Translating Socioemotional Selectivity Theory Into Persuasive Communication: Conceptualizing and Operationalizing Emotionally-Meaningful Versus Knowledge-Related Appeals

MARGOT J. VAN DER GOOT[1]
NADINE BOL
JULIA C. M. VAN WEERT
University of Amsterdam, The Netherlands

Socioemotional selectivity theory (SST) warrants the strong prediction that older adults respond more favorably to emotionally-meaningful versus knowledge-related appeals in persuasive messages, whereas younger adults lack this bias. However, potentially due to multivocality in conceptualizations and operationalizations of these appeals, previous studies found no uniform support for these age differences. Consequently, this article aims to provide a conceptualization and operationalization of emotionally-meaningful versus knowledge-related appeals that can be used in future research. The study consists of a conceptualization phase (literature review; expert meetings) and an operationalization phase (content analysis of persuasive messages). We developed a theoretically valid and reliable coding instrument, outlining three dimensions of emotionally-meaningful appeals (emotion regulation, optimizing the present, close social relationships) and three dimensions of knowledge-related appeals (knowledge acquisition, optimizing the future, novel social relationships). This instrument is intended to guide the selection and design of persuasive messages in effect studies that aim to test hypotheses derived from SST.

Keywords: age differences, aging, emotional appeals, emotionally-meaningful appeals, knowledge-related appeals, life-span development, persuasive communication, rational appeals, socioemotional selectivity theory

Socioemotional selectivity theory (SST; e.g., Carstensen, Isaacowitz, & Charles, 1999) describes how aging implies changes in emotional goal setting. Recent communication research uses SST to hypothesize and test how life-span development in goal setting affects media experiences (e.g., Bartsch,

2012; Mares, Oliver, & Cantor, 2008; Mares & Sun, 2010), as well as responses to emotional appeals in persuasive messages (e.g., Fung & Carstensen, 2003; Sudbury-Riley & Edgar, 2016; van der Goot, van Reijmersdal, & Kleemans, 2015b). Central to SST is the distinction between emotionally-meaningful goals (primarily directed at the regulation of emotion in the present moment) and knowledge-related goals (primarily directed at gaining new knowledge and optimizing the future; Carstensen et al., 1999).

Socioemotional selectivity theory suggests age-related changes in the goal hierarchy: As people age, emotionally-meaningful goals gain prominence over knowledge-related goals, whereas for younger adults knowledge-related goals are dominant. In other words, SST states that older adults attach greater importance to emotionally-meaningful goals (relative to knowledge-related goals) than do their younger counterparts (Carstensen et al., 1999). Persuasion literature suggests that goal-relevant messages are more effective than goal-irrelevant messages (Fung & Carstensen, 2003). Consequently, the age-related changes in the goal hierarchy warrant the prediction that older adults respond more favorably to messages that appeal to emotionally-meaningful versus knowledge-related goals, whereas younger adults generally lack this bias.

So far, several studies on age differences in responses to persuasive messages were specifically designed to test hypotheses derived from SST (e.g., Sudbury-Riley & Edgar, 2016; Williams & Drolet, 2005). However, they did not uniformly support the SST-based hypotheses, which is potentially due to the multivocality among these studies in translating SST goals into content features of persuasive messages. Essentially, not all studies pertained to the same emotionally-meaningful versus knowledge-related appeals. Because SST convincingly implies age differences in responses to persuasive messages that appeal to either emotionally-meaningful or knowledge-related goals, we deem it important to reconsider the translation of SST goals into content features.

Therefore, this article aims to provide a conceptualization and operationalization of emotionally-meaningful versus knowledge-related appeals in persuasive messages. Based on a study consisting of a conceptualization phase (literature review; expert meetings) and an operationalization phase (content analysis of messages), we developed a theoretically valid and reliable coding instrument. This instrument is intended to guide the selection and design of persuasive messages in future effect studies that aim to test hypotheses derived from SST. We envision that this improves the comparability of future studies, thus increasing researchers' abilities to detect and interpret age differences in responses to persuasive messages. This research area has theoretical relevance, and acquiring insights in effective communication with aging individuals is also called for in light of the aging of the population (United Nations, Department of Economic and Social Affairs, Population Division, 2017; World Health Organization, 2018) and the importance of older adults as a target group for persuasive communication.

