influence on individuals' psychological development. Importantly, as childhood economic hardship is associated with lower educational attainment (Breen & Jonsson, 2005), it might represent a potential confounding in our analyses. In other words, could the negative effect of education demonstrated in Study 1 be explained by a confounding with childhood economic disadvantage? Or might obtaining a higher level of education inhibit the development of cynicism even if one got off to a bad start in life? To shed light on this question, in Study 2, we additionally took into account individual differences in childhood SES.

Importantly, we examined the proposed psychological mechanism of the education effect. Using a longitudinal mediation methodology (Cole & Maxwell, 2003; Preacher, 2015), we tested the role of personal control as a potential mediator of the effect of education on cynicism development.

Study 2

Method

For this study, we used the data from the Health and Retirement Study, an American nationally representative longitudinal survey of adults aged 50 and older and their spouses (Health and Retirement Study, 2012). Participants have been surveyed every 2 years since 1992. A measure of cynicism was first added to the survey in 2006 (for one half of the sample) and in 2008 (for the other half). These two subsamples were combined as our baseline assessment. The follow-up assessment was conducted in 2010 (for the 2006 subsample) and in 2012 (for the 2008 subsample), resulting in a 4-year time lag between the baseline and the follow-up for all participants. The final sample consisted of 10,072 (mean age 67.48, 40.1% male) individuals. Data and materials can be accessed at the study's website (Health and Retirement Study, 2012).

We used the information about participants' level of educational attainment (1 = *lower than high school*, 2 = *generational educational development degree*, 3 = *high school diploma*, 4 = *some college*, and 5 = *college and above*), which was collected when they joined the panel.

Cynical beliefs about human nature were measured with a 5-item version of the Cook–Medley Cynical Distrust Scale (Cook & Medley, 1954; Everson et al., 1997). Additional items to the ones used in Study 1 are: "No one cares much what happens to you" and "I commonly wonder what hidden reasons another person may have for doing something nice for me" (1 = *strongly disagree* to 6 = *strongly agree*; Cronbach's $\alpha = .80$ at baseline and .79 at follow-up).

The measure of personal control consisted of two 5-item subscales: mastery (sample item "Whether or not I am able to get what I want is in my own hands"; Cronbach's $\alpha = .90$ at *t*1 and .90 at *t*2) and perceived constraints (sample items "Other people determine most of what I can and cannot do"; Cronbach's $\alpha = .86$ at *t*1 and .88 at *t*2; Lachman & Weaver, 1998). Responses were given on a 6-point agree–disagree scale. The two-factorial structure was confirmed in a confirmatory factor analysis that modeled mastery and constraints at *t*1 and *t*2 as four latent correlated factors, $\chi^2(154) = 6899.71$, $p < .001$, CFI = .94, RMSEA = .07, SRMR = .03.[3]

Participants provided information on the level of their father's and mother's education (number of years in education, ranging from 0 to 17) and their family's financial situation during their childhood (between birth and age 16; 1 = *poor*, 2 = *about average*, 3 = *pretty well off financially*). Participants' responses to these questions were standardized and combined into a measure of childhood SES (Cronbach's $\alpha = .68$).

As in Study1, the analyses included participants' age, gender (1 = male, 0 = female), race (1 = Caucasian, 0 = Other), and log-transformed income at *t*1 (total annual household income in dollars).

Results and Discussion

As this study included four latent constructs (cynicism, mastery, constraints, and childhood SES), we started by examining a measurement model in which manifest variables were allowed to load on their respective latent factors and the latent factors were allowed to correlate with each other (Cole & Maxwell, 2003). This model reached an acceptable fit, $\chi^2(459) = 10{,}549.69$, $p < .001$, CFI = .94, RMSEA = .05, SRMR = .04, suggesting that the manifest variables reflect the underlying constructs they are supposed to measure.

We then proceeded to testing measurement invariance of cynicism, mastery, and constraints over time. We used the same procedure as in Study 1. Models with free and constrained loadings showed good fit (see Supplemental Table S1). A look at incremental fit indices shows that putting constraints on factor loadings did not deteriorate model fit.[4] Therefore, we concluded that cynicism, mastery, and constraints items reached the level of metric invariance between *t*1 and *t*2.

