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# Taboo desires, creativity, and career choice

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**Abstract** Two studies suggest that Protestants are more likely than Catholics or Jews to sublimate taboo desires into motives to pursue creative careers. The results are consistent with a synthesis of psychological and classic sociological theories. In Study 1, Protestants induced to have taboo sexual desires were likely to express a preference for creative careers (as opposed to prosocial ones). In Study 2, a national probability sample revealed that "conflicted" Protestants—who had taboo desires but tried to rule their sexual behavior according to their religious beliefs—worked in the most creative jobs. The effects in both studies did not hold for Catholics and Jews. Results suggest that intrapsychic conflict can partially motivate important real-world decisions, such as the choice to pursue a creative career.

**Keywords** Religion · Sublimation · Culture · Creativity · Career motivation

## Introduction

People are motivated to choose their vocations for many reasons. Individual differences, such as interests, as well as social-structural factors and chance opportunities shape people's career pursuits. Beyond these factors, individuals' vocational choices are also affected by less immediately apparent psychological motives and processes—for example, by needs for achievement or power (Winter 1998),

parental loss (Eisenstadt 1978), narcissism (Campbell et al. 2011), and unconscious conflicts, such as those between selfishness versus selflessness (Maddi and Rulla 1972) or between autonomy versus doubt and shame (Rulla and Maddi 1972). In this paper, we explore how people's motivation to pursue a creative career may also be shaped in a small but significant way by the culturally patterned sublimation of socially inappropriate urges and drives.

## Sublimation

Freud (1905) defined sublimation as a defense mechanism that occurs when forbidden sexual and aggressive desires are transformed and channeled towards positive, productive ends. He believed creativity was one of the fullest expressions of sublimation; however, he also thought that only a minority of people are capable of successful sublimation (Brown 1959). The rest have to deal with such conflicts through other defenses.

Although sublimation was originally conceptualized in psychodynamic terms, it does not actually need the excess baggage that Freudian approaches entail (Cohen et al. 2014). Specifically, processes that can give rise to sublimation have been observed repeatedly in modern cognitive and social psychology research. For example, a number of theories—including dual-process models that contrast "rational", "analytic," "system 2" thinking versus more unconscious loose, "associational," "experiential," or "system 1" thinking (Allen and Thomas 2011; Epstein 1994; Kahneman 2011; Norris and Epstein 2011; Sloman 1996; Stanovich and West 2000); "information processing" models (Erdelyi 1985, updating Dollard and Miller 1950; Takeuchi et al. 2011); cognitive psychological work on incubation (Sio and Ormerod 2009); and ego depletion models (Baumeister and Tierney 2011; also Layton and

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Muraven 2014; Wegner 2009)—describe mechanisms in which disturbing material can be (1) temporarily pushed out of consciousness; (2) incubated and transformed by relatively unconstrained, loose/associational/system 1 thinking; and (3) allowed to reenter consciousness when safely transformed, attenuated, or made nonthreatening.

Despite the fact that sublimation can be easily reconciled with modern cognitive theories, until recently—unlike other defense mechanisms, such as projection (Cohen et al. 2002; Newman et al. 1997), repression (Anderson and Green, 2001; Caldwell and Newman 2005; Newman et al. 2005; Newman and McKinney 2002; Weinberger 1990; cf. Holmes 1990), rationalization (Festinger and Carlsmith 1959), reaction formation (Adams et al. 1996; Weinstein et al. 2012), and compensation (Jordan et al. 2003)—there had been no "even moderately convincing" experimental evidence for sublimation (Baumeister et al. 1998, p. 1104).

## Sublimation as a Protestant phenomenon

Recently, researchers provided perhaps the first experimental support for sublimation (Kim et al. 2013). Synthesizing ideas about sublimation with Weber's (1905/2001) classic argument about the Protestant work ethic, Kim et al. (2013) argued that, although sublimation has not historically been observed in the lab, it should be easiest to observe among Protestant adherents. Supporting this, several studies (Kim and Cohen 2015; Kim et al. 2013) have found that, when induced to experience taboo sexual or aggressive urges, Protestants, but not Catholics or Jews, produce more creative work.

## Why might Protestants be susceptible to sublimation?

Based heavily on Weber's (1905/2001) theory, Kim et al. (2013) argued that Protestants are susceptible to engage in sublimation for several interconnected reasons. First, as compared to Catholics or Jews, Protestants are more likely to view forbidden mental states—such as thoughts and desires—as morally comparable to bad *actions* (Cohen and Rankin 2004; Cohen and Rozin 2001; Cohen et al. 2002). For example, Jesus taught, "You have heard the commandment that says, 'You must not commit adultery.' But I say, anyone who even looks at a woman with lust has already committed adultery with her in his heart" (Matthew 5:27–29, NLT). Protestants are more likely than Catholics and Jews to endorse such sentiments; and they are also more likely to believe that bad thoughts lead to bad actions. Further, compared to Catholics, Protestants are more likely to believe that bad acts emanate from bad souls (Cohen and Rozin 2001; Li et al. 2012). As such, compared with Catholics and Jews, Protestants, who particularly emphasize Jesus's teachings on the "morality of

mentality" (Cohen and Rozin 2001), might view taboo sexual or aggressive *thoughts and feelings* as more threatening and as necessitating resolution via defense mechanisms.

A second reason that Protestants might be more likely than Catholics or Jews to engage in sublimation is that Protestantism lacks formal *institutional rituals* for forgiveness (such as confession in Catholicism or the Day of Atonement in Judaism) (Weber 1905/2001; Westerink 2011). Drawing from this idea, Weber (1905/2001) argued that Protestants are essentially left to their own devices to assuage anxieties about their personal depravity and obtain reassurance of their own salvation. Consequently, early Calvinists in particular emphasized "signs" of faith and "spiritual progress" (Weber 1905/2001; Westerink 2011). The search for signs led them in the direction of another Protestant theological innovation—that of a vocational "calling." Protestantism brought the notion of doing God's work out of the monastery and into the world—as individuals were "called" to glorify God through diligent work (Sanchez-Burks 2002, 2005; Uhlmann et al. 2009, 2011). Essentially, Weber believed that early Calvinists attempted to assuage depravity- and salvation-related anxiety by engaging in productive work. In later writings, Weber himself recognized the similarity between this process and Freudian sublimation (Cavalletto 2007). Over time, the sanctification of work diffused throughout Protestantism, particularly its more ascetic denominations (for recent psychological work consistent with Weber's account, see Cohen et al. 2002; Greeley 1997; Li et al. 2012; Sanchez-Burks 2002, 2005; Uhlmann et al. 2009, 2011; Uhlmann and Sanchez-Burks 2014; Westerink 2011).

To summarize, Kim et al. (2013) proposed that Protestants should be most likely to engage in sublimation because (1) they view forbidden sexual or aggressive thoughts as more sinful than do Catholics and Jews [and thus in need of suppression/resolution], (2) they lack formal religious rituals for resolving psychic conflicts over depravity, and so (3) they use culturally prescribed scripts for resolving depravity-related anxiety through engaging in productive work. To the extent that forbidden and suppressed emotion and desire act as a burr under the skin and psychic conflict cannot simply be "let go of" (Wegner 2009; Baumeister and Tierney 2011; Sio and Ormerod 2009 on incubation; Takeuchi et al. 2011), it will need to be "worked out" in some way that is socially acceptable. Hence, Protestants may experience a drive not simply to toil, but to produce and create.[1]

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[1] As Weber himself noted, even as Puritanism rejected the frivolous enjoyment of everyday pleasures, it spurred the power of the imagination (see Weber 2001, p. 250, paraphrasing Irving 1860, p. 254). Thus, for example, Weber noted that whereas the early Puritans briefly succeeded in closing the London theaters, "in so far as the development of the Puritan tradition could, and in part did, lead to a powerful spiritualization of personality, it was a decided benefit to literature" (Weber 1905/2001, p. 114).

In contrast to the points above, Protestants' closest cultural siblings—Catholics and Jews—are less focused on forbidden thoughts and emotions (as opposed to behaviors), and they have institutionalized rituals for dealing with guilt, often focused on directly restoring interpersonal connection, performing penitent actions, or making reparations (e.g., Walinga et al. 2005). As such, Kim and colleagues argued that Catholics and Jews were an optimal religious comparison group—culturally close enough to Protestants, but theologically distinct in ways that make them far less likely to sublimate forbidden feelings into productive, creative activity (see Cohen 2007, on "just minimal difference" sampling).

### Empirical evidence for Protestant sublimation

Supporting hypotheses about Protestant sublimation, studies have found that Protestants who were induced to feel forbidden sexual or aggressive urges were particularly likely to produce creative products (e.g., collages, sculptures, cartoon captions, poems)—often permeated with sexual or aggressive themes (Cohen et al. 2014; Kim and Cohen 2015; Kim et al. 2013). In one study, for example, Protestant participants who were primed with damnation/depravity words (e.g., "dirty," "punish," "vile," "condemn") or who were induced to have taboo erotic thoughts subsequently created sculptures and poems that were rated higher in quality by expert judges (Kim et al. 2013). In another study, Protestant participants who were asked to recall an anger-provoking incident and then suppress their anger produced more creative work (e.g., on clay sculptures, cartoon captions, and collages) than did (1) those who had to recall an anger-provoking incident but did not have to suppress it or (2) those who had to recall an affectively-neutral incident and then suppress something innocuous (Kim et al. 2013).

