



Minimal Social Interactions with Strangers Predict Greater Subjective Well-Being

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Abstract

Past empirical work has repeatedly revealed that positive social interactions including expressing gratitude and socializing are associated with greater happiness. However, this work predominantly focused on prolonged interactions with close relationship partners. Only a few studies demonstrated hedonic benefits of forming social connections with strangers. The present research investigated whether minimal social interactions with strangers—just taking a moment to greet, thank, and express good wishes to strangers—contribute to happiness of individuals who initiate these interactions. Study 1 ($N=856$) provided correlational evidence that commuters who reported engaging in minimal positive social interactions with shuttle drivers experienced greater subjective well-being (life satisfaction and positive affect). Moreover, hedonic benefits of positive social interactions went beyond relatively more neutral social interactions, Big-Five personality factors, and age, speaking to the robustness of the effect. Study 2 ($N=265$) provided experimental evidence that commuters who greeted, thanked, or expressed good wishes to shuttle drivers experienced greater momentary positive affect than those who did not speak with drivers. These findings add to the burgeoning literature on hedonic benefits of interacting with strangers by showing that even very minimal social interactions with strangers contribute to subjective well-being in everyday life.

Keywords Minimal social interactions · Subjective well-being · Positive affect · Life satisfaction · Gratitude expression

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1 Introduction

As we go through our day-to-day lives, we encounter many individuals who make our lives easier by providing services that we often take for granted—such as the person bagging our groceries in the supermarket, the cleaning person swiping the floors in our office, the barista preparing our morning coffee, or the bus driver taking us to school or work. Sometimes we take the time to greet and thank these individuals, at other times we might be too busy or distracted to do so. Would something as simple as saying “hi,” “thank you,” or “have a nice day” to these strangers contribute to our happiness? Although past empirical work has repeatedly revealed that positive social interactions including expressing gratitude (e.g., Boehm et al. 2011; Seligman et al. 2005) and socializing (e.g., Kahneman et al. 2004) are associated with greater happiness, this work predominantly focused on prolonged interactions with close relationship partners. Only a few studies demonstrated hedonic benefits of forming social connections with strangers—by initiating a conversation and trying to get to know a stranger (Epley and Schroeder 2014) or by engaging in minimal yet positive social interactions with the person (Sandstrom and Dunn 2014a, b). The present research aimed to contribute to this burgeoning literature by investigating whether minimal social interactions with strangers—just taking a moment to greet, thank, or express good wishes to strangers—contribute to happiness of individuals who initiate these social interactions.

The positive-activity model (Lyubomirsky and Layous 2013) provides support to the idea that everyday social interactions that convey others that we appreciate and care for them would promote happiness. According to this model, engaging in positive activities—such as expressing gratitude and committing kind acts—bolsters positive affect, positive thoughts, prosocial behavior, and need satisfaction, which in turn promote greater well-being. Indeed, great many research studies have provided evidence for hedonic benefits of engaging in positive activities. For example, experimental (Alden and Trew 2013; Buchanan and Bardi 2010; Mongrain et al. 2011; Nelson et al. 2016; Pressman et al. 2015) and experience sampling studies (Hofmann et al. 2014) showed that individuals who perform kind acts—such as helping an elderly person use the ATM machine, visiting a sick relative, or walking a stranger with an umbrella to their car—experienced greater positive affect and life satisfaction. Focusing one’s attention on their kind acts by keeping track of these acts on a daily basis is also linked with experiencing greater happiness (Otake et al. 2006). Similarly, individuals who spend their money on others (e.g., by buying gifts, donating to charity) experience greater happiness (Aknin et al. 2017; Dunn et al. 2008; for a review see Dunn et al. 2014)—an effect that was replicated across cultures (Aknin et al. 2013).

Also pertinent to the current research is past work on hedonic benefits of gratitude expression. This work has shown that individuals who wrote letters of gratitude and appreciation to a significant other who has done something nice for them (vs. those who wrote about activities in the past week) experienced greater happiness and lower depression (e.g., Boehm et al. 2011; Seligman et al. 2005), especially if they were motivated to become happier (Lyubomirsky et al. 2011). Recipients of gratitude, too, enjoy hedonic benefits—including greater feelings of social worth (e.g., Grant and Gino 2010) and relationship quality (e.g., Algoe et al. 2010), particularly when they believe expressers of gratitude are responsive (e.g., Algoe et al. 2013). The find-remind-and-bind theory (Algoe 2012) elucidates why gratitude expression confers these hedonic benefits. The theory proposes that expressions of gratitude help one “*find*” new, previously unnoticed social connections or “*remind*” them of existing meaningful relationships, which in turn help “*bind*” relationship

partners. According to the *find* and *remind* functions of the theory, expressing gratitude to strangers whom we interact with during day-to-day exchanges (e.g., a shuttle driver, a barista at a coffee shop, the cashier at the grocery store) might help us establish (*find*) new social connections that we would have otherwise taken for granted. Moreover, such gratitude expressions might make us appreciate (*remind* us) benefits that we routinely receive by interacting with these strangers, which in turn might bolster our happiness (Adler and Fagley 2005). Empirical evidence supporting the find-remind-and-bind theory largely focused on prolonged rather than *brief* gratitude expressions and interactions with close relationship partners rather than *strangers*.

