

Social Media is Shifting the Values in our Societies: An Increase in People's Achievement and Conformity Orientation

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Abstract

Past research explored the beneficial and harmful effects of social media (SM), but no study has investigated how SM might change people's identities. Authors suggest that SM is a catalyst for a shift in two individual values, achievement and conformity, transforming the fabric of our societies. A difference-in-differences analysis found that countries with higher SM adoption compared to their culturally similar country show an increase in achievement and conformity orientation. Next, authors manipulated SM use and established a causal link between SM use and the activation of achievement and conformity values in Facebook users. These findings were replicated with objective SM usage data and the pertinent mechanism was explored: people's SM use increases achievement and conformity orientation through an increased need for approval, particularly for those who self-ruminate. Findings suggest that SM use contributes to the emergence of a societal culture that places an emphasis on achievement-seeking and conformity.

Keywords: Social media, Individual values, Personal identity, Value change, Need for approval.

Social Media is Shifting the Values in our Societies: An Increase in People's Achievement and Conformity Orientation

1. Introduction

In the past two decades, social media has emerged as one of the digital services that is most frequently used. In 2024, people spent on average 143 minutes on social media per day with people in some countries spending up to 50% of their daily leisure time consuming social media (e.g., 229 minutes of social media use per day in Brazil) (Dixon, 2024). With over 5 billion people on this digital service and over 200 billion USD spent yearly in advertising worldwide (Petrosyan, 2024; Statista, 2023), social media occupies a pervasive place in our society. On the other hand, society has seen a surge in a performance-driven culture characterized by an intense focus on achieving career goals and showcasing personal successes (Schwartz, 2018). People increasingly measure their worth and progress against their peers, and they are more likely to develop performance-based identities (Walker & Caprar, 2020). While such social comparisons are a longstanding human behavior, social media has brought about a significant transformation in the nature of social comparisons, particularly with regard to the intensity and frequency of our exposure to such comparisons. Essentially, in this paper, we argue that such incessant social comparisons when consuming social media services shape basic individual values, a core element of personal identity.

Social media research in many domains has been abundant: past work has shown that it can entail positive (increased social connectedness, Allen et al., 2014; increased creativity, Acar et al., 2021) and (predominantly) negative effects on people (lower well-being and self-esteem, Kim & Kim, 2017; Marino et al., 2018; higher anxiety, Mackson et al., 2019; lower body satisfaction, Engeln et al., 2020). Some effects of social media significantly depend on individual

characteristics (e.g., Chen et al., 2020). In this rich literature, there is a gap in understanding how social media influences the deeper, more foundational aspects of our self – our values, which are the underlying principles that shape our long-term goals and behaviors (Gouveia et al., 2014; see Table W1 in Web Appendix A for a summary of the literature on the effects of social media). Addressing this gap is important because people's values strongly influence their behavior. Values are typically viewed as deeply rooted and stable (Lubinski et al., 1996; Schwartz, 2005). However, past work shows that values can temporarily be activated (Bardi & Goodwin, 2011) and could permanently change over the life span (Rokeach, 2008; Schwartz, 1992) as a result of major life events and living conditions (see Table W2 in Web Appendix A for a summary of the literature on value change).

To explore the influence of social media on people's basic values, we adopt a theoretical framework based on social comparison theory (Festinger, 1954) and we integrate it with the functional theory of human values (Gouveia et al., 2014). We argue that social media has transformed the nature of social comparisons and has brought the intensity and frequency of our exposure to social comparisons to an unprecedented level. Moreover, on these platforms, people often engage in upward comparisons with an idealized version of everyone that does not accurately reflect reality. We argue that extended exposure to such social comparisons fosters conformity and achievement orientation through an increased need for approval. Furthermore, we propose that the effects of social media are contingent on people's tendency to self-ruminate.

To examine these propositions, we conducted three studies. In Study 1, using repeated cross-sectional data from rounds 1 to 4 (2002-2008) of the European Social Survey (ESS) from 15 European nations ($N \cong 135000$) (European Social Survey, 2016), we focused on pairs of culturally similar countries around the initial introduction of social media. With a difference-in-

differences (DID) analysis, we find that the countries that have adopted social media to a larger extent compared to their culturally similar country show a significant increase in achievement and conformity orientation within two years after the introduction. In Study 2, we set up a randomized between subject experiment where we manipulated participants' social media exposure to establish a stronger causal link between social media use and the change in values (N=644). We found that social media exposure activated the achievement and conformity orientation of the participants only in the experimental condition involving Facebook exposure, but not LinkedIn or control. In Study 3, we conducted an online survey matched with objective social media use to examine the underlying mechanisms of this effect with a nationally representative sample (N=1000). Study 3 confirmed that the impact of social media use on basic individual values achievement and conformity was mediated by an increased need for approval. In addition, we found that social media use impacted people who self-ruminate to a larger extent.

With our findings, we argue for three main theoretical contributions to the literature on social media and the basic values of individuals. First, our study contributes to the literature on the effects of social media on people (Bayer et al., 2020; Rosenthal-von der Pütten et al., 2019; Yang, 2022). Past work has investigated the effect of social media on important outcomes such as anxiety, self-esteem, and well-being (Appel et al., 2016; Chen & Lee, 2013; Park & Baek, 2018). We complement this literature by showing that social media consumption has profound effects that could shape people's identities by changing their values. Such a fundamental shift in values likely impacts the broader cultural landscape. Second, even though many antecedents of value change have been identified in decades of research (Table W2 in Web Appendix A), we propose social media as a novel driver of value change. While past research has shown that values typically change through a mix of factors that evolve over time (Rokeach, 2008;

Schwartz, 1992), we show that a widespread digital technology can be the identifiable cause of a change in people's values. While prior work has explored social media's influence on specific values and attitudes (Ionescu et al., 2024; Wang et al., 2021), to our knowledge we are the first to show that social media can transform people's basic individual values. Third, past research has shown that some people are more susceptible to social media effects than others (Beyens et al., 2020). We extend this literature by showing that the tendency to self-ruminate, essentially a negatively self-focused way of thinking, makes people more susceptible to the effects of social media. With this finding, we highlight the importance of person-specific approaches in studying the effects of social media on people.

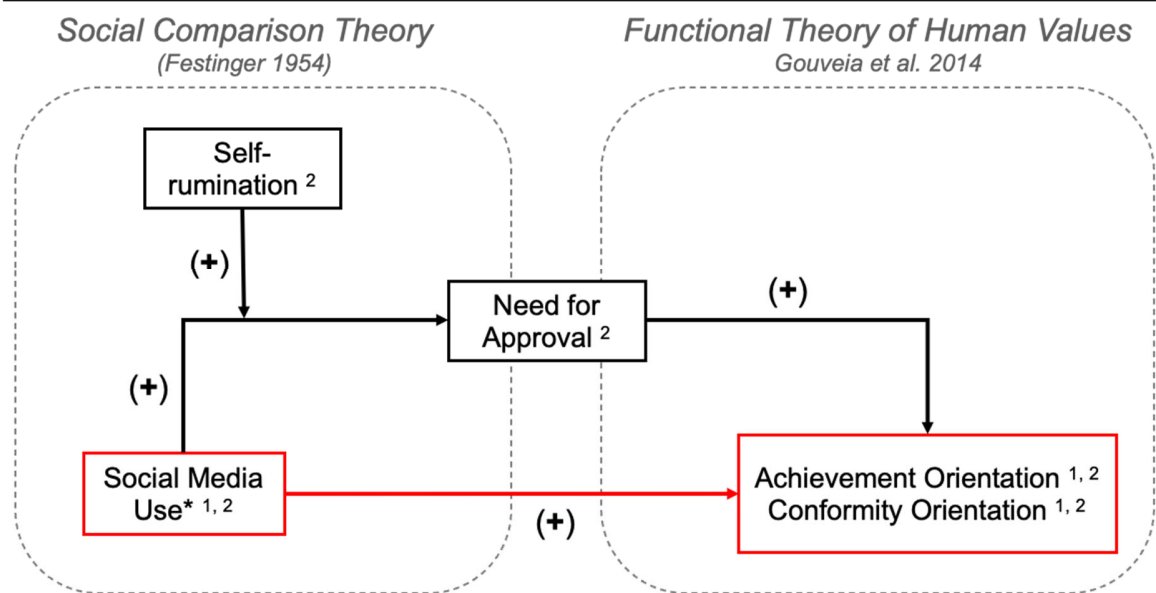
Our focus on the benefits of technology often leads us to overlook the potential consequences until they become apparent, and by then, it may be too late to act (Collingridge, 1980). While our findings do not necessarily suggest that social media intensifies harmful negative values, the fact that values evolve not as a result of a cultural and systemic process within societies but are transformed by people using a specific digital technology raises questions on the role of those technologies in societies. Therefore, an important responsibility falls on technology firms to design platforms that promote a healthy and sustainable digital life by incorporating features that respect human needs and limitations. (Montag & Diefenbach, 2018). This involves dialing back on the addictive and harmful social media features (e.g., endless feeds, promoting divisive content) (Alter, 2017; Rathje et al., 2023) that easily exploit human biases and perpetuate an increased need for approval (e.g., by removing like counts, by adding disclaimers for edited photos). For policymakers and regulatory bodies, our findings underscore the need for robust governance frameworks that acknowledge social media's profound impact on its users. By developing evidence-based policies informed by