Means, standard deviations, and zero-order correlations among the variables are shown in Table 3. Replicating the findings of Study 1, educational attainment was negatively

Table 3. Means, Standard Deviations, and Correlations Among the Variables: Study 2.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1 Education	3.33	1.31	—	—	—	—	—	—	—	—	—	—	—	—
2 Cynicism at *t*1	2.93	1.13	−.24***	.80/.44***	—	—	—	—	—	—	—	—	—	—
3 Cynicism at *t*2	2.86	1.11	−.23***	.57***	.79/.42***	—	—	—	—	—	—	—	—	—
4 Gender (1 = male, 0 = female)	0.40	0.49	.05***	.15***	.14***	—	—	—	—	—	—	—	—	—
5 Age at *t*1	67.48	9.64	−.12***	−.10***	−.08***	.06***	—	—	—	—	—	—	—	—
6 Race (1 = Caucasian, 0 = Other)	0.84	0.36	.16***	−.16***	−.14***	.05***	.10***	—	—	—	—	—	—	—
7 Income at *t*1 (log transformed)	10.71	0.96	.44***	−.16***	−.17***	.14***	.23***	.20***	—	—	—	—	—	—
8 Childhood socioeconomic status	−0.02	0.80	.43***	−.17***	−.18***	−.005	−.18***	.19***	.31***	.67/.41***	—	—	—	—
9 Mastery at *t*1	4.83	1.08	.08***	−.12***	−.13***	.03**	−.05***	.03**	.13***	.10***	.90/.64***	—	—	—
10 Mastery at *t*2	4.70	1.14	.11***	−.10***	−.14***	.02*	−.13***	−.01	.15***	.11***	.43***	.90/.67***	—	—
11 Constraints at *t*1	2.11	1.14	−.22***	.35***	.29***	−.03**	.06**[*]	−.06***	−.24***	−.15***	−.39***	−.34***	.86/.50***	—
12 Constraints at *t*2	2.20	1.21	−.21***	.27***	.34***	−.03**	.13***	−.04***	−.23***	−.14***	−.31***	−.44***	.52***	.88/.54***

Note. *t*1 = Time 1; *t*2 = Time 2. The diagonal row shows Cronbach's αs/mean interitem correlations among scale items.
*$p < .05$. **$p < .01$. ***$p < .001$.

associated with cynicism at both baseline ($r = -.24$, $p < .001$) and follow-up ($r = -.23$, $p < .001$).

To explore the longitudinal effect of education on cynicism, we specified an SEM in which cynicism at *t*2 was predicted by education and cynicism at *t*1 (Model 1, Table 4). Cynicism at *t*1 and *t*2 were modeled as latent constructs. The model reached a satisfactory fit, $\chi^2(38) = 2{,}457.93$, $p < .001$, CFI = .93, RMSEA = .08, SRMR = .07. Like in Study 1, education negatively predicted cynicism at *t*2 when controlling for cynicism at *t*1 ($b = -.09$, $p < .001$, partial $r = -.12$, 95% CI [−.14, −.10]). In Model 2, we added age, gender, race, income at *t*1, and childhood SES as predictors of cynicism at *t*2. The fit of this model was rather poor, $\chi^2(117) = 6{,}419.45$, $p < .001$, CFI = .86, RMSEA = .07, SRMR = .09. The effect of education remained significant, although it decreased compared to the model without controls ($b = -.06$, $p < .001$, partial $r = -.07$, 95% CI [−.09, −.05]). Additionally, to examine whether the effect of education varied depending on childhood SES, we computed an interaction effect between education and childhood SES, that did not reach significance ($b = -.005$, $p = .56$). Hence, obtaining a higher level of education is associated with less cynicism irrespective of childhood SES.

Mediation Analyses

A look at zero-order correlations shows that highly educated individuals were more likely to report a strong sense of mastery ($r = .08$, $p < .001$ at *t*1 and $r = .11$, $p < .001$ at *t*2) and a weak sense of constraints ($r = -.22$, $p < .001$ at *t*1 and $r = -.21$, $p < .001$ at *t*2). In turn, mastery was negatively associated with cynicism ($r = -.12$, $p < .001$ at *t*1 and $r = -.14$, $p < .001$ at *t*2), whereas constraints were positively associated with cynicism ($r = .35$, $p < .001$ at *t*1 and $r = .34$, $p < .001$ at *t*2).

To examine whether the effect of education on cynicism is mediated by mastery and constraints, we conducted a longitudinal mediation analysis. We followed the recommendations by Cole and Maxwell (2003) and Preacher (2015) for two-wave longitudinal data. Their approach involves estimating the longitudinal effect of the independent variable on the mediator (Path a) and the longitudinal effect of the mediator on the dependent variable (Path b). The indirect effect is computed by multiplying Path a by Path b. Although using this approach we cannot determine what share of the total effect is accounted for by the mediator, the estimation of the indirect effect is based on longitudinal tests, making this approach the best possible way to test the underlying relations using nonexperimental methods (Cole & Maxwell, 2003).

The mediation was tested using SEM (see Figure 1). The effects of mastery and constraints were tested simultaneously. The model reached an acceptable fit, $\chi^2(407) = 11{,}929.29$, $p < .001$, CFI = .93, RMSEA = .05, SRMR = .07. Educational attainment was positively associated with mastery at *t*2 ($b = .07$, $p < .001$, partial $r = .09$, 95% CI [.07, .10]) and negatively associated with constraints at *t*2 ($b = -.04$, $p < .001$, partial $r = -.11$, 95% CI [−.13, −.09]), even when controlling for mastery and constraints at baseline, respectively. However,

Table 4. Longitudinal Effect of Educational Attainment on Cynicism: Study 2.

