

Thinking of You: How Second Person Pronouns Shape Cultural Success

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Abstract

What leads some cultural items to succeed while others fail? Some have argued that one function of narrative arts is to facilitate feelings of social connection. If true, cultural items that activate personal connections should be more successful. The present research tests this possibility in the context of second person pronouns. Rather than directly addressing the audience, communicating norms, or encouraging perspective-taking, we argue that second person pronouns can encourage audiences to think of someone in their own lives. Textual analysis of songs ranked in the Billboard charts (N = 4,200), as well as controlled experiments (total N = 2,921) support this possibility, demonstrating that cultural items that use more second person pronouns are liked and purchased more. These findings demonstrate a novel way that second person pronouns make meaning, how pronouns' situated use (object vs. subject) may shape this meaning, and how psychological factors shape the success of narrative arts.

Keywords: language, pronouns, psychological foundations of culture, arts and entertainment

Some songs become hits, while others languish. Some books become bestsellers while others fail to resonate. What leads some things to win out in the marketplace of ideas?

To succeed at the collective level, it helps to build on psychological processes at the individual or interpersonal level (Kashima, Bain, & Perfors, 2019; Schaller & Crandall, 2004). While people spend vast quantities of time and money consuming narrative arts like songs, literature, and movies, the arts' fundamental functions remain murky. Some have theorized that the narrative arts have a social role, fostering a sense of connection with others (Hargreaves & North, 1999; Schafer et al., 2013). Because prior work usually involves asking people to report how much they agree with different functions, however, it remains unclear whether these aspects truly drive behavior. If one function of music is to connect listeners to others in their own social life, then songs that do a better job of facilitating such connections should be more successful (i.e., liked and purchased more).

We examine this possibility in the context of second person pronouns. In modern English, these pronouns are represented by four variations of the word “you” (i.e., you, your, yours, and yourself). Their unique, fundamental role is to signal attentional focus—that a speaker is directly addressing a cognitively or physically present person, people, or their things (e.g., “You’re great” or “Your shoes are great”; Kacewicz et al., 2013; Pennebaker, 2011). Neither first person nor third person pronouns serve this function (Brenner, 1983; Lyons 1977).

While speakers and listeners pay second person pronouns little conscious attention (Chung & Pennebaker, 2007; Pennebaker, 2011), we suggest that these words may help shape cultural success. Prior research suggests two ways this might occur. First, by directly addressing the audience as the subject (e.g., “You are slicing a tomato”) second person pronouns may bolster mental simulation and involvement (Brunyé et al., 2009; Escalas, 2007). Second, “you”

words can convey norms or imperatives whether they are expressed generically by others (e.g., “You should pound in nails”; Orvell, Kross, & Gelman, 2017) or the self (self-talk; e.g., “You should work out more”; Dolcos & Albarracin, 2014; Kross et al., 2014).

The present research offers a third possibility. How people use second person pronouns offers insight into their own relationships with others (Chung & Pennebaker, 2007; Simmons, Chambless, & Gordon, 2008). But what happens when people experience “you” as a third-party observer, such as when they consume narrative arts? When Shakespeare says “Shall I compare thee (you) to a summer’s day?”, Whitney Houston sings “I will always love you,” or Freddie Mercury shouts “We will rock you!” it seems unlikely the audience thinks the speaker is directly addressing them. These examples also don’t seem to convey norms or imperatives. Instead, when consuming such utterances, audiences are exposed to a protagonist communicating about or to another human object.

We hypothesize that these situations should encourage audiences to conjure up a specific “you” in their own life. Audiences tend to slip into the protagonist’s (grammatical subject’s) perspective when processing narratives (Green & Brock, 2000; Hartung et al., 2016), so rather than interpreting themselves as the “you” the cultural item references, second person pronouns should invite audiences to imagine a personal “you” who is the recipient of their own attention (grammatical object). Rather than thinking Whitney loves them, the listener imagines a “you” whom they love or have loved. Rather than thinking Queen is going to rock them, the listener imagines another person or persons they want to “rock” (e.g., an opposing sports team). Evoking such personal connections should make narrative arts more relevant (Baumeister & Leary, 1995; Deci & Ryan, 2000) and make people like them more (Escalas, 2007; Green, 2004).

Note that this suggested process differs from traditional notions of perspective-taking (Galinsky & Moskowitz, 2000). Rather than putting the listener in the singer's shoes, or encouraging them to see the singer's personal perspective (e.g., Whitney Houston's view towards her own love), we suggest that second person pronouns encourage audiences to imagine the narrative in relation to someone in their own life. In this way, second person pronouns encourage narrative transportation (Green, 2004; Strange & Leung, 1999), but rather than being transported into someone *else's* narrative, the narrative provides a new way to look at one's *own* life (Escalas, 1998). Rather than being transported out of one's own life, the lyrics encourage people to experience some aspect of their life through the lens of the singer's lyrics.

In sum, we hypothesize that (H1) songs that use more second person pronouns (i.e., "you") should be more liked and purchased more. But rather than "you" words directly addressing the audience as the subject, conveying norms or imperatives, or activating perspective-taking, we suggest this occurs because (H2) second person pronouns activate a personal other in the audience's own life ("other-activation").

GENERAL METHOD

Analyses of field data (Studies 1-2) was performed in the R programming environment (packages: car, lme4, nlme, NLP, olsrr, tm, topicmodels). Analysis of variance and mediation analysis for the experiments (Studies 3-4) were performed in SPSS. Mediation analyses used the PROCESS macro (Hayes, 2018). The participation check procedure used for the experiments is detailed in the SOM. Data for all studies and preregistration for Study 4 are available at the Open Science Framework (OSF) website at: [link blinded for review].

STUDY 1

To begin to examine our main hypothesis (H1), Study 1 used natural language processing of thousands of songs to test whether songs whose lyrics include more second person pronouns are more successful (purchased more).

This study also provides a preliminary process test. If second person pronouns engage audiences by activating someone in their own lives, as we suggest, then how “you” is used should influence its impact. Prior work suggests that second person pronouns can engage audiences by directly addressing the audience as the protagonist, or grammatical subject (e.g., “*You* love”; Brunyé et al., 2009; Escalas, 2007). If this is driving the effect, then songs should be more successful when they directly address the listener as the subject (i.e., subject uses). In contrast, we take an other-activating or object “you” perspective (H2). This suggests that second person pronouns should boost success more when “you” is the *object* of a protagonist’s thoughts or actions (“Love *you*”). We test this possibility.

Method

First, data on songs and song performance were collected. Billboard’s digital download rankings (www.billboard.com/biz) were sampled for all of the major genres (Christian, Country, Dance, Rock, Pop, Rap, R&B; Alternative genre data was incomplete) every three months for a three-year period (2014-16), obtaining all songs that appeared in each ranking and their position in that chart (1-50). These rankings capture over 90% of major paid song services (e.g., Apple iTunes, Google Play, Spotify). Chart ranks were reverse coded so that positive coefficients describe a positive relationship with audience engagement. Digital downloads were chosen in particular because they are more likely to be driven by consumer preferences rather than

institutional actors (e.g., radio DJs, professional critics, awards). This netted a dataset of 4,200 song rankings over 1,736 unique songs from 1,187 artists. The large sample was motivated in part by a desire to assess robustness of results within genres ($N = 600$ per genre) and over time ($N = 450$ per quarter). Artist name and whether the song appeared on the Billboard radio airplay lists for the same periods were also captured as controls.

Second, we measured second person pronouns. The complete lyrics for each song were acquired from SongLyrics.com and processed using Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2015) to identify the proportion of words in each song that are second person pronouns ($M = 5.20$, $SD = 3.95$; 93.9% of songs > 0).

Finally, linear regression was used to examine the relationship between second person pronouns and song success. Treating rank dependent measures as continuous is appropriate given the large number and fixed range of ranks.

Results

As predicted, songs that used “you” words more were more successful (higher sales rank) ($b = .19$, $t(4198) = 3.35$, $p < .001$, $f^2 = .003$).

Testing Robustness. This result persists controlling for a range of alternative explanations. First, one could wonder whether certain music artists who are more popular also happen to use more second person pronouns, and this unobserved factor is driving the results. We control for this by including random effects for artist. We also nest song within artist given some songs are performed by more than one artist (e.g., covers).

Second, one could wonder whether songs that get played on the radio more often might have more second person pronouns, and that this, rather than consumer preferences, is what is driving popularity. Consequently, we control for radio airplay.