These experimental data were supplemented with analyses of the life accomplishments of the high-IQ participants in the Terman sample, who were followed from childhood until old age (Kim et al. 2013). In this sample, Protestant participants who reported problems and anxiety related to taboo (in 1950) sexual desires showed the highest levels of lifetime creative accomplishments. They had more creative careers and produced greater amounts of creative work (in terms of science, scholarship, artistic products, and so on) than did their peers who reported non-taboo sexual problems or no sexual problems at all. For Protestants, the psychological unease (Ludwig 1995) and conflict induced by forbidden urges seemed to catalyze productive, creative activity.

Importantly, as would be expected according to the Weber-Freud synthesis, the tendency to sublimate forbidden urges into creative work was unique to Protestants. The patterns were not found among Catholics and Jews in the experimental

studies or in the Terman sample. Moreover, in reaction time tasks during the experiments, Catholics and Jews induced to feel forbidden urges showed greater sensitivity to words suggesting feelings of guilt and actions involving interpersonal repair. Taken together, these studies seem to reflect that—whereas Protestant cultural scripts for resolving depravity- and salvation-related anxiety and conflict entail a greater focus on sublimation (Westerink 2011)—Catholic and Jewish cultural scripts focus more on remorse, confession, and reconciliation with others (Cohen et al. 2006).

## Overview of the present studies

The present studies extend previous research by providing experimental evidence that sublimation can affect motivation and real-world outcomes such as career choice. The present studies overcome at least two limitations of previous research (Kim et al., 2013): They address (1) the *causal* question of whether taboo desires might motivate career choice, and (2) the *sampling* question of whether these effects generalize to less rarified populations.

In previous studies using the Terman sample, analyses of who pursued creative careers were, necessarily, strictly correlational. However, in Study 1 of the present paper, we experimentally induced taboo desires and examined whether doing so *caused* participants to self-report greater motivations for creative careers. We expected that inducing such taboo desires would motivate Protestants, but not Catholics or Jews, to want more creative vocations.

In Study 2, we used data from the nationally representative National Health and Social Life Survey (NHSLS; Laumann et al. 1994) to examine whether sublimation might predict career choices in a large, highly-generalizable sample. Although Study 2 is similar to previous analyses of the Terman sample, the much larger and more generalizable NHSLS sample allowed us to test hypotheses in a probability sample of a less rarified population. Consistent with previous research, we expected that "conflicted" Protestants—who had taboo desires but tried to rule their sexual behavior according to religious norms— would sublimate their anxiety and unease into pursuing more creative careers. In contrast, we expected "conflicted" Catholics and Jews might try to restore a moral sense of self through pursuing jobs that helped others and reestablished interpersonal connection (Kim et al. 2013; Walinga et al. 2005).

## Study 1

Study 1 was designed to expand the literature on sublimation in four ways. First, we examined whether sublimation might *influence* people's motivation to pursue

creative, productive careers. In analyses of the Terman study (and in Study 2 of the present paper), Protestants who experienced psychological conflicts over taboo desires worked in the most creative jobs. However, such evidence is correlational and cannot strongly establish cause-and-effect. The experimental studies of Kim et al. (2013) showed that inducing forbidden desires can lead to more creative work on laboratory tasks—and themes related to the forbidden desires permeated the best Protestant creative work. However, the studies did not show that the forbidden desires acted as a burr under the skin and *motivated* a desire to create or pursue a creative career. The present experiment addressed these issues by experimentally inducing forbidden desires and directly measuring motivation to work in a creative vocation.

Second, we directly compared preferences for creative careers as opposed to ones that had another laudable goal—that of helping others and fostering interpersonal connection. If forbidden desires simply create guilt and a desire to *directly* restore a moral sense of self, we might expect that inducing forbidden desires would make obviously prosocial careers particularly appealing (and we did expect this to hold for Catholic and Jewish participants, whose cultures generally inculcate guilt in the service of interpersonal repair). However, if Protestants use sublimation into productive, creative work as a way of dealing with depravity-related anxiety, we would expect creative careers to be especially appealing to them—even more so than obviously prosocial careers.

Third, we more thoroughly examined the motivation to work hard *at any career*. Hard work is often thought to be an important component of the Protestant work ethic (Mirels and Garrett 1971). It may be the case that inducing forbidden desires can lead to enhanced endorsement of the Protestant work ethic and an enhanced desire to work hard more generally.

Finally, we investigated the effect of making life goals salient to participants. By asking them about what they wanted to accomplish in life (vs. in the next few days), we hoped that their career choices would be informed by these overarching ideas about their priorities, accentuating cultural differences.

Study 1 was a four-factor quasi-experimental design. Participants were classified into religious groups (F1). Subsequently, we manipulated the salience of participants' overarching priorities and life goals (F2). Finally, we induced forbidden desires by manipulating whether male participants were imagining a woman as their girlfriend or sister (F3) in an erotic or non-erotic way (F4). Notably, the induction of taboo desires represents a specific interaction between factors 3 and 4—only participants induced to imagine a woman as their *sister* in an *erotic* way should have reason to experience taboo desires.

Our primary hypothesis was that Protestants induced to experience taboo desires would prefer creative careers. This involved a 3-way interaction between religion and the forbidden desire manipulation in predicting career preferences (Hypothesis 1: Religion × Sister/Girlfriend × Attractive/Plain). Decomposing this three way interaction, we predicted that Protestants induced to think erotically about someone they were imagining as their sister would sublimate the anxiety over their taboo desire into motivation to pursue creative careers (Hypothesis 1a). We hypothesized that non-Protestants would show an opposite pattern, preferring to pursue explicitly prosocial jobs in such circumstances (Hypothesis 1b).

Our secondary hypothesis involved a 3-way interaction predicting the Work ethic variable (Hypothesis 2: Religion × Sister/Girlfriend × Attractive/Plain). Decomposing this interaction, we expected that Protestants induced to think erotically about someone they were imagining as their sister would endorse a stronger work ethic (Hypothesis 2a), though we would not necessarily expect this among non-Protestants.

Finally, we predicted that the life goals prime would magnify the above effects (Hypothesis 3: Life Goal Prime × Religion × Sister/Girlfriend × Attractive/Plain predicting the career preferences and work ethic variables).

## Method

### Participants

Participants were 96 Protestant and 100 non-Protestant (78 Catholic, 22 Jewish) heterosexual undergraduate white males, who grew up with sisters. This sample size enabled greater than 84 % power to detect both average-sized zero-order effects ($d \sim 0.42$; Richard et al. 2003), and—based on simulations—interactions equivalent to $\beta = .21$. Ninety-six participants completed the study to fulfill a course requirement. The remaining 100 participants were recruited from the University directory and offered $10 for participating.

We limited our sample to males because pictures (a key part of our manipulation) are likely to elicit stronger sexual desire among men (vs. women) (Ellis and Symons 1990). We limited our sample to whites so as not to confound religion with ethnicity (African Americans are overwhelmingly Protestant, Latinos are primarily Catholic, and in our subject pool, the Asian Americans who are Christian are mostly Protestant). In Study 2 of the present paper, we addressed this limitation by exploring whether ethnicity and religion interact. It is thus important to note that Study 1 results may not generalize beyond *white males*.

## Procedure

The experimenter gave participants a rather generic cover story that the study was about the "relationships between the ways people imagine and write about things in the past and things in the future and [their] preferences and beliefs."

The first manipulation was designed to increase the salience of participants' life goals. Half of the participants were asked to write a response to the question, "What if you died tomorrow? What would you regret doing or not doing? What would you wish you could have accomplished?" In the control condition, "died" was replaced with "caught the flu." The prime was supposed to induce participants to think about their overarching life goals (perhaps through long-term thinking about priorities or through meaning maintenance or terror management defenses; Heine et al. 2006; Landau et al. 2009).

Our main manipulation was designed to induce taboo desires. We adapted the Kim et al. (2013) paradigm by manipulating two factors. In brief, participants were asked to complete a photo diary task. Participants were shown a series of photos. For each photo, they wrote about an imagined autobiographical memory using a provided starter sentence (e.g., "Here are some pictures of my family from when I was a kid. My sister and I…."). They were told that it was important that they fully get into the task, imagining themselves in the situation depicted in the photo and writing about the pictures and memories as if they were their own. The first pages of the photo diary were filled with generic pictures of young children, emphasizing the brother-sister relationship. The starter sentences for the first two pages were constant across conditions.

For half the participants, the next three starter sentences were "During high school my sister and I went on vacation with just the two of us. It really helped us grow closer…," "My sister always loved the color red. One summer she even dyed her hair red. That was a crazy summer…," and "Last summer my sister and I went on a cruise we won at a raffle. We had a great time together…." For the other half, "my sister" was replaced with "my girlfriend." Crossed with the Sister/Girlfriend manipulation, we also varied the erotic content of the photographs. For half of the participants, the woman in the last three pictures was rather plain looking. For the other half, the woman (actually a swimsuit model) was extremely attractive and wore clothes or bathing suits that accentuated her erotic appeal. In this condition, if the participant is imagining and writing about this woman as his sibling, his brotherly thoughts are in conflict with the erotic feelings induced by the pictures. As the participant projects himself into the sibling scenarios he is writing

about, it is the erotic feelings, rather than the fraternal ones, that need to be suppressed and sublimated. After completing the photo diary task, participants completed a survey containing all of our dependent measures.

