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# Does Cultural Exposure Partially Explain the Association Between Personality and Political Orientation?

Personality and Social  
Psychology Bulletin  
39(11) 1497–1517  
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DOI: 10.1177/0146167213499235  
pspb.sagepub.com  


Xiaowen Xu<sup>1</sup>, Raymond A. Mar<sup>2</sup>, and Jordan B. Peterson<sup>1</sup>

## Abstract

Differences in political orientation are partly rooted in personality, with liberalism predicted by Openness to Experience and conservatism by Conscientiousness. Since Openness is positively associated with intellectual and creative activities, these may help shape political orientation. We examined whether exposure to cultural activities and historical knowledge mediates the relationship between personality and political orientation. Specifically, we examined the mediational role of print exposure (Study 1), film exposure (Study 2), and knowledge of American history (Study 3). Studies 1 and 2 found that print and film exposure mediated the relationships Openness to Experience and Conscientiousness have with political orientation. In Study 3, knowledge of American history mediated the relationship between Openness and political orientation, but not the association between Conscientiousness and political orientation. Exposure to culture, and a corollary of this exposure in the form of acquiring knowledge, can therefore partially explain the associations between personality and political orientation.

## Keywords

personality, political orientation, cultural exposure

Received April 30, 2012; revision accepted June 8, 2013

Recent research has established that political orientation is predicted by personality traits, even when these traits are measured early on in life in the form of temperament. Longitudinal research has indicated, for example, that children described in preschool as self-reliant, resilient, and energetic are more politically liberal 20 years later (Block & Block, 2006). The same study found that children characterized as rigid, inhibited, and indecisive are more likely to become politically conservative adults. Another longitudinal study largely confirmed this pattern, with conservative adults more likely to be characterized as fearful when they were children and liberal adults more likely to be characterized as restless and active as children (Fraleay, Griffin, Belsky, & Roisman, 2012). Among adults, liberalism and conservatism are associated with two dimensions of personality: Openness to Experience and Conscientiousness. Adult liberals tend to be higher in trait Openness to Experience, whereas conservatives are higher in trait Conscientiousness (Carney, Jost, Gosling, & Potter, 2008; Hirsh, DeYoung, Xu, & Peterson, 2010). A recent meta-analysis of 73 studies investigating the relationship between trait personality and political orientation confirmed that lower Openness to Experience ( $r = -0.18$ ) and higher Conscientiousness ( $r = 0.10$ ) were the best trait predictors of increased political conservatism (Sibley, Osborne, & Duckitt, 2012). These associations suggest that liberalism embraces intellect, creativity, curiosity, and the desire to be exposed to

new ideas (higher Openness to Experience; John & Srivastava, 1999), whereas conservatism values rules, structure, and organization, and the orderly pursuit of goals (higher Conscientiousness; John & Srivastava, 1999). However, the precise nature of these associations between personality and political orientation has not been adequately explored. In light of the evidence from early temperament, it makes sense that personality causes later political attitudes, but how this occurs is not known. In this paper, we examine the hypothesis that personality drives exposure to cultural activities, which in turn shapes political orientation. In other words, we examine the possibility that cultural exposure partially mediates the association between personality and political orientation.

## Political Orientation, Personality, and Cognitive and Behavioral Tendencies

Liberalism and conservatism are not only associated with different personality traits, but these trait differences also

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seem consistent with how liberals and conservatives approach the world. Conservatism is related to less effortful exploration and processing of novelty, as evidenced by greater need for closure, less tolerance of ambiguity, and greater avoidance of uncertainty (Jost, Glaser, Kruglanski, & Sulloway, 2003; Jost et al., 2007; Shook & Fazio, 2009). Moreover, the reverse also appears to be true, in that situations that limit effortful thought processes tend to lead to an increase in political conservatism (e.g., increased cognitive load; Eidelman, Crandall, Goodman, & Blanchard, 2012). The personality differences between liberals and conservatives also manifest themselves in the details of everyday behavior. During social interactions, for example, liberals display more nonverbal behaviors associated with Openness than their conservative counterparts, by being more expressive, more engaged, and smiling more frequently (Carney et al., 2008). Our own interest is in how trait differences can result in different levels of cultural exposure for liberals and conservatives, with liberals being more likely to expose themselves to cultural products. In line with this idea, liberals have been found to own more books, CDs, and art supplies, consistent with higher trait Openness (Carney et al., 2008). Liberals also show greater preference for foreign films, which is consistent with being more curious and open (Jost, Nosek, & Gosling, 2008). Conservatives, in contrast, own more organizational items (e.g., calendars and stamps), reflecting their higher Conscientiousness (Carney et al., 2008).

## The Role of Cultural Exposure

How does trait personality, beginning with childhood temperament and continuing through to adult personality, function to shape political orientation? One possibility is that cultural exposure might help explain the relationship between traits and political orientation. That is, perhaps, Openness to Experience drives individuals to seek out and experience cultural products such as books and films, which in turn help shape a more liberal political orientation. This seems plausible since personality traits predict cultural exposure, and engagement in cultural activities has an important influence on people's beliefs and attitudes.

Personality traits have been consistently shown to predict cultural preferences and various forms of cultural exposure. Given the characteristics of the trait, it is perhaps not surprising that Openness to Experience is the most stable personality predictor of exposure to culture and media. Higher Openness predicts increased engagement in a multitude of cultural activities, including reading books, viewing films, and going to concerts, among other things (Finn, 1997; Kraaykamp & van Eijck, 2005; Mar, Oatley, & Peterson, 2009). Individuals high in Openness to Experience also tend to prefer more complex cultural activities, while disliking those that are conventional and communal (Rentfrow, Goldberg, & Zilca, 2011). In contrast, individuals high in Conscientiousness are less

likely to partake in cultural activities for pleasure, and show a preference for conventional and highly structured cultural activities (Rentfrow et al., 2011; Schutte & Malouff, 2004). In sum, the personality traits associated with liberalism and conservatism, Openness to Experience and Conscientiousness, appear to predict greater cultural exposure and less cultural exposure, respectively. This is consistent with the idea that traits motivate cultural exposure, which in turn shapes political orientation.

Cultural exposure has long been seen as influential, with research demonstrating that cultural products can influence beliefs, attitudes, and behavior toward a variety of issues and topics (Hall, 2005). Reading, for example, is an important form of encountering culture and is associated with a variety of important life outcomes, such as depth of knowledge and breadth of vocabulary (for a meta-analysis, see Mol & Bus, 2011), as well as increased social abilities and functioning (Mar, Oatley, Hirsh, dela Paz, & Peterson, 2006; Mar et al., 2009). Exposure to different types of books may also alter attitudes and beliefs, since reader attitudes shift to become more consistent with the implicit or explicit themes of a text (Green & Brock, 2000). Moreover, the impact of narratives appears to be quite robust, with the changes in attitudes witnessed in response to fiction difficult to resist (Marsh & Fazio, 2006).

Similarly, exposure to fiction films can have an impact on people's attitudes and decision-making processes. Films can alter people's perceptions of social issues (Butler, Koopman, & Zimbardo, 1995), affect whether people engage in unhealthy or risky behaviors (e.g., O'Hara, Gibbons, Gerrard, Li, & Sargent, 2012), and affect perceptions of the self and others (Goldenberg & Forgas, 2012; Sestir & Green, 2010). Different types of cultural exposure can also change people's interpretations of historical events, as well as influence how people acquire information and knowledge about specific historical and political events (Butler et al., 1995; Hambrick, Mainz, Pink, Pettibone, & Oswald, 2010).

In light of the influential nature of cultural products, it seems possible that greater exposure to books and films might help shape more liberal political orientations. This is not because books and films are inherently liberal in content, but rather because more cultural exposure entails greater exposure to a variety of new and different perspectives, and embracing diversity and novelty is more consistent with a liberal political orientation than a conservative one (Jost et al., 2003; Jost et al., 2008). The knowledge obtained from increased cultural exposure might further influence political orientation, as more information tends to bring increased complexity to major issues and offer the potential for changes in opinions and norms. This complexity is not in keeping with a conservative political orientation, which favors convention, order, and existing norms, with less tolerance for ambiguities or uncertainties (Jost et al., 2003). Thus, given that cultural exposure can impact people's attitudes and beliefs, and given the relationships Openness to Experience

and Conscientiousness have with cultural exposure, we examined whether cultural exposure mediates the relationship between personality and political orientation.

## Present Research

In two studies, we explored whether voluntary exposure to cultural products can partially explain the relationship between personality traits and self-identified political orientation. Study 1 examined whether reading behavior mediates the association between personality and political orientation, and Study 2 investigated film viewing as a potential mediator. In our final study, Study 3, we examined whether one potential outcome of cultural exposure, namely, greater historical knowledge, also mediates this relation between personality and political orientation.

In addition to examining cultural exposure as a potential mediator, we also improved on past work in this area by controlling for a number of nuisance variables. Most studies on political orientation do not account for basic individual differences, such as demographics and cognitive ability. Ruling out these other factors enables us to determine whether personality traits are robust predictors of political orientation, and whether cultural exposure still partially explains these associations after controlling for important individual differences. Thus, for all three studies, we adopted a conservative analytic approach that involved simultaneously measuring and controlling for age, gender, intelligence, and education. In the present research, political orientation is defined as a single continuous variable with political conservatism anchoring one end and political liberalism anchoring the other, operationalized as participant self-identification of general political attitude.

## Study 1

Our first investigation of whether cultural exposure mediates the relation between personality and political orientation focused on exposure to books. Books are an important cultural product and reading has the potential to change how we think and behave. For example, avid readers acquire a wider vocabulary (Mol & Bus, 2011) and more general knowledge about the world than those who read less (Cunningham & Stanovich, 1998). These effects cannot be attributed to other factors, such as differences in intelligence, education, working memory, and cognitive ability (Stanovich, West, & Harrison, 1995). Reading also appears to be related to phenomena beyond the intellectual realm. Exposure to fictional narratives predicts greater social ability in adults (Mar et al., 2006; Mar et al., 2009) and more advanced socioemotional development in children (Aram & Aviram, 2009; Mar, Tackett, & Moore, 2010). One possible explanation for this relation is that fiction meaningfully simulates genuine social life, effectively transmitting social knowledge to readers (Mar & Oatley, 2008). By offering the reader a model of the

social world, fiction helps people understand and predict the dynamics of interactive social systems. Reading also influences emotional states, in that people experience emotions while reading, both those that relate directly to the perception of a character (e.g., sympathy) and emotions tied to the personal memories elicited while reading (Mar, Oatley, Djikic, & Mullin, 2011).