Third, one could wonder whether songs that use more second person pronouns also tend to sing about certain topics (e.g., love or dancing) and it is those topics, rather than the “you” words, that is driving popularity. We control for the song’s topic mixture using a latent Dirichlet allocation (LDA) topic model (Blei, 2012; see Supplemental Online Material (SOM) for detail).

Fourth, one could wonder whether some other major linguistic feature or frequently used word is correlated with second person pronoun usage, and that, rather than “you” words, is driving popularity. To address this possibility, we measure language features capturing major psychological constructs (LIWC dictionaries for cognitive processing, emotion, perception, motivation, time, relativity, and formality; Pennebaker et al., 2015) as well as the presence of the top 100 words appearing across all songs, excluding the second person pronouns we examine separately.

Finally, we also control for song attributes such as genre, how many genres the song charted in, which quarter(s) the song charted in, and how many times the song charted.

Even after including all of these controls (135 fixed effects; 1,186 random effects for artist[song]) in a linear mixed effects regression model, the effect of second person pronouns still persists ($b = .19$, $t(4063) = 2.35$, $p = .019$, $f^2 = 1.184$).

We also examined each of these control sets independently to consider their contribution to model fit (see SOM Table S2 for detail). The positive effect of second person pronouns still persists when we exclude control sets that do not improve model fit (genre and time; you $b = .19$, $t(4082) = 2.40$, $p = .016$, $f^2 = .974$). The effect of “you” words on song success also persists using automatic variable selection to select the best set of individual control variables under either stepwise forward or stepwise backward approaches (R package = `olsrr`; forward: you $b = .23$, $t(4143) = 3.85$, $p < .001$, $f^2 = .187$); backward: you $b = .22$, $t(4129) = 3.80$, $p < .001$, $f^2 =$

.185). The relationship between “you” words and song success is also robust to a logit specification. While linear regression is appropriate given the large number and fixed range of ranks, ordered logistic regression of song ranking as a 50 level factor produces the same result either without controls (you $b = .02$, $t(4198) = 3.36$, $p < .001$, odds ratio = 1.023) or with the controls (you $b = .02$, $t(4063) = 2.74$, $p = .006$, odds ratio = 1.025).

While songs that use more second person pronouns are more popular, one might wonder whether this relationship is restricted to only highly popular (i.e., Billboard ranked) songs. It could be that while the most popular songs in the Billboard charts use more second person pronouns than less popular songs in the charts, songs that don’t make the charts (even less popular) may also use many second person pronouns. To address this, we collected a set of less popular songs. The ideal comparison group would include songs that are as similar as possible to the popular songs (i.e., same artist and album), but not as successful. To provide such a matched comparison, research assistants who were blind to hypotheses randomly selected a song from the same artist and album that didn’t make the Billboard charts. These songs were made by the same artists and launched at the same time (or if the song was launched as a single or multi-artist compilation, on the artist’s immediately prior album) but were less successful. Matched pairs were successfully produced for 1,735 (92.3%) of the 1,879 top 50 songs in the dataset. In addition to controlling for song popularity, this approach offers a test of second person pronoun effects within artist.

Consistent with the notion that second person pronouns increase popularity, compared to less popular songs by the same artist, more popular (i.e., top 50) songs used more “you” words ($M = 5.39$, $SD = 3.99$ vs. $M = 5.07$, $SD = 4.04$; $b = 0.32$, $t(5134) = 2.86$, $p = .004$, $f^2 = .001$).

Using the main linear regression model and treating less popular songs as rank 51 produces a similar result ($b = .19$, $t(1733) = 3.33$, $p < .001$, $f^2 = .002$).

As an additional test for robustness to selection of popular (Billboard ranked) songs, we used the two-stage Heckman model (Heckman, 1979). Consistent with the results above, the first stage probit model replicates the relationship between “you” use and top 50 status ($b = .01$, $t(1733) = 2.86$, $p = .004$, $f^2 = .020$), with a non-significant inverse Mills ratio ($\lambda = -992.35$, $t = -.13$, $p = .896$), suggesting selection is unlikely to impact the relationship between second person pronoun use and song success.

Testing Other-activation. The results so far are supportive, but if second person pronouns engage audiences by activating someone in their own lives, as hypothesized (H2), then how “you” is used should influence its impact. Second person pronouns should boost popularity more when “you” is the *object* of a protagonist’s thoughts or actions (“Love you”).

To test this possibility, two raters coded whether each “you” was used in the subject or object case. Judges were told that subject uses refer to “you” as the protagonist or actor (e.g., “You can think about it”) while object uses refer to “you” as the target of someone’s or something’s thoughts or behaviors (e.g. “Thinking about you”). To give raters enough context to identify the grammatical subject and object, the two words before and after each second person pronoun were extracted (a 5-gram; see SOM and Table S1 for detail). Agreement was high (86% of cases) and a third judge resolved disagreements. Forty-seven of the 6,084 unique 5-grams (0.7% of total) could not be assigned (e.g., “you yeah you you you”). These 5-grams did not predict song success ($b = -.01$, $t(4198) = -.83$, $p = .407$, $f^2 = .004$), and their inclusion did not change the pattern of results. To be consistent with the LIWC measure used for the main analysis in all studies, subject and object cases were converted to a proportion of words in the song.

As predicted, the type of “you” used moderated the effect. Consistent with the other-activation hypothesis, songs that used more object “you” (e.g., “Coming at *you* like a dark horse”) were more popular ($b = .36, t(4197) = 3.10, p = .002, f^2 = .003$), and this relationship remained significant even when including the controls ($b = .45, t(4062) = 2.94, p = .003, f^2 = 1.136$). In contrast, while songs that used more subject “you” (e.g., “*You* know how the time flies”) were marginally more popular ($b = .16, t(4197) = 1.86, p = .063, f^2 = .002$) this relationship fell to non-significance when including the additional controls ($b = .17, t(4062) = 1.47, p = .142, f^2 = 1.136$).

Other Personal Pronouns. While the present research is focused on second person pronouns, one might wonder whether other personal pronouns (first or third person) also play a role. Although, for example, people tend to automatically adopt a first person perspective when processing narratives (Green & Brock, 2000; Hartung et al., 2016), perhaps explicit mention of the first person bolsters this tendency, increasing song liking. This was not the case. While first person singular pronouns (e.g., I, me, my) were linked to popularity when examined in isolation ($b = .15, t(4198) = 3.37, p < .001, f^2 = .002$), their impact fell to non-significance when the controls were included ($b = .09, t(4063) = 1.05, p = .294, f^2 = 1.167$). First person plural pronouns (e.g., we, us, ours) also did not predict song success with or without the controls (with controls $b = .07, t(4063) = .56, p = .576, f^2 = 1.176$; without controls $b = .01, t(4198) = .13, p = .896, f^2 = .0002$). Third person pronouns (e.g., she, he, her, his) were similarly not linked to song success, either with ($b = -.16, t(3928) = 1.44, p = .150, f^2 = 1.172$) or without the controls ($b = .12, t(4197) = .80, p = .424, f^2 = 0.000$). Correlations between second person pronouns and other personal pronouns are presented in SOM Table S3.

Discussion

Analysis of thousands of songs demonstrates that those that use more second person pronouns are more popular (H1). Consistent with the hypothesized role of other-activation (H2), rather than being driven by direct address of “you” as the subject, this seems to be driven by situations where “you” is the object.

STUDY 2

Study 2 uses a more controlled design to test the relationship between second person pronouns and song success (H1) at the individual level, and beyond hit songs. We examine whether a song that participants heard recently is liked more when it includes more second person pronouns.

This study also further tests the hypothesized process through moderation and mediation. If second person pronouns are linked to audience engagement through other-activation (H2), then this relationship should be moderated by the type of second person pronoun used (i.e., object you) and mediated by whether the lyrics activate another person in the listener’s own life.

Method

We sought a sample of 200 participants to allow detection of a small effect size (f^2) of .03 with 80% power at an alpha of .05. To allow for exclusions, 225 Amazon Mechanical Turk participants were offered \$0.30 to complete the study. Twenty nine (12.9%) failed the participation check (see SOM), leaving 196 for analysis (100 female).

First, participants were asked to name any song they had heard recently and the artist that sang it. Second, they indicated how much they liked the song using two items (“How much do you like this song?” and “How much do you enjoy listening to this song?”; $r = .89$). Third, we

measured the hypothesized process—whether the lyrics encouraged people to think about someone from their own life—using two items (“Do the song lyrics make you think about someone you know?” and “Does this song remind you of a person in your own life?”; $r = .62$). All items used seven point scales (1 = not at all, 7 = very much).