SST: Emotionally-Meaningful Versus Knowledge-Related Goals

Reviewing how SST distinguishes between emotionally-meaningful and knowledge-related goals (Carstensen, Fung, & Charles, 2003; Carstensen et al., 1999; Löckenhoff & Carstensen, 2004), we discern three main differences among these goals: (1) functional category (i.e., emotion regulation

or knowledge acquisition); (2) time perspective (i.e., present or future oriented); and (3) type of social relationships involved (i.e., close or novel social relationships).

Emotion Regulation Versus Knowledge Acquisition

First, according to SST, goals can be classified in one of two broad functional categories: those related to (1) the regulation of emotion, or (2) the acquisition of knowledge (Carstensen et al., 1999). The first category refers to the regulation of emotional states via contact with others and encompasses goals related to feelings (Fung & Carstensen, 2003) including experiencing positive states, gaining emotional intimacy, establishing feelings of social embeddedness, and avoiding negative states (Carstensen et al., 1999). In contrast, the second category refers to acquisitive behavior geared toward learning about the social and physical world (Carstensen et al., 1999) and the pursuit of new information (Fung & Carstensen, 2003).

These two functional categories do not reflect absolute, nonoverlapping classes. The theory acknowledges elements of acquiring knowledge in the pursuit of emotional goals and the presence of an emotional component in knowledge acquisition (Carstensen et al., 1999). The underlying assumption is that the delineation of goals distinguishes those that are primarily aimed at satisfying emotional needs and those primarily oriented toward gaining knowledge.

Present Versus Future

The second way of understanding the distinction between the two goals is that emotionally-meaningful goals are present oriented (Löckenhoff & Carstensen, 2004) and related to satisfaction in the moment (Carstensen et al., 1999), whereas knowledge-related ones are future oriented—that is, related to optimizing the future (Löckenhoff & Carstensen, 2004), preparedness (Carstensen et al., 1999), and expanding horizons (Carstensen et al., 2003).

In SST, time perception plays a central role in the prioritization and salience of goals (Carstensen et al., 1999). When time is perceived as limited, emotional goals assume primacy (Carstensen et al., 1999). Because chronological age is negatively associated with the amount of time left in life, age-related patterns emerge. With increasing age, perceived limitations on time lead to reorganizations of goal hierarchies: Goals related to deriving emotional meaning from life are prioritized over goals that maximize long-term payoffs in an unknown future (Löckenhoff & Carstensen, 2004). In this case, emotionally-meaningful goals are more important than knowledge-related goals because they are realized in their pursuit and are therefore more immediately gratifying (Fung & Carstensen, 2003). When time is perceived as limited, activities that are unpleasant/devoid of meaning are less compelling, and interest in novel information diminishes (Carstensen et al., 1999). In contrast, when time is perceived as open-ended, knowledge-related goals are prioritized and information is banked for a long and ambiguous future (Fung & Carstensen, 2003).

Close Versus Novel Social Relationships

Third, as the name implies, SST is essentially about social goals (Carstensen et al., 1999). Emotionally-meaningful goals refer to the regulation of emotional states via contact with others (Carstensen et al., 1999). As people age, they increasingly prefer emotionally gratifying close social relationships over contact with novel social partners (Löckenhoff & Carstensen, 2004). In contrast, knowledge-related goals refer to establishing novel social relationships that could be helpful in the future (Löckenhoff & Carstensen, 2004). Empirical research testing propositions of SST reveals that motivational changes (strongly correlated with chronological age) systematically influence social network composition and social preferences (Lang & Carstensen, 2002; Löckenhoff & Carstensen, 2004).

Empirical Studies That Translated SST Goals Into
Content Features In Persuasive Messages

Several studies on age differences in responses to persuasive messages were specifically designed to test hypotheses derived from SST (Drolet, Williams, & Lau-Gesk, 2007; Fung & Carstensen, 2003; Sudbury-Riley & Edgar, 2016; van der Goot et al., 2015b; Williams & Drolet, 2005). They started with two main notions. First, as outlined by SST, older adults place greater emphasis on emotionally-meaningful goals (compared with knowledge-related goals) than younger adults do. Second, as shown in research on memory and persuasion, individuals are more likely to appreciate and remember messages that are relevant to their goals than messages that are not relevant to their goals (Fung & Carstensen, 2003).