interdisciplinary research, governing bodies can help users cultivate a healthier relationship with this powerful tool.

2. Theoretical Development

For our conceptual framework, in what follows, we draw on social comparison theory (Festinger, 1954) and the functional theory of human values (Gouveia et al., 2014). We start with the notion that social media exposure leads to an increasing need for approval among people due to recurrent upward social comparisons. Then, we propose that people are not uniformly affected by social media use and propose that the increase in the need for approval is contingent on people's tendency to self-ruminate. Consequently, we argue that the need for approval can elevate the importance of achievement and conformity values, as the need for approval focuses people's attention on social acceptance and recognition as key aspects of these values (Figure 1).

Figure 1. *Overview of the conceptual model.*



¹ This construct is included in Study 1 (N ≅ 135000). This study included only the main effects.

² This construct is included in Study 2 (N = 644) and Study 3 (N = 1000). Study 2 and 3 included the full conceptual model.

* Study 3 uses objective social media use as the independent variable extracted through screen time information of social media apps.

Our work is grounded in the principles of social comparison theory, which explores how people (a) try to fit into their social group by conforming with others, and (b) how they try to distinguish themselves from their social group by achieving more. Therefore, based on social comparison theory we argue that social media particularly impacts people's values of achievement and conformity, and we focus specifically on these two values in this paper: our core constructs over three studies are people's achievement and conformity orientation. Our focus on achievement and conformity values is theoretically grounded because social comparison theory specifically predicts two complementary psychological responses: assimilation toward group norms (conformity) and differentiation to distinguish oneself positively (achievement) (Hyman, 1942; Thornton & Arrowood, 1966). Furthermore, social media's unique architecture distinctively amplifies both normative pressures through standardized formats and visibility metrics, while simultaneously encouraging achievement-oriented comparison through quantified status indicators and curated displays of success. We define achievement orientation as the perceived importance of achieving success according to social standards. We define conformity orientation as the perceived importance of complying with social norms and avoiding upsetting other people (Schwartz et al., 2012).

2.1. Social Comparison Theory as the Theoretical Foundation

The key tenet of the social comparison theory is that humans have a natural tendency to evaluate themselves by comparing their abilities and attributes with those of others (Festinger, 1954). Through social comparisons to others, individuals assess their own abilities and worth within a group (Hyman, 1942; Thornton & Arrowood, 1966). While upward comparisons (e.g., comparing yourself to someone more successful than you) can be inspiring, it usually leads to feelings of inferiority (Gilbert et al., 1995; Morse & Kergen, 1970). Social comparison is not a

recent notion, but the advent of social media platforms has revolutionized the accessibility and immediacy of these comparisons (Appel et al., 2015; Smith, 2000). Today, with just a few taps on our screens, we can immerse ourselves in a world of comparisons, constantly evaluating ourselves against others. This availability is accompanied by social media's unprecedented significance in our daily routines (Dixon, 2024). In addition, social media exposes people to a stream of carefully curated lives of others, often portraying overly idealized versions of reality (Hollenbaugh, 2021). Such extended exposure to upward social comparisons on social media platforms, where people compare themselves to others who are perceived as more successful or superior in certain aspects, can foster feelings of inadequacy in social media users (Steers et al., 2014; Tesser et al., 1988). Their craving for reassurance intensifies and they strive to gain positive evaluations from others as a means of bridging the gap between their perceived inferior self and the ideal self (Smith, 2000). In short, social media-induced social comparisons can foster people's need for approval. We define need for approval as the motivation to get positive self-related feedback from others, which can temporally vary in intensity and be influenced by internal and external factors (Rudolph et al., 2005). When the need for approval is prominent and repeatedly activated, people may gradually prioritize certain values that align with satisfying their need for approval, so they mentally focus on these values.

2.2. Need for Approval and A Shift in Values

The functional theory of human values suggests that an individual's needs shape their values (Gouveia et al., 2014; Inglehart, 1977; Maslow, 1954). Put simply, our needs determine what is important to us, i.e., our values. For example, if we have a need for approval, we will focus on values emphasizing good relationships with others, such as conformity. Moreover, past literature shows that long-term changes in values occur through primes that lead to the activation of the

same values repeatedly. This repeated activation gradually strengthens the activated value until it becomes the dominant orientation for the individual, affecting perception, and behavior, and eventually forming a part of personal identity (Bardi & Goodwin, 2011; Hitlin, 2003). Values form a core part of personal identity because they function as internalized standards that guide self-definition. They shape how people see themselves, what they aspire to be, and how they position themselves relative to others (Hitlin, 2003). Achievement and conformity values, in particular, are identity-relevant because they directly govern how individuals relate to social standards. This idea of repeated activation of values perfectly mirrors the dynamics on social media platforms, where the same behaviors are repeated over and over again.

Specifically, we propose that when people have a greater need for approval fueled by extended social media use, they will have a greater achievement orientation in their lives. Social comparisons on social media are intrinsically linked to accomplishments because achievements are the benchmarks by which users measure their own success and self-worth. Social media amplifies this by showcasing highlights and milestones, prompting people to gauge their own progress against the curated achievements of others. These comparisons—from career success to personal milestones—inevitably circle back to one’s own achievements, as these are the visible, quantifiable markers of success in the digital social landscape. So, people align their long-term goals with societal expectations of success displayed on social media and strive to accomplish them. Essentially, we argue that when people have a greater need for approval fueled by extended social media use, they will exhibit stronger achievement orientation, that is, they will put an emphasis on the pursuit of accomplishments according to social standards.

H_{1a}: Social media use increases people’s achievement orientation.

H_{1b}: Social media use increases people's achievement orientation by increasing their need for approval.

While past work suggests a link between social media and conformity, these studies focused on single behaviors (Sun et al., 2019; Yoo et al., 2014). We suggest that seeking approval enhances the significance of a conformity orientation in an individual (i.e., the perceived importance of complying with social norms and avoiding upsetting other people– which might impact a wide range of behaviors) (Schwartz et al., 2012). The need for approval implies that people seek validation from others, leading them to be highly attentive to the expectations of those around them. This suggests that aligning with those social expectations becomes crucial for them. In other words, an individual's need for approval entails putting a significant emphasis on conforming to the expectations of others, which constitutes a conformity orientation. This proposition aligns with past research showing that on social media “people like what others like.” (Rosenthal-von der Pütten et al., 2019). Essentially, we argue that, when people have a greater need for approval fueled by extended social media use, they will exhibit stronger conformity, as an elevated sensitivity to social norms and expectations.

H_{2a}: Social media use increases people's conformity orientation.

H_{2b}: Social media use increases people's conformity orientation by increasing their need for approval.

