



# Texting Frequency and The Moral Shallowing Hypothesis

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## Abstract

Frequency of cell phone texting now exceeds the frequency of all other forms of friendship interaction among teens. As teens and young adults increasingly face phones instead of friends, moral alarm over such trends has grown. One of these concerns, the “shallowing” hypothesis, was evaluated via trait and value correlates of texting frequency in three large samples of convenience. According to the shallowing hypothesis, ultra-brief social media like texting and twitter privilege rapid, relatively shallow thought, consequently very frequent daily use of such media should be associated with cognitive and moral “shallowness”. Correlates of texting were surprisingly consistent with that hypothesis: self-reported texting frequency was weakly but consistently positively associated with outgroup prejudice and materialism, and negatively associated with traits and life goals linked to morally engaged reflective thought. The most consistent negative correlates of texting frequency were trait reflectiveness and moral life goals. We present evidence of a significant linear decline in mean levels of trait reflectiveness during the past four years among first year introductory psychology students.

## Introduction

In his recent Pulitzer Prize nominated bestseller *The Shallows*, culture and technology critic and author, Nicholas Carr, reviewed evidence that human culture may stand before the crest of a wholesale cognitive “shallowing” wrought by the insidious effects of recent media technologies, most notably, in his view, always connected internet access, always-on portable entertainment media, and always-in-touch electronic social media. According to Carr, the critical cognitive sea-change induced by these technologies is a dramatic sudden decline in ordinary daily reflective thought, a decline of truly historic proportions, comparable in its effects on modes of human thought to Gutenberg’s invention of the printing press. Carr considers it in the realm of possibility that texting, twitter, and ever smarter internet search technologies have the power to precipitate synaptic re-sculpting of our currently reflective “Gutenberg” brains to some future, new, unknown, post-Gutenberg form. Carr finds reason for real moral concern here. Citing Immordino-Yang et al.’s (2009) recent discovery that feelings of moral elevation reach peak activation more slowly, and return to activation baseline more slowly, than do other emotions, he concludes our cognitive New World of perpetual texting and tweeting seems destined to unavoidably morally shallow our minds over time.

Although versions of this moral shallowing hypothesis abound in the rapidly growing genre of popular critical nonfiction on technology and culture, we could locate no direct investigations of the moral shallowing hypothesis with respect to two of its key claims: 1) high use of text-messaging and other ultra-brief forms of electronic communication are associated with lower typical levels of reflective thought, and 2) tendencies to engage in reflective thought are in decline among the young. We provide among the first direct empirical evaluations of these claims in the current study.

## Method

### Participants and Procedure

Participants were introductory psychology student volunteers who completed, a 1-hour online battery of questionnaires, in exchange for partial course credit, as part of an annual Psychology Department mass testing conducted online during the first few weeks of the Fall semester in one of three consecutive years. An initial total sample of 2,947 participants pooled from these three annual mass testing samples yielded a subsample of 2,314 participants aged 18-22 who provided the data for the current study (Sample A, *N*=810; Sample B, *N*=740, Sample C, *N*=713).

### Measures

**Peak texting frequency.** Measured in all samples with the single item “How many cellphone text messages do you probably get or send (whichever is higher, not both, not work-related) on your highest use day of the month?”, rated on a 7-point scale in Sample A and an 8-point scale in Samples B and C. For consistency, we recoded response values of “8” in Samples B and C to “7” which yielded very similar response distributions for this item in each sample.

**Big Five Personality Dimensions.** All samples were administered the 44-item Big Five Inventory (BFI; John & Srivastava, S., 1999 ). The BFI measures five personality dimensions, Extraversion (E), Agreeableness (A), Conscientiousness (C), Emotional Stability (ES), and Openness to Experience (O) via 8-10 short trait descriptive phrases per factor (e.g., “Is full of energy”).  $\alpha = .84, .84, .85$  (E),  $.76, .76, .80$  (A),  $.76, .79, .78$  (C),  $.80, .82, .84$  (ES), and  $.77, .73, .76$  (O), for samples A, B, and C, respectively.