## Measures

### Creative versus prosocial career motivation

Our main dependent variable was an index of participants' motivation to pursue creative professions, as opposed to professions that directly stress prosocial connection and helping. To provide a broad assessment of participants' motivation to pursue creative versus prosocial careers, we used five different measures. All measures were standardized and averaged with equal weighting to create a single index of participants' desire to pursue creative careers ($\alpha = .71$). We directly contrasted motivation for creative careers with ones that emphasize prosocial ends for three reasons. First, due to time constraints, we could only present participants with a limited number of careers to rate. As such, it was necessary to ensure that creative and non-creative careers were roughly as socially desirable as one another, and that non-creative careers emphasized a goal that was equally as laudable as creative ones. Second, the most intuitively direct way to counteract anxiety with respect to one's own depravity seems to be to foster interpersonal connection and acceptance. In fact, previous research suggests this is the strategy that Catholics and Jews pursue in order to assuage guilt (e.g., Walinga et al. 2005). Consequently, it would provide stronger evidence for sublimation-like processes if Protestants chose creative careers *over* prosocial ones when experiencing intrapsychic anxiety. Third, career preferences are highly affected by students' tendency to rate high (and perhaps middle) status careers as attractive and low status careers as unattractive. As such, forced-choice comparisons were necessary to prevent ceiling and floor effects on career ratings (Rosenthal and Rosnow 1991). Additionally, socially desirable responding or an eagerness to work at *all* sorts of jobs (measured separately in our Work Ethic scale) could also lead to ceiling effects that would obscure our predicted effects. For these reasons, our primary dependent variable is an index of preferences for creative careers *over* prosocial ones.

With some exceptions, the subscales used to create the career motivations and work ethic variables were either adapted in whole or in part from other research (Mirels and Garrett 1971; Kasser and Ryan 1996), were similar in theme to existing scales asking about interest in various jobs (Crowley 1981; Holland 1958; Leung and Plake 1990; Strong 1962), or were questions about behavioral

intentions for which we have actual behavioral data in Study 2.[2] The five measures that were first standardized and then averaged to form the composite career motivations index were:

*Desire to pursue creative versus prosocial careers* Participants completed partial round-robin ratings of their preferences for 10 creative careers versus 9 prosocial careers. The prosocial and creative careers were roughly matched in terms of SES. Within each SES bracket, each creative career was paired with each prosocial career (e.g., doctor vs. film director; doctor vs. architect), producing a total of 32 comparisons. For each comparison, participants used a slider to rate their preference for pursuing the creative versus prosocial career. Each career was accompanied by a description. To deglamorize some of the creative jobs, we noted, for example, that, "most directors do *not* direct Hollywood movies," and "most authors do *not* write best-selling books." While completing the ratings, participants were instructed to "assume that the careers provide equal salaries, benefits, and so on. Also, assume that you can be trained to perform either career equally well and that they both require the same number of hours per week. We just want to know which career is most likeable to you." (32-item alpha = .93)

The careers were: creative higher SES: film director, urban planner, curator, architect; creative middle SES: author, graphic designer, fashion designer, advertising director; creative lower SES: carpenter, jeweler. Prosocial higher SES: doctor, counselor, pastor; prosocial middle SES: teacher, advocate, social worker, nurse; prosocial lower SES: childcare worker, sports instructor. To confirm our classifications, the professions were rated by eight independent undergraduate judges on creativity (being creative, making something new) and beneficence (helping people, serving people, and being altruistic). One profession—professor—was dropped from analyses because the judges rated it as involving approximately equal amounts of creativity and beneficence. Current O*Net scores as well as England and Kilbourne ratings (used in Study 2) also confirmed our classification of creative versus prosocial jobs.

*Salary demanded for creative versus prosocial careers* For each of the 19 careers in the career preferences measure, participants were asked the *minimum* salary they would require to perform that job. The question's preamble explained the rationale: "Some people have jobs that they love so much that they would perform their job for free. Other people would have to be paid quite a bit of money to perform the same job…Imagine yourself 10 years in the future. If you were offered a 40-hour per week position in each of the following jobs, what is the minimum salary that you would accept?"

We subtracted the average salary demanded for creative careers ($\alpha$ = .81) from the average demanded for prosocial careers ($\alpha$ = .81). The resulting difference indexes participants' preferences for creative careers (i.e., higher numbers indicate that a participant would require more money to take a prosocial career versus a creative one).[3]

*Preference for creative versus prosocial roles* Participants were given four semantic differential scales and asked "in your career, would you rather be seen as a…": creator versus nurturer, designer versus advocate, maker versus protector, or builder versus connector. Participants used a slider to rate their preference for creative versus prosocial roles (4-item alpha = .76).

*Career values* Participants were told that, "everyone has career goals or values. These are the things that individuals value and hope to accomplish over the course of their careers." They were then asked to rank a list of values (adapted from the Aspiration Index; Kasser and Ryan 1996). Their score was the rank they gave to "creativity" ("to build, make, or design things; to express yourself and your individuality") subtracted from the average rank for two items representing pro-social values: "benevolence" ("to work to make the world a better place; to help improve others' lives") and "universalism" ("to contribute to peace and justice in the world; to be fair and just in the execution of your job") ($\alpha$ = .50 for the 2-items).

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[2] The exceptions were the questions we newly created about salary demanded, workplace qualities needed and excelled in, preference for creative versus prosocial roles (e.g., maker vs. protector), and attitudes about welfare. In fact, one can drop all the newly created questions from our composite measure and get results similar to those in the text with the Religion × Sister/Girlfriend × Attractive/Plain interaction remaining statistically significant.

Due to reviewer concerns about reliability of the subscales, we cut the following items: "kindness" and "ability to get along well with all kinds of people" from the workplace qualities subscale and "God's mission for me" and "social relationships" from the career values subscale. All of the subscales now have good or (given their length) adequate reliabilities. If one does not cut these items, results remain very similar to those in the text with the Religion × Sister/Girlfriend × Attractive/Plain interaction remaining statistically significant.

[3] We counted observations as missing if they were 1.5 times the interquartile range below the 25th or above the 75th percentile. There were many values that were plainly not "real" numbers (for example, responses that demanded billions or trillions of dollars to take a job). We chose Tukey's "inner fences" as a standard criterion for defining outliers. However, results on the salary indicator are not crucial. Computing the vocational choice index without the salary indicator, results remain statistically significant for the key interaction of Religion × Sister/Girlfriend × Attractive/Plain, $F(1,180) = 5.51$, $p = .02$.

*Workplace qualities needed and excelled in* Participants were given a list of qualities and asked to indicate the three most important qualities to have in the workplace. "Being able to empathize with others" and "being a good listener" indicated a preference for interpersonal careers. Scores of 1, 2, 3, and 4 were given for the most important, 2nd most important, 3rd most important, and unranked values, respectively, such that lower scores indicated a preference for careers emphasizing empathic connection with others. Participants also looked at the same list to indicate the qualities they most excelled in, with scoring done as above for the 2 key items (α for 4-item index = .60).

### Work ethic

Our second dependent variable measured participants' endorsement of a strong work ethic. Five different measures were standardized and averaged with equal weighting to form the composite (5-item α = .43). The five measures were:

*Workplace qualities needed and excelled in* In the aforementioned workplace qualities subscale (qualities needed and qualities excelled in), values of "having determination and grit" and "being a hard worker" were averaged together (4-item α = .48).

*Workplace values* In the aforementioned career values scale, values of "achievement" ("to be promoted to the highest level possible; to be recognized for the great things you accomplish") and "wealth" ("to accrue money; to have many material resources available to you") were averaged together (2-item α = .52).

*Protestant work ethic scale* Participants completed the 19-item Protestant Work Ethic scale (Mirels and Garrett 1971). This scale measures favorable attitudes toward hard work and the belief that hard work inevitably leads to success (e.g., "Most people who don't succeed in life are just plain lazy"). Items were rated on a scale from strongly disagree (1) to strongly agree (5) and averaged (α = .73).

*Welfare attitudes scale* We created a six item scale to assess participants' attitudes about welfare recipients (e.g., "People who are unemployed are just victims of bad luck"), with higher values indicating more negative views about people who do not work and receive welfare. Items were rated on a scale from strongly disagree (1) to strongly agree (5) and averaged (α = .66).

*Desire to work hard* A four item scale was created asking participants to imagine their future career and estimate the number of hours a week they will work, the frequency with which they would work on weekends, or

past 5 pm, and the age at which they would retire. Response options were open-ended, except for the question, "How many nights per week do you expect to work past 5 pm?" where responses were limited to integers 0 through 7. Items were standardized and averaged (α = .62).

## Results and discussion

### Creative versus prosocial career motivation

We began by examining whether Protestants induced to feel taboo desires expressed greater interest in creative careers. This would manifest as a 3-way Religion × Attractive/Plain × Sister/Girlfriend interaction (Hypothesis 1), such that Protestants induced to feel forbidden thoughts (in the Attractive Sister condition) would prefer creative (vs. prosocial) professions (Hypothesis 1a), whereas non-Protestants (Catholics and Jews) would show the opposite pattern (Hypothesis 1b). Such a pattern was hypothesized to be accentuated in the Life Goal Prime condition (Hypothesis 3). We tested these hypotheses using a 4-factor Religion × Sister/Girlfriend × Attractive/Plain × Life Goal Prime ANOVA.