As might be expected, trait Openness to Experience has consistently been shown to predict reading and exposure to print (Mar et al., 2009). What is not known, however, is whether reading can partially explain why Openness to Experience is also related to political orientation. Past work on political knowledge supports this idea, in that knowledge about political campaigns has been linked to Openness, an association mediated by the reading of political news and materials (Hambrick et al., 2010). Reading might also influence political orientation in a broader way, different from exposing individuals to political knowledge. It is possible that reading in general may help expose individuals to a diversity of ideas and perspectives, the acceptance of which is more consistent with a liberal political orientation than a conservative one. In other words, higher Openness to Experience may impel greater cultural consumption in the form of reading, which in turn shapes a more liberal political orientation. Conscientiousness might behave in an opposite fashion to Openness, since lower Conscientiousness predicts a more liberal political orientation. Individuals lower in Conscientiousness may have a harder time maintaining their work-related goals and be more likely to engage in cultural consumption as a form of distraction and leisure.

To examine these possibilities, we investigated whether print exposure mediates the association between personality and political orientation, while controlling for a number of other individual differences. Our model hypothesizes that print exposure would be positively related to Openness to Experience and a more liberal political orientation, with print exposure mediating this association. We expect that print exposure will also mediate the association between Conscientiousness and liberalism.

## Method

**Participants.** Participants for this study were recruited through Amazon's Mechanical Turk (mTurk; www.mturk.com), an online crowdsourcing marketplace. On mTurk, potential employers (known as "Requesters") can upload descriptive information regarding a specific task (i.e., "Job") that they want to have completed. This includes, but is not limited to, what the task entails, how long it takes to complete, how much compensation is provided, and any restrictions with respect to employee characteristics (e.g., only American respondents). Interested employees ("Workers") can then elect to complete tasks based on these descriptions. The Requesters evaluate the completed Jobs and Workers are compensated if the Job is deemed to be of high quality. The

Workers are each identified by a unique “mTurk Worker ID.” Validating this online approach to research, past research has shown that online questionnaire-based methods produce results similar to in-lab procedures (Chuah, Drasgow, & Roberts, 2006). More specifically, recent studies of mTurk found that this service produced data that are as reliable as data generated by traditional methods and that mTurk participants are more diverse than standard Internet samples and college samples (Buhrmester, Kwang, & Gosling, 2011; Goodman, Cryder, & Cheema, 2013; Paolacci, Chandler, & Ipeirotis, 2010). For all the studies reported here, mTurk participants were limited to residents of the United States. This was done on mTurk by selecting “United States” under the “Location” option in the description section for each study, which then allowed only Workers from the United States to participate in the studies. To ensure quality, participants for all three studies were also restricted to have an overall work approval rating of 97% or greater (based on previously completed assignments).

A total of 486 adults (206 males) participated for monetary compensation (\$0.80 to \$1.00 per participant). The total data collection took approximately 5 days on mTurk. Participant age ranged from 18 to 71 years old ( $M = 34.97$ ,  $SD = 12.53$ ). On average, participants had 15.41 years of education ( $SD = 2.72$ ).

### Materials

**Print exposure.** The Author Recognition Test (ART; Stanovich & West, 1989) was used as a standard measure of print exposure. To complete the ART, participants viewed a list of names and checked off ones that they recognized as belonging to authors. Respondents were warned about the presence of non-author names in the list (i.e., foils), discouraging indiscriminate checking and guessing, which was therefore easy to detect. Past research has shown that checklist measures of print exposure such as the ART are a good predictor of real-life reading behaviors and related phenomena, including vocabulary and cultural literacy (West, Stanovich, & Mitchell, 1993). Although not a direct measure of reading behavior, the ART and its variants are more valid than simple self-report questionnaires (Sénéchal, LeFevre, Thomas, & Daley, 1998) and are the predominant method of measuring reading habits in educational psychology (Mol & Bus, 2011). The version used in this study included authors of fiction and non-fiction, and consisted of a total of 160 names, with an additional 40 non-author names included as foils. Appendix A contains the complete list of real author names.

The subsequent two studies reported here used similar recognition tests for films and American historical figures, designed according to the structure and principles of the ART. Previous studies have similarly adapted recognition tests for the purposes of measuring other types of cultural exposure (e.g., magazines, newspapers, cultural literacy, etc.), and have successfully demonstrated the validity of such tests (e.g., Stanovich et al., 1995; West & Stanovich, 1991).

**Table 1.** Alpha Reliabilities of the BFAS Traits in Studies 1, 2, and 3.

Trait	Study 1 ( $\alpha$ )	Study 2 ( $\alpha$ )	Study 3 ( $\alpha$ )
Openness to Experience	0.87	0.86	0.86
Conscientiousness	0.89	0.90	0.90
Extraversion	0.90	0.90	0.90
Agreeableness	0.89	0.90	0.91
Neuroticism	0.93	0.94	0.93

Note. BFAS = Big Five Aspects Scale.

**Trait personality.** Trait personality was assessed using the Big Five Aspects Scale (BFAS; DeYoung, Quilty, & Peterson, 2007), which consists of 100 descriptive statements regarding one’s behavior and disposition. Participants were asked to rate the extent to which they agreed with these statements on a 5-point Likert-type scale ranging from “Strongly Disagree” to “Strongly Agree.” The BFAS is an empirically derived instrument that measures the broad Big Five personality traits, and also two lower level aspects within each trait. The BFAS has been validated against standard Big Five measurements, such as the Big Five Inventory (BFI, mean  $r = .88$ ) and the Revised NEO Personality Inventory (NEO PI-R, mean  $r = .82$ ; DeYoung et al., 2007). Each of the Big Five traits is broken down into two aspects: Compassion and Politeness (Agreeableness), Industriousness and Orderliness (Conscientiousness), Openness and Intellect (Openness to Experience), Assertiveness and Enthusiasm (Extraversion), and Withdrawal and Volatility (Neuroticism). A sample item is, “I get things done quickly” (trait Conscientiousness, Industriousness aspect). Table 1 lists the alpha reliabilities of the BFAS traits for all three studies.

**Political orientation.** Political orientation was assessed using items measuring political party preferences and overall political attitude. Participants were asked to indicate their preference for the two primary American parties (i.e., “Politically, I favor the Democratic party” and “Politically, I favor the Republican party”) on a 5-point Likert-type scale ranging from “Strongly Disagree” to “Strongly Agree.” Participants were also asked to indicate their overall political orientation on a one-item 7-point Likert-type scale, ranging from *Very Conservative* (1) to *Very Liberal* (7), with a neutral point of 4.

**Intelligence.** Intelligence was used as a control variable in all analyses, and was measured using a timed, progressive matrices IQ test based on the principles of the Raven’s Progressive Matrices Test, generally regarded as the most effective single measure of fluid intelligence (Higgins, Peterson, Lee, & Pihl, 2007). In this test, participants were shown a series of 17 image patterns and for each were asked to select what a missing pattern would look like from a list of eight options. Participants’ raw scores on this test were calculated

**Table 2.** Means and Standard Deviations of Analyses Variables for Studies 1, 2, and 3.

Variable	Study 1		Study 2		Study 3	
	M	SD	M	SD	M	SD
Age	34.97	12.53	34.26	12.14	34.55	12.21
Education	15.41	2.72	15.51	2.53	15.80	2.61
Intelligence	6.96	3.50	6.94	3.73	7.17	3.40
Openness to Experience	3.81	0.52	3.83	0.50	3.81	0.51
Intellect	3.82	0.61	3.89	0.59	3.86	0.59
Openness	3.81	0.62	3.77	0.60	3.75	0.65
Conscientiousness	3.46	0.57	3.50	0.59	3.47	0.58
Industriousness	3.44	0.66	3.52	0.68	3.48	0.67
Orderliness	3.47	0.65	3.49	0.68	3.46	0.68
Extraversion	3.25	0.60	3.31	0.59	3.30	0.59
Enthusiasm	3.31	0.68	3.34	0.66	3.37	0.66
Assertiveness	3.18	0.73	3.28	0.72	3.24	0.73
Agreeableness	3.81	0.53	3.79	0.56	3.79	0.56
Compassion	3.80	0.66	3.80	0.66	3.79	0.69
Politeness	3.82	0.57	3.78	0.60	3.79	0.58
Neuroticism	2.73	0.71	2.69	0.74	2.72	0.72
Withdrawal	2.81	0.77	2.77	0.79	2.79	0.77
Volatility	2.65	0.78	2.60	0.80	2.65	0.78
Target recognition score	27.25	20.51	62.84	33.42	60.23	19.61
Preference for democratic party	3.25	1.36	3.28	1.36	3.31	1.40
Preference for republican party	2.29	1.34	2.37	1.33	2.29	1.35
Overall political attitude	4.56	1.70	4.55	1.68	4.62	1.69

by summing up all the correct responses. It is important for us to emphasize that the present studies aimed to simply control for the potential influence of intelligence. We do not investigate or otherwise attempt to demonstrate any intelligence differences between individuals of different political orientations.

**Procedure.** A recruitment ad for this study was posted on the mTurk website, which directed participants to the study materials online. After completing a consent form, participants were asked to complete the ART, BFAS, political orientation measure, the matrices IQ test, and a demographics questionnaire. At the end of the study, participants received an online debriefing form and were reimbursed for their time.

**Results and Discussion**

The means and standard deviations for all analyses variables are shown in Table 2. Table 3 displays the correlation matrix for all variables used in the regression and mediation analyses, and Table 4 displays the correlations among the Big Five Aspects, political orientation, and print exposure.

The measures of political orientation (political party preferences and the political orientation item) were highly inter-correlated (*r*s ranging from .74 to .78). Therefore, we created an aggregate measure of political orientation by taking the mean of the *z*-scores of the aforementioned measures, with positive

scores indicating greater liberalism. Party preference scores for the politically conservative party (Republican) were reverse-coded prior to obtaining the *z*-scores. This aggregate was characterized by good internal reliability ( $\alpha = 0.90$ ).

In terms of the Big Five, correlations revealed that a more liberal political orientation was related to higher Openness to Experience ( $r = .12, p = .008$ ), lower Conscientiousness ( $r = -.20, p < .001$ ), and higher Neuroticism ( $r = .15, p = .001$ ). Furthermore, liberalism was also correlated with greater exposure to print ( $r = .23, p < .001$ ).

