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Are there differences in the everyday social comparison experiences of youth in the 1990s versus 2020s?

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ABSTRACT

Despite the widespread suggestion that decreases in psychological well-being among youth since 2010 are partly due to increases in distressing social comparisons with idealized portrayals of others on social media, this registered report is the first empirical test of whether social comparisons actually have changed since the advent of social media. Using event-contingent experience sampling, undergraduate participants from two comparable cohorts 27 years apart ($N = 232$ participants in 1997–1998 and 234 participants in 2024–2025) each described 10 naturalistic social comparisons (4,660 comparisons total). The results revealed sizable cohort effects: Compared to their 1990s counterparts, students in the 2020s were more prone to compare automatically, compare with distant rather than close others, compare upward with others' desirable attributes, and feel worse about themselves while making comparisons. The 2020s cohort also reported generally lower self-esteem and higher levels of depression. Examining the contexts in which the 2020s cohort made social comparisons revealed that comparisons made while using social media were more liable to be upward comparisons with distant targets that left people feeling insecure and disconnected. Collectively, these results suggest that social media comparisons could be one driver of the observed generational shifts in everyday social comparison experiences and psychological well-being.

Numerous studies have shown declines since 2010 in indicators of mental health and well-being among adolescents and young adults in the U.S. (Twenge, 2020), and similar trends are apparent across other countries as well (Twenge et al., 2021). Meanwhile, during those same years, ownership of smartphones and engagement with social media increased considerably. By 2020 almost all U.S. adolescents and young adults owned smartphones and accessed the Internet daily, with social media sites (e.g. Instagram, TikTok, Facebook, and YouTube) being particularly popular destinations (Pew Research Center, 2021, 2022). Thus, increases in digital technology and social media usage may be contributing to decreases in psychological health (Twenge, 2020).

On one hand, most reviews of the literature conclude that – averaging across studies and individuals – there is a negative association between social media use and

psychological well-being (Cingel et al., 2022; Meier & Reinecke, 2021; Orben, 2020; Valkenburg et al., 2022). On the other hand, these same reviews also emphasize that the associations between psychological distress and digital-technology use are quite weak, with substantial variability across studies and across individuals within studies. The variability suggests that any negative impact of social media is indirect and mediated by potentially problematic psychological or social processes, with one such problematic process being harmful social comparisons (Appel et al., 2016; Verduyn et al., 2020).

Social comparison and social media

Social comparison is "the process of thinking about information about one or more other people in relation to the self" (Wood, 1996). Noticing that your attributes are *similar* to those of the target person(s) is a *connective comparison* (e.g. "We both love running"). Noticing that your attributes are *different* from the target's attributes – without necessarily being better or worse – is a *contrastive comparison* (e.g. "I love running but you do not"). Noticing that your attributes are *inferior* to the target's attributes is an *upward comparison* (e.g. "You ran faster than I did"). Noticing that your attributes are *superior* to the target's attributes is a *downward comparison* (e.g. "You ran slower than I did"). If we imagine comparisons moving the self in different "directions" relative to the target, then connective and contrastive comparisons represent *lateral* or *horizontal comparisons* that move the self and target *close to or distant from* each other regarding the attributes (e.g. interests, experiences, and attitudes) being compared, while upward and downward comparisons represent *vertical comparisons* that locate the self *below or above* the target regarding the attributes (e.g. assets, abilities, and achievements) being compared (Locke, 2020).

Theorizing and research on the potentially harmful effects of social media social comparisons have focused on vertical comparisons (Midgley et al., 2021; Vogel et al., 2014). The basic argument is as follows: People try to depict themselves and their lives in desirable ways in their social media posts (e.g. lovely pictures, impressive updates, and fun videos). Consequently, on social media people encounter unrealistically desirable depictions of others which, in turn, increases the likelihood of concluding that others are superior or better-off (i.e. upward comparisons). Naturalistic studies of everyday social comparisons clearly and reliably indicate that on average upward comparisons deflate and downward comparisons inflate self-evaluations (Giordano et al., 2000; Locke, 2003, 2005; Midgley et al., 2021; Wheeler & Miyake, 1992). Therefore, to the degree that social media increases the likelihood or extremity of upward comparisons, it will undermine self-evaluations and subjective well-being.

On one hand, there is some evidence that upward comparisons are partly to blame for the negative impact of social media on well-being. For example, Midgley et al. conclude from their research that "these studies suggest that social media may be leading to changes in daily social comparison behavior; individuals now make more upward comparisons that are more threatening to the self." On the other hand, the literature also contains mixed and inconsistent results, leading Meier and Johnson (2022) to conclude that the hypothesis that social media "have changed the frequency, intensity, direction, or foci of social comparison and envy – compared to general human experience – is plausible but remains largely untested" (p. 3).

Indeed, crucially, one component of the argument has never been tested: Whereas there is considerable research on how engagement with social media has increased over time (Pew Research Center, 2022) and well-being has decreased over time (Twenge, 2020), there remains no research on how social comparisons have changed over time. If social comparisons are part of the story of how digital devices and social media affect well-being, then social comparisons themselves must have been affected by the diffusion of digital devices and social media into everyday life. The purpose of the current study is to provide the first test of whether or not social comparisons have in fact changed over time.

The claims about trends in mental health (see first sentence of this paper) are supported by data from reasonably large, diverse, representative samples spanning multiple decades. Unfortunately, there are no large, diverse, representative samples of social comparisons from any decade. Instead, research on naturalistic social comparisons has relied on narrower samples, typically undergraduates from a particular university (see Arigo et al., 2020). Thus, tests of whether social comparisons have changed over time will be limited by the limitations of those earlier samples. Nonetheless, limited tests will be an advance over having no tests at all. Accordingly, the current study will replicate one of the studies of social comparison conducted prior to the spread of online social media platforms and examine how contemporary participants' social comparisons do or do not differ from the earlier participants' social comparisons.

Current study

The current study will specifically replicate a study reported by Locke (2005) for four reasons. First, Locke's data were collected between 11/17/1997 and 03/28/1998, which precedes the advent of social media and the ubiquity of the internet in everyday life. Second, the data are still available. Third, Locke employed experience sampling (also known as *naturalistic* or *ambulatory* or *ecological momentary assessment* depending on the methodological details), which asks people to record experiences close in time to their occurrence; and if we are interested in describing everyday social comparison experiences, then such techniques provide greater accuracy than retrospective studies and greater external validity than laboratory studies (Arigo et al., 2020). Fourth, among naturalistic social comparison studies that do not limit comparisons to a specific type of attribute (e.g. physical appearance) or type of target (e.g. romantic partners), Locke's study – in which 232 participants reported 2,320 comparisons – has the largest sample size (see Arigo et al., 2020, Table 2).

Each time Locke's (2005) participants noticed themselves making a social comparison, they recorded the following five features of the comparison on a *Social Comparison Record* (*SCR*): target closeness, attribute desirability, comparison automaticity, comparison direction, and feelings. More details about each of these are provided below.

Target closeness
The first SCR item asked participants whether they compared with a close ("friend or relative") or a distant ("stranger or acquaintance") target. In Locke (2005), 65% of the comparisons were with close others. Because there is evidence that people compare themselves with more distant targets while using social media (Midgley et al., 2021), it is

possible that the proportion of comparisons with distant targets will be higher and the proportion of comparisons with close targets will be correspondingly lower in the 2020s than it was in the 1990s.

Target attribute desirability

The second SCR item asked participants whether the attribute of the target with which they compared themselves was desirable, undesirable, or neutral/neither. In Locke (2005), the percentages of target attributes that were desirable, undesirable, and neutral/neither were 43%, 30%, and 24%, respectively. A key assumption in the argument that social media has increased harmful social comparisons is that social media has increased exposure to desirable target attributes. If that assumption is true, then the proportion of comparisons with desirable target attributes might be greater in the 2020s than it was in the 1990s.