As seen in Fig. 1, the predicted 3-way interaction of Religion × Sister/Girlfriend × Attractive/Plain occurred, $F(1,180) = 6.01$, $p = .015$, $f = 0.18$. (supporting Hypothesis 1). We first decompose this interaction by experimental condition. In the Sister condition, erotic thoughts about the woman in the photos would be verboten. Consistent with the hypothesis that Protestants would channel forbidden emotions toward creative ends, Protestants who wrote about the attractive sister expressed more interest in creative work than those who wrote about the plain sister: as seen in the left panel of Fig. 1, the mean for Protestants in the Attractive/Sister condition was $M = 0.25$ versus the mean for Protestants in the Plain/Sister condition of $-0.18$, supporting Hypothesis 1a, $t[49] = 2.26$, $p = .025$, $d = 0.65$. On the other hand, Catholics and Jews writing about the attractive sister were predicted to prefer more prosocial careers than those writing about the plain sister. This difference was not significant (mean for non-Protestant/Attractive/Sister $M = -0.15$, mean for non-Protestant/Plain/Sister $M = 0.03$, $t[42] = .87$, $p = .385$, $d = 0.27$), failing to support Hypothesis 1b. The significant simple effect for Protestants and the nonsignificant difference among Catholics and Jews produced the simple Religion × Attractive/Plain interaction among those writing about the sister (simple interaction $t(91) = 2.18$, $p = .031$, $f = 0.23$).

In the Girlfriend condition, erotic thoughts about the woman in the photos would not be verboten. In this

**Fig. 1** Relative preferences for creative versus. Prosocial professions as a function of religious group and whether the participant wrote about a sister versus a girlfriend who was attractive versus not attractive in Study 1
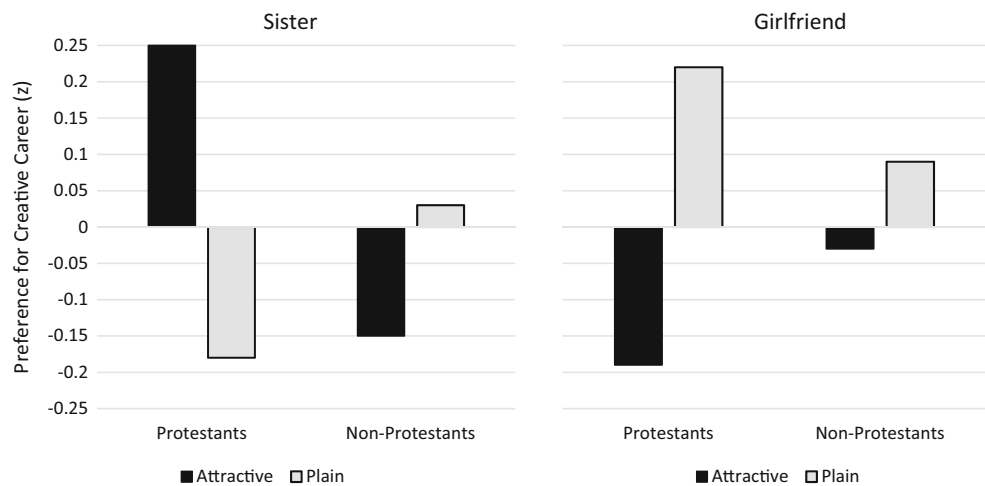


condition, there was no statistically significant Religion × Attractive/Plain interaction $t(97) = 1.07$, $p = .286$, $f = 0.11$. To summarize then, only in the Sister condition, where erotic thoughts would be taboo, did the sexual appeal of the woman spur Protestants toward more creative work; this effect did not hold in the Girlfriend condition, where erotic thoughts would not be taboo.

Decomposing the 3-way interaction of Hypothesis 1 another way, the Sister/Girlfriend × Attractive/Plain interaction was significant among Protestants, $t(95) = 2.96$, $p = .003$, $f = .30$, consistent with Hypothesis 1a that inducing a forbidden desire would lead Protestants to prefer creative rather than prosocial careers. The Sister/Girlfriend × Attractive/Plain interaction was not significant among Non-Protestants, $t < 1$, failing to support Hypothesis 1b.

Finally, there was not a statistically significant 4-way interaction ($F < 1$), which fails to support Hypothesis 3— that the Life Goal Prime would magnify the 3-way interaction. There were also no other statistically significant main effects or interactions in the overall ANOVA (all $ps > .12$), except for a main effect of the Life Goals prime. Those who thought about what they wanted to do before their death chose more prosocial careers than those who thought about what they wanted to do before getting the flu, $M = -0.10$ versus. $0.11$, $F(1,180) = 5.36$, $p = .022$, $f = 0.17$.

*Exploratory follow-up analyses*

As noted, there are important methodological and interpretive advantages to pitting creative jobs against prosocial ones in terms of avoiding ceiling effects and showing that participants want creative, productive jobs over other very laudable types of jobs (Rosenthal and Rosnow 1991). One issue, however, is that the forced choices and rankings make it harder to examine motivation for creative jobs

*separate* from a disinclination toward social jobs. Study 2 addressed this issue more fully, but we can offer tentative, rudimentary analyses in the present study by constructing an indicator of motivation for creative jobs made by averaging: (a) participants' ranking for having a creative job as a career value, (b) salary demanded for having a creative job, and (c) participants' forced choices between careers, scaled according to ratings of creativity from current O*net scores, our independent student judges, and creativity scores from Study 2 (using the England (1992) data).

Examining this index, we found a statistically significant Religion × Sister/Girlfriend × Attractive/Plain interaction, $F(1,180) = 5.79$, $p = .017$. Decomposing this interaction, we found that Protestants in the Attractive Sister condition showed a stronger preference for a creative career ($M = 0.20$) than did their Catholic and Jewish counterparts ($M = -0.28$), $t(42) = 2.33$, $p = .021$. Such an effect was not observed when the sister was plain (Protestant mean for Plain Sister $= -0.06$ vs. Catholic and Jewish mean for Plain Sister $= -0.07$, ns) (contrast for the simple interaction in the sister condition of Religion × Attractive/Plain, $t(94) = 1.68$, $p = .096$). When the woman in the photos was imagined as a Girlfriend, the Religion × Attractive/Plain simple interaction was not statistically significant $t(90) = -1.50$.

Decomposing the 3-way interaction another way, we found a statistically significant Attractive/Plain × Sister/Girlfriend interaction among Protestants [$t(95) = 2.01$, $p = .046$], adding further support to Hypothesis 1a. The Attractive/Plain × Sister/Girlfriend interaction was not found among Catholics and Jews ($t = 1.21$, $p = .228$).

**Work ethic**

For our next analysis, we examined whether Protestants might also express a stronger work ethic after being

induced to feel taboo desires. This would manifest as a 3-way Religion × Sister/Girlfriend × Attractive/Plain interaction (Hypothesis 2) and a 2-way Sister/Girlfriend × Attractive/Plain interaction among Protestants (Hypothesis 2a), such that Protestants express a stronger work ethic in the Attractive Sister condition. We expected this effect might be enhanced in the Life Goal prime condition (Hypothesis 3). We tested these interactions using a 4-factor Religion × Sister/Girlfriend × Attractive/Plain × Life Goals Prime ANOVA. However, none of the relevant interactions were significant, failing to support Hypotheses 2, 2a, and 3.[4]

## Summary of Study 1

Collectively, the results of Study 1 suggest that Protestants induced to feel taboo desires show a stronger preference for creative careers. This effect was not observed among

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[4] A reviewer believed that our Work Ethic index had questionable face validity in addition to poor reliability and should be limited to the Protestant Work Ethic and Desire to Work Hard subscales. If one does so, the predicted 4-way interaction emerges with a $p$-level of $p = .053$ (Religion × Sister/Girlfriend × Attractive/Plain × Life Goal Prime, $F(1, 179) = 3.792$). Decomposing this interaction, we found a marginally significant Religion × Sister/Girlfriend × Attractive/Plain interaction when participants first had to think about their own death ($t(97) = 2.20$, $p = .029$, but no such interaction when respondents first had to think about the flu ($t(96) = -.60$, $p = .549$). Among participants who had to think about their own death, there was a significant simple Sister/Girlfriend × Attractive/Plain interaction among Protestants ($t(47) = 2.30$, $p = .023$), but not among nonProtestants ($t(49) = -.81$, $p = .419$). Decomposing the interaction among Protestants, we found a trend for those in the Attractive Sister condition to express a stronger desire for hard work, as compared to those in the Plain Sister condition (Mean in Attractive Sister condition = .31, SD = .88 vs. Mean in Plain Sister condition = −.14, SD = .91, t(23) = 1.59, p = .114), whereas the reverse tendency was marginally significant when writing about the Attractive Girlfriend vs. Plain Girlfriend (Mean in Attractive Girlfriend condition = -.10, SD = .62 vs. Mean in Plain Girlfriend condition = .39, SD = .77, t(23) = 1.66, p = .099).

We hesitate to put too much faith in this interaction because it involves eliminating 3 of 5 subscales. We do acknowledge the weakness of our measure in the current study. In Study 2, we have reports of actual work behaviors paralleling the hypothetical behaviors of the Desire to Work Hard subscale, and we have faith in the measure of actual behaviors.