SongLyrics.com was used to collect the lyrics for each song. Data were not available for eight of the songs listed, so these responses were excluded, leaving 188 records for analysis (182 unique songs over 161 unique artists). As in Study 1, the song lyrics were processed in LIWC to generate the proportion of words in the lyrics that used “you” pronouns ($M = 5.09$; $SD = 3.82$; 90.3% of songs > 0).

Results

As predicted, and consistent with the results of Study 1, linear regression revealed that songs that contained more second person pronouns were liked more ($b = .05$, $t(186) = 2.48$, $p = .014$; $f^2 = .032$). This result persisted ($b = .07$, $t(159) = 2.46$, $p = .015$, $f^2 = .470$) after including the same artist[song], LDA topic, and dictionary controls as used in Study 1 in a linear mixed effects regression model. Full results for the controls are presented in SOM Table S4.

Testing Other-activation. Using the same procedures as Study 1, to test if second person pronouns boost popularity more when “you” is the *object* of a protagonist’s thoughts or actions, two independent judges blind to hypotheses assessed whether each “you” use in a given song was subject (ICC = .90) or object case (ICC = .92). Intra-class correlation (ICC) is used here rather than Pearson correlation as judges counted the number of instances at song level, rather than at the 5-gram level across songs as in Study 1. To be consistent with the prior study, the counts were converted to a proportion of words in each song.

As observed in the Study 1 data, the link between second person pronoun use and liking with study participants depended on how “you” was used. Linear regression revealed that while songs with more object second person pronouns were liked more ($b = .10$, $t(186) = 2.78$, $p = .006$, $f^2 = .036$), subject “yous” had no effect ($b = .04$, $t(186) = 1.20$, $p = .232$, $f^2 = .002$). These results were also robust to including the controls (object “you” $b = .13$, $t(159) = 2.99$, $p = .003$, $f^2 = .511$; subject “you” $b = .04$, $t(159) = .86$, $p = .389$, $f^2 = .421$).

Bootstrapped mediation analysis (Hayes, 2018; model 4) confirmed that the relationship between object “you” use and song liking was mediated by the song’s ability to make the listener imagine another person from their own life (indirect effect = .05, 95% CI [.019, .089], $P_M = .475$). Object second person pronouns increased the audience’s ability to imagine a personal other ($b = .19$, $t = 3.67$, $p < .001$, $f^2 = .072$), which, in turn, made them like the song more ($b = .24$, $t = 5.26$, $p < .001$, $f^2 = .197$).

This relationship did not hold for subject uses (indirect effect = .02, 95% CI [-.013, .054], $P_M = .371$). Subject “you” uses had no effect on the listener’s ability to imagine another person from their own life ($b = .06$, $t = 1.15$, $p = .254$, $f^2 = .007$).

Alternative Explanations. Alternative explanations have difficulty explaining the results. First, one could wonder whether second person pronouns make people feel like the singer is reaching out to connect with them personally (i.e., direct address). Alternatively, one could argue that second person pronouns might offer a window into the singer’s private thoughts (i.e., in relation to the singer’s personal “you”).

To test these possibilities, we collected additional items including personal connection with the singer (“The song makes me feel a personal connection with the singer” and “The lyrics speak to me personally”; $r = .93$) and seeing into the singer’s personal life (“The song says

something about the singer's private life" and "The song shares something personal about the singer"; $r = .83$). All items used seven-point scales (1 = not at all, 7 = very much).

Neither alternative, however, mediated the effect of second person pronouns on song liking, either individually (personal connection indirect effect = .007, 95% CI [-.0005, .020], $P_M = .134$; see into singer's personal life indirect effect = .004, 95% CI [-.002, .013], $P_M = .080$) or when included as simultaneous mediators in parallel (personal connection indirect effect = -.004, 95% CIs [-.015, .002], $P_M = .077$; see into singer's personal life indirect effect = -.007, 95% CI [-.024, .002], $P_M = .123$) with the predicted other-activation mediator, which remained significant (indirect effect = .038, 95% CI [.010, .077], $P_M = .416$). These results suggest that rather than creating a direct connection with the singer, or offering a voyeuristic peek into their life, "you" pronouns increase engagement by evoking a personal other in the audience's mind.

Other Personal Pronouns. As in Study 1, while this research is interested in second person pronouns, one might wonder whether other personal pronouns also play a role. Replicating study 1, they did not. Neither first person pronouns nor third person pronouns were linked to song liking, either with or without the standard controls ($ts < .99$, $ps > .340$). Correlations between second person pronouns and other personal pronouns are presented in SOM Table S5.

Discussion

Study 2 provides additional evidence that second person pronouns are linked to song success, while further demonstrating the underlying process. First, songs with more second person pronouns were liked more (H1). Second, consistent with H2, this effect was driven more by other-activating (object rather than subject) "yous," and mediated by second person pronouns' ability to evoke a personal other. Third, looking at a broader range of songs (e.g., relatively

unknown songs like “The Underwater Garden” by Septicflesh and “Unraveling” by Wax Motif were among the songs listed) underscores that the results generalize beyond hit songs.

STUDY 3

To directly test their causal impact, Study 3 manipulates second person pronouns in a fictitious song, measures the impact on liking, and tests whether any effect is driven by activation of a personal other.

Method

Participants. We sought a sample of 300 participants to allow detection of an effect size comparable to that observed in Study 2 ($f^2 \sim .03$) at 80% power and an alpha of .05. To allow for exclusions, 350 Amazon Mechanical Turk panelists were offered \$0.30 to complete the study. Forty-one participants (11.7%) failed the participation check (see SOM), leaving 309 for analysis (192 female). Excluding the last nine participants collected does not change the results.

Procedure. All participants were asked to read the lyrics of a fictitious song (see SOM Table S6) three times. In the second person pronouns condition, the lyrics featured “you” words (e.g., “I’ve known *you* for a while now”). The proportion of other-activating “yous” (object use) was matched to the mean proportion observed in the field data.

There were two comparison conditions. The first comparison condition removed all “you” pronouns, replacing them with impersonal pronouns such as “this” and “it” (e.g., “I’ve known *it* for a while now”) or generic references to love.

As a more conservative test of our primary hypothesis (H1), we included an additional condition that replaced second person pronouns (e.g., “you”) with third person pronouns (e.g., “I’ve known *her* for a while now”). This condition presents a person object, but because they are

not a participant in the immediate situation (Brener, 1983; Lyons 1977) presents a more psychologically distant other (Enfield & Stivers, 2007). Characters and people described using third person pronouns feel less identifiable and personally close to readers (De Graaf et al., 2012) and should be less likely to be experienced from the protagonist perspective (Brunyé et al., 2009), which should decrease the likelihood of other-activation.

All participants were asked their gender and sexual orientation prior to song condition assignment. This was done so that participants in the third person pronoun condition could be presented with a third person likely to be consistent with the gender of their own romantic interests (e.g., he/him for heterosexual females) given the song's romantic nature. Eight (out of 100) participants in the third person pronoun condition reported non-binary or non-defined orientations (asexual, bisexual, other, prefer not to answer). These participants were presented with the female third person (she/her). Excluding these participants from analysis does not change the results.

Participants indicated how much they liked the song ($r = .91$) and responded to measures of the underlying process (other-activation, $r = .94$) using the same items as Study 2.

Results

As predicted, even using this fictitious song, analysis of variance reveals that second person pronouns influenced liking ($F(2, 306) = 5.43, p = .005$; partial $\eta^2 = .034$). Compared to when it used third person pronouns ($M = 3.68, SD = 1.48$), or did not use personal pronouns at all ($M = 3.93, SD = 1.43$), the song was liked more when it used second person pronouns ($M = 4.38, SD = 1.68; F(1, 307) = 10.54, p = .001, \eta^2 = .047$ and $F(1, 307) = 4.51, p = .034, \eta^2 = .021$, respectively (see Fig. 1).