Predictor	Model 1			Model 2		
	Path Coefficient (Unstandardized)	Partial *r*	95% CI for Partial *r*	Path Coefficient (Unstandardized)	Partial *r*	95% CI for Partial *r*
Model 1						
Cynicism *t*1	.61***	.54	[.53, .55]	.57***	.51	[.49, .52]
Education	−.09***	−.12	[−.14, −.10]	−.06***	−.07	[−.09, −.05]
Model 2						
Gender (male = 1, female = 0)	—	—	—	.16***	.09	[.07, .11]
Age *t*1	—	—	—	−.01***	−.07	[−.09, −.05]
Income *t*1 (log transformed)	—	—	—	−.07***	−.07	[−.09, −.05]
Race (Caucasian = 1, Other = 0)	—	—	—	−.07**	−.03	[−.05, −.01]
Childhood socioeconomic status	—	—	—	−.10**	−.05	[−.06, −.03]

Note. *t*1 = Time 1; *t*2 = Time 2; CI = confidence interval.
*p < .05. ** p < .01. ***p < .001, based on structural equation model results.

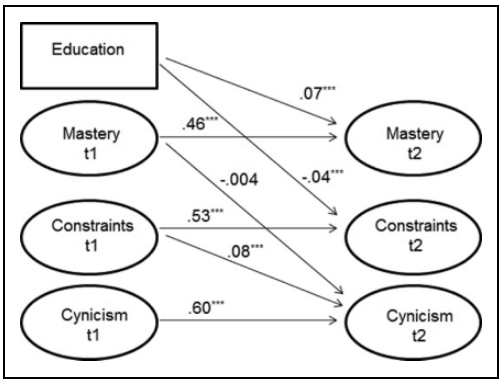

Figure 1. Longitudinal mediation, Study 2. Unstandardized path coefficients and their p values (from structural equation model). *p < .05. **p < .01. ***p < .001. Fit indices: $\chi^2(407) = 11{,}929.29$, p < .001, comparative fit index = .93, root mean square error of approximation = .05, standardized root mean square residuals = .07. Indirect effect via mastery: −.000, *SE* = .001, 95% CI [−.002, .001]. Indirect effect via constraints: −.006, *SE* = .001, 95% CI [−.008, −.003]. CI = confidence interval; *SE* = standard error.

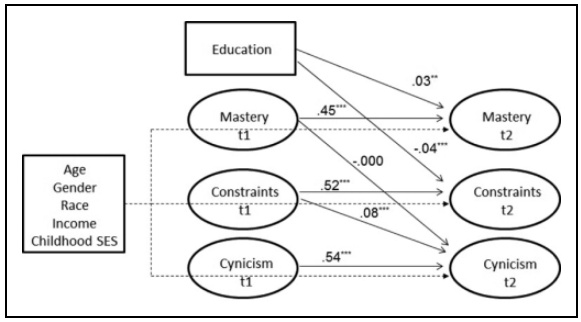

Figure 2. Longitudinal mediation, Study 2. Unstandardized path coefficients and their p values (from structural equation model). *p < .05. **p < .01. ***p < .001. Fit indices: $\chi^2(614) = 16{,}673.66$, p < .001, comparative fit index = .91, root mean square error of approximation = .05, standardized root mean square residuals = .07. Indirect effect via mastery: −.000, *SE* = .000, 95% CI [−.001, .001]. Indirect effect via constraints: −.003, *SE* = .001, 95% CI [−.005, −.001]. CI = confidence interval; *SE* = standard error.

only constraints at *t*1 (but not mastery at *t*1) significantly predicted cynical beliefs at follow-up (b = .08, p < .001, partial r = .10, 95% CI [.08, .12]), when controlling for cynical beliefs at baseline. The indirect effect via mastery amounted to −.00 and was not significant (95% CI [−.002, .001]). The indirect effect via constraints reached −.006 and was significant (95% CI [−.008, −.003]). We repeated these analyses including age, gender, race, income at *t*1, and childhood SES as additional predictors of all endogenous variables (Figure 2). These analyses showed nearly identical results (see Table 5 and Figure 2), highlighting the role of constraints rather than mastery as a mediator of the effect of education on cynicism.

Overall, Study 2 replicated the prospective effect of education on cynicism, demonstrated in Study 1. In addition, it extended the results of Study 1 in two important ways. First, we have shown the education effect to operate regardless of individual differences in childhood SES, suggesting that higher educational attainment appears to undermine the development of cynicism even among individuals who grew up in precarious socioeconomic conditions. Second, using a longitudinal mediation analysis, we shed some light on the psychological mechanism behind this effect: Our results suggest that education is associated with a lower sense of perceived constraints, which might help averting feelings of vulnerability to others and thus undermine cynicism development.