Concerning the analysis of the Work Ethic variable reported in the text, we should also note 2 unexpected interactions. The first was a Religion × Attractive/Plain interaction ($F[1,180] = 6.29$, $p = .013$, $f = 0.19$), such that Protestants expressed a stronger work ethic after looking at the plain woman (means for attractive vs. plain = 0.10 vs. −0.11, respectively), whereas Catholics and Jews did so after looking at the attractive woman (means for attractive vs. plain = 0.13 vs. −0.05, respectively). The second was a 3-way interaction of Life Goal Prime × Sister/Girlfriend × Attractive/Plain ($F[1,180] = 4.80$, $p = .03$, $f = 0.16$), such that a strong work ethic was particularly endorsed in the plain girlfriend condition after the death prime and also particularly endorsed in the plain sister condition after the flu prime. We hesitate to interpret these two interactions.

Catholics and Jews. Contrary to expectations, this effect was not magnified by asking participants to reflect upon their overarching life goals. Also contrary to expectations, Protestants induced to feel taboo desires did not score higher on the Work Ethic index as constituted in this study.

## Study 2

Study 1 found that inducing forbidden thoughts led Protestant participants to prefer creative (rather than prosocial) professions. Catholics and Jews did not exhibit this effect. In Study 2, we extended these findings by examining whether sublimation of Taboo Desires might predict actual job choices in a national probability sample. Unlike the experimental procedure of Study 1, Study 2's design does not allow for strong causal inferences—but it can provide valuable information regarding whether the effects identified in the lab are consistent with real world data regarding career choices.

Previously, Kim et al. (2013) found that, among the gifted Terman sample (all having IQs in 99th percentile), Protestants who reported anxieties over depravity and taboo sexual desires chose more creative careers and had more creative accomplishments. Catholics and Jews in the Terman sample did not show this pattern. However, the Kim et al. (2013) study had two limitations. First, sample sizes for Catholics and Jews in the Terman sample were small, limiting power to detect effects. Second, the Terman sample consisted of a highly non-normative group of people, and thus the generalizability of the findings are questionable. The present study overcomes these limitations by looking at job choices in a large probability sample of the U.S. Toward the end of the results section, we compare effect sizes for the present analyses with those from the Terman study and also benchmark the results against other known predictors of job creativity.

In Study 2, we also examined whether conflict over taboo desires might predict a work ethic variable. It is possible we might find such associations when we examine real work behavior in a very large sample.

In overview, we expected to replicate Study 1 and find that "conflicted" Protestants – who had taboo desires but tried to rule their sexual behavior by their religious beliefs—would be more likely to select creative careers, as opposed to prosocial ones (Hypothesis 1). We believed that this effect would be driven by conflict specifically predicting the *creativity* of Protestants' careers—and not necessarily the prosocial nature of their careers (Hypothesis 1a). We hypothesized the reverse association among Catholics and Jews: conflict between religious beliefs and taboo desires would predict higher prosocial career ratings (but not necessarily creativity ratings; Hypothesis 1b).

Finally we expected that conflicted Protestants would manifest a particularly strong work ethic (Hypothesis 2), though we would not necessarily expect to observe a similar or opposite effect among non-Protestants.

## Method

### Participants

We reanalyzed data from the 1992 National Health and Social Life Survey (NHSLS) conducted by the National Opinion Research Center. It is the largest publicly-available probability survey that we know of that asks about taboo sexual desires, religion, and occupation data with enough detail that the jobs can be coded for creativity. We analyzed data for participants who were Protestant, Catholic, or Jewish and had not switched religions since age 14, though results are quite similar if switchers are included. For most analyses below, sample sizes were 1598, 800, and 44 for Protestant, Catholic, and Jewish respondents, respectively. The participants were 71 % Caucasian, 18 % Black, 9 % Hispanic, 1 % Asian, and 1 % Native American. Fifty-seven percent were women. Neither gender nor ethnicity moderated the key interactions of interest.

### Predictor variables

#### Religious group

Participants' religion was dummy-coded as Protestant (0) or Catholic/Jewish (1).

#### Conflict between taboo desires and religious sexuality

The NHSLS contained many questions about sexual behavior. However, because we were interested in conflicts people have over forbidden impulses and desires, we focused on the desires expressed in the "fantasy" section of the survey. As other researchers have noted (Ellis and Symons 1990; Laumann et al. 1994), fantasy is a better indicator of desire than behavior, because behavior is constrained by the availability of a willing partner and one's willingness to ask one's partner to engage in specific behaviors. Fantasy has no such constraints.

Conflict occurs when one tries to live one's sexual life by certain principles and yet has desires that go against such principles. To capture such conflict, we looked at respondents' answers to the item, "My religious beliefs have shaped and guided my sexual behavior" (4 = strongly agree, 1 = strongly disagree, hereafter this

variable is called *Religious Sexuality*)[5] and their answers to a series of questions about how appealing various taboo sexual practices would be. Specifically, for the index of taboo or illicit desires, we examined how appealing the respondent found: forcing another to perform a sexual act, being forced to perform a sexual act, acts of voyeurism, sex with someone of the same gender, and penetrative anal intercourse. Additionally, for women, we counted group sex as taboo or illicit, and for men, receiving a partner's manual stimulation of one's anus (Hawkes 2004; Miller 1998). Participants rated each behavior from 1 ("not at all appealing") to 4 ("very appealing") and responses were averaged into an index (hereafter this variable is called *Taboo Desires*). The remaining items were not counted as taboo (vaginal intercourse, watching a partner undress, giving or receiving oral sex, using a vibrator, giving manual stimulation to a partner's anus, and sex with a stranger). The reliability of the Taboo Desires scale was $\alpha = .73$ and .77 for men and women, respectively.

To some extent, what was a Taboo Desire in 1992 requires subjective judgment. However, the list above is guided by theory and past research about the sorts of behaviors that are often seen as perverted or criminal (voyeurism, use of force/sadism/masochism), stigmatized (same gender sexual acts, being on the receiving end of anal eroticism for men), offensive (anal intercourse), and highly threatening to conventional notions of appropriate gender behavior (group sex for women, receiving anal stimulation for men, as many men tend to be skittish about acts that even resemble being on the "passive" ["feminine"] end of anal sex) (Crooks and Baur 2011; Wiesner-Hanks 2010; also Prewitt-Freilino and Bosson 2008 on gender threat). Again, the date of the survey must be considered. For example, researchers have argued that anal sex has become much more prevalent in the past 20 years (Leichliter et al. 2007). However, Laumann et al. (1994) could

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[5] The item about religious sexuality was in the "attitudes" section of the survey. Most of the questions in this section were not relevant to the questions in the fantasy section. There were two exceptions, however. First, there was the item "Any kind of sexual activity between adults is okay as long as both persons freely agree to it." This item—reflecting an "anything goes" attitude toward a variety of sexual practices – can be reversed and averaged with the religious sexuality question to create a Religious versus libertine sexuality index. If one does so, results are largely similar to those in the text. Religion × Religious Sexuality × Taboo Desires interaction predicting relative creativity rating and work ethic scale $ps = .009$ and .084, respectively. We did not, however, use this 2-item index as an independent variable, because of the 2 force items in the taboo sexual behaviors index. The other relevant attitude item asked specifically about whether sex with a same-gendered person was wrong. One could examine those who found the thought of same-gender intercourse appealing but believed it was wrong. However, there was little variation to explore, as only 1 percent of respondents (23 Protestants and 10 Catholics or Jews) said that homosexuality was always or almost always wrong and that same-sex intercourse had any sort of appeal for them.

still write that in 1992, "in contrast to [oral sex], anal sex remains offensive to large segments of the population" (p. 108) and that "the apparently persistent effects of religious proscriptions against the practice of anal sex have contributed to its relatively limited popularity" (p. 109). For present purposes, it is taboos in 1992 rather than taboos now that matter. Beyond this, follow-up analyses (shown in the original manuscript but cut for space) showed that findings are relatively robust to various specifications of Taboo Desires.

## Outcome variables

### Career ratings

*Career creativity rating* We assigned a creativity rating to each career using England and Kilbourne's (1989; England, 1992) indices. England and Kilbourne derived scores for the 503 occupations from the census code (based on the larger Dictionary of Occupational Titles [1977]). The career creativity rating was comprised of: (1) the percent of workers in each occupation whose job requires a preference for creative or abstract activities (called "abcreat" in the datafile), and (2) the mean creative preference for each career code, rated from −1 ("a preference for activities of a routine, concrete, organized nature") to 0 ("neither pole of factor is relevant to occupation") to 1 ("a preference for activities of an abstract and creative nature")(called "createpref"). We rescaled both variables to run from 0 to 100 and averaged them ($r = .56$). The 15 highest-scoring occupations in this sample were musicians and composers, painters and sculptors, dancers, authors, designers, hair stylists and cosmetologists, photographers, architects and civil engineers, archivists and curators, technical writers, public relations specialists, lawyers, and clergy.

*Career prosocial rating* The prosocial rating was comprised of two of England and Kilbourne's (1988) indicators: (1) the percent of workers in each career "whose job requires a preference for working for the presumed good of people" (called "good of people"), and (2) whether, on a binary scale, the occupation involved "nurturance," defined as "an application of social skills to activities providing a service to customers or clients… the job involves providing a service to an individual or small group with whom the worker has a face-to-face relationship." We rescaled both variables to run from 0 to 100 and averaged them ($r = .46$). The 15 highest-scoring occupations in this sample were clergy, teachers of various sorts, child care workers, various therapists, and various health care workers (for example, nurses or physicians).