Comparison automaticity

The third SCR item asked participants whether they compared with the target "deliberately" or it happened "automatically." In Locke (2005), 57% of comparisons were automatic and 43% were deliberate. Might digital and social media have influenced these percentages? Research suggests that checking social media is less likely to be an intentional act than a habitual act which can be triggered by sundry internal (e.g. boredom) or external (e.g. location) cues (Anderson & Wood, 2021; Bayer et al., 2022). Moreover, for many people phone checking is both frequent and dispersed throughout their waking hours (Brinberg et al., 2021). If social comparisons get triggered as people stumble across information during these frequent habitual checks of their social media feeds (e.g. *accidentally* learning where your former roommate now works), then the proportion of automatic comparisons might be greater in the 2020s than it was in the 1990s.

But one could make a case for the opposite prediction. A recent experience sampling study confirmed that adolescents check their phone frequently (typically more than five times per hour), but when asked "To what extent did you go on social media without thinking in the past hour" on a 1 (*not at all*) to 4 (*a little*) to 7 (*completely*) scale, these adolescents' average rating fell between *not at all* and *a little* (specifically, 2.68), suggesting they did not *experience* their frequent checking as especially mindless (Meier et al., 2023). To the extent that checking social media is sometimes deliberate and the internet has made it easier to deliberately compare with specific targets on specific dimensions (e.g. *intentionally* figuring out where your former roommate now works), the proportion of deliberate comparisons might be higher – and the proportion of automatic comparisons lower – in the 2020s than it was in the 1990s.

Comparison directions

The fourth set of SCR items asked participants to rate the degree to which the direction of the comparison was connective, contrastive, upward, and downward. It is important to understand that the desirability of the target attribute does not determine comparison direction. To illustrate, a person in the hospital might notice someone who is ill (an undesirable attribute) and think "You and I suffer from the same illness" (a connective comparison), "You and I have different illnesses" (a contrastive comparison), "I am more ill than you are" (an upward comparison), or "You are more ill than I am" (a downward

comparison). Nonetheless, people (unsurprisingly) are much more likely to make upward comparisons when the target attribute is desirable than when the target attribute is undesirable (Locke, 2005). Thus, if social media increases the likelihood of encountering desirable target attributes, then social media may increase the likelihood of upward comparisons. Indeed, there is evidence that comparisons made while using social media do tend to be more upward (Midgley et al., 2021). Moreover, engaging with social media predicts making comparisons with more distant targets (Midgley et al., 2021), and comparisons with more distant targets tend to be less connective (Locke, 2003; Wheeler & Miyake, 1992). These considerations raise the possibility that social comparisons might be going in more upward and less connective directions in the 2020s than they did in the 1990s.

Feelings

The fifth set of SCR items assessed the degree to which the social comparisons engendered feelings of confidence about oneself and feelings of connection with the target. Studies have reliably shown that connective comparisons strengthen and contrastive comparisons weaken feelings of connection (Locke, 2020). Accordingly, if social comparisons have been heading in less connective directions since the advent of social media, then social comparisons may be engendering less connected feelings in the 2020s than they did in the 1990s.

Predicting the affective consequences of vertical comparisons is less straightforward since it depends on whether comparers assimilate themselves toward or contrast themselves away from the target (Smith, 2000). Whereas downward contrast (low perceived likelihood of becoming as bad as the downward target) and upward assimilation (high perceived likelihood of becoming as good as the upward target) tend to increase confidence, upward contrast (low perceived likelihood of becoming as good as the upward target) and downward assimilation (high perceived likelihood of becoming as bad as the downward target) tend to reduce confidence.[1] Both experience sampling studies (e.g. Locke, 2005; Wheeler & Miyake, 1992) and studies that experimentally manipulate comparison targets (Gerber et al., 2018) have typically found upward comparisons have negative affective consequences, thereby suggesting that upward comparisons evoke more contrast than assimilation. If upward comparisons do typically evoke contrast and comparisons have become more upward in the age of social media, then comparisons may be undermining confident feelings more in the 2020s than they did in the 1990s. However, some more recent studies of comparisons on specific social media platforms suggest that upward comparisons might evoke more assimilation than contrast, as evidenced by their positive correlations with benign envy (which motivates self-improvement) and inspiration (Meier & Johnson, 2022). If comparisons have become more upward in the age of social media but those comparisons are more often evoking assimilation than contrast, then comparisons might actually be evoking *more* confident feelings in the 2020s than they did in the 1990s. In sum, the literature contains competing findings that give rise to competing predictions.

Comparison context

If the social comparison experiences of students in the 1990s differ from those students in the 2020s, then increases in social-media usage or declines in face-to-face interactions

may be partly responsible. Yet, there is almost no research on how comparisons made while on social media differ from comparisons made in other contexts (cf. Midgley et al., 2021). Therefore, the current study will append a new item at the end of the SCR that asks participants to indicate the context in which comparison occurred – such as while on social media, or while interacting in-person with the target, or while interacting electronically. The primary purpose of this item is to test the effects of social media contexts on the abovementioned features of social comparisons (e.g. target closeness, comparison direction); however, supplemental analyses may explore the effects of other specific contexts (e.g. in-person interactions) as well.

Summary of current study

The aim of the current study is to juxtapose the social comparison experiences of a cohort of students in the 1990s with the social comparison experiences of a comparable cohort of students in the 2020s. To isolate the effect of cohort, the current study's methods will precisely mirror the earlier study's methods; specifically, the current study will recruit similar participants in a similar manner and use materials almost identical to those used in the 1990s.

The key analyses will test whether there are cohort effects on the following features of social comparisons: target closeness, attribute desirability, automaticity, comparison direction, and evoked feelings. Additionally, since the earlier study included measures of self-esteem and depression, supplementary analyses will test whether self-esteem or depression differs between the two cohorts and whether self-esteem or depression predicts everyday social comparison experiences. Finally, the current study will ask participants about the contexts in which social comparisons occur and compare those that occur while on social media with those that occur in other situations.

This paper will follow the convenient custom of referring to significant differences between the two time points as *changes*. However, it will be important to keep in mind the limitations inherent in data derived from cross-sectional surveys of students from only one location at two time points in time. For example, even if we observe changes, we will not be able make inferences about the typical social comparison experiences during the intervening decades (e.g. whether there were linear or curvilinear or discontinuous changes), or whether the observed changes can be attributed to other sociocultural shifts (e.g. whether they tended to quickly follow social media entering the lives of the individual participants or larger society), or whether they might generalize to other populations (e.g. individuals who are not students or who live in less individualistic cultures).

Method

Open science

No modifications were made to the Stage 1 registered report's methods, analysis plan, or results template. The study materials, Stage 1 manuscript, scanned surveys from the 2020s cohort, data files, and analysis code are available at this project's *Open Science Framework* (OSF) site (https://doi.org/10.17605/osf.io/p9xk6).

Participants

Two cohorts of University of Idaho undergraduates (total $N = 466$) participated for extra credit in psychology classes – specifically, one cohort during 1997–1998 (146 women, 85 men, 1 unknown) and another cohort during 2024–2025 (166 women, 62 men, 6 Other). The proportion of women relative to men was greater in the 2020s cohort than the 1990s cohort, $\chi^2(1) = 4.43$, $p = .035$.

Materials

The materials given to the 2020s cohort were identical to those used in Locke ([2005](#)) except for the following changes: (a) adding an "Other" option to the item assessing gender, (b) adding an item to assess participants' ages, and (c) adding an item to the SCRs that asked about the comparison context.

Measures of self-worth

The Rosenberg Self-Esteem Inventory (Rosenberg, [1965](#)) is a widely used self-report measure of overall self-esteem. Self-esteem scores are computed by averaging 10 items, each rated on a 1-to-4 scale. The Beck Depression Inventory-2 (Beck et al., [1996](#)) is a widely used self-report measure of depression. Depression scores are computed by averaging 21 symptoms, each rated on a 0-to-3 scale. Self-esteem scores were much higher in the 1990s cohort ($M = 3.51$, $SD = 0.52$) than in the 2020s cohorts ($M = 2.79$, $SD = 0.51$), Welch's $t(433) = 7.42$, $p < .0001$. Depression scores similarly were much lower in the 1990s ($M = 10.03$, $SD = 7.60$) than the 2020s ($M = 15.36$, $SD = 9.83$), Welch's $t(433) = 6.52$, $p < .0001$.