Hierarchical regression analyses were conducted to clarify the relationship between traits and political orientation, after controlling for basic demographics. Age, gender, and education were entered in Step 1, and the BFAS traits in Step 2 (all coefficients reported below are taken from Step 2). The total model was significant,  $R^2 = .11, F(8, 476) = 7.18, p < .001$ . Demographically, a more liberal political orientation was predicted by youth,  $\beta = -0.11, t(476) = -2.43, p = .02$ , being female,  $\beta = 0.13, t(476) = 2.76, p = .006$ , and higher education level,  $\beta = 0.13, t(476) = 3.00, p = .003$ . At the trait level, higher Openness to Experience,  $\beta = 0.15, t(476) = 3.16, p = .002$  and lower Conscientiousness,  $\beta = -0.19, t(476) = -4.01, p < .001$ , emerged as a significant predictors of a more liberal political orientation.

**Exposure to print as a mediator.** We next examined whether exposure to books mediated the observed associations

**Table 3.** Correlation Matrix for Study 1 Variables.

	1	2	3	4	5	6	7	8	9	10
1. Age										
2. Gender	.10*									
3. Education	.14**	.04								
4. Intelligence	-.08	-.01	.15**							
5. Openness to Experience	.08	.03	.10*	.19***						
6. Conscientiousness	.05	.08	.07	-.04	.08					
7. Extraversion	.01	.08	-.01	-.02	.36***	.34***				
8. Agreeableness	.18***	.33***	.05	.04	.22***	.21***	.20***			
9. Neuroticism	-.16***	.11*	-.02	-.09	-.19***	-.34***	-.45***	-.19***		
10. ART target score	.32***	.04	.31***	.21***	.25***	-.14**	-.09	.09*	.05	
11. Liberal political orientation	-.09*	.11*	.12**	.17***	.12**	-.20***	-.06	-.01	.15**	.23***

Note. ART = Author Recognition Test.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 4.** Correlation of the Big Five Aspects With Political Orientation and Cultural Exposure/Knowledge for Studies 1, 2, and 3.

Big Five aspects	Study 1		Study 2		Study 3	
	Liberal political orientation	Number of authors recognized	Liberal political orientation	Number of films recognized	Liberal political orientation	Number of historical figures recognized
Intellect (O)	0.07	0.19***	0.10*	0.19***	0.13**	0.26***
Openness (O)	0.14**	0.23***	0.24***	0.23***	0.26***	0.10*
Industriousness (C)	-0.21***	-0.11*	-0.14***	-0.08	-0.15**	-0.07
Orderliness (C)	-0.14**	-0.14**	-0.15***	-0.19***	-0.23***	-0.10*
Enthusiasm (E)	-0.04	-0.08	-0.07	-0.01	-0.04	-0.11*
Assertiveness (E)	-0.06	-0.07	-0.15***	0.06	-0.08	-0.04
Compassion (A)	0.03	0.11*	0.08	0.04	0.09*	-0.02
Politeness (A)	-0.06	0.04	0.04	-0.03	-0.01	-0.01
Withdrawal (N)	0.15**	0.07	0.15***	-0.04	0.13**	-0.02
Volatility (N)	0.12**	0.02	0.03	-0.01	0.05	-0.06

Note. O = Openness to Experience; C = Conscientiousness; E = Extraversion; A = Agreeableness; N = Neuroticism.

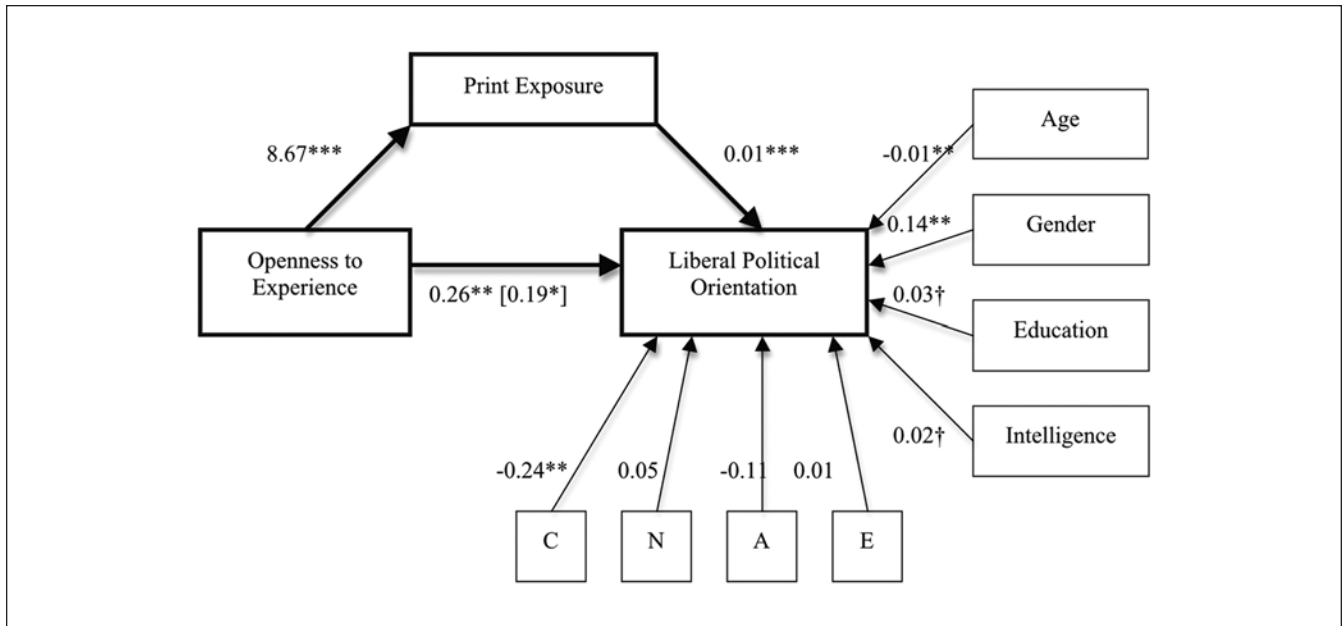
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

between personality and political orientation. A print-exposure score was first calculated by subtracting the total number of foils checked from the total number of author names correctly recognized on the ART (see Table 2 for descriptives). The great majority of the sample checked 3 foil names or less (97.5%;  $M = 0.41$ ,  $SD = 1.21$ ).

Next, we tested the hypothesis that print exposure would mediate the relationships observed between the personality traits and political orientation. Bootstrapped mediation analyses, as outlined by Preacher and Hayes (2008), were used for this purpose. Specifically, we were interested in the traits Openness to Experience and Conscientiousness, as these were consistent predictors of political orientation in both the correlations and the regression. A separate mediation analysis was conducted for each trait, with the mediation model consisting of the specific trait (independent variable), exposure to

print (mediator), and political orientation (dependent variable). We also simultaneously controlled for the effects of demographics, intelligence, and the other Big Five traits by including these variables as covariates in the mediation models. A total of 5,000 bootstrap resamples was used for all mediation analyses conducted.

**Openness to experience.** We first tested the model specifying that exposure to print mediated the relationship between Openness and political orientation, controlling for the effects of age, gender, education, intelligence, and the other four Big Five traits (Figure 1a). The analysis confirmed this mediation ( $ab = 0.07$ ,  $SE = 0.03$ , 95% CI [0.03, 0.13]). Although the total effect of Openness to Experience was statistically significant,  $c = 0.26$ ,  $SE = 0.09$ ,  $t(430) = 2.86$ ,  $p = .005$ , the direct effect of Openness to Experience on political orientation was



**Figure 1a.** The relationships among Openness to Experience, print exposure, and liberal political orientation in Study 1. Note. Value in brackets refers to the direct effect of the independent variable on the dependent variable when the mediator is included in the analysis. (C) = Conscientiousness, (N) = Neuroticism, (A) = Agreeableness, (E) = Extraversion. † $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

mediated by the indirect effect through exposure to print,  $c' = 0.19$ ,  $SE = 0.09$ ,  $t(430) = 2.04$ ,  $p = .04$ .

**Conscientiousness.** The mediation model for trait Conscientiousness (Figure 1b) also confirmed that print exposure mediated the relationship between Conscientiousness and political orientation, after controlling for demographics, intelligence, and the other Big Five traits ( $ab = -0.04$ ,  $SE = 0.02$ , 95% CI [-0.09, -0.01]). Although the total effect of Conscientiousness was significant,  $c = -0.28$ ,  $SE = 0.08$ ,  $t(430) = -3.50$ ,  $p < .001$ , its direct effect on political orientation was in part mediated by exposure to print,  $c' = -0.24$ ,  $SE = 0.08$ ,  $t(430) = -2.98$ ,  $p = .003$ .

The results of Study 1 replicated previous research demonstrating that a more liberal political orientation is associated with higher Openness to Experience and lower Conscientiousness (e.g., Carney et al., 2008; Hirsh et al., 2010). Moving beyond past work, our data demonstrate that these relationships are partially mediated by exposure to print, even after controlling for important demographic variables. Higher Openness to Experience and lower Conscientiousness are associated with increased print exposure (i.e., reading behavior), which in turn predicts a more liberal political orientation.

### Study 2

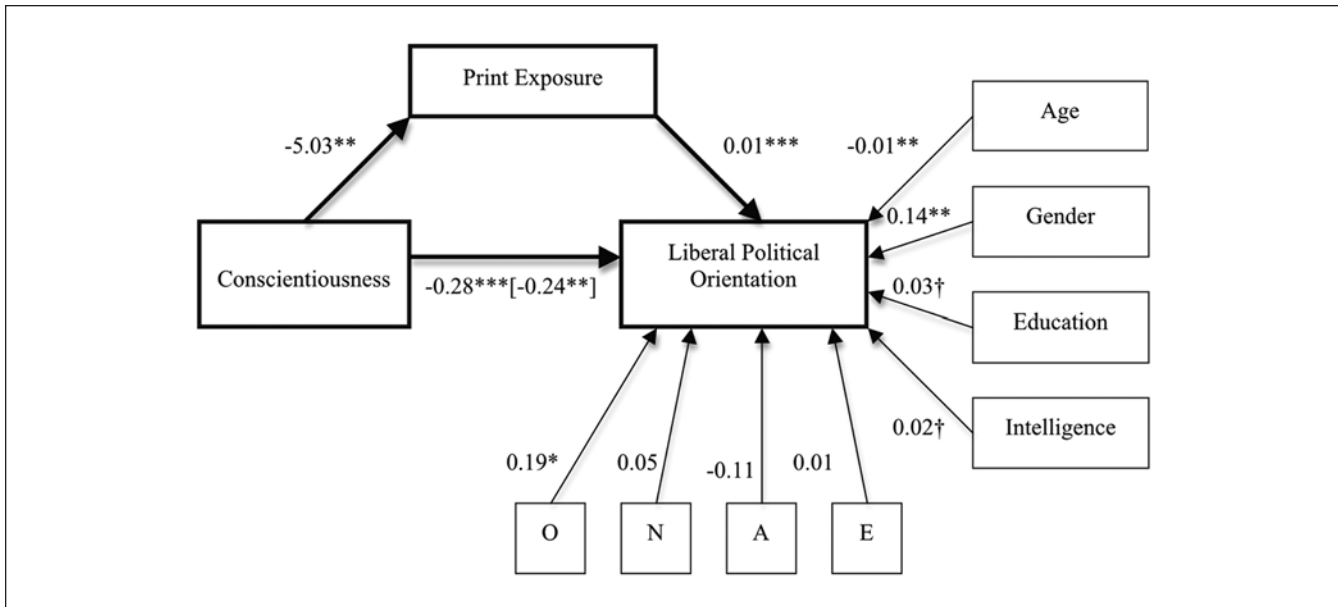
Study 1 revealed that cultural exposure in the form of reading mediates the relationship between personality and

political orientation. This raises the question of whether other forms of cultural consumption might also partially explain the associations that Openness and Conscientiousness have with political orientation.

