

POLITICAL PSYCHOLOGY

Conservatives report, but liberals display, greater happiness

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Research suggesting that political conservatives are happier than political liberals has relied exclusively on self-report measures of subjective well-being. We show that this finding is fully mediated by conservatives' self-enhancing style of self-report (study 1; $N = 1433$) and then describe three studies drawing from "big data" sources to assess liberal-conservative differences in happiness-related behavior (studies 2 to 4; $N = 4936$). Relative to conservatives, liberals more frequently used positive emotional language in their speech and smiled more intensely and genuinely in photographs. Our results were consistent across large samples of online survey takers, U.S. politicians, Twitter users, and LinkedIn users. Our findings illustrate the nuanced relationship between political ideology, self-enhancement, and happiness and illuminate the contradictory ways that happiness differences can manifest across behavior and self-reports.

Are political conservatives happier than political liberals? Several recent studies have found that greater political conservatism predicts higher levels of self-reported happiness and life satisfaction in the United States (1–4). This "ideological happiness gap" has been attributed to a number of different psychological factors. Some explanations posit that conservatives' greater happiness is due to a suite of adaptive personal, social, and cultural values (1), such as high levels of personal agency, optimism, and transcendent moral beliefs (2). Others portray conservatism as a protective or even defensive mechanism that serves the palliative function of justifying troubling societal inequalities (3). Although researchers disagree over the mechanism underlying the happiness gap, meta-analytic review has confirmed that it is a small but reliable effect ($r = 0.12$) (4).

All of the data supporting the relation between political conservatism and subjective well-being rely on self-report measures (e.g., stated agreement with face-valid items such as "In most ways my life is close to ideal") (4, 5). This is not surprising given that self-reports are the foundation of subjective well-being research (6, 7), but reliance on any single methodology within an area of research can result in systematic methodological artifacts due to common method variance (8). There are many challenges involved in self-report research (9–11), including the influence of self-enhancement motives, which commonly lead to unrealistically favorable self-assessments (12). Self-reports of happiness and life satisfaction, much like self-assessments of other valued characteristics, are susceptible to self-enhancing distortions (13). Both individual differences in, and experimental manipulations of, self-enhancement moti-

vation predict the tendency to report happiness and life satisfaction at unrealistically positive levels (i.e., the "happier-than-average effect") (13).

Self-enhancing tendencies are not evenly distributed across populations (14–16), and there are reasons to suspect that liberals and conservatives may self-enhance to differing degrees. Conservatism (17) has been characterized as an ideology grounded in ego defensiveness (18), enhanced sensitivity to negativity (19), and personality dimensions related to defensive forms of motivated social cognition (20, 21). Self-enhancement is also associated with a number of factors related to politically conservative ideologies: It is more pronounced among individualistic cultures (14), religious people (15), and competitive, hierarchically oriented groups (16). Given that self-reported happiness is related to political conservatism (4) and self-enhancement ($r = 0.10$) (13) at comparable magnitudes, it is possible that ideological happiness differences may simply be an example of conservatives' stronger tendency to evaluate the self favorably.

In study 1, we examined whether conservatives' reports of greater subjective well-being, relative to liberals, could be attributed to self-enhancing tendencies. Visitors to YourMorals.org, a psychological research Website, reported their political ideology and completed the Satisfaction With Life Scale, the most frequently used measure of subjective well-being (5), as well as the Balanced Inventory of Desirable Responding, a well-validated measure of the tendency to engage in self-deceptive enhancement (22). As expected, increasing political conservatism predicted greater reported life satisfaction [$r(1433) = 0.10, P < 0.001$; adjusting for demographic characteristics: $\beta = 0.09, P = 0.002$]. This happiness gap was similar in magnitude to that found in past research (4). Importantly, we also found that self-deceptive enhancement was higher among conservatives than liberals [$r(1433) = 0.16, P < 0.001$; adjusting for demographics: $\beta = 0.18, P < 0.001$]. A bootstrapped mediation analysis revealed that, as hypothe-

sized, self-deceptive enhancement fully mediated the ideology–life satisfaction association [indirect effect: $b = 0.05, P < 0.001$, 95% confidence interval (CI) = (0.03, 0.07)] (see Table 1).