General Discussion

Cynicism is a common social phenomenon bearing deleterious consequences for individuals (Chen et al., 2015; Critcher & Dunning, 2011; Smith, 1992; Stavrova & Ehlebracht, 2016) and societies (Knack & Keefer, 1997; Putnam, 2000). Despite its ubiquity, factors contributing to and undermining the development of cynicism have been poorly understood so far. In the present research, we explored the role of educational attainment in cynicism development. The results of two large-scale longitudinal studies showed that high educational attainment

Table 5. Longitudinal Mediation: Study 2.

	Path Coefficient (Unstandardized)	Partial *r*	95% CI for Partial *r*	Path Coefficient (Unstandardized)	Partial *r*	95% CI for Partial *r*
	Path a					
Predictor	DV: Mastery at *t*2					
Education	.07***	.09	[.07, .10]	.03**	.03	[.01, .05]
Gender (male = 1, female = 0)	—	—	—	.002	.01	[−.01, .03]
Age *t*1	—	—	—	−.01***	−.09	[−.11, −.07]
Income *t*1	—	—	—	.08***	.06	[.04, .08]
Race (Caucasian = 1, Other = 0)	—	—	—	−.10**	−.03	[−.05, −.01]
Childhood SES	—	—	—	.07	.02	[.00, .04]
Mastery at *t*1	.46***	.42	[.41, .44]	.45***	.41	[.40, .43]
Constraints at *t*1	—	—	—	—	—	—
	Path a					
	DV: constraints at *t*2					
Education	−.04***	−.11	[−.13, −.09]	−.04***	−.06	[−.08, −.04]
Gender (male = 1, female = 0)	—	—	—	−.02	−.01	[−.02, .01]
Age *t*1	—	—	—	.01***	.08	[.06, .10]
Income *t*1	—	—	—	−.08***	−.07	[−.08, −.05]
Race (Caucasian = 1, Other = 0)	—	—	—	.03	.01	[−.01, .03]
Childhood SES	—	—	—	−.03	−.01	[−.03, .01]
Mastery at *t*1	—	—	—	—	—	—
Constraints at *t*1	.53***	.50	[.49, .52]	−.52***	.49	[.47, .50]
	Path b					
	DV: cynicism at *t*2					
Gender (male = 1, female = 0)	—	—	—	.17***	.09	[.08, .11]
Age *t*1	—	—	—	−.01***	−.07	[−.09, −.05]
Income *t*1	—	—	—	−.08***	−.08	[−.01, −.06]
Race (Caucasian = 1, Other = 0)	—	—	—	−.09**	−.04	[−.05, −.02]
Childhood SES	—	—	—	−.20***	−.07	[−.09, −.05]
Cynicism at *t*1	.60***	.52	[.50, .53]	.54***	.47	[.46, .49]
Mastery at *t*1	−.004	−.03	[−.05, −.01]	−.00	−.03	[−.05, −.01]
Constraints at 1	.08***	.10	[.08, .12]	.08***	.10	[.08, .12]

Note. DV = dependent variable; CI = confidence interval; *t*2 = Time 2; SES = socioeconomic status; *t*1 = Time 1.
*$p < .05$. **$p < .01$. ***$p < .001$, based on structural equation model results.

predicted lower levels of cynicism over time, acting as a sort of antidote to cynicism. We detected this effect in two different large adult samples that were followed over 9 (Study 1) and 4 (Study 2) years. High educational attainment was associated with less cynicism regardless of individuals' sociodemographic characteristics, including income, as well as their childhood SES. That is, obtaining a higher level of education acted as an antidote to cynical beliefs about human nature even among individuals who had a difficult start in life.

How exactly can education contribute to less cynicism? Drawing on existing literature on the link between education and personal control and the potential of personal control to dampen unwarranted suspiciousness and feelings of vulnerability, we proposed that a sense of control can represent the psychological mechanism underlying the education effect. Following prior research (Lachman & Weaver, 1998), we differentiated between mastery, a belief in one's ability to achieve the desired outcomes, and perceived constraints, a belief that external factors, such as other people or just bad luck interfere with achieving the desired outcomes. The results of the longitudinal mediation analyses (Study 2) indicated that only perceived constraints (but not mastery) acted as a mediator of the effect of education on cynicism. While higher education was associated with both a stronger perception of mastery and a weaker perception of constraints, only the latter was related to less cynicism. Perception of constraints involves a belief that one's life is determined by external factors, including other people, and may thus give rise to a feeling of vulnerability. In turn, feeling vulnerable and at other people's mercy are central to suspiciousness and cynical distrust (Pope et al., 1990; Ross, 2011; Vranceanu et al., 2006). These findings are generally consistent with recent research showing that mastery and constraints might have different associations with life outcomes (Infurna & Mayer, 2015; Ward, 2013).