Along with books, films represent a major form of cultural product. Films not only serve as a common source of entertainment, they constitute a key form of information and cultural myth-making. Even when fictional, films can have an impact on how people think about historical and political events. For example, one study found that after viewing the film *JFK*, participants were more likely to believe in conspiratorial accounts of the JFK assassination compared to before they viewed the film (e.g., the involvement of the Central Intelligence Agency (CIA); Butler et al., 1995). Participants were also more confident in their assessments of these conspiracies and showed decreased intentions to engage in political activities. Similarly, after viewing the film *Fahrenheit 9/11*, post-film participants were less likely than pre-film participants to endorse the Bush administration’s rationales for the war in Iraq, rated President Bush less favorably, and indicated a decreased likelihood to vote for President Bush (Koopman et al., 2006).

In addition to influencing beliefs and thoughts about social and political events, films can also change the way people think about themselves and others. For instance, when highly identified with a film’s protagonist, people show an increased activation of the traits displayed by these characters, suggesting that the traits of film characters can





**Figure 1b.** The relationships among Conscientiousness, print exposure, and liberal political orientation in Study 1.

Note. Value in brackets refers to the direct effect of the independent variable on the dependent variable when the mediator is included in the analysis. (O) = Openness to Experience, (N) = Neuroticism, (A) = Agreeableness, (E) = Extraversion.

† $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

spread to viewers themselves (Sestir & Green, 2010). Positive or negative emotions elicited by films can also influence how people see others, with respect to victims and their own culpability, for example (Goldenberg & Forgas, 2012).

In light of the prevalence and influence of films, in Study 2 we examined whether exposure to films may partially explain the association between personality and political orientation. Similar to our reasoning for exposure to print, we hypothesized that higher trait Openness to Experience may impel individuals to encounter and consume more films, which in turn exposes individuals to more diverse perspectives, with this diversity more consistent with a liberal political orientation. Individuals lower in Conscientiousness might also watch more films as a distraction from work-related goals. As in Study 1, potentially relevant individual differences such as demographics, education, and general intelligence were assessed and controlled for statistically to examine the robustness of any observed associations.

## Method

**Participants.** Participants for this study were recruited through mTurk. A total of 540 adults (257 males) participated in the study for monetary compensation (\$0.80 to \$1.00 per participant). Participant data were collected over the course of 5 days on mTurk with participant age ranging from 18 to 75 years ( $M = 34.26$ ,  $SD = 12.14$ ). Participants had, on average, 15.51 years of education ( $SD = 2.53$ ).

## Materials

**Film exposure.** Exposure to film was assessed using a Film Recognition Test (FRT), designed according to the principles of the ART and similar to that used by West and Stanovich (1991). Participants completing the FRT were asked to identify films that they had personally watched using a long list of film titles. Participants were warned about the presence of fake film titles (i.e., foils) in the list to discourage indiscriminate checking and guessing, as well as minimize socially desirable responding. Film titles were taken from Time magazine's Top 100 list, the American Film Institute's Top 100 list, as well as the Internet Movie Database's Top 250 list. The first two lists tend to contain critically acclaimed films, whereas the third list also includes more popular films since film viewers as opposed to film critics compile the Internet Movie Database (IMDB) list. Only films released prior to 2009 were included, to reduce the possibility that film titles would be recognized based on advertising campaigns for current films. The resulting FRT consisted of a total of 252 film titles. In addition, 20 non-film foil titles were included to discourage participants from guessing. Appendix B includes the complete list of real film titles. Participants' personality traits, political orientation, and intelligence were assessed in the same manner as in Study 1.

**Procedure.** A recruitment ad for this study was posted on the mTurk website, which directed participants to the study materials online. After completing the consent form, participants were asked to complete the FRT, BFAS, political orientation

**Table 5.** Correlation Matrix for Study 2 Variables.

	1	2	3	4	5	6	7	8	9	10
1. Age										
2. Gender	.08									
3. Education	.07	.02								
4. Intelligence	-.02	-.03	.17***							
5. Openness to Experience	.09*	.10*	.08	.21***						
6. Conscientiousness	.14***	.16***	-.08	-.05	.09*					
7. Extraversion	-.06	.01	.01	-.10*	.37***	.35***				
8. Agreeableness	.26***	.37***	-.07	.04	.32***	.25***	.15***			
9. Neuroticism	-.17***	.05	.01	-.02	-.21***	-.45***	-.47***	-.21***		
10. FRT target score	.33***	-.18***	.11*	.08	.25***	-.15***	.03	.01	-.03	
11. Liberal political orientation	.01	.10*	.12**	.10*	.20***	-.17***	-.13**	.07	.09*	.18***

Note. FRT = Film Recognition Test.  
 \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

measure, the IQ test, and a demographics questionnaire. Upon completion, participants received an online debriefing form and were reimbursed for their time.

**Results and Discussion**

The descriptives of the variables are shown in Table 2. Table 5 displays the correlation matrix for all the analysis variables. Table 4 displays the correlations between the Big Five Aspects, political orientation, and film exposure.

As in Study 1, the measures of political orientation were strongly correlated with one another ( $r$ s ranging from .73 to .77). An aggregate measure of political orientation was again created by taking the mean of the  $z$ -scores of these measures, with positive scores indicating greater liberalism ( $\alpha = 0.89$ ).

Correlations demonstrated that liberalism was associated with greater Openness to Experience ( $r = .20, p < .001$ ), lower Conscientiousness ( $r = -.17, p < .001$ ), lower Extraversion ( $r = -.13, p = .002$ ), and greater Neuroticism ( $r = .09, p = .03$ ). Liberalism was also correlated with more exposure to films ( $r = .18, p < .001$ ).

Hierarchical regression analyses were conducted to examine how personality traits predicted political orientation after controlling for demographics. Age, gender, and education were entered in Step 1, and the BFAS traits in Step 2 (all reported coefficients are from Step 2). The total model was statistically significant,  $R^2 = .12, F(8, 531) = 9.16, p < .001$ . A more liberal political orientation was associated with more education,  $\beta = 0.10, t(531) = 2.29, p = .02$ , greater Openness to Experience,  $\beta = 0.26, t(531) = 5.61, p < .001$ , lower Conscientiousness,  $\beta = -0.14, t(531) = -2.81, p = .005$ , and lower Extraversion,  $\beta = -0.20, t(531) = -3.84, p < .001$ . Gender, with females being more liberal, also marginally predicted political orientation,  $\beta = 0.09, t(531) = 1.95, p = .05$ .

**Exposure to films as a mediator.** To examine whether exposure to film mediated relations between personality and political

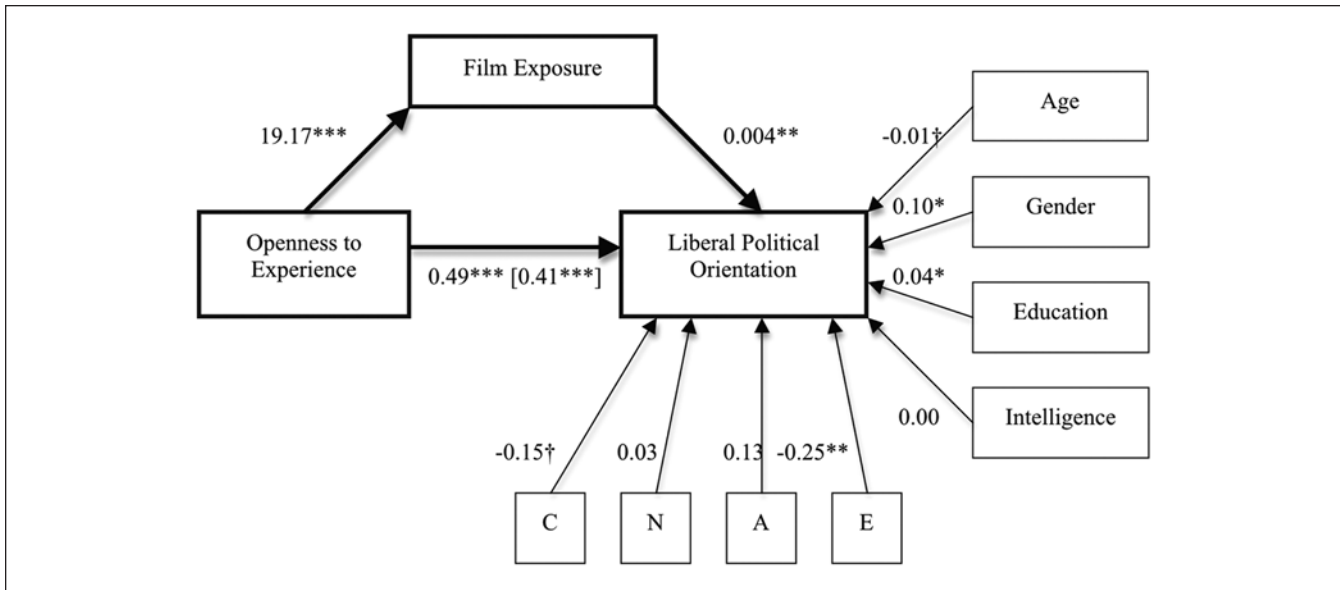
orientation, a film-exposure score was first calculated by subtracting foils checked on the FRT from the total number of films watched. The majority of the sample checked 3 foil names or less (97.8%;  $M = 0.40, SD = 2.38$ ).