These results indicate that conservatives' greater reports of life satisfaction were attributable to their stronger tendency to engage in self-enhancement. But there are two possible interpretations of these findings. First, conservative participants may be experiencing greater happiness and life satisfaction than liberals as a beneficial consequence of their self-enhancing predispositions (23). Alternatively, conservatives' elevated reports may simply be an example of their stronger tendency to provide unrealistically favorable self-assessments. This interpretative ambiguity highlights a major limitation of relying on self-reports alone: They do not distinguish between genuine and superficial presentations of happiness.

Behavioral indicators of happiness provide important information that can clarify this ambiguity. If we take self-reports of well-being at face value, rather than as examples of self-enhanced assessments, we would expect to observe conservatives' greater happiness in unobtrusive measures of happiness-related behavior—for example, in the emotional content of liberals' and conservatives' speech, or in the frequency and intensity of their smiling behavior. Assessing smiling behavior also allows us to distinguish between genuine and superficial expressions of happiness. Intense, genuine smiling, known as Duchenne smiling, involves the muscles lifting the corner of the mouth as well as those orbiting the eye (24). Non-Duchenne (also known as social, deceptive, or standard) smiling involves only the muscles lifting the corners of the mouth and is less often related to genuine feelings of happiness or enjoyment. Non-Duchenne smiling is also less predictive than Duchenne smiling of beneficial long-term psychological and physical health outcomes (24, 25).

In study 2, we examined happiness-related behavior among the United States' most salient liberals and conservatives: members of the U.S. Congress. We assessed two behavioral indicators of happiness within this group: the use of positive and negative emotional language from a text analysis of the 2013 U.S. *Congressional Record* and the smiling behavior exhibited in their publicly available photographs. For our linguistic analysis, we recorded word-use frequencies for members of the 113th U.S. Congress using relevant terms from one of the most frequently used emotion scales in the psychological literature, the Positive and Negative Affect Schedule: Expanded Form (PANAS-X) (26). We assessed political ideology using continuous liberalism-conservatism scores based on analysis of each politician's voting record (27) and controlled for each member's legislative chamber, status as a political minority/majority member in their chamber, overall word usage, and demographic characteristics. Greater conservatism was associated with a small but significant decrease in positive affect word use ($\beta = -0.16, P < 0.001$). Conservatism was not significantly associated with the use of negative affect words, joviality-related words, or sadness-related

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words (Table 2). We replicated this analysis with political ideology defined by party identification instead of voting record and found a similar pattern of results.

We also tested the reliability of the relationship over time by assessing emotional language at the party level across 18 years of *Congressional Record* data, including more than 432 million

words. Members of the liberal-leaning Democratic Party used a higher ratio of positive to negative affect words ($M = 13.65:1$) than members of the conservative-leaning Republican Party ($M = 11.50:1$), including a higher frequency of positive affect word usage in 17 of 18 years.

This pattern of emotional expression was not limited to linguistic analyses. We next analyzed

smiling behavior in photos from the *Congressional Pictorial Directory* of the 113th U. S. Congress (28) using the Facial Action Coding System (FACS) (29). A FACS-certified coder assessed the intensity of two action units (AUs) associated with genuine smiling behavior: activity in the orbicularis oculi (AU6) and the zygomatic major (AU12). We found that increasing political conservatism predicted

Table 1. Unstandardized coefficients from mediation analyses of self-reported life satisfaction (study 1). Standard errors are given in parentheses. Indirect effect for bootstrapped mediation analysis with 5000 resamples for model 1: $b = 0.05$, $SE = 0.01$, $z = 5.57$, $P < 0.001$, and 95% CI = (.03, 0.07); for model 2: $b = 0.05$, $SE = 0.01$, $z = 5.47$, $P < 0.001$, and 95% CI = (0.03, 0.07).