Given that long-term changes in values occur through repeated activation (Bardi & Goodwin, 2011; Hitlin, 2003), it is possible that a brief exposure to social media can temporarily activate certain values. Specifically, while repeated exposure can lead to enduring changes in orientation, a single activation can result in a transient increase in the activated value. This transient activation can influence immediate perceptions of the individual, even if it does not lead to

lasting changes (Maio et al., 2009; Verplanken and Holland 2002). Therefore, we hypothesize that a brief exposure to social media (vs. a control group) will temporarily increase achievement and conformity orientations through an increase in need for approval.

H_{3a}: A brief exposure to social media activates people's achievement orientation by activating their need for approval.

H_{3b}: A brief exposure to social media activates people's conformity orientation by increasing their need for approval.

2.3. Moderating Effect of the Tendency to Self-Ruminate

In what follows, we propose that the impact of social media use on the need for approval is moderated by individual differences in the tendency to engage in self-rumination. Past research on the impact of social media suggests that the effects of social media vary greatly among people (e.g., Beyens et al., 2020; Chen et al., 2020) and advocates a nuanced approach that considers individual differences (Howard & Hoffman, 2018). On social media, people are constantly exposed to upward social comparisons; however, the impact of these social comparisons varies based on how they process and react to such comparisons (O'Day & Heimberg, 2021; Smith, 2000). People who tend to self-ruminate view the source of perceived inferiority to be within the self, which engenders the negative effects of upward comparisons (Smith, 2000). It is not the social comparison itself, but ruminating about these comparisons that affects people negatively (Weber & Hagmayer, 2018). We define self-rumination as a repetitive thought process triggered by the obstruction of personally important goals, creating a temporary state of evaluative self-focus that can lead to a more persistent, trait-like style of ruminative reaction to personal challenges (Watkins & Nolen-Hoeksema, 2014). Self-rumination typically implies negative self-focused thoughts. Specifically, we suggest that social media users with a high tendency to self-

ruminate experience a stronger need for approval in response to using social media. As a result of their tendency for negative self-focused thoughts, such users should be more susceptible to attributing inferiority to themselves and will have a greater need for approval to bridge the gap between their perceived inferior self and the standards on social media.

H₄: Self-rumination moderates the relationship between social media use and the need for approval, such that the positive effect of social media use on people's need for approval grows with increasing self-rumination.

The remainder of the article is organized in the following way. In Study 1, we explore the change in achievement and conformity orientation (H_{1a} and H_{2a}) by comparing country pairs before and after the introduction of social media. In Study 2, using an experimental approach, we investigate the impact of social media on temporarily activating achievement and conformity values (H_{3a} and H_{3b}). Finally, in Study 3, we explore the mechanism of value change through the need for approval (H_{1b} and H_{2b}) and the moderating effect of self-rumination (H₄).

3. Empirical Investigation

3.1. Study 1: A Difference-in-Difference Analysis Focusing on Pairs of European Countries

Using the data from ESS rounds 1 to 4 (2002, 2004, 2006, 2008) from 15 European countries ($N \cong 135000$), we focus on pairs of countries at the onset of social media's introduction (European Social Survey, 2016). The primary goal of this study is to identify initial causal evidence of social media adoption on achievement and conformity values. We seek to empirically exploit the heterogeneity of social media adoption across culturally similar countries to identify the effects. We use a difference-in-difference (DiD) approach to overcome endogeneity issues such as reverse causality and omitted variable bias inherent to purely correlational studies.

As an empirical strategy, we choose pairs of culturally similar countries from the 15 countries of the ESS survey that temporally differed in the introduction of social media and investigate the change in the achievement and conformity values before and after 2006. We chose this year as the critical point in time because Facebook became available to everyone above 13 years of age with a valid email address in September 2006. Even though some other social media platforms preceded Facebook in terms of their introduction (e.g., MySpace, VKontakte), they never reached a global audience at the scale that Facebook did. Therefore, we chose the introduction of Facebook as the main inflection point for the rise of social media and use the adoption of Facebook as the proxy for social media adoption in a country. We argue that in the countries that have adopted social media faster than their counterpart, we would see a significant difference in differences in achievement and conformity values, comparing before and after 2006. To test this proposal, we leverage the staggered adoption of Facebook across the world and use variation generated by the lags between countries to estimate the causal impact of social media on achievement and conformity values (see Braghieri et al., 2022 for a similar empirical approach). We provide further information on the DiD assumptions in Web Appendix B.

3.1.1. Country pair selection

For country pair selection, we identified the neighboring country pairs which are culturally similar (A total of 13 neighboring country pairs, see Table W3 in Web Appendix C). To support our assumption of cultural similarity of neighboring countries, we used the Index on Cultural Similarity (ICS) (Roose, 2012) and the Country Similarity Index (CSI) (Jones, 2020) which show how culturally similar the populations of two compared European countries are based on their demographics, culture, politics, infrastructure, and geography (Table W4 and Table W5

Web Appendix C). In all pairs, the crucial distinction we sought was a difference in social media adoption. For many reasons, social media platforms disseminated worldwide at different rates, sometimes with years of difference (e.g., language availability, internet infrastructure).

Therefore, comparing a country that has adopted social media to a greater extent to a similar country that has lagged behind presents an eligible natural experiment situation for our research question. Does a country that has adopted social media to a greater extent show a change in achievement and conformity values, compared to a similar country that has adopted social media to a lesser extent?

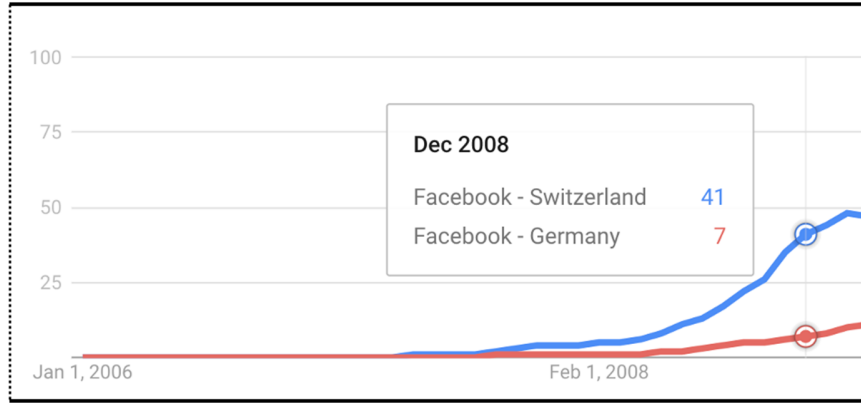
We used Google Trends data for “Facebook” for each country over time, as a proxy for social media adoption in the country. At this time, Facebook was the major social media platform that pioneered the trend of social media. Google Trends data provides a measure of what people are searching for, in a particular place, and at a particular time. Google Trends presents its search data on a scale from 0 to 100. This does not represent the total number of searches, but rather the percentage of searches for that topic as a proportion of all searches at that time and location. This is why the individual data points may not be significant in themselves, but looking at the variations across geographic regions could be meaningful. Moreover, this normalization of data also adjusts the scores for country size because the scores reflect the number of searches relative to the total number of searches in the selected location. In Table W6 (Web Appendix C), we provide the Google Trends scores for Facebook by 2006, indicating the accumulated interest over time in the topic at a location by the cutoff point. For example, a Google Trends score of 7 in Germany and 41 in Switzerland would mean that the interest in Facebook, measured by the proportion of all searches done in those locations, was almost six times higher in Switzerland compared to Germany (Figure 2). We build on previous work

(Bentzen, 2021; Jackson et al., 2023; Yam et al., 2023) that utilized Google Trends as a tool for quantifying geographical and temporal differences in people's preferences and interests. In addition, we validated Google Trends proxy by demonstrating its correlation with actual social media usage metrics across European countries during a later period when direct usage data became available (Web Appendix B)

3.1.2. Measurements

Building on the information in the previous section, we created a country dummy variable where we coded the countries that had a greater social media adoption by 2006 as 1, and the countries that lagged behind as 0 (Table W3 in Web Appendix C). Then we created a time dummy variable where we coded post-2006 as 1, and pre-2006 as 0. We used achievement and conformity value measurements (Schwartz, 1992) from the ESS surveys as dependent variables in the following way (European Social Survey, 2016). We used an average of achievement and conformity values measurements from the ESS survey in 2002 and 2004 (all available years before social media) as the pre-test. We used the achievement and conformity value measurements from 2008 as the post-test, indicating a measure of values after the staggered introduction of social media. A table of correlations is provided in Table W7 in Web Appendix C. More information on control variables and robustness considerations are provided in Web Appendix B.