To examine whether exposure to films mediates the relationship between traits and political orientation, we used bootstrapped mediation analyses parallel to those conducted in Study 1 (Preacher & Hayes, 2008). In addition to Openness to Experience and Conscientiousness, we also examined Extraversion as it was a significant predictor of political orientation in the correlations and the regression.

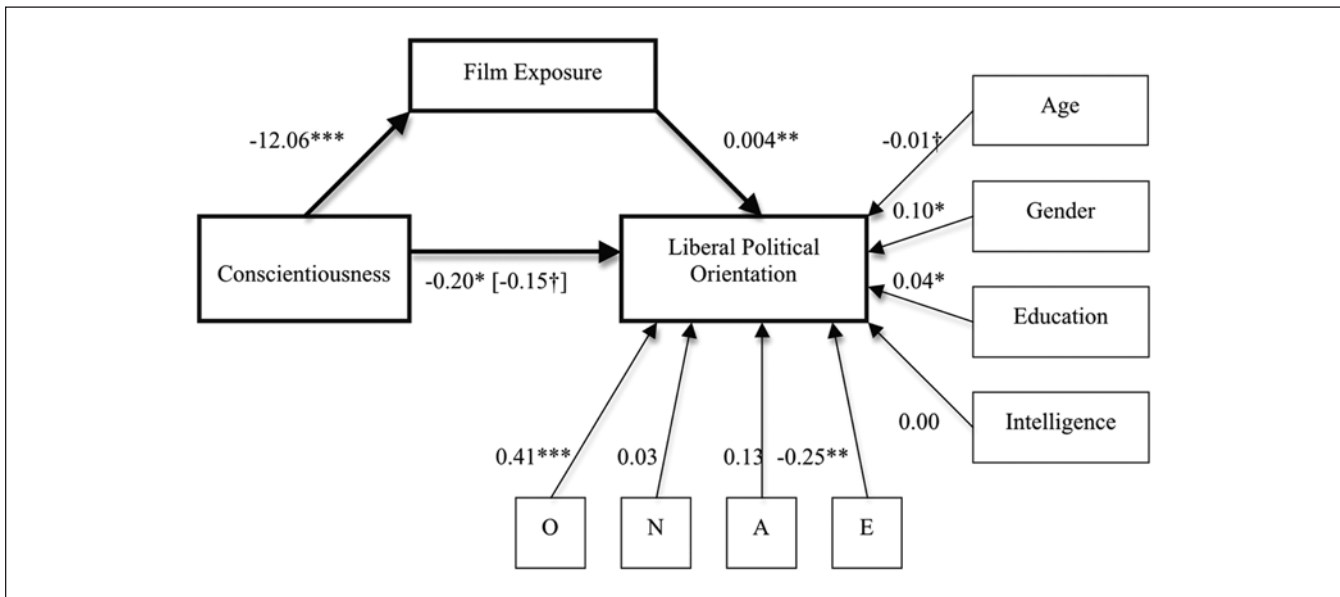
**Openness to experience.** We first tested the model specifying that exposure to films mediated the relationship between Openness to Experience and political orientation, while controlling for age, gender, education, intelligence, and the other Big Five traits (Figure 2a). The analysis confirmed this mediation ( $ab = 0.09, SE = 0.03, 95\% \text{ CI } [0.04, 0.15]$ ). Although the total effect of Openness to Experience was statistically significant,  $c = 0.49, SE = 0.09, t(466) = 5.45, p < .001$ , the direct effect of Openness to Experience on political orientation was in part mediated by the indirect effect of exposure to films,  $c' = 0.41, SE = 0.09, t(466) = 4.38, p < .001$ .

**Conscientiousness.** Next, mediation analyses confirmed that exposure to films also mediated the relationship between Conscientiousness and political orientation, after controlling for demographics, intelligence, and the other Big Five traits ( $ab = -0.05, SE = 0.02, 95\% \text{ CI } [-0.10, -0.02]$ ; Figure 2b). Once again, while the total effect of Conscientiousness was significant,  $c = -0.20, SE = 0.08, t(466) = -2.55, p = .01$ , its direct effect on political orientation was mediated by exposure to films,  $c' = -0.15, SE = 0.08, t(466) = -1.86, p = .06$ .

**Extraversion.** Finally, mediation analyses found that exposure to films did not mediate the relationship between



**Figure 2a.** The relationships among Openness to Experience, film exposure, and liberal political orientation in Study 2. Value in brackets refers to the direct effect of the independent variable on the dependent variable when the mediator is included in the analysis. (C) = Conscientiousness, (N) = Neuroticism, (A) = Agreeableness, (E) = Extraversion. †*p* < .10. \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.



**Figure 2b.** The relationships among Conscientiousness, film exposure, and liberal political orientation in Study 2. Value in brackets refers to the direct effect of the independent variable on the dependent variable when the mediator is included in the analysis. (O) = Openness to Experience, (N) = Neuroticism, (A) = Agreeableness, (E) = Extraversion. †*p* < .10. \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

Extraversion and political orientation, after controlling for the effects of demographics, intelligence, and the other Big Five traits (*ab* = 0.01, *SE* = 0.01, 95% CI [-0.01, 0.04]).

To sum up, Study 2 found that higher Openness to Experience, lower Conscientiousness, and lower Extraversion

predicted a more liberal political orientation. Exposure to films mediated the relationships that Openness to Experience and Conscientiousness had with political orientation. The same was not true for Extraversion, however. Higher Openness to Experience and lower Conscientiousness were

related to more film viewing, and more film viewing was in turn associated with more liberal political attitudes.

### Study 3

Studies 1 and 2 revealed that exposure to cultural products, in the form of books and films, helps explain the association between personality traits and political orientation. For these studies, books and films were examined in a broad sense, across a broad range of content. In Study 3 we shift our attention to examine whether cultural exposure to media on a particular topic, specifically American history, might also explain the relation between traits and political orientation. Reading has been shown to predict the acquisition of general and specific knowledge (e.g., Cunningham & Stanovich, 1998; Stanovich et al., 1995), and mass media such as films also serve as an important source of information acquisition (Roberts & Maccoby, 1985). This knowledge might help shape political orientations, as past work looking specifically at political knowledge has implied. For example, greater knowledge about politics and campaigns is directly predicted by the amount of exposure one has to political topics (e.g., via reading newspapers and magazines) (Hambrick et al., 2010). We chose to focus on historical knowledge, because various political groups have highlighted history as important for education. For instance, the Republican Platform (Republican National Committee, 2008) describes history as part of the “fundamentals of learning.”

Does knowledge of American history shape political orientations? More specifically, does this knowledge help explain the relationship between personality traits and political orientation? Higher levels of Openness to Experience and lower levels of Conscientiousness have already been found to predict greater cultural exposure, so it is reasonable to hypothesize that Openness to Experience might be positively associated with knowledge of American history. However, does knowing more about history predispose people toward a more liberal or conservative political orientation? The answer to this question is not clear.

In this study, we examined whether Openness to Experience predicted greater historical knowledge (presumably acquired through increased cultural exposure), how historical knowledge relates to political orientation, and whether historical knowledge may help explain the association between personality and political orientation. In the present study, knowledge of American history was assessed using a recognition test, similar to those used in Studies 1 and 2, in which participants selected names they recognized as American historical figures. As with the previous two studies, potentially relevant individual differences were again assessed and controlled.

### Method

**Participants.** Participants for this study were recruited through mTurk. A total of 460 adults (199 males) participated in the

study for monetary compensation (\$0.80 per participant). Participant data were collected over the course of four days and participant age ranged from 18 to 79 years ( $M = 34.55$ ,  $SD = 12.21$ ). On average, participants reported 15.80 years of education ( $SD = 2.61$ ).

### Materials

**Historical knowledge.** Degree of knowledge was assessed using a Historical Figure Recognition Test (HFRT), based on the principles of the ART and FRT described previously. This measure is similar to the checklist measure of cultural literacy used by past researchers (Stanovich et al., 1995; West & Stanovich, 1991). Participants checked off names that they recognized as American historical figures from a long list of potential names. Participants were warned about the presence of fake names (i.e., foils) in the list, to discourage indiscriminate checking. The names for this test were obtained from The Atlantic Magazine’s list of Top 100 Influential Americans, as well as names that frequently appeared on the main Wikipedia page for American History. The list of names included a wide range of American historical figures, such as politicians, generals, inventors, scientists, and activists. The resulting HFRT consisted of a total of 120 historical figures. Forty foil names were additionally included. Appendix C includes the list of real American historical figures. Personality traits, political orientation, and intelligence were measured in the same manner as in Studies 1 and 2.

**Procedure.** Participants were directed to the study materials online through a recruitment ad posted on the mTurk website. After completing the consent form, participants completed the HFRT, BFAS, political orientation measures, IQ test, and a demographics questionnaire. Participants received an online debriefing form and were reimbursed for their time on completion.

### Results and Discussion

Means and standard deviations are shown in Table 2. Table 6 displays the correlation matrix for all the variables used in the analyses. Table 4 displays the correlations of the Big Five Aspects with political orientation and historical knowledge.

As with the previous two studies, the measures of political orientation were strongly correlated with one another ( $r$ s ranging from .79 to .82). An aggregate measure was created by taking the mean of the  $z$ -scores of these measures ( $\alpha = 0.92$ ).

Correlations illustrated that a more liberal political orientation was associated with higher levels of Openness to Experience ( $r = .24$ ,  $p < .001$ ), lower Conscientiousness ( $r = -.22$ ,  $p < .001$ ), and greater Neuroticism ( $r = .10$ ,  $p = .04$ ). Furthermore, liberalism was also positively correlated with knowledge of American history ( $r = .15$ ,  $p = .001$ ).