**Reflection.** The 12-item Reflection scale from the Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999). The Reflection scale measures tendencies to engage in reflective and self-reflective states motivated by intrinsic interest or curiosity, in contrast to ruminative and self-ruminative states motivated by threat, loss, anger, or distress. Each item is rated on a 5-place scale ranging from strongly disagree (1) to strongly agree (5), with the instruction: “Select the scale option that most accurately describes you by indicating how strongly you agree or disagree with the statement”. Sample items are “I love to mediate on the nature and meaning of things”, and “I often love to look at my life in philosophical ways”.  $\alpha = .91, .91, \text{ and } .92$ , for samples A, B, and C, respectively.

**Life goals.** A 63-item inventory of major life goals measuring 21 content categories via 3 items each that included, with modifications, the 11 categories measured by Grouzet et al.’s (2005) Aspiration Index and 10 additional ones (e.g., aesthetic goals, family goals, achievement goals) identified in other investigations of life goals (e.g., Roberts and Robins, 2000; Wicker et al., 2001), or values (e.g., Schwartz, 1992). Response format was identical to the AI, a 9-point scale ranging from Not at Important (1) to Extremely Important (9), administered with the instruction: “Respond to each question by indicating how important it is to you that you achieve the goal in the future”. The goals measure appeared last in the survey and only to the approximately 80% of participants in each sample who had under 55 minutes of elapsed time prior to the last survey page. *N*s for analyses involving life goals data are therefore smaller than for other analyses. Coefficient Alpha reliabilities in each sample exceeded .80 for 12 of the 21 life goal scales, exceeded .70 for 8 others, and for the remaining scale, Safety, ranged from .57 to .61.

**Wealth:** To be a very wealthy person; To be financially successful; To be rich.  
**Fame:** To be famous; To have my name known by many people; To be admired by lots of different people.  
**Image:** To have people comment often about how attractive I look; To achieve the look I’ve been after; To have an image that others find appealing.  
**Power:** To have status and power; To have executive authority over others; To triumph over my rivals.  
**Achievement:** To achieve recognition and renown in my work; To be very successful; To be outstanding at what I do, to excel.  
**Hedonism:** To have fun; To seek adventure; To have an exciting lifestyle.  
**Eroticism:** To experience a great deal of sensual pleasure; To have a really good sex life; To have strong erotic passion in my life.  
**Aesthetics:** To promote and support artistic activities and the fine arts; To develop my knowledge or ability in a creative art; To create good artistic works (art, writing, music, etc.).  
**Knowledge:** To gain increasing insight in to why I do the things I do; To deepen my understanding of life; To find real purpose and meaning in life.  
**Autonomy:** To choose what I do, instead of being pushed along by life; To act and decide freely, based on my what I want; To do my own thing, to pursue what I wish to pursue.  
**Morality:** To be a moral human being; To live my life with genuine integrity; To lead an ethical, principled life.  
**Community:** To take part in volunteer community and public service; To work for the betterment of society; To work to make the world a better place.

**Altruism:** To help others in need; To work to promote the welfare of others; To make sacrifices for the sake of others happiness.  
**Universalism:** To promote equality and social justice; To conserve and protect nature and the environment; To promote cultural diversity in society.  
**Closeness:** To share my life with someone I love; To have committed, intimate relationships; To feel that there are people who really love me, and whom I really love.  
**Family:** To maintain close family ties; To have harmonious relationships with my parents and siblings; To honour and respect my family and my group.  
**Safety:** To have few threats to my physical safety; To be able to live in relative safety and security; To feel that our nation, our citizens, and our way of life are protected and safe.  
**Health:** To be physically healthy; To feel good about my physical fitness; To protect my physical health, to maintain healthy habits.  
**Conformity:** To adapt to the proper expectations of society; To fit in responsibly to my society ; To respect the rules and customs of society.  
**Vertical Spirituality:** To loyally obey and defend religious tradition; To obediently serve the will of God ; To encourage submission to one God.  
**Horizontal Spirituality:** To discover and explore my own spirituality; To develop my inner, individual spirituality; To constantly spiritually grow, develop, and change.