Social comparison record (SCR)

Naturalistic social comparisons were assessed using an event-contingent self-recording procedure that has been used in multiple social comparison studies (see Arigo et al., [2020](#)). Specifically, each time participants noticed themselves making a social comparison they recorded various features of their experience on an SCR.

    The first three SCR items used multiple choice formats: (1) "Did you compare yourself with (a) a friend or relative or (b) stranger or acquaintance?"; (2) "Did you (a) deliberately try to compare yourself with him/her/them or (b) did it happen automatically?;" and (3) "Was the characteristic of the other person (a) desirable, (b) undesirable, (c) neutral/neither?."

    The next 12 items were answered on scales ranging from 1 (not at all) to 7 (very much). The first four items assessed the horizontal and vertical comparison directions. As in Locke's ([2005](#)) study, half of the participants received these items phrased so that the target *other* was the *standard of comparison* to which the self was compared; specifically, "you were better off than him/her/them" (downward comparison), "you were different from him/her/them" (contrastive), "you were worse off than him/her/them" (upward), "you were similar to him/her/them" (connective). For the other half of the participants, these items were phrased so that the *self* was the *standard of comparison* to which target was compared; specifically, "he/she/they were worse off than you" (downward comparison), "he/she/they were different from you" (contrastive), "he/she/they were better off than you" (upward), "he/she/they were similar to you" (connective).[2]

The next eight questions asked about how participants felt during the comparison. Four items assessed feelings of self-confidence: "confident," "insecure" [Reverse scored], "good about yourself," "bad about yourself" [R]. Following Locke (2005), these four items were averaged to yield an overall "confident feelings" score (ω_{within} = .88, $\omega_{between}$ = .93). Four items assessed feelings of connection: "connected ", "distant" [R], "a sense of solidarity and kinship with them," "a sense of isolation and separateness from them" [R]. Following Locke (2005), these four items were averaged to yield an overall "connected feelings" score (ω_{within} = .84, $\omega_{between}$ = .78).

Finally, a new item not included in the earlier study was appended to the bottom of the SCR. The item (inspired by an item in Midgley et al., 2021 experience sampling study) asked: "In what context did this comparison occur?." The response options were as follows: "In-person interaction," "Interacting via phone, video, chat, email, or text," "Physically saw him/her/them without interacting," "Just thought about him/her/them," "Social media (e.g. TikTok, Instagram, Facebook, YouTube, Snapchat)," "Other media (e.g. TV, news website)," and "Other (please specify)."

Procedure

Participants completed, in order, a printed survey containing the RSEI, BDI-2, and 10 SCRs. Detailed instructions within the packet asked participants to complete an SCR "each time you notice yourself talking about or thinking about similarities and/or differences between yourself and another person or persons with respect to some characteristic." The instructions stated: "Take as long as you need to complete the 10 records. Some of you may notice 10 comparisons and complete all 10 record sheets in a single day. Others may take a couple of weeks to notice and describe 10 comparisons. The important thing is for you to do your best to complete a record whenever you notice yourself engaging in social comparison, whether that occurs once a day or ten times a day." After completing all 10 SCRs, participants returned the completed packet.

The completed paper surveys from the 1990s cohort unfortunately have already been discarded, but the completed paper surveys from the 2020s cohort have been scanned and uploaded to the study's OSF site.

Data analysis

The outcomes of interest are SCR variables. Since SCRs ("level-1") are nested within persons ("level-2"), the data were analyzed via multilevel models with random person-intercepts estimated using the R package lme4 (Bates et al., 2015). The final analysis code closely matches the sample R code submitted with the Stage 1 manuscript.[3] No participants or observations were excluded from the analyses.

Results

Preregistered analyses of cohort effects

This study's key question is whether or not the two cohorts differ in their SCR responses. To answer this question, each SCR variable was regressed on participant's cohort (coded:

1990s = 0, 2020s = 1). The quantitative outcome variables (connected and confident feelings and the four comparison directions) were analyzed via multilevel regression using the lmer function. Since the outcome variables were standardized relative to the mean and standard deviation (*SD*) of the combined sample from both cohorts, the coefficient for the effect of cohort on each outcome indicates the *SD* difference between the cohorts. The dichotomous outcome variables (target closeness, attribute desirability, and automaticity) were analyzed via multilevel logistic regression analyses using the glmer function (family = binomial); thus, the coefficient for the effect of cohort indicates the difference between the two cohorts in the log odds of that response (e.g. indicating that the comparison target was a close other).

Given the pervasiveness of social comparisons and their potential role in mental health and other outcomes of societal importance, even small cohort effects might be of interest. Therefore, the current study defined the smallest effect size of interest (SESOI) as the smallest cohort effect likely to be detectable with at least 90% power. Statistical power was estimated by conducting Monte Carlo simulations of the multilevel models described above. Each simulated dataset consisted of 460 participants (230 per cohort) who each provided 10 SCRs. The values for the level-1 and level-2 random-effects variances were obtained by computing the average level-1 and level-2 random-effects variances for the SCR variables in the data from the 1990s cohort. Various effect sizes were simulated. For each effect size tested, 1000 datasets were simulated and a multilevel model with random intercepts and cohort as a person-level predictor was fit to each dataset. The power for that effect size was then computed as the proportion of the 1000 simulated datasets in which there was a significant ($p < .05$) cohort effect. The R code for the power analyses is posted at this project's OSF site (https://osf.io/p9xk6/files; see "Simulate MLM Power.R").

For the quantitative outcome variables, the simulations suggested there was 90% power to detect a 0.12 *SD* difference between the two cohorts; thus, for the quantitative outcomes the SESOI was defined as *d* = 0.12. For the dichotomous outcome variables, the simulations (using initial probabilities of answering "yes" to the item ranging from 30% to 50%) suggested there was 90% power to detect a roughly 5% difference between cohorts in the probability of answering "yes" (for example, from 40% in the 1990s to 45% in the 2020s). This corresponds to a change in logs odds (the metric of the raw logistic regression coefficients) of approximately 0.211. Since dividing a change in log odds by 1.81 yields an effect size estimate roughly equivalent to *d* (see Chinn, 2000), the dichotomous outcomes' SESOI (.211/1.81 = .117) can be appreciated as equivalent in magnitude to the quantitative outcomes' SESOI (0.12).

For each outcome tested, if there is a significant (2-tailed $p < .05$) effect whose effect size exceeds the SESOI (i.e. a coefficient of 0.12 for a quantitative outcome or 0.21 for a dichotomous outcome), then the data will be interpreted as supporting the existence of a meaningful cohort effect. Conversely, applying the logic of non-directional equivalence testing (Lakens et al., 2018), if there is a non-significant effect with an effect size whose 90% confidence interval (*CI*) does not include the SESOI, then the data will be interpreted as indicating that there is – for practical purposes—*not* a significant difference between cohorts. Thus, specifically, the criterion for practical equivalence between the two cohorts will be either (for quantitative outcome variables) a non-significant regression coefficient whose 90% *CI* does not include + .12 or −.12 or (for dichotomous outcomes) a non-significant logistic regression coefficient whose 90% *CI* does not include + .21 or −.21.

Table 1. Continuous social comparison record (SCR) variables – descriptive statistics and effects of cohort.

SCR Variable	1990s		2020s		Effects of Cohort			
	M	SD	M	SD	b	SE	p	90% CI
Comparison Direction								
Upward	3.10	1.95	3.48	1.90	**0.185**	0.028	<.0001	[0.139, 0.230]
Downward	3.39	2.05	3.09	1.84	**−0.136**	0.028	<.0001	[−0.182, −0.090]
Connective	3.37	1.55	3.50	1.60	0.082	0.029	.0043	[0.035, 0.128]
Contrastive	4.79	1.63	4.61	1.64	−0.103	0.028	.0003	[−0.150, −0.056]
Feelings During Comparison								
Confident	4.90	1.41	4.24	1.66	**−0.418**	0.027	<.0001	[−0.462, −0.373]
Connected	3.89	1.55	3.77	1.52	−0.082	0.028	.0041	[−0.129, −0.035]

N participants = 232 in the 1990s cohort and 234 in the 2020s cohort. N SCR responses = 2,311–2,313 in the 1990s and 2,337–2,339 in the 2020s. Ratings were made on 1-to-7 scales. The regression coefficients (b) show the difference between cohorts (coded: 1990s = 0, 2020s = 1) for each standardized SCR variable. Bold-faced bs exceeded the preregistered smallest effect size of interest (|0.12|). CI = confidence interval.