These notions led to the hypotheses that (1) older adults (relative to younger adults) evaluate messages more favorably when they relate to emotionally-meaningful goals rather than to knowledge-related goals, and (2) they have better recall of emotionally-meaningful messages (Drolet et al., 2007; Fung & Carstensen, 2003; Sudbury-Riley & Edgar, 2016; van der Goot et al., 2015b; Williams & Drolet, 2005). In contrast, younger adults are expected to show heightened preference for and improved recall of messages pertaining to knowledge-related goals compared with emotionally-meaningful ones (Drolet et al., 2007; Williams & Drolet, 2005) or to show no bias (Fung & Carstensen, 2003; van der Goot et al., 2015b).

Unfortunately, these studies differed in how they conceptualized and operationalized emotionally-meaningful versus knowledge-related messages. Table 1 presents the conceptualizations and operationalizations used in these studies. Regarding conceptualization, two studies retained terminology from SST (i.e., "emotionally-meaningful" versus "knowledge-related"; Fung & Carstensen, 2003; van der Goot et al., 2015b), whereas other studies used more general definitions (i.e., "emotional appeals" versus "rational appeals"; Sudbury-Riley & Edgar, 2016; Williams & Drolet, 2005), or "affective" versus "rational" advertisements (Drolet et al., 2007).

Table 1. Previous Empirical Studies That Translated SST Goals Into Content Features in Persuasive Messages.

Authors (year)	Emotionally-meaningful appeals		Knowledge-related appeals	
	Conceptualization	Operationalization	Conceptualization	Operationalization
Fung & Carstensen (2003)	Messages that feature emotionally-meaningful goals/Messages with emotionally-meaningful appeal	Messages that emphasize how the product is related to love and concern. Example, camera: "Capture those special moments."	Messages that promise greater success in life or new acquisitions/ Messages with knowledge-related appeal	Messages that emphasize how the product is conducive to gaining new knowledge or achieving success in the future. Example, camera: "Capture the unexplored world."
Williams & Drolet (2005)	Emotional appeal/ Emotional messages	Text with emotional attributes of a product. Example, coffee: "pleasure"; "joyous celebration"	Rational appeal	Text with rational attributes of a product. Example, coffee: "gourmet blend"; "acidity"
Drolet et al. (2007)	Affective messages	Text with hedonic attributes of a product. Example, greeting cards: "When you want to connect with someone special in your life, send . . . ."	Rational ads	Text with utilitarian attributes of a product. Example, greeting cards: "When you want to send an appropriate card, send . . . ."
van der Goot et al. (2015)	Emotionally-meaningful television commercials	Commercials with people sharing love, warmth, happiness, and special moments. Example, coffee: Parents and daughter drinking coffee together.	Knowledge-related television commercials	Commercials with informative and factual content. Example, coffee: A person explains the procedure of selecting coffee beans.
Sudbury-Riley & Edgar (2016)	Emotional appeals	Text with emotional attributes of a product. Example, garden: "Craft an outdoor heaven to lose yourself in."	Rational appeals	Text with factual attributes of a product. Example, garden: "A garden range with more than 300 different flower species."

With regard to operationalization, the studies differed in two ways. First, the stimulus materials differed in the dimensions of emotionally-meaningful versus knowledge-related goals that they related to. We described above that emotionally-meaningful goals pertain to (1) emotion regulation, (2) the present, and (3) close social relationships. To illustrate, the slogans used by Fung and Carstensen (2003) appealed to emotions surrounding "love and concern," and in these slogans we recognize (1) emotion regulation, in the sense of experiencing positive feelings ("Brighten the world with love"), (2) the present, in the sense of savoring the moment ("Capture those special moments"), and (3) close social relationships ("Take time for the ones you love"). However, the authors did not differentiate among these three dimensions. In contrast, Williams and Drolet (2007) focused on emotion regulation only. For knowledge-related goals, we described above that these pertain to (1) knowledge acquisition, (2) the future, and (3) novel social relationships. Three studies focused on (1) knowledge acquisition (Drolet et al., 2007; Sudbury-Riley & Edgar, 2016; van der Goot et al., 2015b; Williams & Drolet, 2005), whereas Fung and Carstensen (2003) focused on both (1) knowledge acquisition (in the sense of expanding your horizons) and (2) the future ("Brighten the future with hard work").

Second, the stimulus materials differed in how SST goals were translated into content features. Emotionally-meaningful goals were translated in three ways: The messages presented (1) positive attributes of a product (Williams & Drolet, 2005), (2) how the product helped to achieve the goal (Drolet et al., 2007; Fung & Carstensen, 2003; Sudbury-Riley & Edgar, 2016), or (3) people who shared love and warmth (van der Goot et al., 2015b). Knowledge-related goals were translated into messages that provided factual information about the product (Drolet et al., 2007; Sudbury-Riley & Edgar, 2016; van der Goot et al., 2015b; Williams & Drolet, 2005), but also—very differently—into slogans that appealed to goals related to expanding horizons or achieving success in the future ("Take time for success"; Fung & Carstensen, 2003).