Hierarchical regression analyses were then conducted to determine how personality predicts political orientation after

**Table 6.** Correlation Matrix for Study 3 Variables.

	1	2	3	4	5	6	7	8	9	10
1. Age										
2. Gender	.04									
3. Education	.07	.01								
4. Intelligence	-.12*	.02	.16**							
5. Openness to Experience	.04	.11*	.05	.19***						
6. Conscientiousness	.11*	.01	-.01	-.03	.07					
7. Extraversion	-.02	.06	-.00	.01	.38***	.33***				
8. Agreeableness	.17***	.30***	-.13**	.01	.28***	.19***	.22***			
9. Neuroticism	-.18***	.16***	-.03	-.05	-.23***	-.37***	-.45***	-.16***		
10. HFRT target score	.31***	-.09	.27***	.16***	.21***	-.10*	-.09	-.02	-.05	
11. Liberal political orientation	-.12*	.11*	.13**	.12*	.24***	-.22***	-.07	.05	.10*	.15**

Note. HFRT = Historical Figure Recognition Test.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

controlling for demographic variables. Age, gender, and education were entered in Step 1, and the BFAS traits in Step 2 (all coefficients reported are from Step 2). The total model was significant,  $R^2 = .16$ ,  $F(8, 450) = 10.91$ ,  $p < .001$ . In this sample, liberalism was associated with youth,  $\beta = -0.13$ ,  $t(450) = -2.81$ ,  $p = .005$ , more education,  $\beta = 0.13$ ,  $t(450) = 2.90$ ,  $p = .004$ , greater Openness to Experience,  $\beta = 0.29$ ,  $t(450) = 5.97$ ,  $p < .001$ , lower Conscientiousness,  $\beta = -0.18$ ,  $t(450) = -3.71$ ,  $p < .001$ , and lower Extraversion,  $\beta = -0.13$ ,  $t(450) = -2.53$ ,  $p = .01$ .

**Knowledge of history as a mediator.** To examine whether historical knowledge mediated relations between personality and political orientation, a historical knowledge recognition score was calculated by subtracting foils from the correctly recognized figures on the HFRT (see Table 2 for descriptives). The great majority of the sample checked 3 foil names or less (96.1%;  $M = 0.60$ ,  $SD = 1.41$ ).

We then tested whether knowledge of history mediated the relationships observed between personality traits and political orientation, using bootstrapped mediation analyses (Preacher & Hayes, 2008) akin to those used in Studies 1 and 2. We examined Openness to Experience and Conscientiousness, as these two traits were significant predictors of political orientation in the correlations and the regression.

**Openness to experience.** The results of the mediation analysis examining Openness revealed that knowledge of history mediated the relationship between Openness to Experience and political orientation, even after controlling for age, gender, education, intelligence, and the other Big Five traits ( $ab = 0.04$ ,  $SE = 0.02$ , 95% CI [0.002, 0.10]; Figure 3). Although the total effect of Openness to Experience on political orientation was statistically significant,  $c = 0.42$ ,

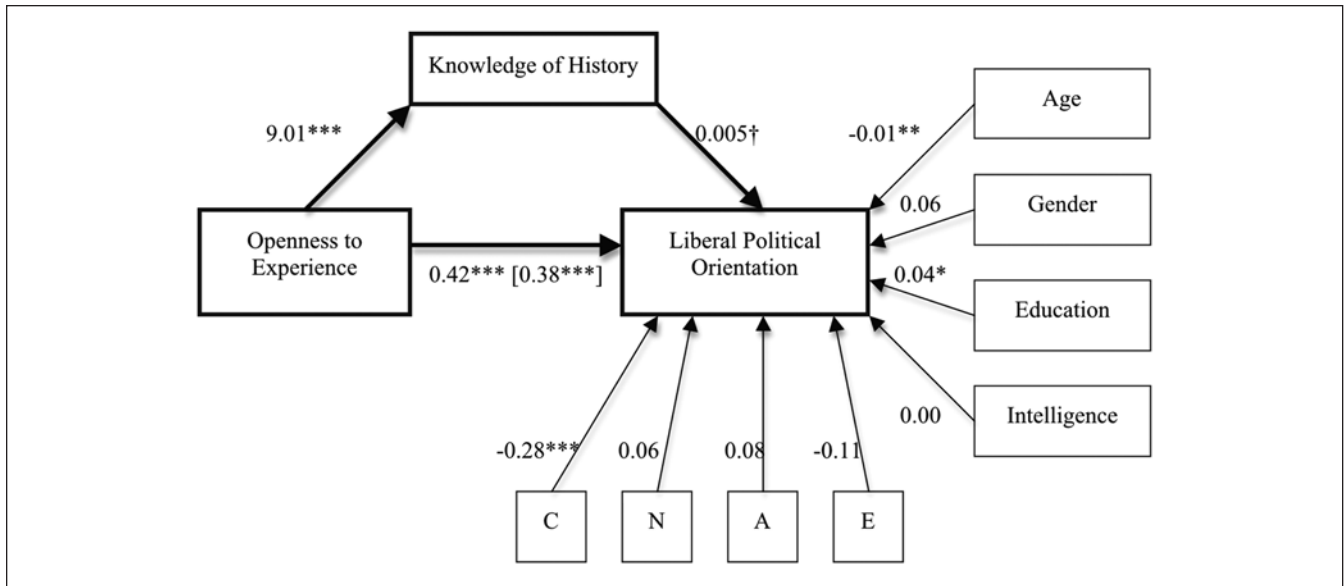
$SE = 0.09$ ,  $t(401) = 4.48$ ,  $p < .001$ , its direct effect was in part mediated by the indirect effect of historical knowledge,  $c' = 0.38$ ,  $SE = 0.10$ ,  $t(401) = 3.93$ ,  $p < .001$ .

**Conscientiousness.** With respect to Conscientiousness, historical knowledge did not mediate the relationship between this trait and political orientation, after controlling for demographics, intelligence, and the other Big Five traits ( $ab = -0.01$ ,  $SE = 0.01$ , 95% CI [-0.04, 0.002]).

To sum up, Study 3 found that greater Openness to Experience and lower Conscientiousness predicted a more liberal political orientation. Knowledge of American history mediated the relationship between Openness to Experience and political orientation, but the same was not true of Conscientiousness. So higher Openness to Experience was related to greater knowledge of history, which in turn was positively associated with a more liberal political orientation.

## General Discussion

The results of these studies illustrate that cultural exposure can help explain why personality traits predict political orientation. Individuals higher in Openness and lower in Conscientiousness tended to be exposed to more books and films, which in turn predicted a more liberal political orientation.<sup>1</sup> Moreover, the knowledge acquired from these forms of cultural exposure also appeared to play an important role, in that knowledge of American history also partially explained the relation between Openness to Experience and greater liberalism. This knowledge, however, could not account for the association between lower levels of Conscientiousness and greater liberalism. It is important to highlight that these mediations were observed within the context of a highly conservative analytic strategy, which controlled for the influence



**Figure 3.** The relationships among Openness to Experience, knowledge of history, and liberal political orientation in Study 3. Value in brackets refers to the direct effect of the independent variable on the dependent variable when the mediator is included in the analysis. (C) = Conscientiousness, (N) = Neuroticism, (A) = Agreeableness, (E) = Extraversion. †*p* < .10. \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

of age, gender, intelligence, education, and the other Big Five personality traits. This suggests that the relations observed are fairly robust.

The present research offers additional insight into past work on personality and political orientation, in that it proposes cultural exposure as an underlying mechanism for how Openness to Experience and Conscientiousness relate to political orientation. This appears to be a sensible model, given the nature of the constructs involved. Trait personality appears early in life and precedes exposure to books and films, acquisition of historical knowledge, and the formation of coherent political beliefs. Similarly, children are exposed to cultural products such as books and films before they form political opinions, so it makes sense for cultural exposure to mediate the relation between traits and political orientation.

Specifically, in the present studies, trait Openness to Experience accounts for greater cultural exposure in the form of books and movies and greater acquisition of historical knowledge, which in turn account for greater liberalism. Individuals higher in Openness to Experience tend to be more inquisitive and curious, and would therefore be more motivated to seek out new activities and information. Consumption of cultural products would seem to be an excellent means to satisfy this curiosity. This is also confirmed by past research showing that high Openness to Experience predicts more exposure to cultural products (e.g., Finn, 1997). Exposure to culture, in turn, is likely to lead to the encounter of new and diverse information and ideas. Embracing novelty and complexity during information-processing appears to be more congruent with liberal

political attitudes compared with conservative ones (Jost et al., 2003). As such, increased cultural exposure may further enhance liberalism.

The present studies also found that higher trait Conscientiousness negatively correlates with cultural exposure (i.e., print and film) and historical knowledge. On closer inspection of the aspects of this trait, it appears that most of the association between Conscientiousness and cultural exposure is accounted for by the Orderliness aspect of this trait as opposed to the Industriousness aspect. Although both aspects were negatively associated with cultural exposure and historical knowledge, Orderliness had stronger negative associations. To further explore this potential difference, we conducted partial correlations to examine the unique variance for each of the two aspects. Orderliness (controlling for Industriousness) emerged as the stronger predictor of the mediator compared with Industriousness (controlling for Orderliness) across all three studies, Study 1: *pr* = -0.10 (*p* = 0.02) vs. -0.04 (*p* = 0.43); Study 2: *pr* = -0.18 (*p* < .001) vs. 0.03 (*p* = .52); Study 3: *pr* = -0.07 (*p* = .12) vs. -0.03 (*p* = .57). Orderliness, as measured by the BFAS, emphasizes a preference for structure, rules, and routine. Highly orderly individuals therefore place a high value on maintaining order and structure, and one way to do so is by following conventions and norms. These individuals may therefore partake less in cultural activities compared with open individuals because decreased cultural exposure can help provide limits on the amount of new information one encounters, especially information that may be inconsistent with current norms. A benefit of limiting cultural exposure may be the maintenance

of a familiar and stable surrounding, which is also valued by more politically conservative individuals (Jost, 2006; Jost et al., 2003).

It is important to acknowledge that other causal explanations could account for our observed pattern of relations. It could be that the relationship between cultural exposure and political orientation operate as a type of feedback loop. The effect of cultural exposure may be a variant of the Pygmalion effect, which occurs when people perform in accordance to the expectations or labels placed on them (Rosenthal, 1994). In essence, increased cultural exposure may continue to shape political liberalism as a type of circular reinforcer, with people who have been identified or have identified themselves as politically liberal more likely to engage in behaviors that they believe are expected of a "liberal person." Participation in cultural activities is a prime candidate for liberal behaviors. Behaving in accordance with expectations can begin to produce positive-feedback loops, which amplify the original consequences. For example, as a person begins to read, the positive effects of reading such as knowledge acquisition (e.g., about American history) could motivate him or her to seek out even more reading materials, forming a cycle of positive reinforcement. Within literacy research, this phenomenon has been labeled the "Matthew effect" of literacy development (Stanovich, 1986). Within this context, it could be that the politically liberal become even more liberal as a result of increasing cultural exposure.