There are a few empirical investigations demonstrating that initiating social connections with strangers contribute to happiness. Across a series of experimental studies spanning multiple contexts including trains, buses, taxi cabs, and laboratory waiting rooms, Epley and Schroeder (2014) instructed a group of participants to initiate a conversation with a stranger and to try to get to know this person through a long conversation if possible whereas others were instructed to keep to themselves or to carry on their normal routine. Their findings revealed that participants who initiated a conversation with a stranger (vs. not) reported a more pleasant experience. However, participants underestimated hedonic benefits of establishing a social connection with a stranger, partly because they thought others were less interested in engaging in social interactions than they themselves were. Although this work provided experimental evidence that forming a social connection with a complete stranger bolsters happiness, interactions that took place in the studies were far from being minimal as the instructions encouraged a longer, deeper connection.

To date, only research by Sandstrom and Dunn (2014a, b) provided evidence that individuals who engaged in minimal social interactions experienced greater happiness. In an experimental study, they instructed a group of participants to have a genuine interaction with a barista at a coffee shop by smiling, making eye contact, and engaging in a brief conversation whereas another group of participants were instructed to have an efficient interaction by having their money ready and avoiding unnecessary conversation. Results showed that individuals who had a genuine (vs. an efficient) interaction with the barista experienced greater momentary positive affect and feelings of belonging (Sandstrom and Dunn 2014a). Moreover, in three correlational studies, Sandstrom and Dunn (2014b) investigated hedonic benefits of day-to-day interactions with acquaintances (weak ties). In one study, university students were asked to report the number of classmates they interacted with regardless of how minimal the social interaction. In two studies, students and community members were asked to count the number of times they greeted another person regardless of how lengthy the social interaction. These studies found that having more day-to-day interactions with acquaintances was associated with greater subjective well-being and feelings of belonging.

The present research builds on past work addressing hedonic benefits of minimal social interactions by investigating, in a new cultural context, whether momentary social connections formed in the few seconds that we greet or say thank you to a stranger contribute to our happiness. To this end, we recruited a sample from Turkey and assessed happiness of commuters who used university-operated free shuttles as they initiated minimal social interactions with shuttle drivers. The first study ($N=856$) sought to obtain correlational evidence for the link between positive social interactions and more stable aspects of happiness by asking commuters to report the degree to which they greet and express their gratitude and good wishes to shuttle drivers when they get on and get off shuttles as well as their subjective well-being (i.e., life satisfaction and positive affect). This study also sought to rule out that the predicted association is due to other correlates of subjective well-being

(e.g., Big-Five personality factors, age). Moreover, we aimed to show that positive social interactions with strangers are linked with subjective well-being above and beyond more neutral conversations (e.g., asking the driver questions about the commute). The second study ($N=265$) sought to provide experimental evidence that commuters who engage in minimal positive social interactions with shuttle drivers (by saying “hi,” “thank you”, “have a nice day”, etc.) experience greater momentary positive affect compared with those who do not talk to the drivers.

Data collection was approved by the Bilkent University Ethics Committee for Research Involving Human Subjects. In Study 1, participants read an online consent form and clicked on a button to indicate their agreement to participate. In Study 2, participants indicated their consent by reading and signing a written consent form. During the consent procedure, participants were assured that participation was voluntary and that the information they provide would be kept confidential.

Materials and data are available from the Open Science Framework (OSF) database (https://osf.io/hvpgk/?view_only=d6d38a62c8fc48c3a9da3cde5aade7ae). For both studies, we reported all measures, conditions, data exclusions, and how we determined sample sizes.

2 Study 1

2.1 Participants and Procedures

The sample consisted of individuals affiliated with a university in Ankara, Turkey who received email invitations to participate in an online survey on a voluntary basis or for course credit. The study announcements indicated that only individuals above 18 years of age who used university-operated shuttles were eligible to participate. The university provides this service to commuters free of charge.