Figure 2. A depiction of how Google Trends can give insights into the variations in social media adoption across geographic regions.



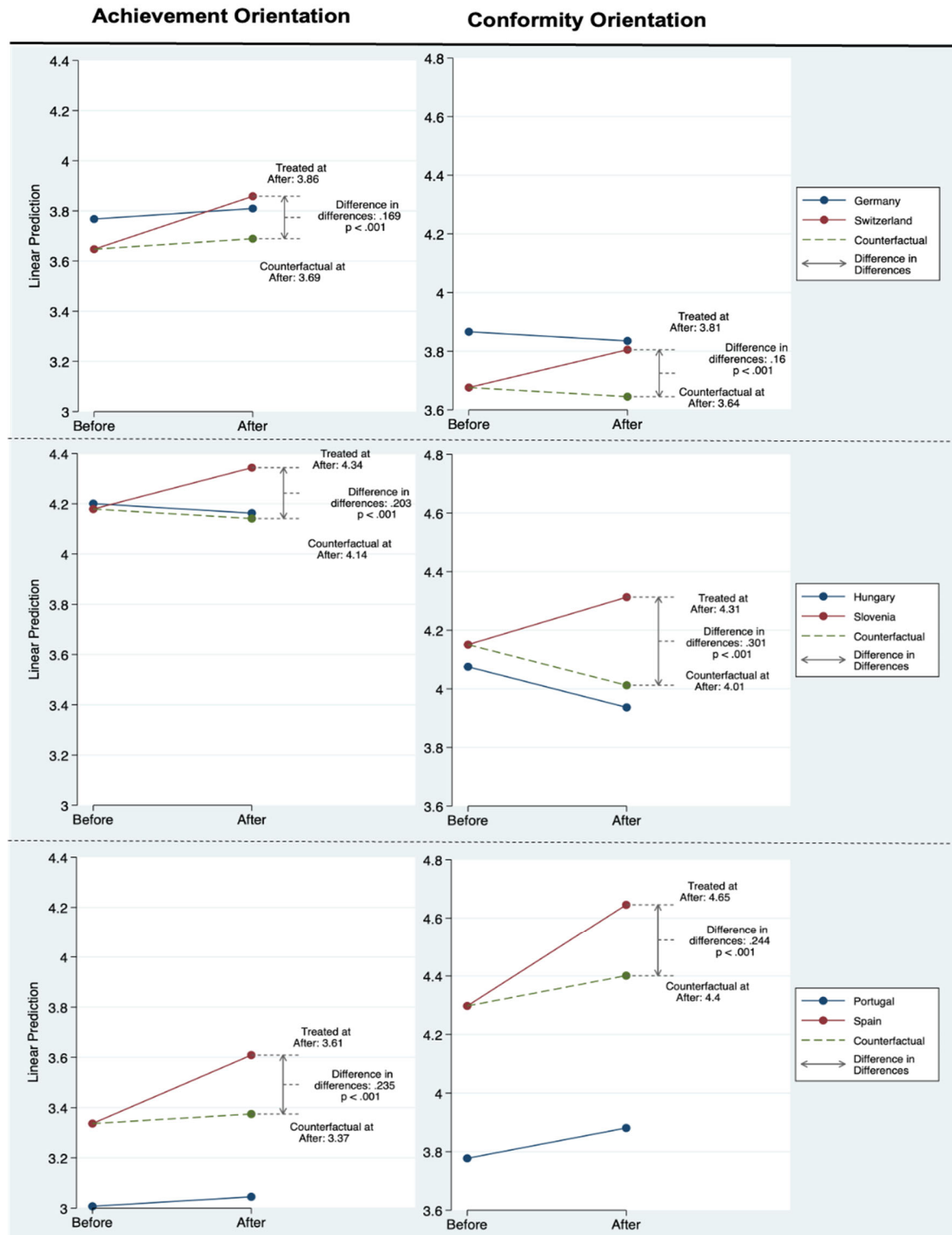
3.1.4. Analysis and Results

We estimated a two-way fixed effects model with country and time dummies as predictors, as well as their interaction term. In addition, internet use, education level, gender, and age of the respondents were added to the model as control variables. This fixed-effects approach can be expressed as:

$$Y_{ijt} = \beta_0 + \beta_1 \text{EarlyAdopter}_j + \beta_2 \text{Time}_t + \beta_3 (\text{EarlyAdopter}_j \times \text{Time}_t) + \beta_4 X_{ijt} + \alpha_j + \varepsilon_{ijt}$$

where Y_{ijt} represents either Achievement or Conformity values, i indexes individuals, j indexes countries, t indexes time, X_{ijt} represents our control variables, and α_j captures country fixed effects. As a robustness check, we also implemented a mixed effects model with random slopes for time within countries to account for country-specific trends over time, which yielded substantively identical results. As the findings remained consistent across both specifications, we report the results from the fixed effects model. In comparing the country pairs, the achievement and conformity values would have evolved along parallel trends, assuming similar country-level average effects. Our coefficient of interest, β_3 , the interaction of the

Figure 3. *Study 1: Increase in Achievement and Conformity in the countries that adopted social media earlier than their counterparts.*



Notes. First country in the pair (blue) is the late adopter, the second country in the pair (red) is the early adopter. “Treated” refers to the countries that had a greater rate of social media adoption. “Counterfactual” refers to the hypothetical trajectory of the treated country without social media exposure. The difference in differences reflect the impact of social media.

country and time dummy variables (the DID estimate), will identify the treatment effect of social media adoption on achievement and conformity values.

The results showed significant difference-in-differences effects on achievement for 9 pairs of countries and on conformity for 7 pairs of countries (Figure 3, Table W8 in Web Appendix C). The early adopters have shown a significant increase in achievement and conformity values after 2006, while in the late adopters, these values remained largely unchanged. Even though the DiD effects were not significant for all country pairs, the graphs show that the effects are trending in the anticipated direction in almost all country pairs. Table W8 in Web Appendix C provides the full list of regression coefficients for the analyses. In the manuscript, we provide the figures (Figure 3) for only three country pairs due to space limitations. However, we provide the results for all country pairs in Web Appendix C (Table W8, Figures W1-W10). Furthermore, to examine whether these effects are statistically significant at the aggregate level, we treated each country pair as an independent estimate and pooled the 13 DiD coefficients using a random-effects meta-analysis (DerSimonian & Laird 1986). This approach asks whether, across all country pairs taken together, social media adoption led to a significant overall increase in achievement and conformity orientation. The pooled effects were positive and significant for both achievement ($b = .122, p < .001, 95\% \text{ CI } [.082, .162]$) and conformity orientation ($b = .099, p < .001, 95\% \text{ CI } [.048, .151]$) (Figure W11 in Web Appendix E). These aggregate-level results remained robust in sensitivity analysis restricted to seven non-overlapping country pairs in which no country appeared more than once (see Web Appendix E for a detailed report of the meta-analytic approach). Overall, these results provide support for the main effects of social media use on achievement and conformity orientation (H_{1a} and H_{2a}). The critical point in time, 2006, when Facebook became available

worldwide, marked a significant change in achievement and conformity values in fast-adopting countries.

3.2. Study 2: The Impact of Social Media Exposure on Activating Values

In Study 2, we aim to show the causal effect of social media use on activating individual values with an experimental setup. In the experiment, the participants were asked to spend time on their own social media. Therefore, our manipulation included real social media exposure that reproduces the actual social media use of the participants. Here, we seek to show that a brief exposure to social media will activate the values of achievement and conformity for its users (H_{3a} , H_{3b}). This experimental approach draws on the value activation theory which suggests that transient activations, when occurring repeatedly over time, can gradually shape an individual's dominant value orientations (Bardi & Goodwin, 2011). While our study examines a single instance of exposure, it aims to provide an insight into how regular social media use over time might influence personal values.