Table 2. Dichotomous social comparison record (SCR) variables - descriptive statistics and effects of cohort.

SCR Variable	Descriptives		Effects of Cohort				
SCR Variable	1990s	2020s	b	SE	p	90% CI	b/1.81
Target							
Close *(vs Distant)*	65.1%	50.7%	**−0.611**	0.063	<.0001	[−.715, −.507]	−0.338
Target's Attribute							
Desirable *(vs Not)*	44.1%	52.6%	**0.348**	0.060	<.0001	[.249, .447]	0.193
Undesirable *(vs Not)*	31.2%	24.2%	**−0.352**	0.067	<.0001	[−.462, −.242]	−0.195
Neutral *(vs Not)*	24.7%	23.1%	−0.088	0.070	.2090	[−.204, .027]	−0.049
Automaticity							
Automatic *(vs Deliberate)*	57.0%	67.0%	**0.471**	0.064	<.0001	[.365, .576]	0.260

N participants = 232 in the 1990s cohort and 234 in the 2020s cohort. N SCR responses in the 1990s and 2020s were: 2,099 and 2,321 for Target; 2,258 and 2,308 for Target Attribute; and 2,242 and 2,270 for Automaticity. The first two columns show the percentages of each type of response (e.g. comparing with a close rather than distant target). The multilevel logistic regression coefficient (b) indicates the difference between the two cohorts (coded: 1990s = 0, 2020s = 1) in the log odds of making that response (e.g. comparing with a close target). Bold-faced bs exceeded the preregistered smallest effect size of interest (|0.211|). CI = confidence interval. The final column shows the bs divided by 1.81, which yields an effect size index roughly comparable to the bs for the quantitative variables in Table 1.

Accordingly, to facilitate equivalence testing, the tables below report the coefficient for each fixed effect of cohort along with its standard error and 90% *CI*.

Table 1 shows the results for the quantitative SCR outcomes – the comparison directions and feelings accompanying the comparison. Compared to the 1990s cohort, the 2020s cohort reported significantly and meaningfully greater upward comparisons and less downward comparisons and confident feelings. The 2020s cohort also reported significantly greater connective comparisons and less contrastive comparisons and connected feelings, but the differences between the cohorts were too small to be considered meaningful (all *d*s ≤0.1).[4]

Table 2 shows the results for the categorical SCR outcomes – target, target attribute, and automaticity. The left columns show the endorsement percentages for each outcome within each cohort. In both cohorts, at least 50% of social comparisons were made with close targets, more than 50% were automatic rather than deliberate, and comparisons with desirable target attributes were more common than comparisons with either undesirable or neutral attributes. However, there were also differences between the two

cohorts. Relative to the 1990s cohort, the 2020s cohort showed significant and meaningful increases in the likelihood of making comparisons automatically rather than deliberately, with a distant rather than close target others, and with target attributes that were desirable rather than undesirable. There was no difference between cohorts in the likelihood of making comparisons with neutral attributes (i.e. the non-significant effect's 90% CI did not include the SESOI).

To make the effect sizes for the dichotomous outcomes more interpretable and comparable to the coefficients for the quantitative outcomes, Table 2 reports the magnitude of the logistic regression coefficients divided by 1.81. Examining Tables 1 and 2 reveals that the two strongest cohort effects were the increase in the percentage of comparisons with distant targets (from 34.9% to 49.3%) and decrease in feelings of confidence ($d \approx .42$). The increases in comparisons with desirable target attributes and upward comparisons – and concomitant decreases in comparisons with undesirable target attributes and downward comparisons – were weaker but still meaningful (i.e. roughly equivalent to ds in the 0.14 to 0.19 range).

Preregistered supplemental Analyses: Effects of gender, self-esteem, and depression

Effects of gender, self-esteem, and depression on the SCR variables were tested by repeating the preceding analyses while including gender, self-esteem scores, or depression scores as a person-level covariate.

Self-esteem and depression

Self-esteem and depression scores were standardized. Thus, for the continuous outcomes, the regression coefficients represent the SD change in that outcome (e.g. comparing downward) for each SD change in either self-esteem or depression. For the dichotomous outcomes, the logistic regression coefficients represent the log odds change in the probability of that outcome (e.g. a close target) for each SD change in either self-esteem or depression. Supplemental Tables S1-2 report the results.

Lower self-esteem and higher depression predicted a greater likelihood of comparing with a desirable target attribute ($OR = 1.11$, meaning each SD decrease in self-esteem or increase in depression scores predicted approximately 11% greater likelihood of comparing with a desirable attribute). Inversely, higher self-esteem predicted being more likely to compare with an undesirable target attribute ($OR = 1.10$). Higher self-esteem and lower depression also predicted making more connective and downward and less contrastive and upward comparisons and feeling more confident and connected. Self-esteem and depression had their biggest impact on upward comparisons and confident feelings (standardized bs between 0.15 and 0.30) followed by connected feelings and downward comparisons (standardized bs between 0.06 and 0.11).

Supplemental Tables S1-2 show the effects of cohort while controlling for self-esteem or depression. As noted in the Method section, relative to the 2020s cohort, the 1990s cohort reported much higher self-esteem and much lower depression. Thus, it is unsurprising that controlling for self-esteem or depression notably weakened the direct effects of cohort on upward comparisons, downward comparisons, confident feelings, and connected feelings (i.e. compare the cohort effects reported in Table 1 with those

reported in the lower right of Supplemental Tables S1-2). Nonetheless, except in the case of connected feelings, the cohort effect remained statistically significant.

Gender

In analyses involving gender, gender was dummy-coded and individuals who reported their gender identity as "other" were omitted. Supplemental Table S3 shows the results. Compared to women, men reported making more deliberate comparisons, making less upward and contrastive comparisons, and feeling more connected and confident during their comparisons. Thus, in general, social comparisons appeared to have been less pleasant experiences for women than for men. Although the two cohorts had different gender ratios, juxtaposing Supplemental Tables S3 with 1-2 shows that controlling for gender had little or no impact of any of the cohort effects.

Preregistered analyses of comparison context

Analyses involving comparison context only use data from the 2020s cohort since the 1990s survey did not include that item. By far the most common context was an in-person interaction (43.1% of comparisons). The next most common context was "Physically saw him/her/them without interacting" (21.7% of comparisons). The third most common context was social media (13.4%), closely followed by "Just thought about him/her/them" (10.9%) and "Interacting via phone, video, chat, email, or text" (8.6%). The remaining 0.7% were "Other" contexts that a participant judged did not fit into any of the preceding categories. Supplemental Table 4 reports the descriptive statistics for the SCR variables within each comparison context (for example, the percentage of social media comparisons that were with close targets).

   The primary impetus for adding this item was to compare social media contexts with other contexts. To do so, each comparison's context was dummy-coded: *social media* = 1, *other contexts* = 0. The dummy-codes were centered within-person by subtracting from each comparison's code the person's average code (i.e. the proportion of that person's comparisons that were social media comparisons). A series of multilevel models treated the Level-2 person-mean and Level-1 person-centered context codes as predictors of target closeness, attribute desirability, automaticity, comparison directions, and connected and confident feelings. The within-person slope coefficient (the effect of the person-centered dummy-code) estimates the difference in the outcome (for example, confident feelings) between when a typical individual makes a comparison while on social media versus when that same individual makes a comparison in another context. The between-person slope coefficient (the effect of person-means) estimates the typical difference in the outcome between an individual who only made comparisons while on social media and another individual who never made comparisons while on social media (Yaremych et al., 2023).