The sample size to achieve .95 statistical power for regression analysis at $p < .05$ assuming a small effect size was estimated by G*Power (Faul et al. 2007) as 652. We decided to check periodically whether the number of participants who met eligibility requirements and completed measures of interest exceeded the minimum sample size determined by power analysis and close the survey accordingly. When we performed the first check after 2 weeks, the sample size exceeded the target number of participants so we stopped data collection.

1050 participants who met eligibility requirements accessed the online survey and agreed to participate. Of these individuals, 856 completed all measures of interest and hence constituted the final analytical sample (482 women; age range = 18–98, $M_{\text{age}} = 20.043$, $SD_{\text{age}} = 3.896^1$; 837 were students, 9 were university staff, 9 were not affiliated with the university, 1 did not provide a response).

¹ There were two participants who were big outliers on age (20 and 10 SD above the mean). When we excluded these outliers from the data analytic sample, frequency of positive social interactions still significantly and positively predicted subjective well-being, ($B=0.101$, $SE=.020$, $p<0.001$, 95% CI [0.061, 0.140]). This effect held when we included frequency of neutral social interactions ($B=0.101$, $SE=.020$, $p<0.001$, 95% CI [0.061, 0.141]), personality factors ($B=0.044$, $SE=.018$, $p<0.016$, 95% CI [0.008, 0.080]), and all covariates (age, gender, commuting frequency, and all five personality factors; $B=0.047$, $SE=.018$, $p=0.01$, 95% CI [0.011, 0.083]) as additional predictors.

2.2 Measures

After consenting to participate in the study, participants completed all measures in random order except demographic factors that were assessed at the end of the survey. Participants were debriefed about aims of the study right after they completed the survey.

2.2.1 Positive Social Interactions

To assess minimal social interactions of positive valence, we asked commuters to indicate how frequently they communicate their good wishes to shuttle drivers including greeting them, saying thank you, and wishing drivers a nice day when getting on and off the shuttle (1 = *Never* to 7 = *Almost always*). Participants reported these behaviors by completing two items developed for the current study: “How often do you express your good wishes to the shuttle driver when getting on the shuttle? (for example, by saying things like: “Good morning” or “Take care””, “How often do you express your good wishes to the shuttle driver when getting off the shuttle? (for example, by saying things like: “Thank you”, “Take care”, or “Have a nice day”)”. These two items were averaged to index positive social interactions ($M = 4.522$, $SD = 1.675$, Cronbach’s $\alpha = .702$).

2.2.2 Neutral Social Interactions

To show that positive social interactions are associated with subjective well-being over and beyond relatively neutral interactions that occur between commuters and shuttle drivers, we asked participants to report how frequently they ask questions to drivers about the commute (1 = *Never* to 7 = *Almost always*). Participants completed two items developed for the current study: “How often do you ask questions about the commute to the shuttle driver when getting on the shuttle? (for example, where the shuttle will stop or whether there will be another shuttle)”, “How often do you ask questions about the commute to the shuttle driver when getting off the shuttle? (for example, whether you could get off before a stop)”. These items were averaged to index relatively more neutral social interactions ($M = 3.162$, $SD = 1.220$, Cronbach’s $\alpha = .505$).

2.2.3 Subjective Well-Being

Subjective well-being was operationalized as the extent to which participants were satisfied with their life and the frequency with which they experienced positive affect. Past work showed that life satisfaction and positive affect are distinct constructs (e.g., Chen et al. 2013; Lucas et al. 1996) that load into a higher order factor representing subjective well-being (e.g., Gallagher et al. 2009; Keyes et al. 2002). Therefore, in the current work, we computed a composite measure of subjective well-being by averaging across life satisfaction and positive affect as well as using each of these measures as distinct outcomes.

Life satisfaction was assessed by a widely-used instrument (The Satisfaction with Life Scale; Diener et al. 1985), which was previously validated in a Turkish sample (Durak et al. 2010). The measure asked participants to rate the extent to which they agree or disagree with five statements (e.g., “In most ways my life is close to my ideal,” 1 = *Strongly disagree*

to 7 = *Strongly agree*). The items were averaged to calculate life satisfaction ($M=4.324$, $SD=1.174$, Cronbach's $\alpha=.795$).

To measure positive affect, participants reported the frequency with which they generally experienced several positive affective states in everyday life (1 = *Never* to 7 = *Almost always*) using items adapted from the positive affect measure developed for the Midlife Development in the United States project (MIDUS; Ryff et al. 2007) and used in prior work (Bayraktaroglu et al. 2019). The second and third authors translated the scale to Turkish and the first author revised the translated items. The affective states included “cheerful,” “happy,” “calm and peaceful,” “satisfied,” and “full of life” ($M=4.452$, $SD=1.037$, Cronbach's $\alpha=.873$).