3.2.1. Sample and Procedure

This pre-registered online study (<https://aspredicted.org/xg8pi7.pdf>) comprises three conditions: two treatment conditions with social media use and a control condition without social media use. An a priori power analysis using G*Power 3.1 (ANOVA: fixed effects, main effects and interactions; $f = 0.16$, $\alpha = .05$, Power $(1-\beta) = .95$, 3 groups) indicated a required total sample size of 607 participants. As specified in the pre-registration, we aimed for 200 valid participants per condition (600 total) and continued recruitment when exclusions exceeded 10 per group. We recruited 644 participants through Prolific, of whom 44 were excluded for failing an attention check requiring a correct summary of the manipulation content (i.e., the summaries of the posts

they browsed), yielding a final sample of 600 valid responses ($M_{age} = 44.3$, 47.3% female)¹.

Participants were required to be residents of the United Kingdom and users of both Facebook and LinkedIn. We chose these two social media platforms because their content is comparable.

For example, Instagram and Snapchat are largely photo and video-based, TikTok is heavily video-based, and X combines text, photo, and video but has a character limit. However, both Facebook and LinkedIn prominently feature text, accompanied by images and videos. Posts on these platforms resemble short news highlights that one might read on a news homepage.

Therefore, our main motivation was to ensure comparable conditions of social media exposure and control. At the beginning of the experiment, the participants were randomly assigned to one of the three conditions. In the first condition, the participants were asked to log in to their LinkedIn account and browse their LinkedIn feed for five minutes. They were provided a link to reach their LinkedIn feed, and they could not proceed with the experiment before the five minutes had elapsed. In the second condition, the participants were asked to browse their Facebook feeds instead. The third condition was the control condition where the participants were redirected to the BBC website to browse highlights of news articles instead of browsing social media. The BBC presents short highlights of news articles with a photo and a brief description on its main page. These highlights have a similar format to social media posts. After this treatment, they completed the rest of the survey. Data files for Study 2 and 3 can be found at: https://osf.io/xpdtw/?view_only=be50d41a608b4070b10a52cf2543975d

¹ An earlier experiment using identical materials and design ($N = 212$) yielded directionally consistent but marginally significant results and was underpowered to detect the moderated indirect effect (see Table W13 in Web Appendix C). We therefore recruited a larger sample for the present study.

3.2.2. Measurements

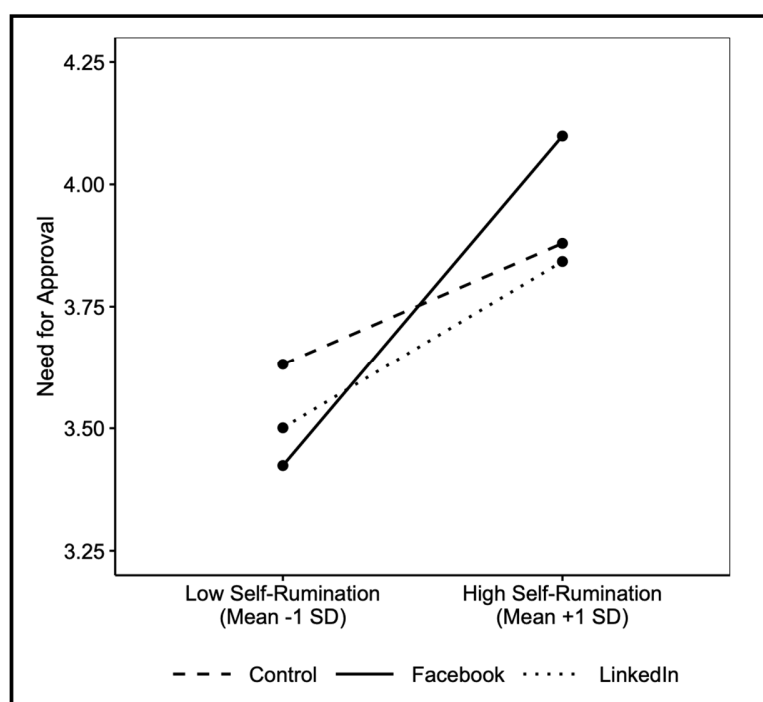
We measured need for approval (Rudolph et al., 2005), tendency to self-ruminate (Trapnell & Campbell, 1999), achievement and conformity orientation (Schwartz et al., 2012) with items from established scales adapted to our context. We measured the level of education, income, age, and gender of the participants as controls. We included country of origin as a control variable to account for cross-cultural differences that have been demonstrated in past research (Inglehart, 2004). Finally, we included overall internet use as a control to distinguish social media use from other internet-related activities. All scales conform to the prescribed values for the item reliabilities, composite reliability (CR) and average variance extracted (AVE). The complete list of measurement items for all studies including scale reliabilities can be found in Table W9 in Web Appendix C.

3.2.3. Results

The results of a one-way analysis of variance (ANOVA) revealed that condition alone (0 = Control, 1 = LinkedIn, 2 = Facebook) did not have a significant effect on need for approval ($F(2, 597) = .39, p = .68$; $M_0 = 3.75, M_1 = 3.73, M_2 = 3.68$). However, the interaction of condition and self-rumination had a significant effect on need for approval ($F(2, 594) = 4.61, p = .01$), and the interaction effects across conditions were not uniform. The interactive effect of condition and self-rumination on need for approval was significant for Facebook condition ($b = .22, SE = .07, p = .003$), but not for LinkedIn condition ($b = .05, SE = .07, p = .511$). Furthermore, contrast analyses revealed that Facebook condition differed significantly from both the control condition ($F(1, 594) = 8.17, p = .004, b = .21, SE = .07$) and the LinkedIn condition ($F(1, 594) = 5.00, p = .026, b = -.17, SE = .07$). This contrast between the LinkedIn and control conditions was not significant ($F(1, 594) = .37, p = .546, b = .05, SE = .08$). These findings show a pattern of an

increase in need for approval only in the condition that was exposed to Facebook, when self-rumination is high (Figure 4). The results show a causal effect of social media exposure in eliciting need for approval and give us further insights into the different mechanisms that might be at play in different social media platforms, thereby supporting H_{3a}, H_{3b}, and H₄.

Figure 4. *Interactive effect of condition and self-rumination on the need for approval.*