*Relative creativity career rating* We subtracted the career prosocial ratings from the career creativity ratings. Higher scores on this variable indicate that a career was rated as being more creative than prosocial. This variable was created to provide a conceptual replication of the "creativity versus prosocial" analyses from Study 1.

We note that for analyses involving career ratings, residuals for the regressions showed skew, because the job ratings were themselves highly skewed. To address the problem of skewed residuals, we also ran analyses on normalized rank data (Cohen et al. 2003) and results (not shown) were robust to such transformations.

### Work ethic

The survey did not ask attitudinal items that measured work ethic. However, it did have items that measured self-reported behavior with respect to: (a) the respondents' work history, (b) respondents' earned income last year, (c) hours worked in the last week, (d) hours worked in a typical week (includes people not currently working), and (e) how often the respondent worked evenings and weekends. These questions are analogs of 3 of the 4 questions from the "Desire to Work Hard" subscale of Study 1.

For work history, we coded for whether the respondent had ever worked for pay (0 = no, 1 = yes). Earned income was coded as a 9-level variable ranging from 0 (no earned income) to $80,000, using the midpoint of the ranges given, (e.g., $25,000 if the range was $20,000–30,000). Hours worked in the last week and in a typical week were coded as a 10-level variable from 0 to 75, using the midpoint of the ranges given. Working evenings and weekends was coded as a 6-level variable, from never to more than twice a week in response to the question "How often do/did you work evenings and weekends?" It should be acknowledged that none of these variables is a perfect measure of work ethic, because: some people are out of work, cannot get enough of it, or cannot find a well-paying job for reasons having nothing to do with their work ethic; some may work hard outside of a job context; and others may put in many hours but do so languorously. Nevertheless, these measures serve as *imperfect proxies*, because *all other things equal*, people who have a stronger work ethic should be more likely to have been employed, work longer hours, and tend to be promoted and paid better. These variables were standardized and averaged with equal weighting (5-item alpha = .68).

## Results and discussion

### Conceptual replication of Study 1

First, we conceptually replicated the primary analyses from Study 1: namely that "conflicted" Protestants —who had taboo desires but tried to rule their sexual behavior by their

**Table 1** Regression coefficients for models in which religion had protestant as the reference group (Study 2)

| | Relative creativity | | Creativity | | Prosocial | |
|---|---|---|---|---|---|---|
| | b | SE | b | SE | b | SE |
| Religion | 1.21 | 1.43 | **1.64** | 0.70 | 0.43 | 1.33 |
| Religious sexuality | **−3.09** | 0.86 | **0.95** | 0.42 | **4.04** | 0.80 |
| Taboo desires | **3.72** | 0.88 | **1.82** | 0.43 | **−1.90** | 0.82 |
| Religion × religious sexuality | **3.33** | 1.47 | 0.03 | 0.72 | **−3.30** | 1.36 |
| Religion × taboo desires | −1.24 | 1.47 | −0.34 | 0.72 | 0.90 | 1.36 |
| Religious sexuality × taboo desires | **2.93** | 0.85 | **1.05** | 0.41 | **−1.88** | 0.78 |
| 3-way interaction | **−4.19** | 1.37 | **−1.75** | 0.67 | **2.44** | 1.27 |

*b*s in boldface are statistically significant, $p \leq .05$

Religion: 0 = Protestant, 1 = non-Protestant

Relative-creativity rating = (creativity rating) − (prosocial rating)

religious beliefs—would be more likely to select careers that were creative as opposed to prosocial (Hypothesis 1). This would be manifest as a 3-way interaction between Religion, Religious Sexuality, and Taboo Desires. Testing this prediction, we regressed the relative creativity career ratings (relative creativity rating = creativity rating − prosocial rating) onto Religion, Religious Sexuality, Taboo Desires, and all interactions thereof. As seen in Table 1, the predicted 3-way interaction was statistically significant ($b = -4.19$, $\beta = -0.09$, $t[2434] = -3.06$, $p = .002$, partial $r = -.06$), conceptually replicating the primary findings of Study 1 and providing support for Hypothesis 1.

Notably, in the present study, the job ratings were not answers provided by participants, and thus they were not susceptible to the potential response biases that led us to create forced choice questions in Study 1. Thus, in the following analyses, we were able to cleanly operationalize our creativity and prosociality variables without reference to each other.
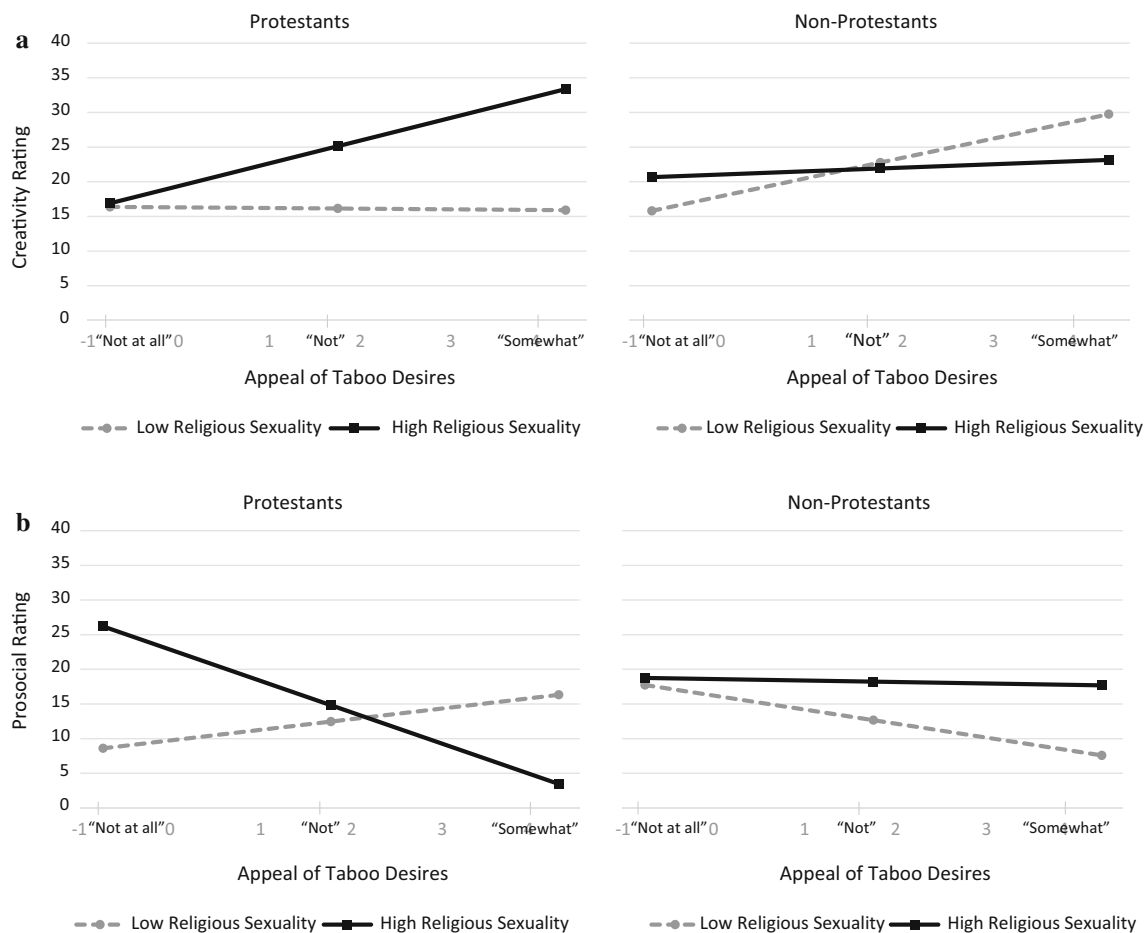
## Career creativity ratings

For the next analyses, we examined how Religion, Religious Sexuality, and Taboo Desires predicted career *creativity* ratings. As seen in the middle column of Table 1 and Fig. 2a, there was a 3-way interaction between Religion, Religious Sexuality, and Taboo Desires in predicting career creativity, such that the most creative jobs were held by "conflicted" Protestants—those who ruled their sexual lives by their religious beliefs (high Religious Sexuality) but also had Taboo Sexual Desires, $b = -1.75$, $\beta = -0.07$, $t = 2.62$, $p = .009$, partial $r = -.05$.

For Protestants, there was a statistically significant simple 2-way interaction between Religious Sexuality and Taboo Desires ($b = 1.05$, $t = 2.54$, $\beta = 0.07$, $p = .011$, partial $r = .05$), supporting Hypothesis 1a (Fig. 2a, left panel). We decomposed this 2-way interaction further by examining the simple slope for Taboo Desires at high ("strongly agree") and low ("strongly disagree") levels of

Religious Sexuality (high/low points were 1.40 and −1.83 SDs from the mean, respectively). Taboo Desires statistically significantly predicted career creativity for Protestants who strongly agreed with the Religious Sexuality item, $b = 3.29$, $\beta = 0.20$, $t = 4.18$, $p = .001$, partial $r = .08$. In contrast, Taboo Desires had no association with career creativity for Protestants who thought their religious beliefs were irrelevant to their sexuality, $b = -0.09$, $\beta = -0.01$, $t = -0.12$, $p = .904$, partial $r = .00$. For Catholics and Jews, the simple Religious Sexuality × Taboo Desires interaction was not statistically significant, $b = -0.71$, $\beta = -0.05$, $t = -1.34$, $p = .18$, partial $r = -.03$ (Fig. 2a, right panel).