To calculate an index of subjective well-being, participants' life satisfaction and positive affect scores were averaged ($M=4.388$, $SD=.995$, Cronbach's $\alpha=.760$).

2.2.4 Covariates

2.2.4.1 Personality Personality was assessed using a widely-used instrument (Ten-Item Personality Inventory; Gosling et al. 2003), which was previously validated in a Turkish sample (Atak 2013). Participants indicated the extent to which they agreed or disagreed with ten statements measuring five major personality dimensions (1 = *Strongly disagree* to 7 = *Strongly agree*). Specifically, we measured extraversion (“I see myself as extraverted, enthusiastic,” “I see myself as reserved, quiet,” $M=4.431$, $SD=1.594$, Cronbach's $\alpha=.811$), agreeableness (“I see myself as sympathetic, warm”, “I see myself as critical, quarrelsome”, $M=5.166$, $SD=1.133$, Cronbach's $\alpha=.400$), emotional stability (“I see myself as calm, emotionally stable”, “I see myself as anxious, easily upset”, $M=3.612$, $SD=1.535$, Cronbach's $\alpha=.578$), conscientiousness (“I see myself as dependable, self-disciplined”, “I see myself as disorganized, careless”, $M=5.109$, $SD=1.331$, Cronbach's $\alpha=.660$), and openness to experience (“I see myself as open to new experiences, complex”, “I see myself as conventional, uncreative”, $M=5.572$, $SD=1.159$, Cronbach's $\alpha=.727$).

2.2.4.2 Frequency of Commuting Participants reported how frequently they commuted with university-operated shuttles on a 7-point Likert scale (1 = *Less than once a month* to 7 = *A few times a day*; $M=5.370$, $SD=1.619$).

2.2.4.3 Demographic Factors At the end of the survey, participants reported their age and gender.

To determine which covariates significantly predicted subjective well-being and hence should be included in the main analyses, we conducted separate regressions that predicted subjective well-being from each potential covariate (for a similar approach see Gunaydin et al. 2016; Leger et al. 2016). Personality factors and age emerged as significant predictors of subjective well-being (all $ps < .01$). However, gender and frequency of commuting did not significantly predict subjective well-being (all $ps > .08$) and hence were not included in the main analyses.²

² When we included all covariates (gender, age, commuting frequency, and all five personality factors) in our analyses, positive social interactions with shuttle drivers again significantly and positively predicted the subjective well-being composite, $B=0.044$, $SE=.018$, $p=0.016$, 95% CI [0.008, 0.080] and its components (life satisfaction $B=0.050$, $SE=.023$, $p=0.028$, 95% CI [0.005, 0.095]; positive affect $B=0.038$, $SE=.019$, $p=0.047$, 95% CI [0.001, 0.075]).

2.3 Results

Results of linear regression analysis revealed that frequency of positive social interactions significantly and positively predicted subjective well-being, ($B=0.099$, $SE=.020$ $p<0.001$, 95% CI [0.059, 0.138], see Model 1a in Table 1). Including frequency of neutral social interactions (Model 2a) or covariates (personality factors and age; Model 3a) as additional predictors did not change the pattern of findings, as indicated in Table 1.

Frequency of positive social interactions also significantly and positively predicted each component of subjective well-being, namely life satisfaction ($B=0.096$, $SE=.024$ $p<0.001$, 95% CI [.049, .143], Model 1b) and positive affect ($B=0.101$, $SE=.021$ $p<0.001$, 95% CI [.060, .142], Model 1c). As shown in Table 1, when we included in the analyses frequency of neutral social interactions (Model 2b and 2c) or covariates (personality factors and age; Model 3b and 3c) as additional predictors, minimal positive social interactions continued to predict greater life satisfaction and positive affect.

3 Study 2

Study 1 focused on more enduring aspects of happiness and provided correlational evidence that engaging in minimal positive social interactions with shuttle drivers was associated with greater subjective well-being. Study 2 aimed to complement Study 1 by focusing on momentary positive affect and providing experimental evidence that commuters who initiate minimal positive social interactions with shuttle drivers experience greater positive affect than those who do not speak with drivers. We sought to examine this effect both with and without baseline positive affect as a covariate.

3.1 Participants and Procedures

Our sample consisted of commuters (students and university staff) riding university-operated shuttles from downtown to a university campus located in Ankara, Turkey. The data were collected during a total of 32 commutes (lasting about 30 to 45 min). We aimed to collect the data within one semester and stopped data collection at the end of the semester as planned.