   As Table 3 shows, at the between-person level, individuals who made more of their social comparisons while using social media were more likely to compare with distant targets and with desirable target attributes and less likely to compare with neutral attributes. They also reported more upward comparisons and less confident and connected feelings. At the within-person level, comparisons made while on social media were more likely to involve distant targets, desirable (rather than neutral or undesirable) target

Table 3. Effects on social comparison record (SCR) variables of comparing while using social media — 2020s cohort.

SCR Variable	Within-Person			Between-Person		
	b	SE	p	b	SE	p
Dichotomous Outcomes						
Target						
Close (vs Distant)	−2.240	0.185	<.0001	−1.320	0.413	.0014
Target's Attribute						
Desirable (vs Not)	1.046	0.152	<.0001	1.343	0.366	.0002
Undesirable (vs Not)	−.816	0.188	<.0001	−.679	0.398	.0878
Neutral (vs Not)	−.772	0.195	<.0001	−1.335	0.459	.0036
Automaticity						
Automatic (vs Deliberate)	−.024	0.159	.8800	.719	0.589	.2220
Quantitative Outcomes						
Comparison Direction						
Upward	.544	0.057	<.0001	.540	0.220	.0149
Downward	−.403	0.057	<.0001	−.285	0.211	.1790
Connective	−.330	0.063	<.0001	.137	0.224	.5414
Contrastive	.274	0.062	<.0001	.141	0.219	.5210
Feelings During Comparison						
Confident	−.590	0.059	<.0001	−.939	0.284	.0011
Connected	−.559	0.060	<.0001	−.586	0.216	.0071

Ns = 311 social media comparisons and 2,015 non-social-media comparisons. The within-person bs indicate the difference in outcomes (in the metric of log odds for dichotomous outcomes and SDs for quantitative outcomes) between a comparison a typical participant made while on social media versus made in another context. The between-person bs indicate the typical difference in the outcome between a hypothetical participant who only made comparisons while on social media and a participant who only made comparisons in other contexts.

attributes, more upward and contrastive (and less downward and connective) comparison directions, and less confident and connected feelings.

Exploratory tests of effects of the other contexts were also conducted. Given the number of exploratory tests, only associations significant at $p < .005$ will be mentioned. Supplemental Table 5 shows that at the between-person level, individuals who made more of their comparisons during in-person or virtual interactions were more likely to compare with close targets and to feel confident and connected. At the within-person level, social comparisons made during interactions were much more likely to involve close targets and feelings of similarity and connection and were also somewhat less likely to involve upward comparisons and feelings of insecurity. Supplemental Table 6 shows that relative to comparisons made in other contexts, comparisons made while physically observing but not interacting with the target were associated with an increased likelihood of the following: the comparison being automatic rather than deliberate, with a distant rather than close target, and with an undesirable rather than desirable target attribute; the comparison going in contrastive and downward rather than upward and connective directions; and the comparison evoking less connected feelings. Finally, Supplemental Table 7 shows that (both between- and within-persons) comparisons that involved just thinking about the target were associated with a greater likelihood of comparing deliberately and with close others.

Preregistered supplemental Analyses: Effects of closeness, desirability, and automaticity

The situational context is just one of the factors that could influence social comparison directions and feelings. Other measured factors include target closeness, target attribute

desirability, and whether the comparison was intentional or automatic. The final set of analyses tested whether these other factors predicted comparison directions and feelings. The analyses included the data from both cohorts and entered closeness, desirability, and automaticity as simultaneous predictors. Closeness, automaticity, and desirability were initially coded as follows: distant = 0, close = 1; deliberate = 0, automatic = 1; undesirable = −1, neutral = 0, desirable = 1. But (paralleling the models testing social media effects described above) person-mean and person-centered closeness, automaticity, and desirability were then computed and between-person and within-person slopes were modeled.

Supplemental Tables 8–10 report the results. Unsurprisingly, comparing with close rather than distant others was associated with feeling similar and connected rather than dissimilar and disconnected. Comparing with less desirable attributes was associated with feeling confident and better off than the target but also more dissimilar and disconnected from the target. Finally, people felt more confident and connected when making comparisons deliberately rather than automatically.

Discussion

In this experience sampling study, undergraduates from two different time periods – the 1990s and the 2020s – described their everyday social comparison experiences.

Cohort effects

The current study's key finding was that the social comparison experiences reported by participants in the 1990s versus the 2020s clearly differed. There were noteworthy differences between the two cohorts in their comparison targets, the desirability of the attributes they compared, the automaticity and direction of their comparisons, and the feelings their comparisons evoked. The effect sizes of the differences discussed below exceeded not only the SESOIs but also any variance we might naturally expect when replicating a 25-year-old study.

The greatest change between the 1990s and 2020s was a moderately strong decline in feeling confident and secure and good about oneself while making social comparisons. There were also meaningful increases in upward comparisons with "better off" others and with others' desirable attributes and decreases in downward comparisons with "worse-off" others and with others' undesirable attributes. These changes are clearly intertwined: Individual differences in comparing with others' desirable (vs undesirable) attributes, comparing upward (vs downward), and feeling insecure (vs confident) were all positively associated. Similar associations were evident within individuals; for example, an individual was more apt to compare upward and feel insecure when focused on a target's desirable attribute than when focused on a target's undesirable attribute. Note that this finding that feeling confident and good about yourself was strongly negatively associated with upward comparisons and positively associated with downward comparisons aligns with previous findings suggesting that in everyday life the emotional and self-evaluative consequences of vertical comparisons are driven more by *contrast* than *assimilation* (e.g. Irmer & Schmiedek, 2023; Wheeler & Miyake, 1992).

There was also a sizable shift in the targets of comparison: From the 1990s to the 2020s the percentage of comparisons with close others (friends or relatives) dropped from 65% to under 51% while the complementary percentage of comparisons with distant others (strangers or acquaintances) increased from 35% to over 49%. Finally, the percentage of comparisons that happened automatically rather than deliberately increased from 57% in the 1990s to 67% in the 2020s. Whether a comparison is made deliberately or automatically mattered: Comparisons that were made deliberately were associated with more positive emotional consequences than comparisons that happened automatically.

Psychological well-being

In addition to the effect of cohort on social comparisons, there was also a sizable effect of cohort on psychological well-being: Compared to the 1990s cohort, the 2020s cohort reported substantially (ds >0.6) lower levels of self-esteem and higher levels of depression symptoms. In turn, lower self-esteem and higher depression levels predicted experiencing higher levels of upward comparisons and feelings of insecurity.

The observed cohort effects are consistent with prior studies documenting declines in psychological well-being since 2010 among adolescents and young adults (Haidt, 2024). And the effects of self-esteem and depression are consistent with prior studies demonstrating that lower well-being predicts more upward comparisons and concomitant negative self-evaluations (Aubry et al., 2024; Midgley et al., 2021). Thus, the results involving self-esteem and depression were not surprising.

Together, though, these results raise the possibility that the differences between cohorts in psychological well-being might partly explain the differences between cohorts in upward comparisons and feelings of insecurity. Supporting this possibility, including self-esteem or depression as covariates weakened the effects of cohort on upward comparisons and confidence. Nonetheless, controlling for the differences between cohort in psychological well-being did not eliminate the cohort effects on comparison directions and feelings of confidence. Thus, other factors – in addition to declines in psychological well-being – are necessary to fully explain why undergraduates in the 2020s were more prone to comparisons that evoked feelings of inferiority and insecurity.

To the extent that psychological well-being and social comparisons are causally related, several different causal pathways are possible (Appel et al., 2016; Aubry et al., 2024; Frison & Eggermont, 2016). Perhaps, the 2020s cohort initially experienced declines in psychological well-being which consequently caused them to be more vulnerable to making unfavorable social comparisons. Or perhaps the 2020s cohort initially experienced increases in unfavorable social comparisons which consequently caused them to be more susceptible to depression and low self-esteem. Or perhaps social comparison experiences and psychological well-being have been exerting bidirectional influences on each other over many years. Unfortunately, this study's non-longitudinal data cannot point to which of these mechanisms would best explain the current findings.