Decomposing the 3-way interaction another way, we found that among those *high* in Religious Sexuality, there was a significant Religion × Taboo Desires interaction ($b = -2.79$, $\beta = -0.11$, $t = 2.08$, $p = .038$, partial $r = -.04$), such that Protestants with more Taboo Desires had more creative jobs (simple slope $t = 4.18$, $p = .001$, see above), whereas this effect was not found among Catholics and Jews ($b = .50$, beta = .03, $t = .46$, $p = .647$). Among those *low* in Religious Sexuality, the Religion × Taboo Desires interaction reversed ($b = 2.87$, beta = .11, $t = 2.37$, $p = .018$, partial $r = .05$), such that Catholics and Jews with more Taboo Desires had more creative jobs (simple slope for Taboo Desires $b = 2.78$, beta = .17, $t = 3.02$, $p = .003$, partial $r = .06$), whereas this effect did not hold for Protestants ($t = -.12$, $p = .904$, see above).

To summarize, the most creative jobs were held by "conflicted" Protestants (who have Taboo Desires but try to rule their sexual behavior by their religious beliefs) and "libertine" Catholics and Jews (who have Taboo Desires and view religion as irrelevant to their sexuality). These findings parallel previous research, particularly that of Kim and Cohen (2015), who found that among a student sample, creativity was greatest among Protestants who suppressed troublesome affect and impulses and Catholics who did *not*

**Fig. 2 a** Ratings for the creative nature of respondent's career (on a scale from 0 to 100) as a function of religion, religious sexuality, and taboo desires. High/low religious sexuality represent the predicted values for participants who responded "strongly agree"/"strongly disagree" on the religious sexuality item, respectively. Taboo desires are plotted from "not at all appealing" (−0.75 SD) to "somewhat appealing" (4.27 SD). Forty-six percent of respondents scored at the "not at all appealing" value; six percent of respondents had scores averaging above "not appealing" (1.76 SD). **b** Ratings for the

prosocial nature of respondent's career (on a scale from 0 to 100) as a function of religion, religious sexuality, and taboo desires. High/low religious sexuality represent the predicted values for participants who responded "strongly agree"/"strongly disagree" on the religious sexuality item, respectively. Taboo desires are plotted from "not at all appealing" (−0.75 SD) to "somewhat appealing" (4.27 SD). Forty-six percent of respondents scored at the "not at all appealing" value; six percent of respondents had scores averaging above "not appealing" (1.76 SD)

suppress such impulses. The notion that creative Catholics and Jews are uninhibited and explore unusual desires and emotions, which would be shocking to bourgeoisie "squares," fits well with common stereotypes of the highly open-to-experience artist.[6]

### Career prosocial ratings

We next examined the extent to which our predictor variables were associated with career *prosocial* ratings. As seen

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[6] It has been suggested to us that our interactions might be due to "conflicted" Protestants simply wanting to produce something tangible (as opposed to producing something creative). However, including the "tangible productive satisfaction" job ratings (from England 1992) as a control did not change results.

in Fig. 2b and the right-hand column of Table 1, there was also a 3-way interaction between Religion, Religious Sexuality, and Taboo Desires in predicting the career prosocial ratings, $b = 2.44$, $\beta = 0.05$, $t = 1.92$, $p = .05497$, partial $r = .04$. This interaction was in the opposite direction of the one found for career creativity ratings; "conventional" Protestants—whose sexual lives were guided by religion and who lacked Taboo Desires—had careers that were rated as being most prosocial. Among Protestants (Fig. 2b, left panel), career prosocial ratings were predicted by a simple interaction between Religious Sexuality and Taboo Desires, $b = -1.88$, $\beta = -0.06$, $t = -2.40$, $p = .016$, partial $r = -.05$. This simple 2-way interaction was not observed among Catholics and Jews, $b = 0.56$, $\beta = 0.02$, $p = .58$, failing to support Hypothesis 1b (Fig. 2b, right panel).
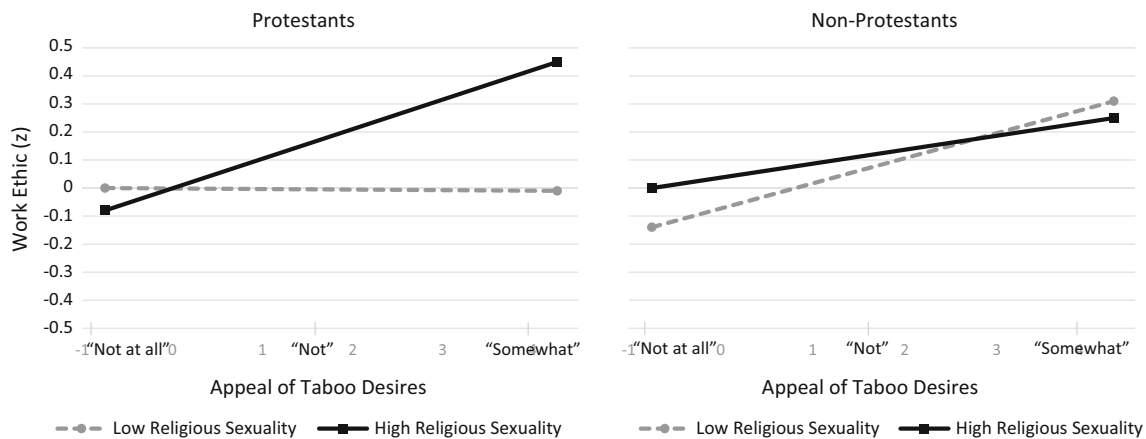
**Fig. 3** Respondent's standardized work ethic as a function of religion, religious sexuality, and taboo desires. High/low religious sexuality represent the predicted values for participants who responded "strongly agree"/"strongly disagree" on the religious sexuality item, respectively. Taboo desires are plotted from "not at all appealing" (−0.75 SD) to "somewhat appealing" (4.27 SD). Forty-six percent of respondents scored at the "not at all appealing" value; six percent of respondents had scores averaging above "not appealing" (1.76 SD)

## Work ethic

For our final planned analyses, we examined the extent to which Religion, Religious Sexuality, and Taboo Desires predicted work ethic. As seen in Fig. 3, there was a statistically significant 3-way interaction between Religion, Religious Sexuality, and Taboo Desires in predicting the Work Ethic variable, $b = -.06$, $\beta = -0.06$, $t = 2.21$, $p = .027$, partial $r = .04$. Among Protestants, the simple interaction between Religious Sexuality and Taboo Desires was statistically significant ($b = .04$, $\beta = 0.07$, $t = 2.61$, $p = .009$, partial $r = .05$), supporting Hypothesis 2 (Fig. 3, left panel). For Protestants who tried to rule their sexuality by their religious beliefs, the more taboo desires they had, the higher they scored on the Work Ethic index (simple slope for Taboo Desires $b = .14$, $\beta = .21$, $t = 4.36$, $p = .001$). For Protestants who did not rule their sexuality by their religious beliefs, Taboo Desires did not predict Work Ethic (simple slope $p = .96$). Among Non-Protestants, the simple Religious Sexuality × Taboo Desires interaction was not statistically significant, $p = .45$ (Fig. 3, right panel).

## Exploratory follow-up analyses

### Traditional sexual desires

Importantly, the predicted effects were only found when examining *taboo* desires. We also created a traditional desires variable (averaging the appeal of vaginal intercourse, watching a partner undress, giving and receiving oral sex). The 3-way Religion × Religious Sexuality ×

Traditional Sexual Desires interaction was not statistically significant in predicting relative-creativity career ratings, creativity ratings alone, prosocial ratings alone, or the work ethic index (all $|b|$s $< 1.30$, $|\beta|$s $< 0.02$, $p$s $> .36$).

### Comparison of effect sizes

It is useful to compare effect sizes found here with (1) effects of other variables that might explain why people pursue creative careers and (2) effect sizes found in previous sublimation studies. With respect to (1), we compared the predictive power of the Religion × Religious Sexuality × Taboo Desires interaction with two demographic/attitudinal variables that theoretically should also predict career creativity. The first variable was respondents' socio-economic status growing up. Based on extensive research showing that working class parents socialize their children to value authority and obedience, whereas middle and upper SES parents socialize their children to think independently (e.g., Kohn et al. 1990), we expected childhood socio-economic status to predict creativity. Second, people who are politically liberal also tend to be more "open to experience," a trait associated with greater creativity (Ozer and Benet-Martínez 2006, also Boschma and Fritsch 2009), so liberal individuals might work in more creative careers. When the 3-way interaction and both of these benchmark variables were allowed to simultaneously predict career creativity ratings, the effect size for the 3-way interaction of Religion, Religious Sexuality, and Taboo Desires (partial $r = -.06$) was slightly bigger than that of political liberalism (partial $r = -.04$ with liberalism indexed by Republican vs.

Democrat party identification), and it was slightly less than half the size of childhood socio-economic status (partial $r = .14$, indexed by a 3-item composite of mother's education level, father's education level, and father's occupational prestige [$\alpha = .79$]). Concerning the work-ethic variable, the effect size for the 3-way interaction (partial $r = .05$) was similar to that of childhood SES (partial $r = .04$) and greater than that of political liberalism (partial $r = .01$).