Regarding older adults, two studies found the expected higher liking and better recall for emotionally-meaningful (vs. knowledge-related) messages (Drolet et al., 2007; Williams & Drolet, 2005), two other studies found the anticipated effects for only some of the dependent variables (Fung & Carstensen, 2003; van der Goot et al., 2015b), whereas one study showed higher preference and better recall for rational over emotional appeals (Sudbury-Riley & Edgar, 2016). For younger adults, the findings were even more inconsistent, with younger people either liking and recalling rational (vs. affective) appeals more (Williams & Drolet, 2005), or liking emotionally-meaningful (vs. knowledge-related) messages more (van der Goot et al., 2015b), or showing no bias about recall (van der Goot et al., 2015b) or all dependent variables (Fung & Carstensen, 2003).

To conclude, although there may be additional explanations for the inconsistent findings in these studies, differences in conceptualization and operationalization probably play a major role in the disparity. Essentially, the studies investigated the effects of different appeals, which makes it logical that they generated inconsistent results. Therefore, the current study aims to introduce a conceptualization and operationalization of emotionally-meaningful versus knowledge-related appeals that future researchers can use to identify these appeals in a theoretically valid and reliable manner. This should lead to more comparability among persuasive communication studies that test hypotheses derived from SST, thereby

facilitating the accumulation of knowledge on the types of appeals that are most effective for aging individuals.

Method

The study consisted of a conceptualization phase (literature review; expert meetings) and an operationalization phase (content analysis of persuasive messages; see Figure 1).
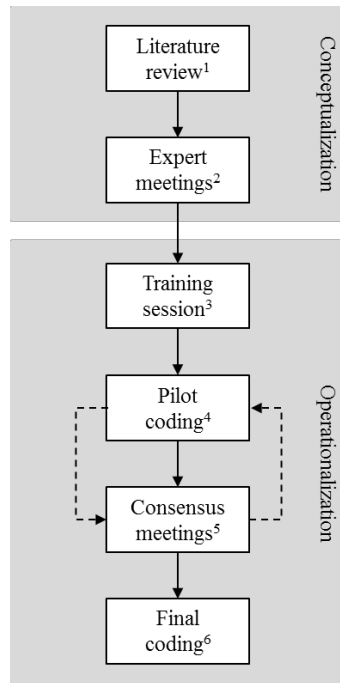

Figure 1. Summary of conceptualization and operationalization phases.

[1]Literature review of both theoretical SST literature and previous empirical studies. [2]Expert meetings: three meetings with the first author and 10 communication scholars (in total). [3]Training session: explanation of initial coding instrument. [4]Pilot coding: two rounds of coding by the first author and the two coders (Round 1: n = 15 messages; Round 2: n = 10 messages).[5]Consensus meetings: two meetings with the authors and the two coders. [6]Final coding: final coding—using final coding instrument—by the two coders (n = 50 messages).

Phase 1: Conceptualization

Literature Review

The literature review included theoretical literature describing SST, and empirical studies that translated SST goals into content features in persuasive messages (see previous sections). Using the theoretical literature, we identified three main differences between the two types of goals: (1) functional

category, (2) time perspective, and (3) type of social relationships. Therefore, we concluded that translating these SST goals into appeals in persuasive messages required a multidimensional approach. However, because several dimensional structures were possible for the conceptualization of the appeals, expert meetings were held to acquire input about this structure.

Expert Meetings

During three expert meetings, the first author requested 10 communication scholars to offer feedback about the conceptualization. All experts hold a PhD in either communication or psychology, work in a department of communication science, and have extensive experience with experimental studies in the field of persuasive communication. We considered it most insightful to seek advice from individuals with this type of expertise because our main aim was to develop an instrument to be used in future effect studies in communication science.

In the sessions, we requested feedback about the dimensional structure. In particular, we discussed whether emotionally-meaningful versus knowledge-related appeals should be considered as two end points of a bipolar scale, or rather as two independent types of appeals. Subsequently, we discussed whether the three categories that help to differentiate the two types of goals (i.e., functional category, time perspective, and type of social relationships) should be translated into three bipolar scales (each with two options), or whether we should distinguish six separate dimensions. After integrating the experts' feedback, we decided to present emotionally-meaningful and knowledge-related as two independent types of appeals and to work with six independent dimensions, as the appeals are not mutually exclusive. This implies that both types of appeals can be present in one persuasive message—that is, each of them separately can be either absent or present (which was confirmed in our content analysis of the messages).

