Author, year, and country	Sample recruitment method	Design	Comparison conditions	Outcomes	Findings
Walther and D'Addario, 2001 [16], United States	226 university students: - 71.0% male (M), 29.0% female (F) - Mean age 19 years Class participation	Randomized 4x2 between-subjects design View single email	Message recourse: - Emoticon (smile, frown, wink, and no cue) Positive or negative statement	- Message interpretation (confusing, serious, and ambiguous) - Writer interpretation (attitude, happiness, and sincerity) - Social influence (likelihood of taking course) - Degree of emotion portrayed	- No gender effect - Words have stronger effect than emoticons (course attitude $P<.001$; happiness $P=.015$; message ambiguity $P=.012$) - Smile or wink emoticon makes message seem happier than no cue ($P<.001$) - Smile or wink does not decrease negativity of negative message - Any negative element (text or cue) causes negative "shift" in interpretation
Lo, 2008 [19], Taiwan	137 instant message users (no gender or age data collected)	Random assignment to one of 3 groups with 3 within-subjects conditions	3 types of social messages, each with emoticon (positive, negative, and none)	Writer's perceived emotion, attitude, and attention	- Using an emoticon affects perceived emotion (positive or negative) compared with no emoticon ($P<.001$) - Using an emoticon affects perceived attitude (like vs dislike) ($P<.001$)

					- Using an emoticon affects perceived attention ($P<.001$)
Ganster et al, 2012 [20], Germany	127 volunteers: - 26.0% M, 74.0% F - Mean age 24 years Open online survey platform	Randomized 2x2 between-subjects + neutral condition View chat dialogue between 2 others reexam	Discussion reupcoming exams plus - Smiley versus emoticon - Positive (smile) versus negative (frown) cue - No cue	- Message interpretation (positive and humorous) - Evaluation of writer of cue (commitment extraversion and sociality) - Own mood	- Emoticon or smiley makes message seem more positive (smile) or negative (frown) compared with no cue ($P<.001$) - Writer is perceived as more extroverted if using cue but no effect on commitment or sociality ($P<.001$) - Rater has lower mood if sees frown cue ($P<.05$) - Smileys have stronger effect than emoticons on perceived commitment only ($P<.05$)
Comesana et al, 2013 [22], Spain	18 university students Exposure to stimuli	All participants received all stimuli in counterbalanced order	Subliminal presentation of (1) pleasant smiley, (2) unpleasant smiley, (3) pleasant word, (4) unpleasant word before presentation of	- Electroencephelo graphic (EEG) activity - Reaction time (choice of whether target word was positive or negative)	- Smileys cause a larger EEG response than words ($P<.01$) - Unpleasant smiley and unpleasant word had a larger EEG response ($P<.05$) than positive smiley + target word pairs,

			pleasant or unpleasant target words		incongruent smiley + target word pairs, and words-only pairs - Smileys associated with shorter reaction times than words ($P<.05$)
Thompson et al, 2016 [21], United Kingdom	47 university students: - English speaking - 34.0% M, 66.0% F - Mean age 24 years Open online survey platform Exposure to stimuli	Randomized 2 polarity (praise vs criticism) x 2 literality (literal vs ironic) x 2 emoticon (present vs absent) within-subject design 160 items, each with 8 conditional variants All participants received all items in counterbalanced order (4 blocks with 40 items in each)	Presentation of items: (1) Phrase featuring critical and ironic statement with emoticon (2) Phrase featuring critical and ironic statement full stop (3) Phrase featuring critical and literal statement with emoticon (4) Phrase featuring critical and literal statement with full stop (5) Phrase featuring praising and ironic statement with emoticon (6) Phrase	- Electrodermal activity to measure arousal - Facial electromyography to detect muscle movements indicative of emotional expressions	- Higher arousal when emoticon present ($P<.05$) - Reduced frowning ($P<.01$) and increased smiling ($P<.05$) when emoticon present - Reduced smiling for praising statement when emoticon absent ($P<.008$) - Greater smiling for phrases conveying praise when emoticon present - Emoticons have an important function in clarifying intent - Emoticons assist with modulating emotional impact of a message and aiding comprehension

			featuring praising and ironic statement with full stop (7) Phrase featuring praising and literal statement with emoticon (8) Phrase featuring praising and literal statement with full stop		
Wall et al, 2016 [23], United Kingdom	7 undergraduate psychology university students: - 2 male, 5 female	Naïve observers rated first impression of online chat of unacquainted target participants who had previously completed a counterbalanced self-report questionnaire on emoticon use, then participated in the online chat conversation with an unknown user	Observation of emoticon use in online chat discussion about everyday life: (1) Presence or absence of "happy" emoticon	- Observers' impressions of personality judgments using modified *International Personality Item Pool* (5 traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness) - Assessment of accuracy of observers' impression— correlation between aggregate observer ratings and participant self-report	- Positive correlations found between targets' use of "happy" emoticons and observers' assessment of agreeableness ($P<.01$), conscientiousness ($P<.05$), and openness ($P<.05$)

				- Correlation between emoticon use and personality traits measured	