| Predictor | Model 1 | | Model 2 | |
|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Step 1 | Step 2 | Step 1 | Step 2 |
| Political conservatism | 0.09 (0.02)*** | 0.04 (0.02) ⁺ | 0.07 (0.01)*** | 0.03 (0.02) ns |
| Self-deceptive enhancement | | 0.73 (0.05)*** | | 0.69 (0.05)*** |
| Socioeconomic status | | | 0.02 (0.01)** | 0.07 (0.01)*** |
| Education | | | -0.02 (0.02) ns | 0.21 (0.03)*** |
| Sex (1 = female) | | | -0.03 (0.04) ns | 0.32 (0.07)*** |
| Age | | | 0.00 (0.00) ns | 0.00 (0.00) ns |
| Age squared | | | 0.00 (0.00) ns | 0.00 (0.00)*** |
| Religious attendance | | | -0.03 (0.02)* | 0.07 (0.02)** |
| Constant | 4.13 (0.08)*** | 1.35 (0.22)*** | 3.87 (0.10)*** | -0.42 (0.29) ns |
| $F(df)$ | $F(1, 1431) = 14.45$ *** | $F(2, 1430) = 95.63$ *** | $F(7, 1373) = 10.15$ *** | $F(8, 1372) = 46.15$ *** |
| R^2 | 0.01 | 0.12 | 0.05 | 0.21 |

ns, $P > 0.10$; ⁺ $P < 0.10$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

Table 2. Unstandardized regression coefficients for linguistic analyses and smile analyses for politicians in 2013 U.S. Congressional Record (study 2). Standard errors are given in parentheses.

| Predictor | Linguistic analyses | | | | Smile analyses | | |
|--------------------------------------|---------------------------------------|--|--|--|-----------------------|---------------------------|---------------------------|
| | Positive affect | Negative affect | Joviality | Sadness | Overall smile | Zygomatic major (AU12) | Orbicularis oculi (AU6) |
| Political conservatism | -0.88 (0.19)*** | 0.04 (0.05) ns | -0.04 (0.07) ns | -0.09 (0.05) ⁺ | -0.03 (0.01)* | -0.02 (0.01) ⁺ | -0.03 (0.02)* |
| Chamber (1 = House) | 2.79 (2.28) ns | 1.07 (0.58) ⁺ | 0.08 (0.91) ns | 2.18 (0.61)*** | 0.11 (0.13) ns | 0.02 (0.12) ns | 0.24 (0.17) ns |
| Party majority status (1 = Majority) | 7.06 (1.93)*** | -0.60 (0.49) ns | -0.21 (0.77) ns | 0.73 (0.52) ns | 0.13 (0.13) ns | 0.13 (0.12) ns | 0.13 (0.16) ns |
| Age | -0.02 (0.07) ns | 0.00 (0.02) ns | -0.06 (0.03) ⁺ | 0.00 (0.02) ns | 0.00 (0.00) ns | 0.00 (0.00) ns | 0.00 (0.01) ns |
| Ethnicity: African American | -0.38 (3.07) ns | -0.23 (0.79) ns | -0.62 (1.23) ns | -0.43 (0.83) ns | -0.58 (0.20)** | -0.28 (0.19) ns | -0.88 (0.26)** |
| Ethnicity: Hispanic American | -2.38 (3.01) ns | -0.44 (0.77) ns | 3.32 (1.21)** | -0.46 (0.81) ns | -0.16 (0.20) ns | 0.00 (0.18) ns | -0.33 (0.25) ns |
| Ethnicity: Asian American | -2.17 (5.58) ns | 0.26 (1.43) ns | -0.50 (2.24) ns | -0.47 (1.50) ns | -0.05 (0.37) ns | 0.13 (0.34) ns | -0.22 (0.47) ns |
| Ethnicity: Other | -5.61 (7.66) ns | -0.95 (1.97) ns | -1.47 (3.08) ns | 0.35 (2.06) ns | -0.52 (0.50) ns | 0.06 (0.47) ns | -1.11 (0.64) ⁺ |
| Sex (1 = male) | -2.38 (2.04) ns | -0.36 (0.52) ns | -0.84 (0.82) ns | -1.05 (0.55) ⁺ | -0.38 (0.13)** | -0.63 (0.12)*** | -0.13 (0.17) ns |
| Wordiness | 3.5×10^{-3} (10^{-4})*** | 3×10^{-4} (3×10^{-5})*** | 8×10^{-4} (5×10^{-5})*** | 9×10^{-4} (3×10^{-5})*** | | | |
| Constant | 2.91 (5.29) ns | -0.01 (1.36) ns | 4.29 (2.12)* | -1.34 (1.42) ns | 2.38 (0.34)*** | 3.15 (0.32)*** | 1.60 (0.44)*** |
| $F(df)$ | $F(10, 516) = 115.69$ *** | $F(10, 516) = 10.01$ *** | $F(10, 516) = 38.64$ *** | $F(10, 516) = 92.04$ *** | $F(9, 517) = 2.44$ ** | $F(9, 517) = 4.08$ *** | $F(9, 517) = 2.12$ ** |
| R^2 | 0.69 | 0.16 | 0.43 | 0.64 | 0.04 | 0.07 | 0.04 |