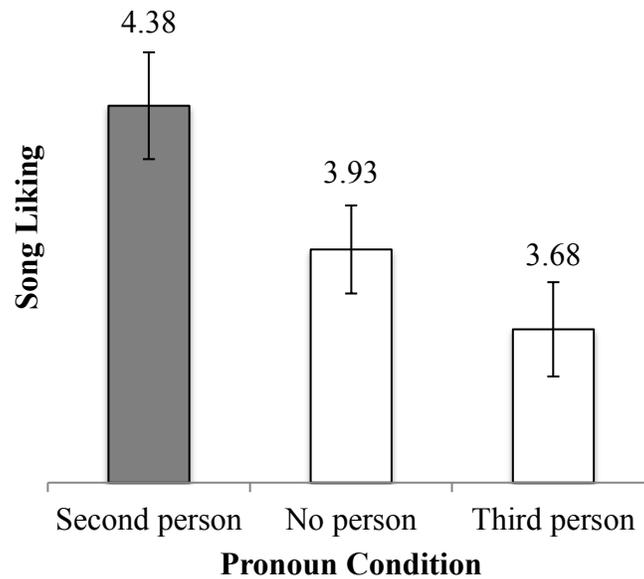


Fig. 1. Song liking by pronoun condition (Study 3)
Error bars represent standard errors of the mean.

Testing Other-Activation. Consistent with hypotheses, these effects were driven by other-activation. Bootstrapped mediation analysis (Hayes, 2018; model 4) indicates that the relationship between second person pronouns and liking was driven by the song’s activation of another person from their own life (indirect effect = .16, 95% CI [.050, .274], $P_M = .557$). “You” words activated a personal other ($b = .35$, $t = 2.91$, $p = .004$, $f^2 = .027$), which, in turn, made people like the song more ($b = .46$, $t = 12.70$, $p < .001$, $f^2 = .365$).

Alternative Explanation. One might wonder whether the comparison conditions (third person or no personal pronouns) seemed more unusual or unexpected, and that this, rather than positive effects of second person pronouns, drove the results. This was not the case. In addition to the measures mentioned above, participants completed the language typicality scale (i.e., how typical, expected, or standard the song’s language seemed; Kronrod, Grinstein, & Wathieu, 2012). There was no difference in language typicality due to condition ($\alpha = .90$; $F < 1$), and it

did not mediate the effects (indirect effect = $-.014$, bootstrapped 95% CIs of $[-.049, .029]$, $P_M = -.048$).

Discussion

By directly manipulating the language used, Study 3 underscores both the causal impact of “you” pronouns on cultural success and the process behind this effect. Second person pronouns made people like a fictitious song more, and this was driven by the activation of a personal other in their own lives.

STUDY 4

To assess the robustness of the Study 3 results to various song lyrics (i.e., stimulus sampling concerns; Wells & Windschitl, 1999), Study 4 tests whether the results hold across a larger sample of different songs (one song per participant in a between-subjects design). This study was preregistered.

Method

Participants. We sought a sample of 1,500 participants over five songs to allow detection of effect sizes comparable to those observed in prior studies ($f^2 \sim .03$) at 80% power and an alpha of .05. To allow for exclusions, 1,800 Amazon Mechanical Turk participants were offered \$0.35 to complete the study. Two hundred participants (11.1%) failed the participation check (see SOM), leaving 1,600 for analysis (925 female).

Procedure. As in Study 3, participants were asked to read the lyrics of a single song three times. Both real, existing songs and fictitious, newly created songs were used. We adapted two

real songs drawn using the “random” song button at Lyrics.com. The remaining three songs used fictitious lyrics to show that the effect was not somehow driven by editing the real songs in some conditions and not others. In addition to using the same fictitious song from Study 3 to demonstrate reliability, two new fictitious songs were created. Each song was written by a different person who was blind to the research and specific hypotheses. Procedural detail and materials are presented in the SOM.

Following Study 3, the study design compares the focal second person pronouns condition to comparison conditions that replaced the second person pronouns with impersonal pronouns (no personal pronouns) or third person pronouns matched to gender (e.g., “I can’t wait to see [you, it, her] tonight.”; see SOM Tables S7-S11).

Participants completed the key dependent measure (i.e., how much they liked the song, $r = .92$) and measures of the hypothesized process (i.e., other-activation, $r = .92$) using the same items as Studies 2 and 3.

Results

This study is interested in two key tests. First, is there a main effect of second person pronoun condition across stimuli, such that compared to the control conditions using second person pronouns increases song liking? Second, is this effect driven by other-activation?

As predicted, even using a broader range of songs, analysis of variance reveals that using second person pronouns enhanced song liking ($F(1, 1598) = 17.69, p < .001$; partial $\eta^2 = .011$). Compared to when they used third person pronouns ($M = 3.61, SD = 1.65$), or did not use personal pronouns at all ($M = 3.67, SD = 1.64$), songs were liked more when they used second person pronouns ($M = 4.01, SD = 1.71$; $F(1, 1598) = 15.36, p < .001$, partial $\eta^2 = .014$ and $F(1, 1598) = 11.02, p = .001$, partial $\eta^2 = .010$ respectively, see Fig. 2).

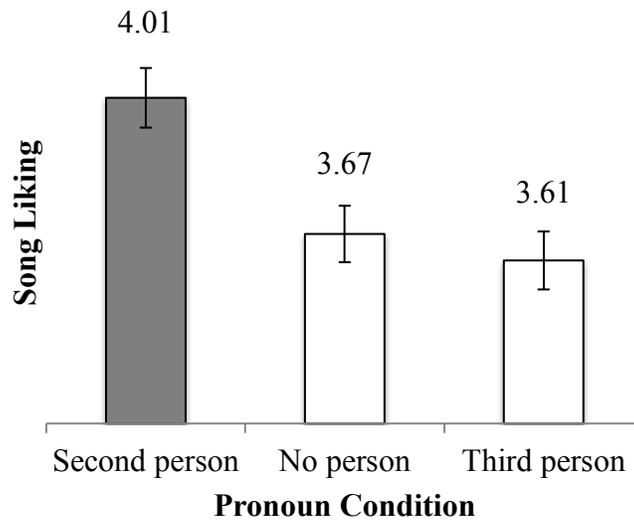


Fig. 2. Song liking by pronoun condition. (Study 4)
Error bars represent standard errors of the mean.

We also controlled for potential differences across song variants and the interaction of pronouns with song variant, and the results remain the same (see SOM).

Testing Other-Activation. Replicating Studies 2-3, these effects were driven by other-activation. Bootstrapped mediation analysis (Hayes, 2018; model 4) confirms that the relationship between second person pronouns (vs. the comparison conditions) and liking was again driven by the songs' activation of another person from their own life (indirect effect = .08, 95% CI [.03, .13], $P_M = .435$). "You" words activated a personal other ($b = .19$, $t = 3.41$, $p < .001$, $f^2 = .007$), which, in turn, made people like a given song more ($b = .11$, $t = 2.80$, $p = .005$, $f^2 = .421$).

Alternative Explanations. Ancillary analyses cast doubt on a number of alternative explanations.

First, given some real songs were used in Study 4, one could wonder whether changing their lyrics somehow made the lyrics less typical, which decreased liking. This was not the case.

We included the same language typicality scale used in Study 3 ($\alpha = .90$; Kronrod et al., 2012), but consistent with Study 3, even after accounting for typicality ($F(1, 1598) = 61.86, p < .001$; partial $\eta^2 = .037$) the effect of second person pronouns on song liking persists ($F(1, 1598) = 9.84, p = .002$; partial $\eta^2 = .006$). Further, the fact that the effect of second person pronouns on song liking holds even just looking at the three fictitious songs casts additional doubt on this possibility ($F(1, 1598) = 8.24, p = .004$; partial $\eta^2 = .009$). While making a change to a real song could theoretically make it less pleasing, for fictitious songs the lyrics are equally created across all pronoun conditions, making it unlikely that this alternative can explain the effects.

Second, one could wonder whether the results among the real songs were driven by the second person pronoun versions being more familiar. This was also not the case. Participants were asked a binary (yes/no) measure of song familiarity (“Have you heard this song before?”). The number of people who said they had heard the song before was extremely low ($M_{\text{yes}} = 2.69\%$) and logistic regression reveals that familiarity did not vary by pronoun condition (Wald $\chi^2(2) = 2.71, p = .258$; pairwise odds ratios = .528 and .719). The effect of second person pronouns on song liking persists ($F(1, 1598) = 16.52, p < .001$, partial $\eta^2 = .010$) when song familiarity was included as a control in analysis of variance.