In terms of a comparison to previous research, Kim et al. (2013) found that, in the Terman sample, effect sizes of taboo/depravity-related anxieties on career creativity were generally medium to large among Protestants, depending on the particular comparison. Effect sizes reported in the present study are considerably smaller. Part of this undoubtedly has to do with the Terman sample being much more homogenous than the national probability sample of NHSLS. Specifically, the Terman sample consisted of persons who all lived in California, were approximately the same age, were overwhelmingly white, and had childhood IQs in the 99th percentile. Effect sizes can be larger among such elite and homogeneous samples. To illustrate, we analyzed a subset of data more comparable to the Terman sample, using education as a crude proxy for IQ, since the NHSLS did not contain an IQ measure.

When the NHSLS sample was limited to only the 150 white respondents who had a degree above a bachelors (7 % of the sample), effect sizes did increase. The Religion × Religious Sexuality × Taboo Desires interaction predicting creative jobs jumped in size, $b = -7.34$, $\beta = -0.24$, $t(142) = 1.94$, $p = .054$, partial $r = -.16$. Among Protestants, there was a statistically significant simple interaction between Religious Sexuality and Taboo Desires, $b = 4.95$, $\beta = 0.24$, $t = 1.96$, $p = .052$, partial $r = .16$. However, the Terman sample is likely still more selective and homogenous than a national random sample of whites with more than a bachelor's degree. When we examined whites in the top 2 percent of education (those who had an "other advanced degree" besides that of a "master's or equivalent"), the simple interaction between Religious Sexuality and Taboo Desires for Protestants again increased (partial $r = .32$) to within the range of effect sizes found in the Terman analyses. However, conclusions must be tempered by the small sample size of 43 respondents in this most educated group.

## General discussion

Previous research suggests that Protestants are more likely to engage in sublimation than are two of their closest cultural siblings—Catholics and Jews (Kim and Cohen 2015; Kim et al. 2013). These prior studies showed that

Protestants are likely to sublimate taboo sexual or aggressive urges into producing more creative artwork in the lab. The present studies suggest that conflict over taboo has a role in *motivating* Protestants toward creative career paths. In Study 1, Protestant students experimentally induced to feel taboo desires preferred creative careers over prosocial ones. In Study 2, examining data from a national probability sample of adults, sexually "conflicted" Protestants—who wanted to align their sexual behavior with their religious principles, yet also had taboo sexual desires—were likely to choose the most creative careers. In contrast, it was their more "conventional" Protestant peers—those who tried to conduct their sexual behavior according to their religious morality and did not have taboo desires—who chose jobs that were more oriented towards prosocial ends.

In both Studies 1 and 2, Catholics and Jews showed no sublimating tendencies with respect to creativity. If anything, in Study 2, it seemed that "libertine" Catholics and Jews—who had taboo desires and viewed religion as irrelevant to their sexuality—were the most creative of the non-Protestants. Again, such findings parallel past research, particularly that of Kim and Cohen (2015) who found that among a student sample, creativity was greatest for Protestants who suppressed or tamped down troublesome affect and impulses and for Catholics who did *not* do so. Altogether, the stereotype of the uninhibited artist who disdains conventions of "normal" society fits more with our findings about who the creative Catholics and Jews are.

In sum, results dovetail nicely with previous experimental data, studies of individual differences (Kim and Cohen 2015), and analyses of the Terman sample (Kim et al. 2013) in suggesting that Protestants are likely to sublimate unacceptable desires toward creative, productive ends. Yet there are some issues—about limitations, null and mixed findings, and effect sizes—deserving further comment.

## Limitations to generalization

Limits to generalization apply principally to Study 1, with its white male student sample. In contrast, Study 2 used a probability sample of the US. The US population, however, is still largely WEIRD (Western Educated Industrialized Rich and Democratic) (Henrich et al., 2010). It remains to be seen whether Protestant versus non-Protestant differences hold in, say, Latin America, Asia, or Africa—or whether they hold when the non-Protestant religions are outside the Judeo-Christian tradition.

Finally, it should be noted that, whereas Study 2 used an index with a range of taboo behaviors (rather than one particular taboo as in Study 1), both studies focused exclusively on *sexual* behaviors. There are other taboo desires, such as those having to do with aggression that we have not explored here, though we have done so elsewhere and found similar results (Kim et al. 2013; Kim et al. 2015).

## Null findings among Catholics and Jews

In previous research (Kim et al. 2013), it was suggested that taboo desires elicited guilt feelings among Catholics and Jews that might promote interpersonal repair and connection. Here, however, there was little indication that feeling guilt translated into redemptive efforts to help others. Because we did not directly measure guilt in Study 1, we cannot determine whether we failed to elicit guilt in this particular experiment or simply failed to provide an appropriate avenue for redemptive action. Future research should explore whether evoking guilt for Catholics and Jews motivates them to desire prosocial action more than it might for people of other faiths (Walinga et al. 2005). It is possible that guilt might motivate Catholics and Jews to *directed* prosocial action involving making amends to the particular people they have wronged rather than evoking a diffuse prosocial orientation toward people in general (Halbertal 2011).

## Mixed findings for the work ethic measure

Second, we expected that inducing forbidden thoughts would lead Protestants to endorse hard work more in Study 1. And we expected that "conflicted" Protestants would manifest a stronger work ethic in Study 2. A previous lab study (Kim et al. 2013, Study 2) found that inducing forbidden thoughts did not lead Protestants to exert greater effort on a word search task. The null finding in Study 1 is consistent with that previous null effect.

However, Study 2 did yield evidence consistent with the hypothesis that among Protestants, conflict between Taboo Desires and Religious Sexuality would strengthen respondents' work ethic. (See also Kim et al. 2013 analyses of the Terman data, which found that Protestants with taboo/depravity-related anxieties were more likely than those without such anxieties to work in jobs that the census classified as high-level "professions." Presumably, one gets to the professions at least in part through hard work).

It is possible that our lab experiments produced null effects because Protestants reserve their diligence and drive to work hard for tasks that they see as particularly meaningful and/or related to their calling. It is also possible that our work ethic measure in Study 1 was not very good. Future experimental studies should explore the work ethic issue and the conditions in which Protestants might sublimate their desires into a generalized drive to work hard—a drive that at least seems to be manifested in the survey data from this paper and the Terman study.

## Comparison of effect sizes

The medium effect sizes in Study 1 are similar to those found by Kim and colleagues, though perhaps slightly smaller. In contrast, the small effect sizes in Study 2 are much smaller than those from analyses of the Terman data. Notably, however, the effect sizes in Study 2 were much larger among the most highly educated individuals in the sample, who are likely most similar to those in Terman sample.

The differences between the NHSLS and Terman samples are interesting because they also help clarify how institutional factors and the structure of modern work might affect the relationship between intrapsychic conflict and vocational choice. Among Protestants who are advantaged by their family backgrounds or their own intellectual gifts, intrapsychic conflicts are associated with moderate size effects on occupational choices. In contrast, among those less favored, the effects of sublimation *on occupational choice* exist but are much smaller. This may be because—as the job creativity ratings indicate—most jobs do not demand high levels of creativity. Because creative jobs tend to be higher in income and prestige, people who are not in a position to compete for such jobs may encounter limited opportunities to pursue creative careers. This, however, does *not* mean that only slight sublimation is occurring for these people, because creativity can be exercised even within the most repetitive of tasks—and more importantly, creativity is often expressed *outside of the work context* (Csikszentmihalyi, 2008). Other research has only begun to explore how Protestants might sublimate intrapsychic conflict in non-work related settings (Kim and Cohen 2015).

## Conclusion

In sum, the present studies provide further evidence for the hypothesis that Protestants are likely to sublimate unacceptable affect and desires into creative, productive activities. In Study 1, experimentally inducing Protestants to have forbidden thoughts led them to temporarily want creative careers, as opposed to prosocial ones. Catholics and Jews did not show this effect. In Study 2, a national probability sample revealed that "conflicted" Protestants—who simultaneously tried to rule their sexual behavior according to their religious beliefs and yet also had taboo desires—chose the most creative occupations; in contrast, among the non-Protestants, it was the "libertine" Catholics and Jews who were the most creative. Together, these results support hypotheses about the Protestant sublimation of psychic conflicts, with consequences for preferences and major real-life decisions, such as those involving career choice.

## Appendix

See Table 2.

**Table 2** Study 1 correlation matrix

| Variable | Correlations | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1. Protestant work ethic | – | | | | | | | | | |
| 2. Attitudes toward welfare | **.31** | – | | | | | | | | |
| 3. Qualities needed and excelled in (hard work) | **.29** | .03 | – | | | | | | | |
| 4. Career values (hard work) | .07 | **.15** | **.25** | – | | | | | | |
| 5. Desire to work hard | .13 | −.01 | .10 | −.01 | – | | | | | |
| 6. Desire to pursue creative versus prosocial careers | .09 | **.20** | **.22** | **.30** | −.08 | – | | | | |
| 7. Salary demanded for creative versus prosocial careers | .04 | .07 | .15 | .14 | −.08 | **.47** | – | | | |
| 8. Career values (creativity vs. prosocial values) | .04 | .12 | .10 | **.24** | −.08 | **.34** | **.22** | – | | |
| 9. Preference for creative versus prosocial roles | .04 | **.17** | **.16** | **.21** | −.05 | **.70** | **.33** | **.33** | – | |
| 10. Qualities needed and excelled in (prosocial) (reverse scored) | **.17** | **.23** | **.18** | **.20** | −.12 | **.31** | **.16** | .11 | **.26** | – |

Parameter estimates in boldface are statistically significant, $p \leq .05$. Scales are described in the methods section

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