Three hundred and forty-seven participants consented to participating in the study. We excluded 21 participants with missing Time 1 and Time 2 survey data who could not complete the study due to a shuttle breakdown and 14 participants who did not complete the Time 2 survey that included our outcome measure. Of the remaining 312 participants, 47 failed the manipulation check (they either did not follow instructions or encountered an unexpected incident that prevented them from following instructions—e.g., the driver left the shuttle before commuters could express their good wishes, the shuttle was too crowded preventing commuters from getting off using the front door in which case they could not speak with the driver). Excluding these participants left a final analytical sample of 265 commuters (143 female; $M_{\text{age}}=22.294$, $SD_{\text{age}}=5.267$). Sample characteristics for participants who were excluded from the final analytic sample may be found in Table S1 in the Online Supplemental Materials.

Given the abovementioned incidents prevented participants from interacting with the driver, they disproportionately affected participants' ability to follow instructions in the

Table 1 Regression models predicting subjective well-being in Study 1

Predictor	Subjective well-being composite				Life satisfaction				Positive affect			
	β	<i>B</i>	<i>p</i>	95% CI of <i>B</i>	β	<i>B</i>	<i>p</i>	95% CI of <i>B</i>	β	<i>B</i>	<i>p</i>	95% CI of <i>B</i>
Intercept					Model 1a				Model 1c			
Positive interactions	0.166	3.941	0.000	[3.751, 4.131]	Model 1b	0.137	3.889	0.000	0.164	3.993	0.000	[3.795, 4.191]
Adjusted R^2		0.027				0.018				0.101	0.000	[0.060, .142]
Intercept					Model 2a				Model 2c			
Positive interactions	0.167	3.944	0.000	[3.708, 4.179]	Model 2b	0.145	3.994	0.000	0.155	3.894	0.000	[3.648, 4.139]
Neutral interactions	-0.001	-0.001	0.972	[-.056, .054]		-0.043	-0.041	0.972	0.046	0.039	0.182	[-.018, .096]
Adjusted R^2		0.025				0.018				0.029		
Intercept					Model 3a				Model 3c			
Positive interactions	0.080	2.006	0.000	[1.493, 2.519]	Model 3b	0.077	1.933	0.000	0.042	2.080	0.000	[1.543, 2.617]
Neutral interactions	-0.015	-0.012	0.625	[-.060, .036]		-0.053	-0.051	0.625	0.028	0.042	0.029	[.004, .079]
Extraversion	0.254	0.158	0.000	[.119, .198]		0.189	0.139	0.000	0.178	-0.012	0.278	[-.022, .077]
Agreeableness	0.162	0.142	0.000	[.091, .194]		0.141	0.146	0.000	0.139	0.158	0.000	[.136, .220]
Conscientiousness	0.179	0.133	0.000	[.090, .177]		0.193	0.170	0.000	0.097	0.142	0.000	[.085, .193]
Emotional stability	0.259	0.168	0.000	[.130, .206]		0.192	0.147	0.000	0.190	0.168	0.000	[.051, .143]
Openness	0.019	0.016	0.564	[-.038, .070]		0.018	0.018	0.594	0.013	0.016	0.643	[-.043, .070]
Age	-0.120	-0.031	0.000	[-.045, -.016]		-0.092	-0.028	0.003	-0.033	-0.031	0.000	[-.049, -.018]
Adjusted R^2		0.293				0.202				0.295		

Subjective well-being was calculated by averaging across life satisfaction and positive affect

positive social interaction group who were asked to speak with the driver. Therefore, a greater proportion of participants in the experimental condition (25%) failed the manipulation check compared with the control condition (11%), $\chi^2(1) = 5.790$, $p = .016$, Contingency Coefficient = .135, 95% CI [.028, .230]. Participants who failed the manipulation check did not significantly differ from those who passed in age ($M = 21.979$, $SE = .418$, 95% CI [21.138, 22.819]), $M = 22.294$, $SE = .324$, 95% CI [21.657, 22.931], respectively; $F(1, 310) = .160$, $p = .689$, $\eta_p^2 = .001$) or gender (47% vs. 54% females, respectively; $\chi^2(1) = .820$, $p = .365$, Contingency Coefficient = .051, 95% CI [.002, .179]). Participants who failed the manipulation check ($M = 4.681$, $SE = .184$, 95% CI [4.319, 5.042]) also did not significantly differ from those who passed ($M = 4.853$, $SE = .077$, 95% CI [4.701, 5.005]) in pre-commute positive affect, $F(1, 310) = .745$, $p = .389$, $\eta_p^2 = .002$. Moreover, we checked whether there were differences in pre-commute positive affect across participants who followed instructions vs. not within each condition. For the positive social interaction condition, participants who failed the manipulation check ($M = 4.547$, $SE = .238$, 95% CI [4.077, 5.017]) did not significantly differ from those who passed in pre-commute positive affect ($M = 4.904$, $SE = .118$, 95% CI [4.671, 5.137]), $F(1, 160) = 1.804$, $p = .181$, $\eta_p^2 = .011$). For the control condition, participants who failed the manipulation check ($M = 4.967$, $SE = .299$, 95% CI [4.375, 5.558]) again did not significantly differ from those who passed ($M = 4.804$, $SE = .100$, 95% CI [4.607, 5.001]), $F(1, 148) = .267$, $p = .606$, $\eta_p^2 = .002$.