Third, one might wonder if perspective-taking (Brunyé et al., 2009; Galinsky & Moskowitz 2000) could explain the results. Rather than other-activation, perhaps second person pronouns encourage people to put themselves in the singer’s shoes or experience the singer’s perspective towards things in their own life. They did not. Two items about taking the singer’s own perspective towards someone or something were collected (“The song helped me imagine how the music artist relates to something in their own life” and “Did you imagine singing to someone in the music artist’s own life?”, $r = .60$, 1 = not at all, 7 = very much). There was no

effect of second person pronouns on perspective-taking, however, ($F(1, 1598) = .646, p = .422$, partial $\eta^2 = .000$), nor did perspective-taking drive the effect of second person pronouns on song liking (indirect effect = .01, 95% CI [-.019, .044], $P_M = .070$).

Fourth, one could wonder if the ability of second person pronouns to evoke norms (e.g., Orvell et al., 2014), rather than other-activation, could explain the results. To consider this possibility, we collected two items (“The song was about how people normally act or feel” and “The song was about what most people would do or think in a given situation”; $r = .69$). While the norm measure partially mediated the focal relationship when considered alone (indirect effect = .07, 95% CI [.031, .102], $P_M = .357$), when other-activation and norm measures were included simultaneously, other-activation remained significant (indirect effect = .07, 95% CI [.027, .109], $P_M = .367$) and explained 69.8% more of the total effect than norms (indirect effect = .04, 95% CI [.019, .064], $P_M = .216$). Further analysis (SOM) also suggests that the effect of perceived norms is likely driven by other-activation rather than by a separate process. A self-talk version of normative influence also seems unlikely to explain the effect. Some self-talk work (Dolcos and Albarracin 2014; Zell, Warriner, and Albarracin 2012) suggests that second person perspective can motivate behavior through priming someone you care about giving you commands (or imperatives; e.g., “You shouldn’t do that”). It seems unlikely, however, that song lyrics that use the object case of “you” (e.g., “I will always love you”) are commonly seen as commands.

Fifth, one might wonder if the presence of first person pronouns is required for second person pronouns to have an effect. To test this possibility, we examined what happens when explicit subject first person pronouns are removed from the second person pronoun condition stimuli (e.g., “I can’t wait to see you tonight” becomes “Can’t wait to see you tonight”; see SOM Table S12). Along with the main sample and following the same preregistered procedures, 600

participants were collected for this “you but no I” condition. Seventy-eight participants (13.0%) failed the participation checks, leaving 522 for this experimental condition (281 female) across the five songs. Analysis of variance, however, revealed that there was no difference in song liking between this ancillary condition and the second person pronoun condition from the main analysis ($F(1, 1053) = .06, p = .801, \text{partial } \eta^2 = .000$; results are the same with the controls (see SOM)).

While this casts doubt on the notion that first person pronouns are required for second person pronouns to have an effect, this does not mean that narratives’ ability to transport audiences into the first person perspective is not important. Prior work suggests that people automatically tend to assume first person perspective when processing narratives (Green & Brock, 2000; Hartung et al., 2016). Consequently, even if first person pronouns are not present, being transported into the first person perspective of the song should facilitate second person pronouns’ ability to activate a personal other.

Discussion

The fact that second person pronouns increase song liking (H1) and that this relationship is driven by other-activation (H2) replicates over additional song stimuli in a preregistered experiment provides further support for the effects observed in Studies 1-3.

GENERAL DISCUSSION

While songs, poems, and stories are a fundamental aspect of human culture, little work directly tests why people consume such narrative arts. The present research suggests that a small,

often ignored linguistic feature (Chung & Pennebaker, 2007; Pennebaker, 2011) may help determine which cultural items are more successful.

As popular music is said to help listeners experience and give voice to their own lives (Frith, 1996), this narrative art may be particularly conducive to other-activation through second person pronouns. That said, given lyrical music and other narrative arts evolved together and serve similar purposes (Brown, 1970), similar results may hold in other cultural items such as Shakespeare's "Shall I compare thee (you) to a summer's day?" or Humphrey Bogart's "Here's looking at you, kid" (i.e., literature and film). Indeed, while further exploration is needed, an additional replication of Study 3 using a poem produced the same pattern of results (see Study 5 in SOM).

The present research also reveals a novel psychological mechanism by which second person pronouns engage listeners. Songs with more second person pronouns were liked more not because "you" words directly addressed the audience as a protagonist or conveyed normative imperatives, as considered in prior research, but because "you" invoked another person in the listener's mind. This supports suggestions that one of music's fundamental functions is to foster social connection (Schafer et al., 2013).

This mechanism highlights the importance of the situated, or contextual, meaning of language (Watzlawick, Bavelas, & Jackson, 2011). While pronouns influence perceptions of group belonging (Pennebaker, 2011), social distance (Fitzsimons & Kay, 2004), and relationship satisfaction (Simmons, Gordon, & Chambless, 2005), consistent with pragmatics, their effect may depend on the situation or context in which they are used. Here, being a third-party observer appears to circumvent the usual effect through which second person pronouns either address the audience individually or as part of a larger group.

Future research could dive deeper into the nature of the relationship between “you” and the protagonist. Other-activation may have stronger effects when it evokes someone the audience has a particularly strong psychological connection to, someone who is or was important in the audience’s own life, or when the narrative feels sufficiently “real” (i.e., non-fictional) to encourage the adoption of this perspective. Future work could also consider attitudes towards the evoked other. Evoking a loved, or even hated other may be beneficial, but evoking an other that makes someone sad, or that they don’t care to think about, may have different effects. If similar effects are observed for lyrics that activate someone like an ex-boyfriend that the listener has moved on from, for example, (e.g., “I’m so glad you’re gone”), this would cast doubt on the notion that affiliation motives help explain the effect.

Because it can potentially include both “you and me”, one might wonder why singing about “we” (i.e., first person plural) did not boost liking. One reason may be that “we” isn’t used that frequently. First person plural were the least frequent pronouns in Studies 1 and 2, representing less than 10% of personal pronouns in each. Further, they may be less likely to activate a specific personal other because “we” can refer to more than just “you and me.” It can exclude the first person (i.e., the royal we; “We must eat vegetables, children”) or exclude the audience completely (“We [not you] are going to get this done for you”) (Inigo-Mora 2004; Pennebaker 2011; Wales 1996). Future work could investigate how the more varied meaning of first person plural pronouns impacts other-activation, and narrative transportation more broadly.

More broadly, this work contributes to the burgeoning stream of literature on the psychological foundations of culture (Kashima et al., 2019; Schaller & Crandell, 2004). Research on cross-cultural psychology demonstrates the important influence of culture on psychological processes (Markus & Kitayama, 1991), but the reverse is also true: psychological

processes shape the norms and practices that make up collective culture (Kashima et al., 2019).

Consequently, when shared across individuals, such processes may act as a selection mechanism, determining which cultural items succeed and which fail.

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Open Practices Statement

Data for the four studies in this article and one study in SOM and a data legend are available at <https://osf.io/d2xbu> except for one variable from the first study (Billboard chart rankings). The authors are not permitted to re-transmit, disclose, or distribute the Billboard chart rankings. This variable is available at <https://subscribe.billboard.com> for a nominal subscription fee (US\$12.99). The authors have provided ranking date, artist name, and song name in the data posted at OSF to facilitate researcher matching of song ranking to the date, artist, and song for the purposes of replication or further analysis. Preregistration for Study 4 is available at <https://osf.io/wgr4u>. Stimuli and participation check procedures for all experiments are provided in the main text or SOM.

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SUPPLEMENTAL ONLINE MATERIALS

Study 1 Appendix

Song Topic Control Variables

To control for the possibility that certain song topics explained the effect of “you” pronouns, we used latent Dirichlet allocation (LDA; Blei, 2012). LDA measures word co-occurrence within and across texts (e.g., songs), identifies latent topics that make up those texts, and the probability of each word appearing in a given topic.

We followed standard pre-processing procedures, including removal of punctuation and numbers, and stemming related words (e.g., drive, driven, driving = driv) in song lyrics. Results were robust to the inclusion/exclusion of both infrequent words and stop words. Model runs used Gibbs sampling at 5,000 iterations with a random seed starting point.

We followed suggested practices and prior research (Blei, 2012; Chang et al., 2009) in determining the number of topics. We examined 5-15 topic solutions. Goodness of fit statistics suggest little benefit as the number of topics increased (adjusted R-squared range = 0.10 – 0.11 and conditional R-squared range = 0.30 – 0.31 for K from seven to 15). We observed modest peaks in model fit at 10 topics. Researcher interpretation of the topics and predictive fit for individual topics also suggested diminishing benefit of including more than 10 topics. Thus, we used the 10 topic model for the topic controls. While the perplexity fit measure for topic models revealed a modest improvement in fit (lower perplexity) as the number of topics increase, this statistic holds little relationship with interpretability or predictive fit (Chang et al., 2009) and so was not used in choosing the number of topics.