ns, $P > 0.10$; ⁺ $P < 0.10$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

less intense overall smiling ($\beta = -0.12, P = 0.032$), controlling for the same variables as the linguistic analysis above (Table 2). We observed only marginally significant differences in the intensity of smiling behavior in the muscles lifting the corners of the mouth (AU12: $\beta = -0.10, P = 0.096$), but conservatism predicted significantly less intense facial action in the muscles around the eyes that indicate genuine happiness (AU6: $\beta = -0.13, P = 0.031$). The odds of displaying non-Duchenne smiles (i.e., action in AU12 but not AU6) were slightly higher for conservatives than for liberals, but this did not reach statistical significance [controlling for demographics: odds ratio (OR) = 1.04, $P = 0.206$].

Study 2 revealed no evidence of greater emotionally positive behavior among conservative elected officials. Instead, it was liberal politicians who tended to more frequently express positive emotional language, smile more intensely, and smile more genuinely. These effects were modest in size, but in the opposite direction of the previously observed self-report-based happiness gap (4). Of course, elected political leaders are not representative of liberal and conservative individuals more generally, and it is unclear how well speech and facial expressions occurring within the confines of Capitol Hill reflect similar happiness-related behaviors in less overtly political contexts.

Accordingly, study 3 assessed the linguistic content of 47,257 Twitter status updates (“tweets”) from liberal and conservative members of the general public. We analyzed the statuses of individuals who subscribed to (“followed”) the official Twitter pages of either the Democratic or Republican Party, excluding those following both, under the assumption that users who followed one party exclusively were likely to share that party’s political views. We assessed the emotional content of each tweet using word lists from the PANAS-X, the Linguistic Inquiry Word Count software (LIWC) (30), and lists of “happy” and “sad” emoticons. Logistic regressions predicting the presence or absence of emotion words/emoticons at the tweet level were conducted, with political party followed as the independent variable. Relative to Democratic Party subscribers’ updates, Republican Party subscribers’ updates were significantly less likely to contain positive emotion words, joviality words, and happy emoticons, and significantly more likely to contain negative emotion words (all P s < 0.05) (Table 3). Marginal ef-

fects also revealed similar patterns on the PANAS-X negative affect and sadness subscales.