3.2 Procedures

Commuters were approached by a research assistant while waiting in line to board the shuttle and were invited to participate in the study in exchange for course credit or entering into a raffle to win small prizes (e.g., movie tickets, dinners for two). Commuters who consented to participate were asked to fill out a short survey before the commute and were given an envelope containing instructions that constituted our experimental manipulation. To keep the research assistant administering the first survey blind to condition assignments, participants were asked to not unseal the envelope until they boarded the shuttle.³ Participants were further informed that other research assistants stationed at shuttle stops across campus would ask them to fill out a second short survey right after they get off the shuttle.

Participants in a given commute were randomly assigned either to the positive social interaction (130 participants in 17 commutes) or control conditions (135 participants in 15 commutes). We kept the experimental manipulation at the commute (but not participant) level for two primary reasons. First, had the manipulation been at the participant level,

³ To keep research assistants blind to condition assignments, envelopes containing instructions sheets were given to research assistants in a larger, numbered envelope that did not reveal condition assignments for the commute. An excel sheet was used to randomly assign participants to conditions and to keep a record of condition assignments for commutes (i.e., to track which number corresponded to which condition). After data collection was completed, the information in the excel sheet was checked against instructions sheets collected from participants following completion of the second survey. For one commute (including six participants), condition assignments indicated in the excel sheet and those indicated in collected instructions sheets did not match due to experimenter error, so the excel sheet was updated to reflect actual condition assignments of these participants. The information in the updated excel sheet about condition assignment was then combined with participants' data. When we kept the initial condition assignments of these six participants, the main findings still remained the same. Specifically, commuters who engaged in minimal social interactions with the driver (vs. not) experienced greater positive affect following the commute, both with ($F(1, 262) = 18.449$, $p < .001$, $\eta_p^2 = .066$) and without ($F(1, 263) = 10.278$, $p = .002$, $\eta_p^2 = .038$) baseline positive affect as a covariate.

participants assigned to different conditions might have affected one another's behaviors, making it more difficult to follow instructions. Second, participants' positive affect might have been influenced by other participants' behaviors rather than the experimental manipulation. For example, a participant in the control condition who observes participants in the experimental condition greeting or thanking the driver might be compelled to do so, hence failing to follow instructions. Alternatively, the same participant might not talk to the driver as instructed but might feel bad because they diverged from what others were doing. Thus, manipulating positive social interactions at the commute level afforded better control of factors that may account for potential differences across conditions.

The instructions sheets participants were given asked them to use the front door when they get off the shuttle. Participants in the positive social interaction condition were asked to express their good wishes (e.g., by saying "*Have a nice day*") and gratitude (e.g., by saying "*Thank you*") to the driver in a warm and sincere manner as they get off the shuttle while making eye contact if possible (verbatim instructions are available on the project webpage on the OSF). Participants in the control condition were asked to not speak with the driver. The control condition was chosen to reflect the prevalent norm in Turkey where the study was conducted, which is not speaking with shuttle drivers during commutes, mainly to not distract them while driving.

Research assistants who were stationed at shuttle stops across campus and who were blind to participants' condition assignment asked participants to fill out a second survey including positive affect items and the manipulation check. After data collection was completed, participants were debriefed about the purposes of the study and the experimental manipulation via email, and were provided with contact details of the research team in case they had any questions.

3.3 Measures

3.3.1 Positive Affect

To capture situational changes in positive affect, we used a brief measure adapted from past work that assessed momentary positive affect (Dunn et al. 2008; Selcuk et al. 2012). Participants were asked to report how they are feeling at the moment on two items: "*How happy or unhappy are you feeling right now?*" (1 = *Very unhappy* to 7 = *Very happy*) and "*How good or bad are you feeling right now?*" (1 = *Very bad* to 7 = *Very good*). The second and third authors translated the items to Turkish and the first author revised the translated items. The two items were averaged to index momentary positive affect at baseline ($M=4.853$, $SD=1.257$, Cronbach's $\alpha=.837$) and following the commute ($M=4.813$, $SD=1.237$, $\alpha=.892$).