This procedure results in a vector of ten control variables, one for each topic. Each variable represents the proportional representation of one of the 10 topics within a given song, where the vector of topic controls sums to one. High probability topics include ones we might describe as “tentative love” (27% of average song content; high probability words such as love, never, and need), “the streets” (12%; e.g., money, street, ho), and “spiritual” (11%; e.g., god, lord, soul).

5-gram Judge Instructions

Independent student judges who were not involved in the research and unaware of hypotheses were provided the following instructions:

We want you to judge whether you think the second person pronoun (“you” word) that appears as the third word in each five word string is the “actor” or the “recipient of action” in the phrase to which it belongs. Grammatically speaking, this is a question of whether the “you” word is the subject or object in the clause in which it resides.

Grammatical subject (i.e., “actor”) uses of “you” words usually appear before a verb that describes what “you” is doing, thinking, feeling, being, etc. For example, “you love me”, “you will learn to”, “you are going”, “your body makes.” If the phrase is a question, this can be reversed (e.g., “are you going”). Words like “youre,” “youll” and “youve” (remember all punctuation has been removed) are usually going to be cases in which “you”

is the actor because the verb has been contracted together with the “you” pronoun (e.g., “youve” is “you have”)

Grammatical object (i.e., “recipient of action”) uses of “you” words often appear after a verb that describes what someone else (e.g. the singer or a third-party) is thinking, doing, etc. in relation to “you.” (e.g., “I love you,” “given to you,” “be seeing you later ok”). If you feel like you can confidently assign the “you” word that appears as the third word in a given string to either the “actor” (grammatical subject) or “recipient of action” (grammatical object), put a “1” in the appropriate column (“Confident an Actor” or “Confident a Recipient of Action”). If you are unsure or not confident about assigning a given word string to any of these conditions, put a “1” in the “Unsure” column.

Sample of Judged 5-grams

Table S1. Sample of Judged 5-grams

Judged as Object Case	Judged as Subject Case
to ask you a question	just because you can your
ill save you a seat	a word you should send
too told you about me	a champion you could beat
drown in you again cause	and so youre back from
forget about you which way	please believe youre all that
listen to you all day	why if you ever give
i need you all for	my shadow you are the
hands give you all his	how could you be that
ask give you all i	never did you dont give
Should’ve gave you all my	proud all you do is

Detailed Results for the Controls

Table S2. Study 1 Results Providing Detailed Results for All Control Sets in a Single Table

[Appears on Next Page]

[Note to Reviewers: Given the large volume of ancillary information requested, this table cannot easily fit in a Word document. We propose including it in SOM as an Excel worksheet or PDF. A high-resolution PDF is pasted below for reference in the review process.]

Table S3. Correlation of Second Person Pronouns with Other Personal Pronoun Use in Songs (Study 1)

	1	2	3	4	5
1 First person singular					
2 First person plural	-.380 ***				
3 Second person (all)	.092 +	-.176 ***			
4 Second person (object)	.164 ***	-.104 ***	.661 ***		
5 Second person (subject)	-.006	-.150 ***	.828 ***	.253 ***	
6 Third person	-.141 ***	-.075 ***	-.199 ***	-.158 ***	-.151 ***

+ $p < .1$. *** $p < .001$

Second Person Pronoun Objects in Combination with Other Pronoun Subjects

One might wonder whether the effect is driven by other personal pronouns that may coincide with “you” in a given use. For example, if audiences tend to inhabit the protagonist’s perspective in a story (Pennebaker, 2011), object “you” uses may be particularly engaging when the corresponding subject (i.e., the protagonist) appears in first rather than third person voice (e.g., “I understand you” vs. “She understands you”).

A linear regression model using the Study 1 data predicted song success as a function of other-activating (object case) 5-grams that included (a) first person singular subjects (e.g. “I understand you”), (b) third person subjects (e.g., “He understands you”), and (c) impersonal or no subjects (e.g., “It understands you”). Results revealed that other-activating “yous” that were co-incident with a first person subject were more strongly linked to song success ($b = .11$, $t(4196) = 2.42$, $p = .016$, $f^2 = .002$) than other-activating “yous” that were co-incident with third person (he/she), impersonal (they/that/it) or no pronoun subject ($ts < 1.20$, $ps > .230$, $f^2 = .002$). When including the controls from Study 1, however, first person subject co-incident did not predict song success ($b = .06$, $t(4061) = 1.23$, $p = .220$, $f^2 = .790$), while third person subject co-incident was marginally significant ($b = .33$, $t(4061) = 1.72$, $p = .085$, $f^2 = .790$) and impersonal or no subject co-incident was non-significant ($b = .05$, $t(4061) = .79$, $p = .432$, $f^2 = .790$)

These results provide mixed evidence as to whether second person pronoun effects might be strongest when a first person singular subject is also present. However, a more direct test of this possibility in a more controlled setting (Study 4) suggests no difference between the presence and absence of first person singular pronouns. Prior research (Brunye et al., 2009; Hartung et al., 2016) has similarly found inconsistency in first person singular pronoun effects, with contextual factors (e.g., discourse length, situation) moderating their impact. Future research might examine when and why first person singular pronouns impact audience involvement, perspective-taking, or appreciation/liking for a given narrative more directly.

Study 2 Appendix

Song Topic Control Variables

As in Study 1, we used LDA to control for the possibility that the presence of certain song topics in the 196 self-reported songs analyzed in Study 2 explained the effect of “you” pronouns.

Because training LDA on a small corpus of documents can result in unstable topic distributions, we followed suggestions that larger, similar corpora should be exploited when available to produce more stable topic representations (Phan et al., 2011; Sahami & Heilman, 2006). We therefore combined Study 2's 188 self-reported songs with lyrics with the 1,879 songs analyzed in Study 1 in the training set to produce the topic distribution by song. Otherwise, the preprocessing and modeling procedures were the same as those reported for Study 1 above.

The positive effect of "you" use on attitude towards the song remained positive and significant after controlling for the topics generated using the larger combined corpus of songs without the other artist and language controls ($b = .07$, $t(177) = 2.41$, $p = .017$, $f^2 = .046$).

For thoroughness, we also calculated latent song topics using only the 188 self-reported songs with lyrics in Study 2. The positive effect of "you" use on attitude towards the song marginally replicated after controlling for topics generated using this smaller corpus without the other artist and language controls ($b = .04$, $t(177) = 1.89$, $p = .060$, $f^2 = .026$). Results with all controls are provided in Table S4.

Table S4. Study 2 Detailed Results for Main Model Controls

	Est.	SE	t	
You	.072	.02	2.46	*
Artist[song]	[Includes 1,186 random effects]			
Cogproc	-.02	.02	-1.20	
Affect	.00	.02	-0.19	
Percept	.00	.02	-0.22	
Drives	-.01	.02	-0.31	
Relative	.00	.02	0.31	
Time	-.01	.02	-0.76	
Informal	-.04	.02	-2.16	*
lda11topic1	7655.00	8308.00	0.92	
lda11topic2	7657.00	8308.00	0.92	
lda11topic3	7657.00	8309.00	0.92	
lda11topic4	7658.00	8309.00	0.92	
lda11topic5	7656.00	8309.00	0.92	
lda11topic6	7657.00	8308.00	0.92	
lda11topic7	7659.00	8308.00	0.92	
lda11topic8	7656.00	8309.00	0.92	
lda11topic9	7657.00	8308.00	0.92	
Posemo	-.07	.06	-1.32	
Negemo	-.21	.08	-2.65	**
Anger	.27	.12	2.34	*
Sad	.15	.11	1.34	
(Intercept)	-7650.00	8308.00	-.92	
N	188			

Marginal R-square [^]	.118
Conditional R-square [^]	.203
Total R-square	.320
Total f-square	.471

p* < .05. *p* < .01

Fixed effects that drop out for identification are Genre = Rock, Time = Q4 2015, LDA Topic = Topic 10

[^]In mixed effect models, Marginal (Conditional) R-square captures the fixed (random) effects.