Thus, the end result of the conceptualization phase was the dimensional structure of the appeals. The conceptualization distinguishes between emotionally-meaningful appeals (consisting of three dimensions) and knowledge-related appeals (consisting of three other dimensions). This final dimensional structure (see Table 2, left column, and the explanation in the Results section) provided the framework for the operationalization that was developed in Phase 2.

Phase 2: Operationalization

Our overall aim was to develop a conceptualization and operationalization for use in future effect studies that test hypotheses derived from SST. Therefore, the second phase consisted of a quantitative content analysis of persuasive messages. Here, we developed a theoretically valid and reliable coding instrument intended to guide the selection and design of messages in such future studies. We chose to develop a coding instrument (working with coders) rather than constructing a measurement scale to be filled out by respondents in effect studies. The reason is that we think it is important to make a clear distinction between content features in messages (as is done in quantitative content analysis) and recipients' responses to these messages (that can be studied in subsequent effect studies).

In content analysis, theoretical validity (Rourke & Anderson, 2004), including internal validity (Neuendorf, 2002), face validity (Krippendorff, 2004; Neuendorf, 2002; Potter & Levine-Donnerstein, 1999), and content validity (Neuendorf, 2002), are important quality criteria. Concepts need to be operationalized in the coding scheme in a theory-consistent way (Neuendorf, 2002; Potter & Levine-Donnerstein, 1999), and the instrument needs to reflect the full domain of the concept being measured (Neuendorf, 2002). In the present study, the main idea is that the coding instrument helps to determine whether persuasive messages appeal to SST goals. We made a distinction between (1) SST-based operationalizations (i.e., formulations about SST goals) and (2) appeal-related operationalizations (i.e., formulations about how the persuasive messages appeal to these goals). The SST-based operationalizations were explicitly taken from the SST literature. In contrast, because SST literature focuses on goals and not on appeals, the appeal-related operationalizations had to be newly defined by us. During the several steps in our content analysis (described below), we particularly worked on refining these appeal-related operationalizations.

Reliability in content analysis is generally assessed through intercoder reliability (i.e., the amount of agreement among coders; Krippendorff, 2004; Neuendorf, 2002). To report reliability, Krippendorff's alpha (α) is considered suitable, because it accounts for chance agreements, allows for any number of coders, and can be used for any level of measurement (Hayes & Krippendorff, 2007; Krippendorff, 2004; Neuendorf, 2002; Potter & Levine-Donnerstein, 1999). Our coder consensus meetings and rounds of coding were used to optimize this intercoder reliability.

Development of the coding instrument was done in four steps: a training session, two rounds of coding, and a round of final coding. These steps were adapted from Rourke and Anderson (2004), who stated that, to develop a coding instrument that is theoretically valid, the following steps should be taken: identify the purpose of coding, identify behaviors that represent the construct, review the categories and indicators, hold preliminary tryouts, and develop guidelines for administration, scoring, and interpretation of the coding scheme.

Training Session

Before the training session, based on the literature review and the expert meetings, we composed the initial version of the coding instrument (Appendix 1).[2] The SST-based operationalizations were explicitly derived from SST literature, whereas the appeal-related operationalizations stated that a specific dimension was present when the persuasive message showed or addressed the SST goal. During the training session, the first author explained this initial version of the coding instrument. Each of the six dimensions was illustrated with example messages. The coders were two students participating in an English-language master's program in persuasive communication.

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[2] Appendices 1 and 2 are available as online supplementary files. Appendix 1 is available at
https://www.dropbox.com/s/82nvnb6hp7m6i16/Appendix%201%20Initial%20version%20of%20the%20coding%20instrument.pdf?dl=0. Appendix 2 is available at
https://www.dropbox.com/s/t52kidy8tk4um76/Appendix%202%20List%20of%2050%20commercials%20with%20their%20coding.pdf?dl=0

First Round of Pilot Coding and Consensus Meeting

The first author and the two coders independently conducted a first round of pilot coding (n = 15 messages). Because the pilot reliability (using Krippendorff's alpha) was insufficient in the first consensus meeting the first author, the two coders and the two coauthors (one of whom was an older person) discussed disagreements and ways in which to rewrite the operationalizations to optimize reliability.