3.3.2 Manipulation Check

To check whether participants followed instructions, they were asked whether or not they spoke with the driver upon exiting the shuttle and if yes, what they said. Participants in the social interaction condition reported that they spoke on average three words with the driver ($M=2.984$, $SD=1.118$), with 60% only greeting or expressing good wishes to the driver, 4% only thanking him, and 36% doing both.

3.4 Data Analytic Strategy

Given participants were nested within commutes in our data, we first assessed whether multilevel modelling was appropriate to analyze the data. Following recommendations of Hayes (2006), we calculated intraclass correlation (ICC) to assess the degree of non-independence in our outcome measure (momentary positive affect) across level-1 units (commuters). ICC was very close to zero (0.017), suggesting that level-1 units were statistically independent. We also used a Log Likelihood Test to assess whether level-2 units (commutes) differed from each other on momentary positive affect (Hayes 2006). There was no evidence that the level-2 intercept varied randomly, $\chi^2(1)=0.272, p=.602$. Given that level-1 units appeared sufficiently independent and level-2 units did not significantly differ from each other on momentary positive affect, we conducted ANOVAs to test our hypothesis.⁴

3.5 Results

We conducted an ANOVA with condition (positive social interaction vs. no talking control) as a between-participants factor, baseline positive affect as a covariate, and post-commute positive affect as the outcome. Results revealed that, controlling for baseline positive affect, participants in the positive social interaction condition ($M=4.973, SE=.055, 95\% CI [4.864, 5.081]$) experienced greater positive affect following the commute compared with the control condition ($M=4.660, SE=.054, 95\% CI [4.553, 4.766], F(1, 262)=16.420, p<.001, \eta_p^2=.059$).⁵ The difference across conditions was also significant when we did not adjust for baseline positive affect, $F(1, 263)=6.970, p=.009, \eta_p^2=.026$.

4 Discussion

The current research showed that simply taking a moment to greet, express good wishes, or say thank you to strangers is linked with greater happiness in everyday life. Study 1 provided correlational evidence that commuters who reported engaging in such minimal positive social interactions with shuttle drivers experienced greater subjective well-being—namely, greater life satisfaction and positive affect. Moreover, hedonic benefits of positive social interactions went beyond relatively more neutral social interactions,

⁴ We also conducted linear mixed models in SPSS to predict momentary positive affect from condition. Given that there was no significant evidence that the level-2 intercept varied randomly we used a fixed intercept in these analyses. Results showed that commuters who engaged in minimal social interactions with the driver (vs. not) experienced greater positive affect following the commute, both with ($B=.313, SE=.077, p<.001, 95\% CI [0.161, 0.466]$) and without ($B=.397, SE=.150, p=.009, 95\% CI [0.101, 0.693]$) baseline positive affect as a covariate.

⁵ The survey also included a question to assess physical fatigue (“How fatigued or refreshed are you feeling right now?”, 1 = Very fatigued, 7 = Very refreshed). For exploratory purposes, we examined whether positive social interactions even helped overcome physical fatigue. Results showed that participants in the positive social interaction (vs. control) condition experienced lower fatigue when we adjusted for baseline fatigue, $F(1, 262)=7.507, p=.007, \eta_p^2=.028$, but not when we excluded baseline fatigue from the analysis, $F(1, 263)=.304, p=.582, \eta_p^2=.001$. Moreover, the difference across conditions in post-commute positive affect remained significant when we included baseline fatigue as an additional covariate, $F(1, 261)=17.272, p<.001, \eta_p^2=.062$.

Big-Five personality factors, and age, speaking to the robustness of the effect. Study 2 provided experimental evidence that commuters who thanked, greeted, or expressed their good wishes to shuttle drivers experienced greater momentary positive affect than those who did not speak with drivers.