**Group Evaluation Thermometer.** An evaluation thermometer was used as our prejudice measure. Participants rated their degree of positive feeling on a scale from 0° (extremely unfavorable) to 100° (extremely favorable) toward “typical” members of certain target groups. Seven of these targets “Immigrants”, “Aboriginals”, “Asians”, “Middle Eastern Persons”, “Blacks”, “Obese persons”, and “Disabled Persons”, were chosen to operationalize outgroup prejudice. Differences in response scale use were controlled by subtracting each target group evaluation from that for a fifth group, “Whites” (cf. Brewer & Pierce, 2005; Hugenberg & Bodenhausen, 2004), or “Canadians”, in the case of Immigrants, yielding a prejudice score indicating relative favorability toward either Whites or Canadians.

## Results

### Texting Frequency Distributions

Approximately 30% of participants in all samples reported a typical peak rate of texting per month of 200+ a day. 12% reported a peak rate of 300+ per day (i.e, chose response value “8” in samples B and C). Response frequencies for intervals of 1 through 6 were comparable between samples. Combining them, response frequencies for the remaining intervals were 1.7% (“none”), 2.8% (“5”), 5.9% (“10”), 14.5% (“20”), 21.5% (“50”), and 22.9% (“100”).

### Texting Frequency and Personality

Correlations between texting frequency and personality traits are shown in Table 1. Consistent with the moral shallowing hypothesis, reflectiveness and openness were both negatively associated with texting frequency. Reflection explained the openness effects.

Table 1

	Sample			
	Combined (N=2,211)	A (N=772)	B (N=705)	C (N=734)
Extraversion	.19***	.21***	.20***	.18***
Agreeableness	-.01	-.03	.01	.00
Conscientiousness	-.01	.02	-.03	-.02
Emotional Stability	-.02	.01	.03	.01
<b>Openness</b>	<b>-.08***</b>	<b>-.09*</b>	<b>-.07*</b>	<b>-.03</b>
Openness (.Refl)	-.01	-.01	-.01	.01
<b>Reflection</b>	<b>-.12***</b>	<b>-.16***</b>	<b>-.12**</b>	<b>-.06</b>
Reflection (.Opns)	-.09***	-.13***	-.09*	-.05

Note: Tabled values are partial correlations controlling for participant age and gender, based on participants 18-22 years of age. Expected associations based on the shallowing hypothesis are shown in bolded font. \*\*\*p<.001, \*\*p<.01, \*p<.05 (pairwise).

### Texting Frequency and Life Goals

Correlations between texting frequency and the relative personal importance of major life goals are shown in Table 2. Higher texting frequency was associated with lesser importance of moral, aesthetic, and spiritual goals, and greater importance of wealth and image.

Table 2

Goal domain:	Sample			
	Combined (N=1,620)	A (N=576)	B (N=547)	C (N=487)
<b>Morality</b>	<b>-.19***</b>	<b>-.18***</b>	<b>-.19***</b>	<b>-.20***</b>
<b>Aesthetics</b>	<b>-.14***</b>	<b>-.18***</b>	<b>-.14**</b>	<b>-.09*</b>
<b>Image</b>	<b>.12***</b>	<b>.12**</b>	<b>.13**</b>	<b>.11*</b>
<b>Wealth</b>	<b>.12***</b>	<b>.11**</b>	<b>.12**</b>	<b>.14**</b>
<b>Horizontal Spirituality</b>	<b>-.10***</b>	<b>-.10*</b>	<b>-.11*</b>	<b>-.09*</b>
Eroticism	.12***	.14**	.14**	.05
Power	.09***	.10*	.06	.12**
Closeness	.08**	.02	.15**	.06
Altruism	-.08**	-.09*	-.12**	-.02
Knowledge	-.08**	-.14**	-.03	-.07
Community	-.08**	-.11**	-.11*	-.02
Universalism	-.08**	-.07	-.12**	-.06
Hedonism	.07**	.15***	.06	-.04
Fame	.06*	.05	.02	.13**
Health	.03	.01	.12**	-.06
Autonomy	-.03	.03	-.00	-.14**
Conformity	.03	-.02	.03	.12**
Safety	.03	.06	.06	-.06
Family	.03	.04	.04	.00
Vertical Spirituality	-.03	-.01	-.08	-.00
Achievement	.02	.01	.06	-.01

Note: Tabled values are partial correlations controlling for participant age and gender. <sup>1</sup> Each 3-item life goal scale is based on item scores deviated from each participant’s mean response to all 63 goal items. Associations consistent with the moral shallowing hypothesis that are also significantly different from zero in all samples (A, B, and C) are shown in bolded font. \*\*\*p<.001, \*\*p<.01, \*p<.05 (pairwise).