Our results are also informative for those interested in how politics relates to knowledge attainment. For instance, it has previously been shown that individuals who identify themselves as conservative actually know more about the political system than liberals (e.g., Federico & Schneider, 2007; Pew Research Center, 2012). This may seem to conflict with our findings in Study 3, in which conservatism was associated with less knowledge of American history. It is important, however, to highlight that the previous studies emphasized political knowledge and expertise, whereas the historical knowledge measured in Study 3 included a wide range of domains (scientists, inventors, etc.). Therefore, although conservatives may know more about politics than liberals, their breadth of knowledge may not extend to other areas of American history. Hence, the results found in Study 3 should not be viewed as a direct contradiction of previous findings, but rather an extension of past work.

### *Limitations and Future Directions*

Although the present studies offer further insight into how political orientation relates to cultural engagement, there are important limitations that need to be addressed. One limitation lies in the fact that the political orientation measures used were fairly simple in structure, based solely on self-identification of party affiliation and general attitude. As a result, our data do not allow for the assessment of more complex representations of political attitudes. For instance, some

individuals may be liberal about certain issues but conservative about others (e.g., someone could support increased funding for healthcare, but oppose funding for artistic programs). Furthermore, the measures used cannot address the differences between social and fiscal conservatism. These more subtle political differences may offer additional insight into which components of liberalism versus conservatism are best predicted by personality and cultural exposure. Future research should distinguish between these different components of political orientation to gain a better understanding of the observed relations.

Another limitation of the present studies lies in the fact that the fundamental basis of the mediation analyses is correlational in nature. Thus, one cannot draw inferences about causation or directionality based on the results. Although these studies show that cultural exposure can partially account for why higher Openness and lower Conscientious predict greater liberalism, it is not possible to make firm causal inferences or rule out the role of additional variables. We did, however, control for a number of potential confounding variables in our analyses, including gender, age, intelligence, and education. Future studies need to use longitudinal or experimental methods to better differentiate and comprehend the directionality of these findings. Furthermore, it is important for us to acknowledge that the observed effects were small in size, with much variance left unaccounted for in the models. In light of this unexplained variance, it is very important that future research explore other possible predictors of political orientation. Political orientation is likely to be determined by multiple factors that interact in a complex fashion, with an accurate picture of political orientation unlikely to arise from a single study. That said, a promising way forward is to begin examining how various predictors are related, as we have done in the present research. Although our observed effects were modest in magnitude, they were consistent across studies and still offer valuable insight into the relationships among personality, cultural exposure, and political orientation. Moreover, in the realm of American politics, where outcomes are often decided by slim margins, even small effects may have important practical implications.

Although we present evidence for one potential mechanism explaining the relation between traits and liberalism, there are likely to be others that account for additional shared variance between these two constructs. One possible confound, for instance, may be parental political orientation, which might influence both political orientation and cultural exposure (e.g., Oesterreich, 2005). It is important for future studies to examine a wider variety of potential mechanisms to better understand the significance of the present findings.

One other important limitation of the present research is that the same recognition-test format was used to measure cultural exposure across all three studies. As a result, it might be that there is something particular about this form of test that may account for the results, rather than the content per

se. Perhaps, for example, those lower in liberalism are less confident in their recognition of cultural products, checking less items on the recognition tests and therefore scoring lower on these measures. One reason we believe this not to be the case, however, is that foil-checking was unrelated to liberalism in the three studies ( $r$ s ranging from  $-.01$  to  $.06$ ,  $p$  values ranging from  $.24$  to  $.76$ ), so it does not appear that those higher in liberalism had a lower threshold for recognition or were more likely to guess. Furthermore, recognition scores were corrected for foil-checking in all our analyses. Another potential limitation with the recognition-test format pertains to the issue of validity. The FRT and HFRT were designed according to the structure and principles of the ART. While these two measures have not been explicitly validated, past research measuring other types of cultural exposure (e.g., television shows, cultural literacy) has adopted a similar approach to constructing these recognition tests (e.g., West & Stanovich, 1991), suggesting that this is a reasonable method to assess cultural exposure.

Finally, an important note should be made regarding the samples used in these studies, which were all drawn from mTurk. Although previous research has validated the use of mTurk as a source of participant recruitment, it is still a fairly new tool for psychological science. Despite the fact that studies investigating the properties of mTurk samples suggest that it produces valid and reliable data (e.g., Buhrmester et al., 2011), there are potential issues with using an Internet sample that could limit the interpretation and generalizability of the present findings. For example, the present results cannot be generalized to other cultures, as we have preselected the participants to be United States residents. The generalizability of our results may also be limited in that all of our participants were relatively savvy with respect to the Internet and technology, the skills needed to participate in the mTurk marketplace. So individuals who do not have stable access to

the Internet or are unaware of resources such as mTurk were not likely to be sampled. Furthermore, our sample consisted of highly educated individuals, who on average obtained around 15 years of education, which is equivalent to a few years of college/university education. It has been previously shown that more educated individuals tend to support a single-factor structure for political orientation (Stimson, 1975). With a more diverse sample, the single-factor structure of political orientation that we rely on here may not be supported. More educated individuals may also be more politically liberal (Phelan, Link, Stueve, & Moore, 1995; Truett, 1993; although the reverse has also been shown, e.g., Abramowitz & Saunders, 2006; Erikson, McIver, & Wright, 1987). In our samples, it appears that the participants are slightly skewed toward the liberal end of the political spectrum, in terms of political party preferences and overall political attitudes (Table 2). Thus, although our analyses made efforts to control for the influence of education, it remains possible that the demographics of our sample may be restricted in range, influencing the generalizability of the results and providing an underestimation of the true population effect size.

## Conclusion

Across three studies we explored why personality predicts political orientation, finding evidence that cultural exposure and the acquisition of historical knowledge might provide a partial account. This is true even after taking into consideration important demographic variables and individual differences. These findings offer new insights into how cultural exposure helps shape people's attitudes and beliefs, a finding that may be especially relevant given that we now live in a time where media and culture are becoming increasingly more prevalent and accessible.

## Appendix A

### List of 160 Real Author Names for the Author Recognition Test Used in Study 1

Alastair Reynolds	George R. R. Martin	Kenneth H. Blanchard	Ray Bradbury
Albert Camus	Greg Bear	Kim Harrison	Richard Dawkins
Alice Munro	Gregory Maguire	Larry Niven	Robert A. Heinlein
Alice Sebold	Harlan Coben	Lisa Kleypas	Robert B. Parker
Amir D. Aczel	Ian Rankin	M. D. Johnson Spencer	Robert D. Kaplan
Amy Tan	Iris Johansen	M. Scott Peck	Robert Fulghum
Anne McCaffrey	Italo Calvino	Maeve Binchy	Robert Jordan
Antonio Damasio	J. D. Sallinger	Margaret Weis	Robert Ludlum
Arthur C. Clarke	Jack Canfield	Marianne Williamson	Robert T. Kiyosaki
Audrey Niffenegger	Jack Higgins	Mary Higgins Clark	Rohinton Mistry
Barry Z. Posner	Jackie Collins	Matt Ridley	Roland Barthes
Bertrand Russell	Jacqueline Carey	Meg Cabot	Sandra Brown
Bob Woodward	James Patterson	Melody Beattie	Sherrilyn Kenyon
Carol Shields	Jayne Ann Krentz	Michael Connolly	Sidney Sheldon

(continued)



## Appendix A (continued)

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Catherine Anderson	Jean Baudrillard	Michael Jecks	Sinclair Ross
Cathy Reichs	Jean Vanier	Michael Moore	Sophie Kinsella
Charlaine Harris	Jeffrey Deaver	Michel Foucault	Stephen C. Lundin
Christopher Moore	Jeffrey Gray	Milan Kundera	Stephen Hawking
Chuck Palahniuk	Jim Butcher	Naomi Klein	Stephen J. Gould
Clive Cussler	Jim Collins	Naomi Wolf	Stephen R. Covey
Daniel Goleman	Jo Davis	Napoleon Hill	Sue Grafton
Danielle Steele	Jodi Picoult	Neil Gaiman	Susan Sontag
Dean Koontz	John Grisham	Nelson DeMille	Terry Brooks
Deepak Chopra	John Irving	Nicholas Sparks	Terry Goodkind
Diana Gabaldon	John LeCarré	Noam Chomsky	Terry Pratchett
Diana Palmer	John Maynard Smith	Nora Roberts	Thomas Kuhn
Diane Ackerman	John Saul	Norman Mailer	Thomas Mann
Dick Francis	John Searle	Oliver Sacks	Timothy Findley
Donna Leon	John Steinbeck	Orson Scott Card	Tom Robbins
Douglas Adams	John Updike	P. D. James	Toni Morrison
Douglas Coupland	Jonathan Kellerman	Patricia Cornwell	Umberto Eco
Douglas Rushkoff	José Saramago	Paulo Coelho	Ursula K. Le Guin
Emily Giffin	Joseph Heller	Peter F. Drucker	Vince Flynn
Eric Schlosser	Joseph LeDoux	Peter S. Pande	W. G. Sebald
Erma Bombeck	Joy Fielding	Philip C. McGraw	W. O. Mitchell
Ernst Mayr	Jude Deveraux	Philip K. Dick	Wally Lamb
Faith Popcorn	Judith Krantz	Philippa Gregory	William Faulkner
Fern Michaels	Julia London	Pierre Berton	William Gibson
Frank Herbert	Karen Marie Moning	Piers Anthony	Yann Martel
Gabriel Garcia Marquez	Ken Follett	R. A. Salvatore	Yukio Mishima

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## Appendix B

### List of 252 Real Film Titles for the Film Recognition Test Used in Study 2

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12 Angry Men (1957)	Pan's Labyrinth (2006)
2001: A Space Odyssey (1968)	Paths of Glory (1957)
8 1/2 (1963)	Persona (1966)
A Clockwork Orange (1971)	Pinocchio (1940)
A Hard Day's Night (1964)	Platoon (1986)
A Night at the Opera (1935)	Princess Mononoke (1997)
A Streetcar Named Desire (1951)	Psycho (1960)
A Touch of Zen (1971)	Pulp Fiction (1994)
Aguirre: The Wrath of God (1972)	Pyraasa (1957)
Alien (1979)	Raging Bull (1980)
Aliens (1986)	Raiders of the Lost Ark (1981)
All About Eve (1950)	Ran (1985)
All the President's Men (1976)	Rashômon (1950)
Amadeus (1984)	Rear Window (1954)
Amélie (2001)	Rebecca (1940)
American Beauty (1999)	Requiem for a Dream (2000)
American Graffiti (1973)	Reservoir Dogs (1992)
American History X (1998)	Rocky (1976)
Annie Hall (1977)	Saving Private Ryan (1998)
Apocalypse Now (1979)	Schindler's List (1993)

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(continued)