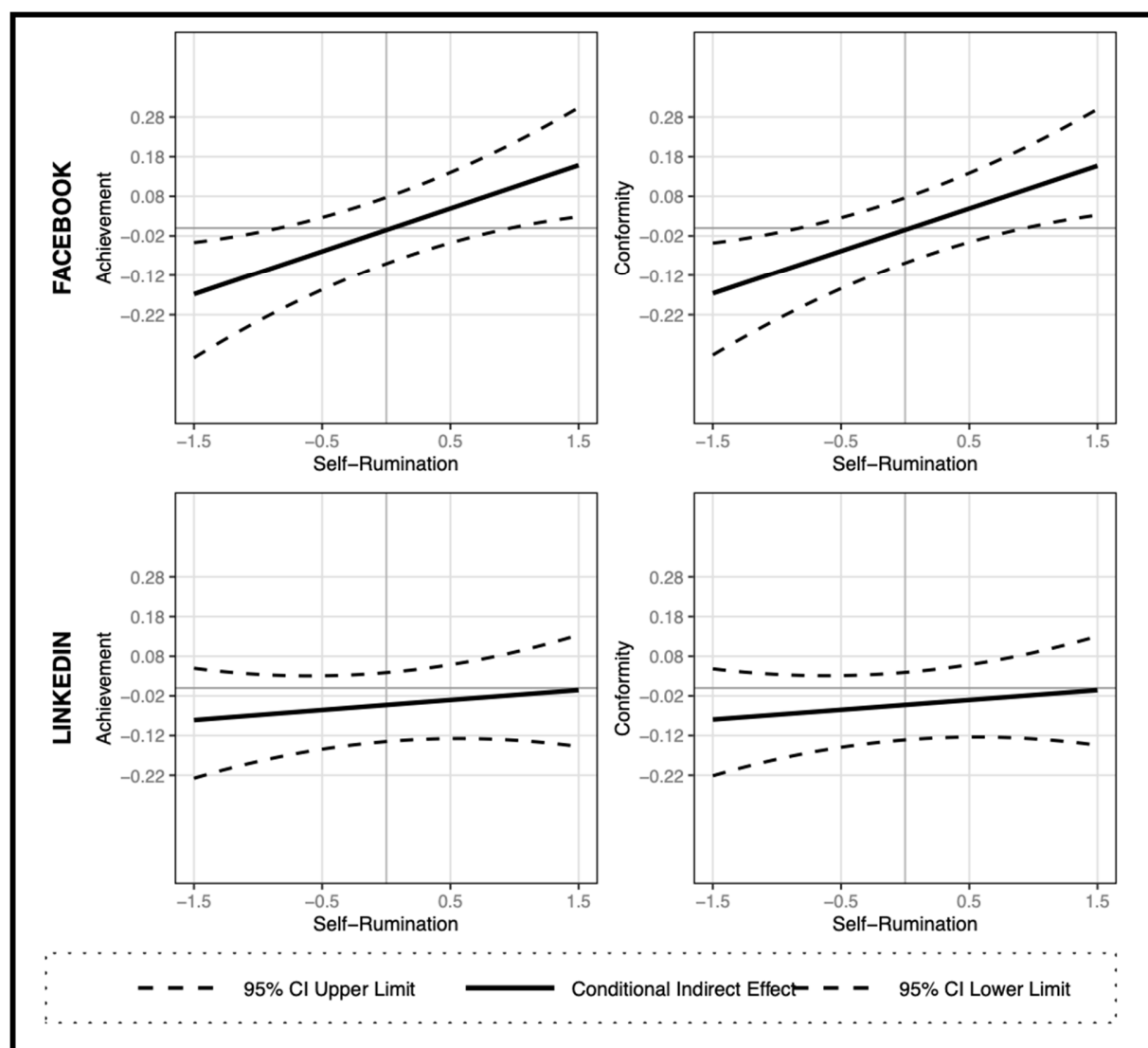
We then specified a structural equation model and performed a moderated mediation analysis to examine the effect of experimental condition on achievement and conformity orientation through need for approval, moderated by the tendency to self-ruminate. We relied on the fully specified model including the full set of control variables, with confidence intervals estimated using 5,000 bootstrap samples. We report the conditional indirect effects at three levels of the moderator (mean -1 SD, mean, mean $+1$ SD). For the Facebook condition, the conditional indirect effect on achievement orientation was negative and marginally significant at low self-rumination ($b = -.114$, $SE = .062$, $p = .065$, 95% bootstrap CIs $[-.243, -.005]$), not significant at the mean ($b = -$

.005, $SE = .039$, $p = .902$, 95% bootstrap CIs $[-.083, .073]$), and was positive and marginally significant at high self-rumination ($b = .104$, $SE = .055$, $p = .059$, 95% bootstrap CIs $[-.001, .215]$). A similar pattern emerged for conformity orientation: the indirect effect was negative and significant at low self-rumination ($b = -.112$, $SE = .059$, $p = .056$, 95% bootstrap CIs $[-.237, -.008]$), not significant at the mean ($b = -.005$, $SE = .038$, $p = .902$, 95% bootstrap CIs $[-.082, .071]$), positive and significant at high self-rumination ($b = .103$, $SE = .054$, $p = .058$, 95% bootstrap CIs $[-.001, .216]$). For the LinkedIn condition, the conditional indirect effect was non-significant at all three levels of the moderator for both achievement (low: $b = -.068$, $SE = .057$, $p = .228$, 95% bootstrap CIs $[-.189, .038]$; mean: $b = -.043$, $SE = .040$, $p = .287$, 95% bootstrap CIs $[-.129, .033]$; high: $b = -.018$, $SE = .058$, $p = .756$, 95% bootstrap CIs $[-.136, .094]$) and conformity orientation (low: $b = -.067$, $SE = .055$, $p = .223$, 95% bootstrap CIs $[-.187, .035]$; mean: $b = -.043$, $SE = .039$, $p = .280$, 95% bootstrap CIs $[-.124, .034]$; high: $b = -.018$, $SE = .057$, $p = .755$, 95% bootstrap CIs $[-.130, .095]$).

In a further analysis, we additionally examined the conditional indirect effects at ± 2 SD. For the Facebook condition, the indirect effect on achievement was negative and significant at -2 SD ($b = -.222$, $SE = .099$, $p = .025$, 95% bootstrap CIs $[-.432, -.052]$), and positive and significant at $+2$ SD ($b = .213$, $SE = .091$, $p = .020$, 95% bootstrap CIs $[-.042, .405]$). The same pattern held for conformity orientation (-2 SD: $b = -.220$, $SE = .094$, $p = .020$, 95% bootstrap CIs $[-.422, -.053]$; $+2$ SD: $b = .211$, $SE = .089$, $p = .018$, 95% bootstrap CIs $[-.049, .398]$). For the LinkedIn condition, indirect effects remained non-significant at both extremes for achievement (-2 SD: $b = -.094$, $SE = .090$, $p = .298$, 95% bootstrap CIs $[-.281, .076]$; $+2$ SD: $b = .007$, $SE = .091$, $p = .936$, 95% bootstrap CIs $[-.174, .188]$) and conformity orientation (-2 SD: $b = -.092$, $SE = .088$, $p = .294$, 95% bootstrap CIs $[-.272, .074]$; $+2$ SD: $b = .007$, $SE = .090$, $p = .937$, 95%

bootstrap CIs $[-.172, .181]$). The effects were more pronounced at the more extreme values of the moderator, such that individuals with the highest levels of self-rumination demonstrated the strongest increase in achievement and conformity orientation — but only in the Facebook condition, not LinkedIn. The distinct pattern of effects across these two platforms is a key finding of this study (Figure 5). Full results of the moderated mediation including the direct effects and the control variables are reported in Table W11 in Web Appendix C.

Figure 5. *Conditional indirect effects of Facebook and LinkedIn Conditions on Achievement and Conformity Orientation at values of moderator Self-Rumination through Need for Approval.*



3.2.4. Discussion of Study 2

In our study, we provided the participants with a brief exposure to social media, limited to just five minutes, and showed an increase in need for approval, and indirectly an activation of values achievement and conformity. The findings showed a pattern of an increase in need for approval only in the group that was exposed to Facebook, and only when self-rumination was high. This study shows that even a brief social media exposure can temporarily activate achievement and conformity orientation. This is in line with past literature showing that changes in values occur through the activation of the same value orientations repeatedly. Based on this finding, we suggest that extensive social media use over time might be doing exactly that—the repeated activation gradually strengthens the activated value until it becomes the dominant orientation for the individual (Bardi & Goodwin, 2011). However, the effect of LinkedIn exposure on need for approval, and subsequently on achievement and conformity orientation did not emerge. While it is not entirely conclusive in our findings, exposure to different social media platforms could have potentially different effects (e.g., Alhabash & Ma, 2017). We chose this pair of social media platforms due to the comparable type of their content, and we did not have a priori hypotheses about how each platform might exhibit different effects. Each social media platform offers a unique digital realm for its users, fostering different experiences (Sheldon & Bryant, 2016). Future research can focus on platform-specific features on these social media platforms to further understand the subtleties across platforms.

Furthermore, for individuals low in self-rumination, we observed a significant negative indirect effect, suggesting that social media exposure may actually decrease need for approval in this group. This implies that low self-ruminators may be less susceptible to the negative consequences of social comparisons on social media perhaps because, without a tendency toward

negative self-focused thinking, social media exposure may function as a source of social reassurance rather than a trigger for approval-seeking.