In study 4, we analyzed 457 publicly available photographs of individuals from LinkedIn, a business-oriented social networking Web site. We selected participants who publicly self-identified as employees at organizations strongly associated with ideologically liberal or conservative values (e.g., Planned Parenthood versus the Family Research Council), under the assumption that the majority of employees at these organizations were likely to share the organizations’ ideological views. As we found among Democratic and Republican Congress members in study 2, smiles were marginally more intense among employees at ideologically liberal organizations ($M = 1.98, SD = 1.35$) than among employees of ideologically conservative organizations [$M = 1.75, SD = 1.24$; $t(455) = 1.91, d = 0.18, P = 0.057$; controlling for gender and ethnicity: $\beta = -0.07, P = 0.143$]. We again did not observe ideological differences in the intensity of smiling behavior in the muscles lifting the corners of the mouth [AU12; liberals: $M = 2.18, SD = 1.45$; conservatives: $M = 1.99, SD = 1.32$; $t(455) = 1.42, d = 0.13, P = 0.157$; controlling for gender and ethnicity: $\beta = -0.03, P = 0.458$]. However, individuals at conservative organizations expressed significantly less intense facial action in the muscles around the eyes that indicate genuine feelings of happiness [AU6; liberals: $M = 1.78, SD = 1.43$; conservatives: $M = 1.50, SD = 1.38$; $t(455) = 2.14, d = 0.20, P = 0.033$; controlling for gender and ethnicity: $\beta = -0.09, P = 0.051$]. We also found that the proportion of individuals displaying non-Duchenne smiles was significantly higher at conservative organizations ($n = 41$ of 217, or 18.89%) than at liberal organizations ($n = 24$ of 240, or 10.00%; $\chi^2 = 7.39, P = 0.007$; controlling for demographics: OR = 2.35, $P = 0.003$).

Together, our studies found that political liberals exhibited more frequent and intense happiness-related behavior than political conservatives. Contrary to the pattern found in self-reports of happiness and life satisfaction (1–4), linguistic analyses of massive archives of text from both elected politicians and the general public revealed a modest but consistent tendency for liberals to use more positive emotional language than conservatives. In addition, we found that liberal politicians and employees at organizations promoting liberal values smiled more intensely and genuinely than their conservative counterparts. Although the effects in these studies

were small, they consistently revealed greater happiness-related behavior among liberals, rather than conservatives. These behavioral data support our finding from study 1 that differences in liberals’ and conservatives’ reports of happiness can be attributed to conservatives’ stronger tendency to provide flattering self-assessments.

These findings add nuance to past research suggesting that subjective well-being is a multifaceted construct composed of both hedonic or experiential aspects (e.g., reports of current affect and observed behavior) and eudaimonic or evaluative ones (e.g., global assessments of happiness or life satisfaction) (31, 32). What does it mean when self-reports and behavioral indicators provide contradictory data? Happiness lacks an objective “gold standard” validation criterion, and both self-report (6) and behavioral (25, 33) measures of happiness have been linked to beneficial short- and long-term outcomes. For this reason, it would be a mistake to infer from our data that liberals are “objectively” happier than conservatives or that conservatives’ self-enhancing tendencies are necessarily maladaptive. It is not currently known whether claims of happiness bolstered by self-enhancement motivation are any less advantageous than more “genuine” reports of positive well-being. In fact, there is evidence that self-enhancement tendencies can often facilitate psychological adjustment, including the capacity for productive work, satisfying relationships, and resilience to psychological threat (23). This possibility raises important questions for future research, including the potential existence of “defensive” forms of happiness similar to other forms of defensive self-evaluation, such as those uncovered in research on self-esteem (34).