Effects of comparison context

One of the explanations that has been suggested for declines in youth well-being since 2010 is that social media tends to spur the sorts of social comparisons that undermine self-

evaluations (Haidt, 2024; Verduyn et al., 2020). To examine this possibility, the 2020s cohort was additionally asked to describe the context in which each comparison occurred. Perhaps surprisingly given the omnipresence of digital devices in their daily lives, approximately two-thirds of their social comparisons were with physically present others and slightly over half occurred while interacting with the target. Only 13.4% of comparisons were made while on social media.

Crucially, the context in which a social comparison occurred made a difference. Compared to social comparisons made in other contexts, those made while on social media were more likely to involve distant rather than close others and focus on desirable rather neutral or undesirable target attributes. Social media comparisons also tended to be more upward and contrastive and less downward and connective. Consequently, comparisons made via social media induced less confident and connected feelings. These findings align with those of Midgley et al. (2021), who similarly observed that, relative to other contexts, comparisons made while using social media involved more distant targets, more upward comparisons, and more negative self-evaluations.

The characteristics that distinguish social media comparisons from those in other contexts mirror the characteristics that distinguish the 2020s cohort's social comparisons from those of the 1990s cohort – namely, an increased focus on distant others and desirable target attributes, increased upward comparisons, and increased feelings of insecurity. These compelling parallels suggest that social media comparisons, which were present in the 2020s but not the 1990s, might be partly responsible for the differences between the cohorts. To the extent that is true, it would support the argument that social media comparisons – by repeatedly provoking dispiriting, alienating comparisons with unrealistically positive portrayals of others – may be one of the causes of the decline in psychological well-being since 2010.

The only aspect of a social comparison that was *not* predicted by whether it occurred while using social media was whether the comparison was automatic versus deliberate. Thus, social media comparisons are probably not *directly* responsible for the decrease in deliberate comparisons from the 1990s to the 2020s. However, social media and smartphones may have played an indirect role – potentially by frequently taxing individuals' limited capacities for sustained attention and social cognition, even in situations where the comparison target was physically present.

The social comparisons associated with the *best* outcomes were those that occurred while interacting with the target. Specifically, compared to social comparisons made in other contexts, those made during interactions with others were much more likely to involve close others and evoke feelings of similarity, solidarity, and connection. They were also somewhat less likely to make people feel insecure or bad about themselves.

Finally, social comparisons that involved physically seeing the target without interacting were associated with a mixed pattern of emotional and self-evaluative outcomes. On the one hand, they were less likely to focus on desirable target attributes and thus less likely to involve upward comparisons. On the other hand, they were much less likely to involve close targets and evoke feelings of similarity and connection.

Limitations

The limitations inherent in relying on cross-sectional data from just two time periods were discussed earlier. The following section summarizes the benefits and limitations of two

other features of the current study. First, having participants record social comparisons whenever they notice themselves making them has the benefit of capturing information about spontaneous comparisons shortly after they occur. But a limitation is that there could be systematic biases in which social comparisons participants notice and select to report; for instance, it might be that people are more likely to notice and record unpleasant social comparisons than pleasant ones.

Second, the participants were traditional-age undergraduates taking psychology courses on a particular university campus during either the 1990s or 2020s. An advantage of such a relatively homogeneous sample is that – by minimizing irrelevant sources of variability – it enables more confident conclusions about cohort effects. But a disadvantage is that it increases uncertainty about how well the findings will generalize to other populations (e.g. that differ in location, education, age, culture, and so on). For example, in contrast to the students in this study – who were attending on-campus courses and living on or near a college campus – students completing online degree programs may spend less time with physically present peers and thus be more likely to make comparisons online.

Conclusion

The impetus for this study was that despite the widespread assertion – in both academic publications and popular media – that one cause of decreases in psychological well-being since approximately 2010 have been increases in distressing social comparisons, the assumption that distressing social comparisons have increased has never been tested. Hence, the present study was designed to test whether social comparisons had or had not changed – specifically, by juxtaposing the social comparison experiences of students in 1997–1998 with those of comparable students in 2024–2025.

The results showed that there indeed were sizable shifts in everyday social comparison experiences: Students in the 2020s were more likely than their 1990s counterparts to compare automatically and with distant rather than close others, to focus on others' desirable attributes, and to feel worse-off and bad about themselves. Perhaps relatedly, students in the 2020s also reported lower self-esteem and higher levels of depression. Analyzing the contexts in which the 2020s cohort made social comparisons revealed that those made while using social media – especially in contrast to those made during interpersonal interactions – were more liable to be upward comparisons with distant others that left individuals feeling insecure and disconnected. Collectively, these results suggest that social media comparisons could be one of the drivers of the changes in everyday social comparison experiences and psychological well-being in recent decades.

Notes

1. Assimilation and contrast are distinct from connective and contrastive horizontal comparisons. Unlike connective and contrastive comparisons, assimilation and contrast are not themselves social comparisons. Instead, assimilation and contrast are "post-comparison self-evaluations" and "consequences of social comparison" (Crusius et al., 2022, p. 173). However, connective and contrastive comparisons can shape these post-comparison consequences; specifically, connective comparisons (i.e. registering relevant self-target similarities) tend to

stimulate assimilation and contrastive comparisons (i.e. registering relevant self-target dissimilarities) tend to stimulate contrast.

2. The standard of comparison manipulation (*Self* or *Other*) is tangential to current research. Nonetheless, in analyses involving comparison direction, the condition to which a participant is randomly assigned will be included as a covariate and any effects of the manipulation will be reported in a footnote.

3. The one exception concerns the analyses reported in the final paragraph of the "Effects of Comparison Context" section. The Stage 1 registered report introduced these analyses as follow: "Exploratory tests of effects of other contexts or categories of contexts (e.g. interaction contexts, whether in-person or electronically mediated) may be conducted if sufficient numbers of comparisons were made in those contexts . . . ." The analysis code for these explicitly exploratory tests was not preregistered since which contexts would make sense to analyze was unknown prior to collecting the data.

4. In analyses of comparison direction, the standard of comparison manipulation (e.g. whether the upward comparison item was phrased as "He/she/they were better off than me" versus "I was worse off than him/her/them") was included as a dummy-coded covariate. Interestingly, the results revealed that people were much more willing to make upward comparisons that involved saying "they were better-off" versus saying "I was worse-off" ($b = 0.414$, $SE = 0.034$, $p < .0001$) and make downward comparisons that involved saying "I was better-off" versus saying "they were worse-off" ($b = -0.411$, $SE = 0.033$, $p < .0001$). In short, people seemed less reluctant to indicate who was better than who was worse. People were also slightly more inclined to make connective comparisons that involved saying "they were similar to me" versus "I was similar to them" ($b = 0.138$, $SE = 0.034$, $p < .0001$) and make contrastive comparisons that involved saying "I was different from them" versus "they were different from me" ($b = -0.129$, $SE = 0.034$, $p < .001$).

Disclosure statement

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Supplemental Table 1

Effects of Cohort and Self-Esteem on Social Comparison Record (SCR) Variables

SCR Variable	Effect of Self-Esteem			Effect of Cohort		
	b	*SE*	*p*	*b*	*SE*	*p*
Dichotomous Outcomes						
Target						
Close *(vs Distant)*	0.045	*0.036*	.2150	-0.583	*0.067*	<.0001
Target's Attribute						
Desirable *(vs Not)*	-0.100	*0.034*	.0032	0.284	*0.064*	<.0001
Undesirable *(vs Not)*	0.098	*0.037*	.0074	-0.289	*0.071*	<.0001
Neutral *(vs Not)*	0.023	*0.041*	.5740	-0.073	*0.075*	.3310
Automaticity						
Automatic *(vs Deliberate)*	-0.006	*0.040*	.8880	0.467	*0.069*	<.0001
Quantitative Outcomes						
Comparison Direction						
Upward	-0.165	*0.017*	<.0001	0.078	*0.030*	.0080
Downward	0.113	*0.017*	<.0001	-0.063	*0.030*	.0347
Connective	0.073	*0.017*	<.0001	0.128	*0.031*	<.0001
Contrastive	-0.056	*0.017*	.0014	-0.139	*0.031*	<.0001
Feelings During Comparison						
Confident	0.302	*0.017*	<.0001	-0.221	*0.028*	<.0001
Connected	0.114	*0.017*	<.0001	-0.008	*0.031*	.8000

Note. N participants = 232 and 234 in the 1990s and 2020s cohort, respectively. *N SCR responses* ranged from 2,099 to 2,339, depending on the outcome variable (see Tables 1-2 for details). *Self-Esteem* = Rosenberg Self-Esteem Inventory (Rosenberg, 1965) scores. For the dichotomous SCR variables, the *b*s show the difference in the log odds of that outcome between the two cohorts (coded: 1990s = 0, 2020s = 1) or per *SD* change in self-esteem. For the quantitative SCR variables, the *b*s show the *SD* difference in the outcome either between the two cohorts or per *SD* difference in self-esteem.