Although here we have shown education to reduce cynicism via its positive influence on perceived constraints, it still remains to be explored how exactly this effect operates. For example, highly educated individuals might have different social experiences compared to their less educated counterparts. High educational attainment might reduce the likelihood of becoming victim to deception and exploitation and consequently counteract the perception of the social world as a hostile place. In fact, existing research suggests that a hostile childhood environment contributes to cynicism development (Meesters, Muris, & Esselink, 1995). Hence, one potentially interesting avenue for future research is to examine to what extent the education effect demonstrated here rests on individual differences in the exposure to others' malevolence or kindness.

On a related note, education might provide individuals not only with a higher perceived control of their own lives but also with more power over others (e.g., as it can provide access to high-power positions). While we showed that perceived control over one's own life is associated with less cynicism, power (i.e., control over others) might have the opposite effect. Studies have shown power to undermine perspective taking, increase social distance (Blader et al., 2016; Lammers, Galinsky, Gordijn, & Otten, 2012), and render individuals more sensitive to unfairness against the self (Sawaoka, Hughes, & Ambady, 2015). Most importantly, power gives one reason to doubt the purity of the intentions behind others' kindness and thus facilitates cynical attributions for others' generous behavior (Inesi, Gruenfeld, & Galinsky, 2012). It might be interesting to future studies to explore whether holding a position of power can fuel the development of cynicism.

The present research is not without limitations. We acknowledge that both studies are based on only two waves of data, which limits our ability to examine individual trajectories of cynicism development over time as a function of their education (Singer & Willett, 2003). Another design limitation is that the information about participants' education was collected years before their cynicism was measured for the first time. Yet, given that we were interested in formal education which is typically completed by the age of 25–30 (National Center of Education Statistics, 2016) and both our samples were rather old (mean age over 50), we believe potential unrecorded changes in formal education throughout this time to be rather unlikely. At the same time, besides formal education, individuals might educate themselves independently of any formal institution (and highly educated individuals might be more likely to commit to lifelong learning). Such individual efforts might serve as a more proximal mechanism of the effect of formal education reported here and is worth further investigations.

Despite the longitudinal design of the current studies, suggesting that education leads to less cynicism, the reverse path of causality is possible as well. Dispositional cynicism might make one suspicious not only regarding strangers' intentions, it might also impair one's openness to new experiences, including willingness to absorb new information, openness to new ideas, and divergent thinking, which might undermine one's academic achievement. We could not explore this possibility in the present study, as the majority of respondents were in late adulthood and the studies included a measure of education at just one time point. We encourage future studies to use samples of children and adolescents to examine the potential effect of cynical worldviews on educational attainment.

In a similar vein, although the longitudinal mediation used here represents a methodological improvement over widely used cross-sectional mediation designs (Cole & Maxwell, 2003), it does not allow making strong causal inferences either (Bullock, Green, & Ha, 2010) and might be even confused with mathematically equivalent phenomena, such as confounding (MacKinnon, Krull, & Lockwood, 2000). Although causal inferences regarding the effect of education are difficult, researchers can still explore the causal assumptions behind the role of control in cynicism development. For example, manipulating perceived constraints (e.g., see Stavrova & Meckel, 2017) to examine their effect on cynical beliefs might be the first step on this way.

Overall, as Western societies are increasingly plagued with suspiciousness and cynical distrust (Eisinger, 1999; Twenge, Campbell, & Carter, 2014), understanding sources of cynicism and factors undermining its development represents an important research endeavor. The present research has contributed to this by uncovering one of the antidotes to cynicism—education. Importantly, as cynicism not only is connected to multiple negative outcomes for individuals but also represents a threat for the functioning of democratic and economic institutions (Knack & Keefer, 1997; Rothstein & Uslaner, 2005), policies fostering investment in education may pave the way for a less cynical, more open and, ultimately, successful society.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Supplemental Material

The supplemental material is available in the online version of the article.

Notes

1. The gender disparity is most probably due to the fact that participants aged 60 and older were oversampled at twice the rate of the others and women are generally overrepresented among the elderly (Howden & Meyer, 2011). The same applies to Study 2.
2. Post hoc power analyses revealed that given the sample size of 1,087 and an effect size of partial $r = -.10$, the power to detect a significant effect using a two-tailed test and the conventional level of α (.05) was 91%. In Study 2 ($N = 10{,}072$), the power reached 100% (including the mediation analyses).

3. In contrast, a one-factorial solution did not reach a sufficient fit, $\chi^2(159) = 39{,}133.42$, $p < .001$, comparative fit index = .68, root mean square error of approximation = .16, standardized root mean square residuals = .14. This one-factorial solution was significantly worse than the two-factor model ($\chi^2[5] = 33{,}228$, $p < .001$).
4. The χ^2 difference test was significant (see Supplemental Table S1). Yet, differences in incremental fit indices are preferred over the χ^2 test in large samples (here, $N > 10{,}000$), as the latter is sample size sensitive (Cheung & Rensvold, 2002).