## Appendix B (continued)

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Baby Face (1933)	Se7en (1995)
Back to the Future (1985)	Seven Samurai (1954)
Bande à part (1964)	Shane (1953)
Barry Lyndon (1975)	Sherlock, Jr. (1924)
Batman Begins (2005)	Sin City (2005)
Ben-Hur (1959)	Singin' in the Rain (1952)
Berlin Alexanderplatz (1980)	Slumdog Millionaire (2008)
Bicycle Thieves (1948)	Smiles of a Summer Night (1955)
Blade Runner (1982)	Snatch (2000)
Bonnie and Clyde (1967)	Snow White and the Seven Dwarfs (1937)
Braveheart (1995)	Some Like It Hot (1959)
Brazil (1985)	Sophie's Choice (1982)
Bride of Frankenstein (1935)	Spartacus (1960)
Bringing Up Baby (1938)	Spirited Away (2001)
Butch Cassidy and the Sundance Kid (1969)	Star Wars: Episode IV—A New Hope (1977)
Cabaret (1972)	Star Wars: Episode V—The Empire Strikes Back (1980)
Camille (1936)	Star Wars: Episode VI—Return of the Jedi (1983)
Casablanca (1942)	Strangers on a Train (1951)
Charade (1963)	Sullivan's Travels (1941)
Children of Paradise (1945)	Sunrise (1927)
Chinatown (1974)	Sunset Blvd. (1950)
Chungking Express (1994)	Sweet Smell of Success (1957)
Cinema Paradiso (1988)	Swing Time (1936)
Citizen Kane (1941)	Talk to Her (2002)
City Lights (1931)	Taxi Driver (1976)
City of God (2002)	Terminator 2: Judgment Day (1991)
Closely Watched Trains (1966)	The 400 Blows (1959)
Cool Hand Luke (1967)	The African Queen (1951)
Das Boot (1981)	The Apartment (1960)
Day for Night (1973)	The Apu Trilogy (1955, 1956, 1959)
Detour (1945)	The Awful Truth (1937)
Die Hard (1988)	The Best Years of Our Lives (1946)
Do the Right Thing (1989)	The Big Lebowski (1998)
Dodsworth (1936)	The Bridge on the River Kwai (1957)
Donnie Darko (2001)	The Crime of Monsieur Lange (1936)
Double Indemnity (1944)	The Crowd (1928)
Downfall (2004)	The Dark Knight (2008)
Dr. Strangelove: or How I Learned to Stop Worrying and Love the Bomb (1964)	The Decalogue (1989)
Drunken Master II (1994)	The Deer Hunter (1978)
Duck Soup (1933)	The Departed (2006)
E.T. The Extra Terrestrial (1982)	The Discreet Charm of the Bourgeoisie (1972)
Easy Rider (1969)	The Elephant Man (1980)
Eternal Sunshine of the Spotless Mind (2004)	The Fly (1986)
Farewell My Concubine (1993)	The French Connection (1971)
Fargo (1996)	The General (1926)
Fight Club (1999)	The Godfather (1972)
Finding Nemo (2003)	The Godfather: Part II (1974)
For a Few Dollars More (1965)	The Gold Rush (1925)
Forrest Gump (1994)	The Good, the Bad and the Ugly (1966)
Full Metal Jacket (1987)	The Graduate (1967)
Gladiator (2000)	The Grapes of Wrath (1940)
Gone With the Wind (1939)	The Great Dictator (1940)
Goodfellas (1990)	The Great Escape (1963)

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(continued)

## Appendix B (continued)

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Gran Torino (2008)	The Green Mile (1999)
Grave of the Fireflies (1988)	The Lady Eve (1941)
Heat (1995)	The Last Command (1928)
High Noon (1952)	The Last Picture Show (1971)
His Girl Friday (1940)	The Lion King (1994)
Hotel Rwanda (2004)	The Lives of Others (2006)
Ikiru (1952)	The Lord of the Rings: The Fellowship of the Ring (2001)
In A Lonely Place (1950)	The Lord of the Rings: The Return of the King (2003)
In the Heat of the Night (1967)	The Lord of the Rings: The Two Towers (2002)
Indiana Jones and the Last Crusade (1989)	The Maltese Falcon (1941)
Into the Wild (2007)	The Man With a Camera (1929)
Intolerance (1916)	The Manchurian Candidate (1962)
Invasion of the Body Snatchers (1956)	The Matrix (1999)
It Happened One Night (1934)	The Philadelphia Story (1940)
It's A Gift (1934)	The Pianist (2002)
It's a Wonderful Life (1946)	The Prestige (2006)
Jaws (1975)	The Purple Rose of Cairo (1985)
Kandahar (2001)	The Searchers (1956)
Kill Bill: Vol. I (2003)	The Seventh Seal (1957)
Kind Hearts and Coronets (1949)	The Shawshank Redemption (1994)
King Kong (1933)	The Shining (1980)
L.A. Confidential (1997)	The Shop Around the Corner (1940)
Lawrence of Arabia (1962)	The Silence of the Lambs (1991)
Léolo (1992)	The Singing Detective (1986)
Leon: The Professional (1994)	The Sixth Sense (1999)
Life Is Beautiful (1997)	The Sound of Music (1965)
M (1931)	The Sting (1973)
M*A*S*H (1970)	The Third Man (1949)
Meet Me in St. Louis (1944)	The Treasure of the Sierra Madre (1948)
Memento (2000)	The Usual Suspects (1995)
Metropolis (1927)	The Wild Bunch (1969)
Midnight Cowboy (1969)	The Wizard of Oz (1939)
Miller's Crossing (1990)	There Will Be Blood (2007)
Million Dollar Baby (2004)	Titanic (1997)
Modern Times (1936)	To Kill a Mockingbird (1962)
Mon oncle d'Amérique (1980)	Tokyo Story (1953)
Monty Python and the Holy Grail (1975)	Tootsie (1982)
Mouchette (1967)	Touch of Evil (1958)
Mr. Smith Goes to Washington (1939)	Toy Story (1995)
Nashville (1975)	Ugetsu (1953)
Nayakan (1987)	Ulysses' Gaze (1995)
Network (1976)	Umberto D (1952)
Ninotchka (1939)	Unforgiven (1992)
No Country for Old Men (2007)	Vertigo (1958)
North by Northwest (1959)	WALL·E (2008)
Notorious (1946)	West Side Story (1961)
Oldboy (2003)	White Heat (1949)
Olympia, Parts I and 2 (1938)	Who's Afraid of Virginia Woolf? (1966)
On the Waterfront (1954)	Wild Strawberries (1957)
Once Upon a Time in America (1984)	Wings of Desire (1987)
Once Upon a Time in the West (1968)	Witness for the Prosecution (1957)
One Flew Over the Cuckoo's Nest (1975)	Yankee Doodle Dandy (1642)
Out of the Past (1947)	Yojimbo (1961)

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## Appendix C

### List of 120 Real American Historical Figures for the Historical Figures Recognition Test Used in Study 3

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Albert Gallatin	George Meade	John Jay	Richard Nixon
Alexander Graham Bell	George Ripley	John Marshall	Robert E. Lee
Alexander Hamilton	George Washington	John Quincy Adams	Robert Oppenheimer
Andrew Carnegie	Gloria Steinem	Jonas Salk	Roger Williams
Andrew Jackson	Harriet Beecher Stowe	Jonathan Edwards	Ronald Reagan
Benjamin Franklin	Harriet Tubman	Joseph Smith	Rosa Parks
Benjamin Spock	Harry Truman	Lee Harvey Oswald	Ross Barnett
Betty Friedan	Henry Clay	Leonard Wood	Sam Goldwyn
Booker T. Washington	Henry David Thoreau	Louis Sullivan	Sam Walton
Brigham Young	Henry Ford	Lucretia Mott	Samuel Gompers
Cyrus McCormick	Herman Melville	Lucy Stone	Samuel Morse
Daniel Boone	Horace Mann	Lyman Beecher	Susan B. Anthony
Dwight Eisenhower	J. P. Morgan	Lyndon Baines Johnson	Theodore Roosevelt
Earl Warren	Jackie Robinson	Malcolm X	Thomas Edison
Eleanor Roosevelt	James D. Watson	Margaret Sanger	Thomas Jefferson
Eli Whitney	James Fenimore Cooper	Mark Twain	Thomas Paine
Elizabeth Cady Stanton	James Gordon Bennett	Martin Luther King, Jr.	Thurgood Marshall
Enrico Fermi	James K. Polk	Martin Van Buren	Ulysses S. Grant
Frank Lloyd Wright	James Madison	Mary Baker Eddy	W.E.B. Du Bois
Franklin Delano Roosevelt	Jane Addams	Mary Elizabeth Lease	Walt Whitman
Frederick Douglass	Jay Gould	Nat Turner	Walter Lippmann
Frederick Law Olmsted	Jeannette Rankin	Nelson Aldrich	Wilbur Wright
Frederick Winslow Taylor	Jim Thorpe	Noah Webster	William Faulkner
George Clinton	John Adams	Oliver Wendell Holmes, Jr.	William James
George Eastman	John Brown	Orville Wright	William Jennings Bryan
George Gallup	John C. Calhoun	P. T. Barnum	William Lloyd Garrison
George Herman Ruth	John D. Rockefeller	Patrick Henry	William Quantrill
George Marshall	John Dewey	Rachel Carson	William Randolph Hearst
George Mason	John Foster Dulles	Ralph Nader	William Tecumseh Sherman
George McClellan	John Humphrey Noyes	Ralph Waldo Emerson	Woodrow Wilson

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### Acknowledgments

We thank Colin DeYoung for his comments on earlier drafts of this manuscript.

### 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) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The authors received funding support from the Social Sciences and Humanities Research Council of Canada.

### Note

1. The present studies also found consistent, small positive zero-order correlations between Neuroticism and more

liberal political orientation. However, these associations did not persist once demographics (i.e., age, gender, and education) were taken into account, suggesting that these variables might be responsible for the observed relation. A recent meta-analysis found the association between Neuroticism and political orientation to be weak (Sibley et al., 2012). Although these findings may appear to be inconsistent with the longitudinal work showing that resilient children grow to become more liberal adults (Block & Block, 2006), personality is measured at two different points in the life span for the two approaches; it may be that resilient children grow to become more liberal adults who are slightly more likely to be higher in neuroticism. The small effect size observed might also mean that this observation is somewhat dependent on the characteristics of the sample observed or personality measure used. The inconsistent associations observed for Extraversion might similarly reflect a small effect size for this association, moderated by different samples and methods of measurement.

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