3.3. Study 3: How Social Media Impacts Achievement and Conformity

3.3.1. Sample and Procedure

In Study 3, we aimed to replicate our full model. For this purpose, we conducted an online survey. We used a nationally representative sample of 1000 participants based on age, gender, and ethnicity. The participants were residents of the United Kingdom who were recruited through Prolific ($M_{\text{age}} = 44.98$, 51.31% female). 50 participants were excluded from the analysis due to missing data provided by Prolific ($N = 1$) and failing attention checks ($N = 49$). Unlike the previous studies which relied on aggregate country-level data, indirect measures such as Google Trends for Facebook (Study 1), or experimental manipulations (Study 2), in this study we collected objective measurements of participants' actual social media usage.

3.3.2. Measurements

Measuring social media use

Our key independent variable, social media use, comprises the total time per day that an individual spends on social media, which we validated through their objective time spent on social media. We asked the participants which social media platforms they use, among the following: Facebook, Instagram, X, Snapchat, TikTok, and LinkedIn. We measured daily social media use separately for each social media platform using sliders, reported in hours and minutes. Social media use was the sum of all platform use reported in these six variables. Since this data was highly skewed, we log-transformed this variable and used it as our independent variable of social media use. However, past research suggests that self-reported social media use often does not accurately reflect actual usage (Naab et al., 2019), which decreases the reliability of studies

that rely solely on such self-reported data. Only a moderate correlation has been identified between self-reported and logged measurements of social media use (Parry et al., 2021). This issue becomes more pronounced given the complex nature of social media usage, which encompasses a wide range of platforms and forms of communication and highlights the limitations of retrospective measures commonly used in past research.

Therefore, instead of relying on participants' recall and self-report accuracy, we asked the participants to directly report their screen time metrics from their devices to receive objective reports of social media use, rather than giving an estimate. In addition, we requested screenshots of their smartphone screen time data for their social media use. This allowed us to verify the authenticity of the participants' reported social media usage. 598 participants successfully provided screenshot evidence that matched their self-reports, thereby confirming their data for inclusion in the final analysis. The final analysis included data from 598 participants. This way, we ensured that our main independent variable, social media use, is observed data and does not suffer from self-reporting biases.

In addition, we measured the need for approval, tendency to self-ruminate, achievement and conformity orientation, as well as the control variables with the same items used in Study 2.

3.3.3. Model Specification and Results

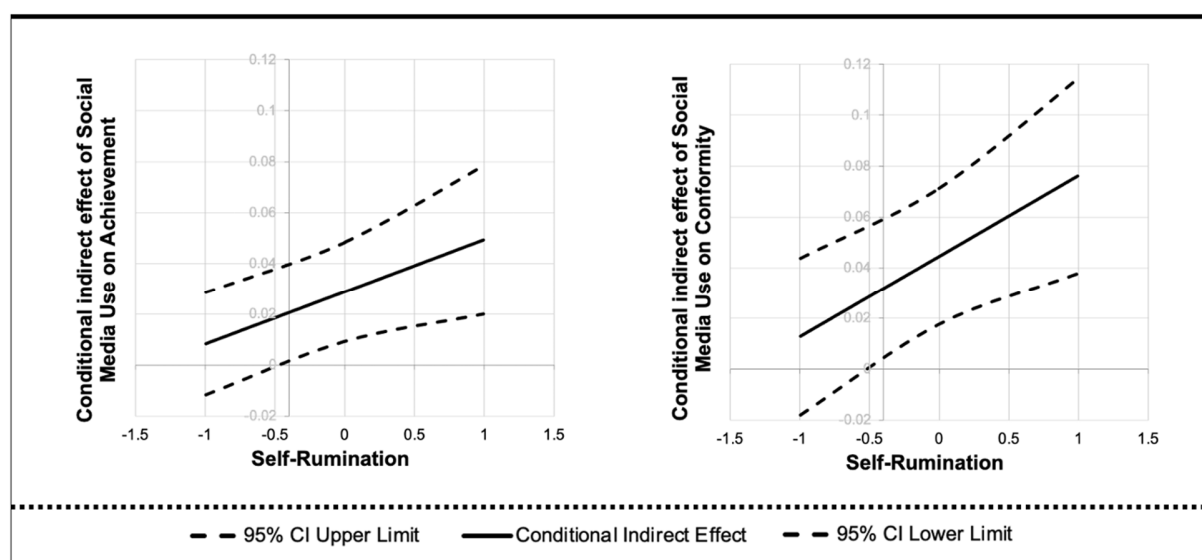
We specified a structural equation model as follows: we linked social media use to the need for approval, then the need for approval to achievement and conformity orientation (see Figure 1 for an overview of the conceptual model). We analyzed the mediated effect of social media use on achievement and conformity orientation, through the need for approval (H_{1b} and H_{2b}), as well as the direct main effects. In addition, we added self-rumination as a moderator for the link between social media use and the need for approval (H₄) and analyzed the moderated mediation model.

We added all control variables to all paths. We estimated this model using Stata 18.5 (StataCorp, 2023) including 598 observations. The results of this study are presented in Table 1.

Moderated mediation analysis

For testing the formal hypotheses, we relied on the fully specified model including the full set of control variables. We performed a moderated mediation analysis to analyze the effect of social media use on achievement and conformity orientation through the need for approval, moderated by the tendency to self-ruminate. The results showed that greater social media use had a significant positive conditional indirect effect on achievement and conformity orientation mediated by the need for approval. We found that the positive conditional indirect effect of social media use on achievement and conformity orientation was the strongest for those high in self-rumination. However, for those low in self-rumination (low level of moderator, 1 SD below mean), the effect was not significant. These results provide support for H₁ and H₂ (Table 1, Figure 6).

Figure 6. *Conditional indirect effect of social media use on Achievement and Conformity at values of the moderator self-rumination through need for approval.*



These results fully replicate the findings of Study 2 and provide a nuanced explanation for how social media use impacts people. People who have a lower tendency to self-ruminate seem to be less affected by extensive exposure to social comparisons on social media. These individuals may be less likely to internalize social media comparisons and therefore exhibit less social media-induced need for approval. However, for people who have an average or a high tendency to self-ruminate, social media use had a significant positive impact on achievement and conformity orientations through an increased need for approval.

Unlike Study 2, which isolated the effects of single platforms (Facebook and LinkedIn), Study 3 captures social media use as an aggregate across multiple platforms. Our primary interest is in the broader impact of social media as a pervasive technology rather than any single platform, and the overall convergence of findings across the two studies is encouraging. With that said, different social media platforms engage users in distinct ways and may elicit different psychological responses beyond need for approval, which future research can disentangle.

Table 1. *Study 3: Results of the Moderated Mediation Model.*

Path		Bootstrapped Model	Bias-Corrected 95% CIs
<i>Conditional Indirect Effects at 3 different levels of the moderator</i>			
Mean – 1SD	→ Achievement	–.010 (.007)	[–.029, .001]
Mean	→ Achievement	.003 (.005)	[–.005, .019]
Mean + 1SD	→ Achievement	.016 (.010)	 [.001, .046]^λ
Mean – 1SD	→ Conformity	–.031 (.020)	[–.070, .007]
Mean	→ Conformity	.010 (.016)	[–.020, .042]
Mean + 1SD	→ Conformity	.051 (.022)	 [.008, .097]^λ
Age, Gender, Income, Education level, Internet use and Country of origin are included as controls. Detailed results of the model estimation are provided in Table W12 in Web Appendix C. Robustness checks are reported in Table W15 in Web Appendix E.			

Notes. ^λ confidence interval does not contain zero, indicating that the observed effect is statistically significant at 95% level. Unstandardized coefficients are reported, SE=Standard Error. Hypothesized parts are written in **bold**. The coefficients and bias-corrected confidence intervals were estimated using 5000 bootstrap samples.

4. General Discussion

Social media platforms allow for constant social comparison of oneself against others, and we show that this leads to an increased need for approval in social media users, especially for those who tend to self-ruminate. We find that people seek approval from others, leading them to conform to group norms and strive for achievement.