References

Baron, K. G., Smith, T. W., Butner, J., Nealey-Moore, J., Hawkins, M. W., & Uchino, B. N. (2007). Hostility, anger, and marital adjustment: Concurrent and prospective associations with psychosocial vulnerability. *Journal of Behavioral Medicine*, *30*, 1–10.

Blader, S. L., Shirako, A., & Chen, Y.-R. (2016). Looking out from the top: Differential effects of status and power on perspective taking. *Personality and Social Psychology Bulletin*, *42*, 723–737.

Bond, M. H., Leung, K., Au, A., Tong, K.-K., De Carrasquel, S. R., Murakami, F., . . . Lewis, J. R. (2004). Culture-level dimensions of social axioms and their correlates across 41 cultures. *Journal of Cross-Cultural Psychology*, *35*, 548–570.

Breen, R., & Jonsson, J. O. (2005). Inequality of opportunity in comparative perspective: Recent research on educational attainment and social mobility. *Annual Review of Sociology*, *31*, 223–243.

Bullock, J. G., Green, D. P., & Ha, S. E. (2010). Yes, but what's the mechanism? (Don't expect an easy answer). *Journal of Personality and Social Psychology*, *98*, 550–558. doi:10.1037/a0018933

Carroll, D., Smith, G. D., Sheffield, D., Shipley, M. J., & Marmot, M. G. (1997). The relationship between socioeconomic status, hostility, and blood pressure reactions to mental stress in men: Data from the Whitehall II study. *Health Psychology*, *16*, 131–136. doi:10.1037/0278-6133.16.2.131

Chen, S. X., Lam, B. C. P., Wu, W. C. H., Ng, J. C. K., Buchtel, E. E., Guan, Y., & Deng, H. (2016). Do people's world views matter? The why and how. *Journal of Personality and Social Psychology*, *110*, 743–765. doi:10.1037/pspp0000061

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, *9*, 233–255.

Coenders, M., & Scheepers, P. (2003). The effect of education on nationalism and ethnic exclusionism: An international comparison. *Political Psychology*, *24*, 313–343. doi:10.1111/0162-895X.00330

Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology*, *112*, 558–577.

Cook, W. W., & Medley, D. M. (1954). Proposed hostility and pharisaic-virtue scales for the MMPI. *Journal of Applied Psychology*, *38*, 414–418. doi:10.1037/h0060667

Critcher, C. R., & Dunning, D. (2011). No good deed goes unquestioned: Cynical reconstruals maintain belief in the power of self-interest. *Journal of Experimental Social Psychology*, *47*, 1207–1213. doi:10.1016/j.jesp.2011.05.001

Eisinger, R. (1999). Cynical America? Misunderstanding the public's message. *The Public Perspective*, *10*, 45–48.

Eshbaugh, E. M. (2009). Socioeconomic predictors of mastery among mothers in poverty. *Journal of Poverty*, *13*, 426–440. doi:10.1080/10875540903272405

Everson, S. A., Kauhanen, J., Kaplan, G. A., Goldberg, D. E., Julkunen, J., Tuomilehto, J., & Salonen, J. T. (1997). Hostility and increased risk of mortality and acute myocardial infarction: The mediating role of behavioral risk factors. *American Journal of Epidemiology*, *146*, 142–152.

Fingerhut, A. W. (2011). Straight allies: What predicts heterosexuals' alliance with the LGBT community? *Journal of Applied Social Psychology*, *41*, 2230–2248. doi:10.1111/j.1559-1816.2011.00807.x

Gallo, L. C., & Matthews, K. A. (2003). Understanding the association between socioeconomic status and physical health: Do negative emotions play a role? *Psychological Bulletin*, *129*, 10–51. doi:10.1037/0033-2909.129.1.10

Greenglass, E. R., & Julkunen, J. (1989). Construct validity and sex differences in Cook-Medley Hostility. *Personality and Individual Differences*, *10*, 209–218.

Health and Retirement Study. (2012). *HRS data files; 2006, 2008, 2010, 2012* [public use dataset]. Ann Arbor, MI: Institute for Social Research.

House, J. S. (2014). Americans' changing lives: Waves I, II, III, IV, and V, 1986, 1989, 1994, 2002, and 2011. ICPSR04690-v7. Retrieved from http://www.icpsr.umich.edu/icpsrweb/NACDA/studies/4690

Howden, L. M., & Meyer, J. A. (2011). *Age and sex composition: 2010*. Retrieved from January 12, 2017, from http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf

Hu, L.-t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55.