Our studies did not directly test previously proposed mechanisms for the ideological happiness gap, such as differences in ideological values (1), system justification motivation (3), or judgments about personal agency, optimism, and transcendent moral beliefs (2). However, it seems plausible that these explanations share common motivational mechanisms with self-enhancement (21, 23). A key difference is that these previous accounts would predict happiness-related behavior to correspond with self-report evidence of greater conservative happiness. Our self-enhancement-based account explains this discrepancy. Future research should continue to examine whether these motivational mechanisms truly lead to genuinely positive emotional experiences and greater

Table 3. Odds of emotion-related words appearing in tweets of Republican party subscribers relative to Democratic party subscribers (study 3). ORs above 1.00 indicate that conservative tweets contained a higher percentage than liberal tweets; values below 1.00 indicate the opposite. N of tweets for PANAS-X and LIWC analyses = 37,857; N for emoticon analyses = 47,257.

| | Positive emotion word lists | | | | Negative emotion word lists | | | |
|-----|-----------------------------|-------------------|-----------------------|-----------------|-----------------------------|-----------------|-----------------------|---------------|
| | PANAS-X Positive affect | PANAS-X Joviality | LIWC Positive emotion | Happy emoticons | PANAS-X Negative affect | PANAS-X Sadness | LIWC Negative emotion | Sad emoticons |
| OR | 0.88 | 0.80 | 0.95 | 0.83 | 1.44 | 1.32 | 1.07 | 0.77 |
| SE | 0.08 | 0.06 | 0.02 | 0.07 | 0.20 | 0.22 | 0.03 | 0.17 |
| P | 0.159 | 0.007 | 0.018 | 0.030 | 0.051 | 0.093 | 0.015 | 0.229 |

psychological adjustment or if they primarily motivate the superficial report of one's positive qualities.

The questions raised by this research are important because of a growing interest in using self-report measures of happiness to inform public policy (1, 6). Our research supports those recommending caution about promoting any particular ideology or policy as a road to happiness (32). Research investigating self-report-based happiness differences between nonrandomized groups (e.g., cultures, nations, and religious groups) may inadvertently capture differences in self-reporting styles rather than actual differences in emotional experience. Both behavioral measures and self-reports of subjective well-being are valuable tools, but any comprehensive assessment of subjective well-being should involve multiple methodological approaches (6, 8). Reliance on any single methodology is likely to lead to an oversimplified account of not only who is happier than whom but also what it means to be happy at all.

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SUPPLEMENTARY MATERIALS

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HUMAN PALEOECOLOGY

Direct evidence for human reliance on rainforest resources in late Pleistocene Sri Lanka

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Human occupation of tropical rainforest habitats is thought to be a mainly Holocene phenomenon. Although archaeological and paleoenvironmental data have hinted at pre-Holocene rainforest foraging, earlier human reliance on rainforest resources has not been shown directly. We applied stable carbon and oxygen isotope analysis to human and faunal tooth enamel from four late Pleistocene-to-Holocene archaeological sites in Sri Lanka. The results show that human foragers relied primarily on rainforest resources from at least ~20,000 years ago, with a distinct preference for semi-open rainforest and rain forest edges. *Homo sapiens'* relationship with the tropical rainforests of South Asia is therefore long-standing, a conclusion that indicates the time-depth of anthropogenic reliance and influence on these habitats.

The expansion of *Homo sapiens* beyond Africa in the late Pleistocene [125 to 12 thousand years ago (ka)] required a capacity to adapt successfully to a diversity of environments (1, 2). One environment in particular, tropical rainforest, has been widely considered an unattractive prospect for long-term foraging because it is difficult to navigate, lacks abundant carbohydrate and protein resources, and requires significant subsistence and

technological developments for occupation to be feasible (3, 4). Ethnographic observations of existing and historical rainforest foragers, and those foragers' typical nutrient intake, however, have called this view into question (5, 6). Furthermore, discoveries and reappraisal of early human archaeological sites in Africa (7), Southeast Asia (8), and Melanesia (9) have associated environmental indications from pollen, archaeobotanical, and archaeozoological remains with human material to demonstrate that human rainforest resource use may have occurred as early as ~46 ka. The association of stone tool assemblages with offsite pollen records for forest conditions of unknown catchment have been more controversially argued to show human forest foraging back to ~200 ka in Africa (7). However, archaeological evidence against the contention that prehistoric humans avoided rainforest environments as long-term ecologies for

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