Arguably, the most face valid indicators of “moral shallowness” among the 63 life goal items measured here are the three morality goals, *To be a moral human being*, *To live my life with genuine integrity*, and *To lead an ethical, principled life*. Remarkably, *the relative personal importance of moral goals showed the strongest (inverse) life goal associations with peak texting frequency in all three samples*. Partialling the erotic goals scale score from that association did not meaningfully reduce it suggesting it may not be narrowly linked to “sexting” or to sexual interpretation of the morality goal items by some participants.

### Texting Frequency and Prejudice

Texting correlations with prejudice are presented in Table 3. Higher texting frequency was associated with lower moral inclusiveness evidenced here by higher explicit outgroup prejudice toward a broad range of social outgroups.

Table 3  
Correlations Between Texting Frequency and Explicit Prejudices<sup>1</sup>

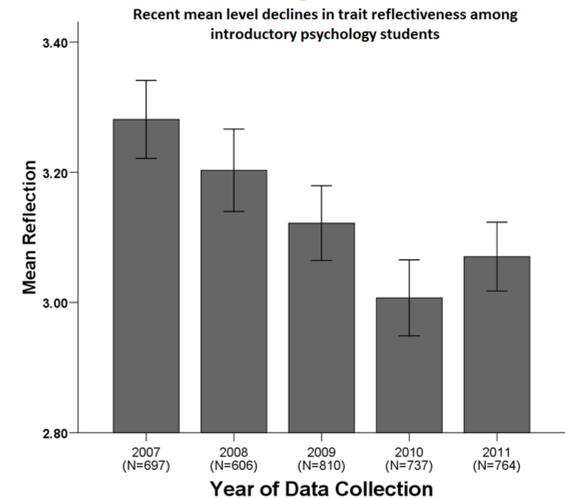
Sample	Target Group						
	Aborig	Immig	Asians	MEast	Blacks	Obese	Disabled
Combined-sex	.21***	.16***	.19***	.16***	.14***	.15***	.07*
Women	.20***	.15***	.19***	.15***	.16***	.10**	.05
Men	.25***	.19***	.18**	.18**	.14**	.15**	.11*

Note: *N*= 1255 (905 women, 350 men). The above analyses are based on participants in the combined sample (A+B+C) who indicated that their ethnic ancestry was “European or British Isles”, were born in Canada, and had been living in Canada their whole lives. Tabled values are partial correlations controlling for age. Values for the combined-sex sample are partial correlations controlling for age and gender. <sup>1</sup>Higher prejudice scores indicate higher positivity felt toward “a typical White person” (in the case of immigrant prejudice), “a typical Canadian” than toward a “typical” member of the target outgroup (e.g., “a typical Black person”). Column abbreviations are Aboriginal (Aborig), Immigrant (Immig), Middle Eastern Person (MEast). \*\*\*p<.001, \*\*p<.01, \*p<.05 (pairwise).

### Declining reflectiveness among university students?

Figure 1 presents evidence of apparent mean level declines in trait reflectiveness in recent years among introductory psychology students aged 18-22. Parallel analyses (not shown) were conducted for each of the Big Five domains. Only the openness to experience domain demonstrated a significant monotonic downward trend over this time period, and this pattern held true both for openness raw scores and openness deviation scores relative to the within-sample mean of the remaining Big Five domains.

Figure 1



## Conclusion

Self-reported frequency of texting is consistently weakly correlated with traits, goals, and attitudes indicative of low interest and engagement in reflective thought. Although consistent with Carr’s shallowing concerns, all of the current findings are cross-sectional, non-experimental associations open to numerous alternative explanations. Dispositionally reflective persons may not be as interested as others in frequent texting. Downward trends in openness and reflection reported here may be a sampling anomaly related to the years or local population examined. Even if mean level declines in openness and reflection were real, they may be unrelated to recent technological change. Years of heavy daily texting in adolescence and early adulthood may or may not reduce the frequency, fluency and appeal of morally engaged reflective thought. Longitudinal and experiment investigations are needed to more rigorously test Carr’s shallowing hypothesis.