Huang, J., den Brink, H., & Groot, W. (2011). College education and social trust: An evidence-based study on the causal mechanisms. *Social Indicators Research*, *104*, 287–310. doi:10.1007/s11205-010-9744-y

Inesi, M. E., Gruenfeld, D. H., & Galinsky, A. D. (2012). How power corrupts relationships: Cynical attributions for others' generous acts. *Journal of Experimental Social Psychology*, *48*, 795–803. doi:10.1016/j.jesp.2012.01.008

Infurna, F. J., & Mayer, A. (2015). The effects of constraints and mastery on mental and physical health: Conceptual and methodological considerations. *Psychology and Aging*, *30*, 432–448. doi:10.1037/a0039050

Jenssen, A. T., & Engesbak, H. (1994). The many faces of education: Why are people with lower education more hostile towards immigrants than people with higher education? *Scandinavian Journal of Educational Research*, *38*, 33–50. doi:10.1080/0031383940380103

Kaplan, S. A., Bradley, J. C., & Ruscher, J. B. (2004). The inhibitory role of cynical disposition in the provision and receipt of social support: The case of the September 11th terrorist attacks. *Personality and Individual Differences*, *37*, 1221–1232.

Kluckhohn, F. R. (1950). Dominant and substitute profiles of cultural orientations: Their significance for the analysis of social stratification. *Social Forces*, *28*, 376–393.

Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *Quarterly Journal of Economics*, *112*, 1251.

Kuppens, T., & Spears, R. (2014). You don't have to be well-educated to be an aversive racist, but it helps. *Social Science Research*, *45*, 211–223. doi:10.1016/j.ssresearch.2014.01.006

Lachman, M. E. (2006). Perceived control over aging-related declines: Adaptive beliefs and behaviors. *Current Directions in Psychological Science*, *15*, 282–286. doi:10.1111/j.1467-8721.2006.00453.x

Lachman, M. E., & Weaver, S. L. (1998). The sense of control as a moderato of social class differences in health and well-being. *Journal of Personality and Social Psychology*, *74*, 763–773.

Lammers, J., Galinsky, A. D., Gordijn, E. H., & Otten, S. (2012). Power increases social distance. *Social Psychological and Personality Science*, *3*, 282–290. doi:10.1177/1948550611418679

Leung, K., Bond, M. H., de Carrasquel, S. R., Muñoz, C., Hernández, M., Murakami, F., . . . Singelis, T. M. (2002). Social axioms: The search for universal dimensions of general beliefs about how the world functions. *Journal of Cross-Cultural Psychology*, *33*, 286–302.

Leung, K., Ip, O. K. M., & Leung, K.-K. (2010). Social cynicism and job satisfaction: A longitudinal analysis. *Applied Psychology: An International Review*, *59*, 318–338.

Lewis, S. K., Ross, C. E., & Mirowsky, J. (1999). Establishing a sense of personal control in the transition to adulthood. *Social Forces*, *77*, 1573–1599.

Little, T. D., Preacher, K. J., Selig, J. P., & Card, N. A. (2007). New developments in latent variable panel analyses of longitudinal data. *International Journal of Behavioral Development*, *31*, 357–365. doi:10.1177/0165025407077757

Lynch, J. W., Kaplan, G. A., & Shema, S. J. (1997). Cumulative impact of sustained econimic hardship on physical, cognitive, psychological, and social functioning. *The New England Journal of Medicine*, *337*, 1889–1895.

MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science*, *1*, 173–181. doi:10.1023/A:1026595011371

Marsh, H. W., Hau, K.-T., & Grayson, D. (2005). Goodness of fit evaluation in structural equation modeling. In A. Maydeu-Olivares & J. McCardle (Eds.), *Contemporary psychometrics: A festschrift to Roderick P. McDonald* (pp. 275–340). Mahwah, NJ: Lawrence Erlbaum.

Meesters, C., Muris, P., & Esselink, T. (1995). Hostility and perceived parental rearing behaviour. *Personality and Individual Differences*, *18*, 567–570. doi:10.1016/0191-8869(94)00181-Q

National Center of Education Statistics. (2016). *Table 507.40. Participation rate of persons, 17 years old and over, in adult education during the previous 12 months, by selected characteristics of participants: Selected years, 1991 through 2005*. Digest of Education Statistics. Author. Retrieved January 20, 2017, from https://nces.ed.gov/programs/digest/d15/tables/dt15_507.40.asp

Neuvonen, E., Rusanen, M., Solomon, A., Ngandu, T., Laatikainen, T., Soininen, H., . . . Tolppanen, A. M. (2014). Late-life cynical distrust, risk of incident dementia, and mortality in a population-based cohort. *Neurology*, *82*, 2205–2212. doi:10.1212/wnl.0000000000000528

O'Connell, M., & Sheikh, H. (2011). 'Big Five' personality dimensions and social attainment: Evidence from beyond the campus. *Personality and Individual Differences*, *50*, 828–833. doi:10.1016/j.paid.2011.01.004

Osborne, D., & Sibley, C. G. (2015). Within the limits of civic training: Education moderates the relationship between openness and political attitudes. *Political Psychology*, *36*, 295–313. doi:10.1111/pops.12070

Pope, M. K., Smith, T. W., & Rhodewalt, F. (1990). Cognitive, behavioral, and affective correlates of the cook and medley hostility scale. *Journal of Personality Assessment*, *54*, 501–514.