Our findings support the positive-activity model (Lyubomirsky and Layous 2013) by showing that initiating positive social interactions with strangers, albeit minimal, predicts greater subjective well-being. The findings are also consistent with past work demonstrating that minimal social interactions contribute to happiness (Sandstrom and Dunn 2014a, b). By the nature of the interactional context used in the present work, social connections formed are likely more minimal than investigated in past work. In the limited time when getting on and off the shuttle commuters typically have very little opportunity to chat with the driver so their interactions were likely limited to greeting and thanking the driver. Indeed, commuters who were instructed to express their good wishes to the driver indicated that they only exchanged a few of words (such as “Good afternoon,” “Thanks,” “Take care”) with the driver when exiting the shuttle (Study 2). In Sandstrom and Dunn (2014a), participants who were instructed to have a genuine interaction with a barista at an urban coffee shop were encouraged to smile, make eye contact, and have a brief conversation with the person. So some participants might have had a little chat with the barista while waiting for their beverage whereas due to the busy nature of a coffee shop others might have only greeted or thanked the person—very much like commuters expressing their good wishes to shuttle drivers in our studies. Similarly, Sandstrom and Dunn (2014b) encouraged participants to report minimal social interactions (such as number of times they greeted someone) while at the same time allowing them to report lengthier interactions. Therefore, past work likely captured a broader range of interactions including (but not necessarily limited to) minimal social connections whereas the present work almost exclusively captured minimal social connections.

Why are minimal social interactions with strangers associated with greater subjective well-being? According to the find-remind-and-bind theory (Algoe 2012), when we take the time to initiate minimal social connections with strangers, we might notice and appreciate the small benefits that our day-to-day interactions with these individuals confer, which in turn, might increase feelings of social connection and belonging. Indeed, past work showed that engaging in minimal social interactions with a barista at a coffee shop increased positive affect via feelings of belonging (Sandstrom and Dunn 2014a). Future research should examine whether the link between minimal social interactions and subjective well-being demonstrated in the present research is similarly mediated by feelings of belonging. It is also possible that the extent to which targets (in this case shuttle drivers) reciprocate expressions of gratitude and good wishes might influence how much we benefit from minimal social interactions. For example, when a shuttle driver responds back with a warm smile and wishes us a nice day we might feel happier than when the driver ignores us or gives a dry, forced response. Therefore, another interesting direction for future work is to investigate how targets’ responses to minimal social interactions affect happiness of individuals initiating those interactions.

The current findings speak to subjective well-being of individuals who initiated minimal social interactions with shuttle drivers rather than drivers’ subjective well-being. Do minimal social interactions contribute to subjective well-being of targets? Indeed, one study provided evidence that being talked to by a stranger is as pleasant as initiating a conversation with a stranger (Epley and Schroeder 2014). Therefore, upon hearing momentary expressions of gratitude or good wishes, targets might also experience greater positive affect. Past work showing the pivotal role of responsiveness in relational and personal

well-being (e.g., Algoe et al. 2013; Selcuk et al. 2016) suggests that targets' happiness might depend on how responsive or genuine they perceive minimal social interactions. If targets perceive these interactions as responsive they might feel happier than if they perceive them as unresponsive. Investigating whether and under what circumstances minimal social interactions contribute to targets' subjective well-being provides yet another interesting avenue for future work.

A limitation of the current research is the large number of participants who failed to follow instructions in our experimental study and therefore were removed from the final analytic sample (see Online Supplemental Materials for analyses using alternative approaches to address non-adherence in the data). A greater proportion of these participants were in the positive social interaction (vs. control) condition, partly because issues that prevented participants to follow instructions disproportionately affected participants in this condition. For example, when the shuttle was too crowded to use the front door or the driver left as soon as the shuttle stopped, the positive social interaction group could not speak with the driver whereas the control group was still able to not speak with the driver as instructed. These issues notwithstanding, there might also be dispositional differences across participants who followed instructions vs. not, which might have amplified the size of our effects. Unhappier or more introverted participants might be more likely to fail to follow the instructions to speak with the driver (than the instructions to not speak with him). In that case, excluding these participants could have inflated the observed positive affect of the remaining participants in the social interaction condition. Participants in each condition who failed the manipulation check did not significantly differ in baseline positive affect than those who passed, speaking against the idea that participants who did not follow instructions were unhappier than those who did. However, an important caveat is that these comparisons might have failed to reach significance due to the restricted sample size with which we carried out the comparisons. Therefore, it is possible that dispositional differences (such as happiness or introversion) affecting participants' propensity to follow instructions might have inflated the size of our effects.

Overall, the present research showed that something as simple as saying "have a nice day" or "thank you" to a stranger that we encounter in everyday life is linked with greater subjective well-being. Our findings add to the burgeoning literature on hedonic benefits of interacting with strangers (Epley and Schroeder 2014; Sandstrom and Dunn 2014a) by showing, in a new cultural context, that even very minimal social interactions with strangers contribute to happiness.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Human and Animal Rights Data collection was approved by the Bilkent University Ethics Committee for Research Involving Human Subjects.

Informed Consent In Study 1, participants read an online consent form and clicked on a button to indicate their agreement to participate. In Study 2, participants indicated their consent by reading and signing a written consent form. During the consent procedure, participants were assured that participation was voluntary and that the information they provide would be kept confidential.

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