Table S5. Correlation of Second Person Pronouns with Other Personal Pronouns Use in Songs (Study 2)

	1	2	3	4	5
1 First person singular					
2 First person plural	-.226 **				
3 Second person (all)	.036	.052			
4 Second person (object)	.175 *	.003	.795 ***		
5 Second person (subject)	-.111	.088	.791 ***	.267 ***	
6 Third person	-.121 +	-.153 *	-.147 *	-.182 *	-.047

⁺*p* < .1. **p* < .05. ***p* < .01. ****p* < .001

Study 3 Appendix

Table S6. Song Lyrics by Personal Pronoun Condition [Second Person / Third Person / No person]

My love, I've known [you / her / it] for a while now
 [You lift / She lifts / It lifts] me up, up, up,
 Lift me up higher
 Because [your / her / -] love, [your / her / -] love,
 [your / her / -] love it keeps me going

[You are / She is / This is] my life
 Nothing can take [your / her / its] place
 [You are / She is / Love is] all I need
 [You have / She has / Love has] set me free

In the midst of the darkest night
 Let [your love / her love / love] be my greatest light
 I'm pressing on to see [you / her / it] tonight
 Nothing can take [your / her / its] place in my sight

My love, I've known [you / her / it] for a while now
 [You are / She is / This is] my life
 Nothing can take [your / her / its] place
 [You are / She is / Love is] all I need
 [You have / She has / Love has] set me free

Study 4 Appendix

Song Stimuli

To test whether the results of Study 3 were robust over a larger range of stimuli, we collected a number of additional songs. This included (1) a direct replication of Study 3's song, (2) two fictitious songs developed by people unaware of the research and specific hypotheses, and (3) two real songs. This approach seemed to offer a reasonable mix of reliability and validity (e.g., test-retest for the Study 3 stimuli, two songs that could not be familiar to participants, and two songs with high external validity).

For the two new fictitious songs, two undergraduate research assistants unaware of the research and blind to hypotheses were asked to write a song based on the following instructions:

We want you to write a song. Specifically, we want song lyrics with at least two verses and one chorus. You could write what feels like a pop song, rap song, rock song, love song, country song, or a mix of those. Whatever you want.

What's important is that (a) you could actually imagine it being song lyrics, and (b) most people wouldn't recognize the lyrics as something they have heard before. We're not asking you to win an award for songwriting or anything. Just try to make it plausible.

The authors made minor edits to the song stimuli provided to accommodate manipulation of second person pronouns and the comparison conditions without the lyrics in a given condition seeming extremely unexpected or atypical.

For the selection of two real songs, we used the "Random" song selection button featured on the right side of the horizontal navigation bar at Lyrics.com. We drew 10 songs, and picked the two that seemed (a) most amenable to manipulation of the second person pronouns without making a given condition seem extremely unexpected or atypical, and (b) seemed the least likely to be highly familiar to participants such that any personal pronoun manipulation would be obvious. The two songs selected were "So Excited", written by BB King (1969) and "I Won't Deny You" by Natalie Cole (1983). The songs were adapted slightly for length (i.e., we did not present all choruses or verses) and for manipulation of the pronoun conditions.

Stimuli variants used in Study 4 are presented in Tables S7-S12.

Table S7: Song “A” Lyrics by Personal Pronoun Condition
[Second Person / Third Person / No person]

Up late at night, and hoping [you'd / she'd / to] phone
 Remembering [you / she / it] said, wouldn't have to be alone
 But then it was late, and I was turning to bed
 I was lost in the dark, seeing [you / her / it] in my head

I can't wait, I can't wait, to see [you / her / it] tonight
 Oh [your / her / that] face, it makes me shine so bright
 Makes me happy, makes me buzz, open up to [your / her / the] sight
 I can't wait, I can't wait, to see [you / her / it] tonight

Back to work, and hoping [you'd / she'd / to] call
 The last time that [you / she / it] did, [you / she / it] made me feel it all
 But then it was five, and I breathed out a long sigh
 I was tied to the ground, but [your / her / that] voice makes me fly.

This stimuli variant was written by a research assistant (RA1) who was blind to the research and specific hypotheses.

Table S8: Song “B” Lyrics by Personal Pronoun Condition
[Second Person / Third Person / No person]

The mailman smiled as he handed me the news,
 tell [you / her / it], I nearly jumped out of my shoes,
 the postcard read returning home tonight

My body jumped with pure delight,
 I know [you're / she's / it's] gonna need some tender lovin' care,
 whatever [you need / she needs / it needs], [you know / she knows /
 it knows] I'll be right there

I won't deny [you / her / it]
 that's one thing, that I'll never, never do
 [you / she / it] took care of me,
 I'll take care of [you / her / this]

[You make / She makes / It makes] me feel better,
 and [your / her / its] love really keeps me together
 Come rain or shine, night or day,
 whenever [you call / she calls / it calls] me it'll be okay

I won't deny [you / her / it]
 that's one thing, that I'll never, never do
 [you / she / it] took care of me,
 I'll take care of [you / her / this]

This stimuli variant was adapted from Natalie Cole's "I Won't Deny You."

Table S9: Song “C” Lyrics by Personal Pronoun Condition
[Second Person / Third Person / No person]

My love, I’ve known [you / her / it] for a while now
[You lift / She lifts / It lifts] me up, up, up,
Lift me up higher
Because [your / her / -] love, [your / her / -] love,
[your / her / -] love it keeps me going

[You are / She is / This is] my life
Nothing can take [your / her / its] place
[You are / She is / Love is] all I need
[You have / She has / Love has] set me free

In the midst of the darkest night
Let [your love / her love / love] be my greatest light
I’m pressing on to see [you / her / it] tonight
Nothing can take [your / her / its] place in my sight

My love, I’ve known [you / her / it] for a while now
[You are / She is / This is] my life
Nothing can take [your / her / its] place
[You are / She is / Love is] all I need
[You have / She has / Love has] set me free

This stimuli variant was written by the first author.

Table S10: Song “D” Lyrics by Personal Pronoun Condition
[Second Person / Third Person / No person]

Oh, I'm so excited, think about [you / her / it] all the time
Yes, I can't wait to see [you / her / it] now
[You're / She's / It's] really the best of my mind
[You're / She's / It's] so fine, wanna hold [you / her / it] all the time

Oh, when, when [you touch / she touches / it touches] me now, tears of joy I'm crying
Oh, and when [you hold / she holds / it holds] me chills run up and down my spine
[You're / She's / It's] so fine, think about [you / she / it] all the time

Yes, I'm so excited, I met peace with the world
Oh, can this love be real, I'm talking about my new, new love
[You're / She's / It's] so fine now, wanna love [you / her / it] all the time

Hey, I'm so excited, don't know what [you're / she's / it's] doing myself
Oh, I'm so happy now, don't need nobody else
[You're / She's / It's] so fine now, think about you all the time

This stimuli variant was adapted from B.B. King's “So Excited.”

Table S11: Song “E” Lyrics by Personal Pronoun Condition
[Second Person / Third Person / No person]

I’m cleaning up, get [you / her / it] out of my head
It’s time to put this past to bed
Just take [you / her / it] down, and toss [you / her / it] out
Don’t like [your / her / this] thing, I’m feeling better without

I hate having [you / her / this] in my space
It’s time [you go / she goes / it goes], get outta my place
Just get [you / her / it] out, have [you / her / it] taken away
It doesn’t belong here, [you / she / it] cannot stay

I’m happier, just don’t need [you / her / it] in my life
Don’t need the mess, and don’t need the strife
No good memories [you give / she gives / it gives] me now
I’m glad [you’re / she’s / it’s] no longer in my house.

This stimuli variant was written by a research assistant (RA2) who was blind to the research and specific hypotheses.

Table S12: Example (Song “E”) Lyrics for Ancillary “You versus You but no I” Tests
[Second person / Second person & No first person]

[I’m cleaning / Cleaning] up, get you out of [my / this] head
It’s time to put this past to bed
Just take you down, and toss you out
Don’t like your thing, [I’m feeling / feeling] better without

[I hate / Hate] having you in [my / this] space
It’s time you go, get outta [my / this] place
Just get you out, have you taken away
It doesn’t belong here, you cannot stay

[I’m happier / It’s happier], just don’t need you in [my / this] life
Don’t need the mess, and don’t need the strife
No good memories you give [me / -] now
[I’m glad / Glad] you’re no longer in [my / this] house.

This stimuli variant was written by a research assistant (RA2) who was blind to the research and specific hypotheses.

Results Including the Controls

As indicated in the preregistration, we were interested in testing for the effect of second person pronouns across songs variants. That said, we also tested whether this effect holds including song variant and the interaction term controls.