4.1. Theoretical Contributions

We discuss two research issues on social media and individual value change and how we contribute to each. First, we contribute to the literature on the effects of social media on individuals by demonstrating that social media has far-reaching effects, shaping the fundamental values of people who are extensively exposed to it. This finding represents a shift in our understanding of social media's influence (Appel et al., 2020), suggesting that it has the potential to reshape people's identities. While past research has extensively investigated the impact of social media use on various domains such as mental health, well-being, and self-expression (summarized in Table W1 in Web Appendix A), we are the first to demonstrate the impact of social media on the basic individual values of people. This finding is highly relevant for research on changes in values (Abramson & Inglehart, 2009; Bardi et al., 2009), identity (Todd, 2005), and personality (Caspi et al. 2005; Helson et al., 2002). Our work also connects to past research which has shown that basic individual values are strongly related to people's interpersonal relationships (Asendorpf & Wilpers, 1998), consumption choices (Vinson et al., 1977), and decision-making patterns (McClintock & Liebrand, 1988). Relatedly, our work also contributes to the literature on value change. Although past research has shown the role of technological developments in individual value change (e.g., Shrum et al., 2005) and the effect of social media on specific values and attitudes (e.g., Ionescu et al., 2024; Wang et al., 2021), our findings add

valuable insights to the discourse on value change by revealing social media as a transformative force driving individual value change within a relatively short timeframe of fewer than two decades (Bardi & Goodwin, 2011; Maio et al., 2009).

Furthermore, converging evidence from neuroscience provides a complementary perspective on why social media is such a powerful driver of this process. Social media approval signals, such as likes and comments, activate the brain's dopamine-driven reward circuitry, including the nucleus accumbens, in ways that parallels responses to other primary rewards (Meshi et al., 2015; Sherman et al., 2016). Strikingly, deviating from group norms triggers a prediction error signal in the same neural circuits, which directly drives conforming behavioral adjustments (Klucharev et al., 2009). Social media, by generating a relentless stream of social approval signals and norm feedback, repeatedly activates these circuits, providing a neurobiological basis for the kind of repeated value activation we propose as the mechanism for lasting value change.

Second, we introduce self-rumination as an important moderator of social media's negative effects on individuals. Our findings reveal that a need for approval arises predominantly in people with a high propensity for self-rumination when engaging with social media. Past research has shown that people have different levels of susceptibility to the effects of social media, due to their age, gender, and personality (Perloff, 2014; Whaite et al., 2018). For example, teenage girls are particularly susceptible to the negative mental health effects of social media (Twenge et al., 2020). We show that self-rumination is an individual characteristic that we identify as a vulnerability factor when dealing with social media. Our results suggest that regardless of age and gender, a greater tendency to self-ruminate in an individual could exacerbate the negative effects of social media. Moreover, this is an important moderator

because past literature shows that the tendency to self-ruminate is malleable through behavioral interventions (e.g., Koole et al., 1999) unlike other individual characteristics like age, gender or personality traits.

4.2. Implications

First and foremost, our research highlights the broader societal implications of social media's pervasive influence. Our findings underscore the notion that a digital service could significantly impact our basic individual values. Typically, values are shaped by an internal journey through exposure to many different cues, personal growth, and societal discourse (Rokeach, 2008; Schwartz, 1992). However, the idea that values evolve not only as the result of a cultural and systemic process within societies but are altered by a specific digital technology, constructed by commercially driven companies, raises questions on how those technologies should be integrated in societies. This is essential from a societal well-being perspective because individuals are not aware that social media is driving a gradual shift in their values. Moreover, while achievement and conformity are not inherently harmful values, an externally-driven, technology-induced elevation of these orientations could lead to well-documented societal costs, including increased performance pressure (the so-called "hustle culture"), burnout, and diminished autonomy in how individuals define success and social belonging (Smollan & Mooney, 2024; Walker & Capral, 2020). However, these downstream consequences go beyond the scope of our current data, and future research should directly examine the links between social media-induced value change and these broader cultural outcomes.

Second, previous research has documented many dark sides of social media (Appel et al., 2015; Twenge et al., 2022). In addition to the notion that values could change as a result of social media, the mechanism through which those values are changed (i.e., a heightened need for

approval) can be problematic. While social media platforms are intended for marketing, connection, and communication, they can paradoxically engender certain stressors that have significant consequences. The continuous stream of carefully chosen portrayals of other people's lives that we encounter on social media and our relentless pursuit of social approval in the digital realm cultivate a fertile ground for the escalation of insecurity within us. Here, an important responsibility falls on tech companies and policymakers to combat the harmful effects of social media. For example, Instagram gave its users the option to remove the like count (Prichard et al., 2021), and a law in Norway requires adding disclaimers for edited photos (Stortinget, 2021). While these are steps in the right direction, a fundamental change is necessary for social media which should include abandoning the exploitative practices of the attention economy. Social media urgently needs informed guidance to design ethically humane digital products and services that prioritize the well-being of its users.

4.3. Directions for Future Research and Limitations

Building on our findings and interpretations, we offer potentially fruitful avenues for future research. In our daily lives, we are increasingly surrounded by various technologies that can affect us in different ways. This is particularly relevant for technologies that we encounter frequently or that hold a significant presence in our lives. Therefore, it would be beneficial for future research to explore the potential impact of other paradigm-shifting innovations on other individual values. For instance, the emergence of Large Language Models might potentially induce a shift towards conservation values (e.g., security) rather than openness values (e.g., stimulation) among individuals due to an increase in the perceived threat to human identity. Such a perception of a threat to human identity has already been demonstrated in voice assistants (e.g., Alexa) powered by advanced artificial intelligence (Uysal et al., 2022).

Second, exploring the interplay between existing cultural frameworks and the impact of social media on values presents another intriguing research pathway. The effect of social media on individual values may vary significantly across cultural divides, such as between collectivist societies like China and individualistic cultures found in many Western countries (Jackson & Wang, 2013; Kim et al., 2011). This divergence could influence not only the use of social media but also how values shift as a result. For instance, the value orientations inherent in different cultures—collectivism emphasizing community and social harmony versus individualism highlighting personal freedom and self-expression (Schwartz, 2007)—might dictate the degree to which social media can sway individual behavior and values. Additionally, the varying impact of technologies across cultures (Dedrick et al., 2013) suggests that social media platforms might not have a uniform effect on global value systems. Investigating these differences could uncover how cultural contexts mediate the relationship between social media use and value change, offering nuanced insights into the global dynamics of digital influence.

Finally, our model focuses on the reinforcing cycle between social media use, need for approval, and value change, but does not account for potential ‘exit doors’ from this cycle. In reality, some individuals experience social media fatigue, a state of exhaustion and disengagement resulting from excessive use, and may reduce or temporarily discontinue their social media use (Maier et al., 2015; Zhang et al., 2016). However, full discontinuance remains rare in practice, as social media has become deeply embedded in everyday social and professional life. Future research could examine whether and how social media fatigue interrupts or reverses the value shifts we identify, and what individual or contextual factors enable people to break this cycle permanently. In addition, we acknowledge that individuals engage with social media for a variety of reasons, not all of which involve deliberate social comparison. However,

social comparison on social media is not primarily an intentional, conscious process. Rather, it occurs automatically and incidentally as users consume content (Appel et al., 2015; Festinger, 1954). Even when individuals engage with social media for connection or entertainment, exposure to curated portrayals of others' lives makes social comparison an inevitable byproduct of use, regardless of the user's original motivation. Future research could directly examine how different motivations for social media use moderate the social comparison process.

Our studies have limitations, and we acknowledge them to provide a comprehensive understanding of the findings. While our research included multiple country comparisons, it was geographically confined to Europe. This focus inherently restricts the generalizability of our findings to other regions and cultures. Consequently, there exists a significant opportunity for future research to explore the applicability and relevance of our findings within the contexts of other cultural settings. Second, despite our efforts to select culturally similar neighboring countries and control for relevant country-level variables, unobserved cross-national differences in institutional, cultural, or technological factors may still exist. These differences could also potentially influence value shifts through mechanisms independent of social media adoption. Third, we intentionally focused on the early years following the inception of social media. Future research should extend the timeframe under consideration, examining the evolution and outcomes of social media exposure over a more extended period. Such an approach would enable the identification of effects that may emerge only over time.

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