Preacher, K. J. (2015). Advances in mediation analysis: A survey and synthesis of new developments. *Annual Review of Psychology*, *66*, 825–852. doi:10.1146/annurev-psych-010814-015258

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York, NY: Touchstone Books/Simon & Schuster.

Rosenberg, M. (1956). Misanthropy and political ideology. *American Sociological Review*, *21*, 690–695. doi:10.2307/2088419

Ross, C. E. (2011). Collective threat, trust, and the sense of personal control. *Journal of Health & Social Behavior*, *52*, 287–296. doi:10.1177/0022146511404558

Ross, C. E., & Sastry, J. (1999). The sense of personal control. In C. S. Aneshensel & J. C. Phelan (Eds.), *Handbook of the sociology of mental health* (pp. 369–394). Boston, MA: Springer US.

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*, 1.36. doi:http://www.jstatsoft.org/v48/i02/

Rothstein, B., & Uslaner, E. M. (2005). All for all: Equality, corruption, and social trust. *World Politics*, *58*, 41–72.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, *80*, 1–28.

Sawaoka, T., Hughes, B. L., & Ambady, N. (2015). Power heightens sensitivity to unfairness against the self. *Personality and Social Psychology Bulletin*, *41*, 1023–1035. doi:10.1177/0146167215588755

Schieman, S. (2001). Age, education, and the sense of control: A test of the cumulative advantage hypothesis. *Research on Aging*, *23*, 153–178. doi:10.1177/0164027501232002

Schieman, S., & Plickert, G. (2008). How knowledge is power: Education and the sense of control. *Social Forces*, *87*, 153–183.

Schneeweis, N., Skirbekk, V., & Winter-Ebmer, R. (2014). Does education improve cognitive performance four decades after school completion? *Demography*, *51*, 619–643. doi:10.1007/s13524-014-0281-1

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis*. New York, NY: Oxford University Press.

Skinner, E. A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology*, *71*, 549–570. doi:10.1037/0022-3514.71.3.549

Smith, T. W. (1992). Hostility and health: Current status of a psychosomatic hypothesis. *Health Psychology*, *11*, 139–150.

Specht, J., Egloff, B., & Schmukle, S. C. (2013). Everything under control? The effects of age, gender, and education on trajectories of perceived control in a nationally representative German sample. *Developmental Psychology*, *49*, 353–364. doi:10.1037/a0028243

Stavrova, O., & Ehlebracht, D. (2016). Cynical beliefs about human nature and income: Longitudinal and cross-cultural analyses. *Journal of Personality and Social Psychology*, *110*, 116–132. doi:10.1037/pspp0000050

Stavrova, O., & Meckel, A. (2017). The role of magical thinking in forecasting the future. *British Journal of Psychology*, *108*, 148–168. doi:10.1111/bjop.12187

Turiano, N. A., Chapman, B. P., Agrigoroaei, S., Infurna, F. J., & Lachman, M. (2014). Perceived control reduces mortality risk at low, not high, education levels. *Health Psychology*. doi:10.1037/hea0000022

Twenge, J. M., Campbell, W. K., & Carter, N. T. (2014). Declines in trust in others and confidence in institutions among American adults and late adolescents, 1972–2012. *Psychological Science*, *25*, 1914–1923. doi:10.1177/0956797614545133

Uslaner, E. M., & Brown, M. (2005). Inequality, trust, and civic engagement. *American Politics Research*, *33*, 868–894. doi:10.1177/1532673x04271903

Van Eijck, K., & De Graaf, P. M. (2004). The Big Five at school: The impact of personality on educational attainment. *Netherlands' Journal of Social Sciences*, *40*, 24–40.

Vranceanu, A.-M., Gallo, L. C., & Bogart, L. M. (2006). Hostility and perceptions of support in ambiguous social interactions. *Journal of Individual Differences*, *27*, 108–115.

Ward, M. M. (2013). Parental educational attainment and sense of control in mid- and late-adulthood. *Developmental Psychology*, *49*, 1407–1412. doi:10.1037/a0029557

Wrightsman, L. S. (1964). Measurement of philosophies of human nature. *Psychological Reports*, *14*, 743–751.

Wrightsman, L. S. (1992). *Assumptions about human nature: Implications for researchers and practitioners*. Thousand Oaks, CA: Sage.

Author Biographies

Olga Stavrova is an assistant professor at Tilburg University. Her research interests include psychology of beliefs and attitudes, subjective well-being, and cross-cultural research.

Daniel Ehlebracht is a research associate at the University of Cologne. His research is broadly situated in the areas of interpersonal trust and prosocial behavior.

Handling Editor: Gregory Webster