Even including these controls in omnibus analysis of variance, songs with second person pronouns were liked more ($F(2, 1590) = 6.41, p = .002$; partial $\eta^2 = .011$). As for the controls, there were baseline differences in liking over the five song variants ($F(4, 1590) = 3.33, p = .010$; partial $\eta^2 = .022$), and a non-significant interaction of the focal second person pronoun effect with song ($F(4, 1590) = .89, p = .47$; partial $\eta^2 = .006$).

Contrasts for second person pronouns versus each of the comparison conditions also produced the same results when including the controls. Compared to when they used third person pronouns ($M = 3.61, SD = .072$), or did not use personal pronouns at all ($M = 3.67, SD = .070$), songs were liked more when they used second person pronouns ($M = 4.01, SD = .074$; $F(1, 1590) = 14.90, p < .001$, partial $\eta^2 = .014$ and $F(1, 1590) = 11.29, p < .001$, partial $\eta^2 = .010$ respectively). As for the controls in these contrasts, only the simple effect of song variant was significant for the second person vs. third person contrast ($F(4, 1590) = 8.86, p < .001$, partial $\eta^2 = .032$) while the interaction was non-significant ($F(4, 1590) = .98, p = .417$, partial $\eta^2 = .004$). For the second person versus no personal pronouns condition, the controls find a baseline variation in song liking ($F(4, 1590) = 5.80, p < .001$, partial $\eta^2 = .021$) and an interaction ($F(4, 1590) = 3.70, p = .005$, partial $\eta^2 = .014$).

Ancillary analysis considering whether the effect of second person pronouns is enhanced by the co-occurrence of first person singular pronouns also replicates when the controls are included. Analysis of variance replicates the null result for song liking between the ancillary condition (“you and no I”) and the second pronoun condition from the main analysis ($F(1, 1045) = .10, p = .751$, partial $\eta^2 = .000$) after controlling for variation in liking across songs ($F(4, 1045) = 13.30, p < .001$, partial $\eta^2 = .048$) and the interaction term ($F(4, 1045) = 9.04, p < .001$, partial $\eta^2 = .13$). This result further casts doubt on speculation that the presence of first person pronouns plays an important role in the effect of second person pronouns.

Song-Level Variation

As preregistered, Study 4 was designed to test whether the effect of second person pronouns held across a set of songs (rather than for an individual song). That said, to provide more texture, below are analyses for each individual song.

Table S13 provides means and statistical results for all primary (vs. comparison conditions) and secondary tests (contrasts vs. no personal pronoun or third person pronouns) of second person pronouns effects by song variant. The hypothesized effect of second person pronouns on song liking (H1) relative to the comparison conditions persisted at $p = .01$ or better for three of the five song variants (A, B, and C), was directionally consistent in a fourth song (Song D; $p = .129$), and non-significant in a fifth song (Song E; $p = .493$).

Table S13 Song liking by pronoun condition (Study 4)

Song	Author	N	Song Liking Means			Second Person Pronouns vs. Comparison Conditions			Second Person vs. No Personal Pronouns			Second Person vs Third Person Pronouns		
			2nd person	3rd person	No person	F	p	Part. η^2	F	p	Part. η^2	F	p	Part. η^2
All	All	1598	4.01	3.61	3.67	17.69	<.001	.015	15.36	<.001	.014	11.02	.001	.010
A	RA 1	317	4.08	3.36	3.59	10.83	.001	.032	5.24	.023	.023	11.39	.001	.050
B	N. Cole	312	4.32	3.88	3.65	8.08	.005	.025	8.54	.004	.039	3.64	.058	.018
C	Author	328	4.43	4.01	3.88	6.29	.013	.019	6.21	.013	.028	3.45	.065	.016
D	BB King	312	3.60	3.36	3.23	2.32	.129	.007	2.53	.114	.012	1.07	.301	.005
E	RA 2	329	3.59	3.45	3.99	0.47	.493	.001	3.24	.073	.015	0.33	.569	.002

Mediation by the Norms Measure

As reported in the main paper, while a two-item measure of norms also mediated the relationship between second person pronouns and song liking, other-activation explained 69.8% more of the effect.

Rather than being a competing mediator, however, the effect of the norm measure seems more likely to be a sequential consequence of other-activation. It would be difficult for a song to activate an other in a listener's life if that song talked about things the listener did not find normative. Similarly, if a song activates a close other, and thus captures what goes on in someone's life already, they should be motivated to see those aspects as more normative (i.e., self-anchoring; Cadinu & Rothbart, 1996; Kilpatrick & Cantril, 1960). While results of a serial mediation model (Hayes, 2018; model 6) is consistent with this notion (indirect effect = .013, 95% CI [.005, .022], $P_M = .070$), note that both it, and the norm mediator alone (indirect effect = .027, 95% CI [.008, .048], $P_M = .147$) result in considerably smaller coefficients and effect sizes than the other-activation mediator alone (indirect effect = .068, 95% CI [.028, .109], $P_M = .367$). Thus other-activation alone best accounts for the relationship between second person pronouns and song liking and overall, these results support the other-activation model (H2).

“Poetry” Replication Study (Study 5)

To test whether the results extend to other narrative arts (i.e., literature), Study 5 asked participants to evaluate the language used in Study 3 (and Study 4 song variant C) as a poem.

Method

We sought a sample of 300 participants to allow detection of effect sizes comparable to those observed in prior studies ($f^2 \sim .03$) at 80% power and an alpha of .05. To allow for exclusions (see SOM), three hundred thirty (360) Amazon Mechanical Turk participants were offered \$0.30 to complete the study. Fifty eight participants (16.1%) failed the participation check, leaving 302 for analysis (151 female).

As in prior experiments, participants were randomly assigned to one of three pronoun conditions (second person pronouns, third person pronouns, no personal pronouns).

All participants were asked to read a poem using the same language as the song presented in Study 3 (and Study 4 song variant C), and then to indicate how much they liked and enjoyed the poem ($r = .94$) using the same items as Studies 3 and 4.

We also measured how much the poem activated someone from their own life, using the same items from Studies 3 and 4 ($r = .90$).

Results

Replicating the results of Studies 3 and 4 in a different narrative art (i.e., literature), one-way ANOVA indicates that second person pronouns influenced liking ($F(1, 300) = 5.63, p = .018$, partial $\eta^2 = .018$). Compared to when it used third person pronouns ($M = 4.03, SD = 1.85$) or did not use personal pronouns at all ($M = 4.19, SD = 1.65$), the poem was liked more when it used second person pronouns ($M = 4.62, SD = 1.71; F(1, 300) = 5.62, p = .018$, partial $\eta^2 = .026$ and $F(1, 300) = 3.04, p = .082$, partial $\eta^2 = .016$, respectively).

Testing Other-Activation. Bootstrapped mediation analysis (Hayes, 2018; model 4) found that relative to the comparison conditions, the relationship between “you” pronouns and liking was driven by the poem’s activation of another person from their own life (indirect effect = .19, 95% CI [.037, .345], $P_M = .376$). Second person pronouns significantly increased thoughts about another person from the participant’s own life ($b = .61, t = 2.42, p = .016$, partial $\eta^2 = .020$), which increased liking of the poem ($b = .54, t = 14.61, p < .001$, partial $\eta^2 = .746$).

Participation Check Procedure for All Experiments

In all experimental studies (Studies 2-5) we excluded participants who (a) moved through the song lyric stimuli page at a time interval consistent with a reading speed of 500 words per minute (WPM) or greater based on the number of words in the song lyric (as measured by a hidden timer) and/or (b) who provided completely invariant responses to all scaled measures (e.g., all 1s or all 7s). The 500 WPM exclusion rule has been used by the first author in all laboratory studies conducted over the last 11 years. It is based on published guidelines on average adult reading speed and comprehension. A recent meta-analysis finds average adult English language reading rates of 238-260 WPM, with most adults falling between 175-320 WPM (Brysbaert, 2019). Five hundred words per minute WPM captures three standard deviations (99.7%) of adult readers in the general population (Just & Carpenter, 1987). Typically, more than half of Amazon Mechanical Turk panel participants excluded by this rule show a reading rate in excess of 1,000 WPM, which is said to be achievable with modest comprehension only among the handful of highly trained individuals who compete in the World Championship Speed Reading Competition (Bremer, 2011). 10-20% of Amazon Mechanical Turk panelists are typically excluded by the WPM rule. 0-5% of online panelists are usually excluded due to completely invariant responding.

ADDITIONAL SOM REFERENCES (NOT USED IN MAIN TEXT)

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