Supplemental Table 2

Effects of Cohort and Depression on Social Comparison Record (SCR) Variables

SCR Variable	Effect of Depression			Effect of Cohort		
	b	*SE*	*p*	*b*	*SE*	*p*
Dichotomous Outcomes						
Target						
Close *(vs Distant)*	-0.014	*0.035*	.6850	-0.594	*0.066*	<.0001
Target's Attribute						
Desirable *(vs Not)*	0.100	*0.034*	.0033	0.293	*0.063*	<.0001
Undesirable *(vs Not)*	-0.065	*0.037*	.0816	-0.310	*0.070*	<.0001
Neutral *(vs Not)*	-0.060	*0.041*	.1460	-0.063	*0.075*	.3940
Automaticity						
Automatic *(vs Deliberate)*	-0.076	*0.040*	.0571	0.527	*0.069*	<.0001
Quantitative Outcomes						
Comparison Direction						
Upward	0.149	*0.017*	<.0001	0.100	*0.029*	.0006
Downward	-0.063	*0.017*	.0003	-0.105	*0.030*	.0004
Connective	-0.046	*0.017*	.0083	0.100	*0.030*	.0010
Contrastive	0.059	*0.017*	.0007	-0.131	*0.030*	<.0001
Feelings During Comparison						
Confident	-0.225	*0.017*	<.0001	-0.294	*0.028*	<.0001
Connected	-0.112	*0.017*	<.0001	-0.021	*0.030*	.4870

Note. N participants = 232 and 234 in the 1990s and 2020s cohort, respectively. *N SCR responses* ranged from 2,099 to 2,339, depending on the outcome variable (see Tables 1-2 for details). *Depression* = Beck Depression Inventory-2 (Beck, Steer, & Brown, 1996) scores. For the dichotomous SCR variables, the *b*s show the difference in the log odds of that outcome between the two cohorts (coded: 1990s = 0, 2020s = 1) or per *SD* change in depression. For the quantitative SCR variables, the *b*s show the *SD* difference in the outcome either between the two cohorts or per *SD* difference in depression.

Supplemental Table 3

Effects of Cohort and Gender on Social Comparison Record (SCR) Variables

SCR Variable	Effect of Gender			Effect of Cohort		
	b	*SE*	*p*	*b*	*SE*	*p*
Dichotomous Outcomes						
Target						
Close *(vs Distant)*	0.050	0.075	.5060	-0.602	0.064	<.0001
Target's Attribute						
Desirable *(vs Not)*	-0.086	0.072	.2290	0.354	0.061	<.0001
Undesirable *(vs Not)*	0.127	0.075	.0907	-0.354	0.068	<.0001
Neutral *(vs Not)*	-0.009	0.085	.9150	-0.093	0.071	.1920
Automaticity						
Automatic *(vs Deliberate)*	-0.309	0.083	.0002	0.450	0.066	<.0001
Quantitative Outcomes						
Comparison Direction						
Upward	-0.174	0.036	<.0001	0.168	0.028	<.0001
Downward	0.077	0.036	.0319	-0.137	0.028	<.0001
Connective	0.063	0.036	.0827	0.079	0.029	.0062
Contrastive	-0.155	0.037	<.0001	-0.120	0.029	<.0001
Feelings During Comparison						
Confident	0.344	0.036	<.0001	-0.381	0.027	<.0001
Connected	0.166	0.036	<.0001	-0.064	0.029	.0268

*Note. N*s = 146 women and 85 men in the 1990s and 166 women and 62 men in the 2020s. Gender was dummy-coded: *women* = 0, *men* = 1. Cohort was dummy-coded: *1990s* = 0, *2020s* = 1. For the dichotomous SCR variables, the *b*s show the difference between the cohorts or between the genders in the log odds of that outcome. For the quantitative SCR variables, the *b*s show the *SD* difference in the outcome between the cohorts or between the genders.

Supplemental Table 4

Social Comparison Record (SCR) Variables' Descriptive Statistics Within Each Comparison Context — 2020s Cohort

SCR Variable	In-Person Interaction	Virtual Interaction	Observed	Thought About	Social Media	Other Media
Dichotomous Outcomes						
Target						
Close *(vs Distant)*	68.0%	81.3%	16.7%	71.5%	15.0%	16.7%
Target's Attribute						
Desirable *(vs Not)*	51.9%	46.4%	45.6%	48.2%	73.9%	61.1%
Undesirable *(vs Not)*	23.9%	24.5%	29.2%	26.5%	13.7%	25.0%
Neutral *(vs Not)*	24.2%	29.1%	25.2%	25.3%	12.4%	13.9%
Automaticity						
Automatic *(vs Deliberate)*	67.0%	68.8%	74.0%	52.8%	69.1%	42.9%
Quantitative Outcomes	M *(SD)*	M *(SD)*	M *(SD)*	M *(SD)*	M *(SD)*	M *(SD)*
Comparison Direction						
Upward	3.31 *(1.79)*	3.41 *(1.92)*	3.27 *(1.81)*	3.48 *(1.99)*	4.39 *(2.01)*	4.00 *(2.14)*
Downward	3.07 *(1.77)*	3.30 *(1.95)*	3.34 *(1.88)*	3.27 *(2.03)*	2.45 *(1.61)*	2.94 *(1.98)*
Connective	3.76 *(1.57)*	3.93 *(1.63)*	3.04 *(1.48)*	3.60 *(1.64)*	3.17 *(1.54)*	3.08 *(1.71)*
Contrastive	4.36 *(1.61)*	4.30 *(1.78)*	4.94 *(1.53)*	4.63 *(1.66)*	4.96 *(1.62)*	4.92 *(1.61)*
Feelings During Comparison						
Confident	4.52 *(1.55)*	4.37 *(1.59)*	4.27 *(1.69)*	4.04 *(1.76)*	3.36 *(1.61)*	4.55 *(1.53)*
Connected	4.25 *(1.49)*	4.12 *(1.54)*	3.20 *(1.27)*	3.63 *(1.59)*	3.02 *(1.30)*	3.75 *(1.47)*

Note. *N* participants = 234. *N* comparisons within each context = 1003 *in-person interaction*, 200 *virtual interaction*, 505 *observed*, 254 *thought about*, 311 *social media*, 36 *other media*. Quantitative SCR variables were rated on 1-to-7 scales.

Supplemental Table 5

*Effects of Comparing While Interacting with Target on Social Comparison Record (SCR) Variables —
2020s Cohort*

SCR Variable	Within-Person			Between-Person		
	b	*SE*	*p*	*b*	*SE*	*p*
Dichotomous Outcomes						
Target						
Close *(vs Distant)*	1.991	*0.110*	<.0001	1.187	*0.293*	<.0001
Target's Attribute						
Desirable *(vs Not)*	-0.065	*0.094*	.4849	-0.474	*0.238*	.0465
Undesirable *(vs Not)*	-0.101	*0.108*	.3500	0.328	*0.254*	.1970
Neutral *(vs Not)*	0.200	*0.111*	.0719	0.313	*0.290*	.2816
Automaticity						
Automatic *(vs Deliberate)*	0.108	*0.107*	.3150	-0.271	*0.394*	.4910
Quantitative Outcomes						
Comparison Direction						
Upward	-0.126	*0.040*	.0015	-0.384	*0.149*	.0106
Downward	0.018	*0.039*	.6530	0.028	*0.144*	.8470
Connective	0.435	*0.042*	<.0001	0.039	*0.152*	.7958
Contrastive	-0.343	*0.042*	<.0001	-0.242	*0.148*	.1020
Feelings During Comparison						
Confident	0.277	*0.040*	<.0001	0.562	*0.193*	.0039
Connected	0.652	*0.039*	<.0001	0.433	*0.146*	.0032

Note. Ns = 1,203 comparisons during interactions and 1,123 comparisons in other contexts. The within-person *b*s indicate the difference in outcomes (in the metric of log odds for dichotomous outcomes and *SD*s for quantitative outcomes) between a comparison a typical participant made while interacting with the target versus made in another context. The between-person *b*s indicate the typical difference in the outcome between a hypothetical participant who only made comparisons during interactions and a participant who only made comparisons in other contexts.

Supplemental Table 6

Effects of Comparing While Observing Target on Social Comparison Record (SCR) Variables — 2020s Cohort

SCR Variable	Within-Person			Between-Person		
	b	*SE*	*p*	*b*	*SE*	*p*
Dichotomous Outcomes						
Target						
Close *(vs Distant)*	-2.143	*0.144*	<.0001	-1.996	*0.353*	<.0001
Target's Attribute						
Desirable *(vs Not)*	-0.454	*0.114*	<.0001	-0.021	*0.303*	.9430
Undesirable *(vs Not)*	0.402	*0.126*	.0015	0.039	*0.322*	.9046
Neutral *(vs Not)*	0.194	*0.132*	.1400	-0.044	*0.367*	.9040
Automaticity						
Automatic *(vs Deliberate)*	0.396	*0.135*	.0033	1.174	*0.509*	.0212
Quantitative Outcomes						
Comparison Direction						
Upward	-0.215	*0.048*	<.0001	0.339	*0.188*	.0732
Downward	0.171	*0.047*	.0003	0.071	*0.180*	.6927
Connective	-0.373	*0.051*	<.0001	-0.370	*0.189*	.0512
Contrastive	0.270	*0.051*	<.0001	0.187	*0.186*	.3160
Feelings During Comparison						
Confident	0.041	*0.049*	.4013	-0.095	*0.246*	.6993
Connected	-0.486	*0.049*	<.0001	-0.391	*0.184*	.0349

Note. Ns = 505 comparisons while physically observing the target and 1,821 comparisons in other contexts. The within-person *b*s indicate the difference in outcomes (in the metric of log odds for dichotomous outcomes and *SD*s for quantitative outcomes) between a comparison a typical participant made while observing the target versus made in another context. The between-person *b*s indicate the typical difference in the outcome between a hypothetical participant who only made comparisons while observing the target and a participant who only made comparisons in other contexts.

Supplemental Table 7

Effects of Comparing While Just Thinking about Target on Social Comparison Record (SCR) Variables —
2020s Cohort

SCR Variable	Within-Person			Between-Person		
	b	*SE*	*p*	*b*	*SE*	*p*
Dichotomous Outcomes						
Target						
Close *(vs Distant)*	1.001	*0.160*	<.0001	1.390	*0.451*	.0021
Target's Attribute						
Desirable *(vs Not)*	-0.209	*0.148*	.1587	-0.249	*0.421*	.5539
Undesirable *(vs Not)*	0.236	*0.168*	.1610	-0.393	*0.452*	.3850
Neutral *(vs Not)*	0.043	*0.171*	.8030	0.758	*0.502*	.1310
Automaticity						
Automatic *(vs Deliberate)*	-0.663	*0.162*	<.0001	-1.804	*.690*	.0090
Quantitative Outcomes						
Comparison Direction						
Upward	0.033	*0.063*	.6038	-0.169	*0.265*	.5237
Downward	0.112	*0.062*	.0709	0.014	*0.252*	.9560
Connective	-0.014	*0.068*	.8370	0.552	*0.263*	.0371
Contrastive	0.028	*0.067*	.6700	-0.049	*0.260*	.8500
Feelings During Comparison						
Confident	-0.126	*0.064*	.0516	-0.251	*0.345*	.4681
Connected	-0.140	*0.066*	.0331	0.150	*0.261*	.5649

Note. Ns = 254 comparisons while thinking about target and 2,072 comparisons in other contexts. The within-person *b*s indicate the difference in outcomes (in the metric of log odds for dichotomous outcomes and *SD*s for quantitative outcomes) between a comparison a typical participant made while thinking about the target versus made in another context. The between-person *b*s indicate the typical difference in the outcome between a hypothetical participant who only made comparisons while thinking about the target and a participant who only made comparisons in other contexts.

Supplemental Table 8

Effects of Comparing with Close (vs Distant) Target on Social Comparison Record (SCR) Variables

SCR Variable	Within-Person			Between-Person		
	b	*SE*	*p*	*b*	*SE*	*P*
Comparison Direction						
Upward	-0.087	*0.027*	.0014	-0.290	*0.075*	.0001
Downward	-0.015	*0.025*	.5470	0.106	*0.069*	.1230
Connective	0.453	*0.031*	<.0001	0.161	*0.083*	.0517
Contrastive	-0.363	*0.031*	<.0001	0.083	*0.085*	.3260
Feelings During Comparison						
Confident	0.142	*0.028*	<.0001	0.519	*0.079*	<.0001
Connected	0.708	*0.030*	<.0001	0.598	*0.080*	<.0001

Note. Ns = 2,543 comparisons with close targets and 1,877 comparisons with distant targets. The within-person *b*s indicate the *SD* difference in outcomes between a comparison a typical participant made with a close target versus made with a distant target. The between-person *b*s indicate the typical *SD* difference in the outcome between a hypothetical participant who only made comparisons with close targets and a participant who only made comparisons with distant targets.

Supplemental Table 9

Effects of Target Attribute Desirability on Social Comparison Record (SCR) Variables

SCR Variable	Within-Person			Between-Person		
	b	*SE*	*p*	*b*	*SE*	*P*
Comparison Direction						
Upward	0.592	*0.016*	<.0001	0.630	*0.050*	<.0001
Downward	-0.721	*0.014*	<.0001	-0.627	*0.046*	<.0001
Connective	0.271	*0.018*	<.0001	0.252	*0.055*	<.0001
Contrastive	-0.241	*0.018*	<.0001	-0.170	*0.056*	.0025
Feelings During Comparison						
Confident	-0.464	*0.016*	<.0001	-0.854	*0.053*	<.0001
Connected	0.208	*0.017*	<.0001	0.085	*0.053*	.1093

Note. Ns = 2,211 comparisons with desirable target attributes, 1,093 comparisons with neutral attributes, and 1,263 comparisons with undesirable attributes. The within-person *b*s estimate the *SD* difference in outcomes between comparisons whose target attributes differed by one unit of desirability (e.g., from undesirable to neutral or from neutral to desirable). The between-person *b*s estimate the *SD* difference in outcomes between participants whose target attributes differed on average by one unit.

Supplemental Table 10

Effects of Comparing Automatically (vs Deliberately) on Social Comparison Record (SCR) Variables

SCR Variable	Within-Person			Between-Person		
	b	*SE*	*p*	*b*	*SE*	*P*
Comparison Direction						
Upward	0.017	*0.029*	.5589	0.178	*0.066*	.0073
Downward	0.035	*0.026*	.1810	-0.031	*0.061*	.6080
Connective	-0.012	*0.033*	.7114	-0.177	*0.073*	.0153
Contrastive	0.024	*0.033*	.4717	0.065	*0.075*	.3875
Feelings During Comparison						
Confident	-0.111	*0.030*	.0002	-0.517	*0.070*	<.0001
Connected	-0.069	*0.032*	.0301	-0.382	*0.070*	<.0001

Note. Ns = 2,800 automatic comparisons and 1,712 deliberate comparisons. The *b*s indicate the effects of comparing automatically on the standardized outcome variables. The within-person *b*s indicate the *SD* difference in outcomes between a comparison a typical participant made automatically versus made deliberately. The between-person *b*s indicate the typical *SD* difference in the outcome between a hypothetical participant who only made automatic comparisons and a participant who only made deliberate comparisons.