We decided to keep the SST-based operationalizations practically the same. The only adjustment was related to the dimension "knowledge acquisition." In the initial version of our instrument, the formulations of Carstensen et al. (1999) were used (i.e., "acquisition of knowledge," "acquisition of new information," and "learning about the world"). However, the first consensus meeting revealed that these are rather general formulations: When persons (in persuasive messages) are engaged in any activity, they can be said to learn something about the world. Therefore, we kept "acquisition of knowledge" and replaced "acquisition of new information" and "learning about the world" with "learn about new topics" as an operationalization that guides coders in a more precise way.

We refined the appeal-related operationalizations, because our initial formulation (see above and Appendix 1) was not specific enough and generated coding disagreements. Based on the first round of pilot coding, we concluded that the persuasive messages can appeal to the SST goals by (1) portraying people who are engaged in pursuing this goal, and/or (2) communicating that the promoted product/organization/behavior contributes to this goal. Therefore, per dimension, these two definitions of appealing to the goal were integrated in the coding instrument.

Second Round of Pilot Coding and Consensus Meeting

Subsequently, the first author and the two coders independently conducted a second round of pilot coding (n = 10 other messages). Although Krippendorff's alpha increased compared with the first round, it was still not entirely satisfactory. During the subsequent consensus meeting, we finalized the operationalizations. In particular, in the appeal-related operationalizations, we ensured that the two definitions followed exactly the same format for all six dimensions. Because the operationalizations needed to be very precise, we also ensured that it was as clear as possible that the operationalization referred to (1) the person(s) or social relationships that were visibly or audibly portrayed in the message, and to (2) what the persuasive message communicates about the promoted product, organization or behavior. The final coding instrument is presented in Table 2.

Table 2. Final Coding Instrument for Emotionally-Meaningful
and Knowledge-Related Appeals.

Dimension	Operationalization	Coding
Emotionally-meaningful appeals		
Emotion regulation α = 1.00 *n* = 29 (58.0%)	(1) The persuasive message portrays (visibly or audibly) one or more persons who are engaged in emotion regulation. That is, the person(s): - experience positive states (they feel good), AND/OR - experience emotional meaning in life, AND/OR - experience emotional intimacy, AND/OR - experience feelings of social embeddedness, AND/OR - avoid negative states. AND/OR (2) The persuasive message communicates that the promoted product/organization/behavior contributes to emotion regulation. That is, the message communicates (explicitly or implicitly) that when you use this product/choose this organization/engage in this behavior, you will: - experience positive states (you will feel good), AND/OR - experience emotional meaning in life, AND/OR - experience emotional intimacy, AND/OR - experience feelings of social embeddedness, AND/OR - avoid negative states.	0 = absent 1 = present Give code 1 if condition (1) AND/OR (2) under operationalization is satisfied
Optimizing the present α = .82 *n* = 18 (36.0%)	(1) The persuasive message portrays (visibly or audibly) one or more persons who optimize their present. That is, the person(s): - focus on the present experience, AND/OR - experience satisfaction in the moment, AND/OR - savor the moment. AND/OR (2) The persuasive message communicates that the promoted product/organization/ behavior contributes to optimization of the present. That is, the message communicates (explicitly or implicitly) that when you use this product/choose this organization/engage in this behavior, you will: - focus on the present experience, AND/OR - experience satisfaction in the moment, AND/OR - savor the moment.	0 = absent 1 = present Give code 1 if condition (1) AND/OR (2) under operationalization is satisfied
Close social relationships α = .96 *n* = 18 (36.0%)	(1) The persuasive message portrays (visibly or audibly) social relationships that are emotionally close. That is, the relationships involve persons who care about each other. AND/OR (2) The persuasive message communicates that the promoted product/organization/ behavior contributes to social relationships that are emotionally close.	0 = absent 1 = present Give code 1 if condition (1) AND/OR (2) under operationalization is satisfied

	That is, the message communicates (explicitly or implicitly) that when you use this product/choose this organization/engage in this behavior, your emotionally close relationships will be enhanced.	
Knowledge-related appeals		
Knowledge acquisition α = .91 n = 18 (36.0%)	(1) The persuasive message portrays (visibly or audibly) one or more persons who are engaged in knowledge acquisition. That is, the person(s) - acquire new knowledge, AND/OR - learn about new topics. AND/OR (2) The persuasive message communicates that the promoted product/organization/behavior contributes to knowledge acquisition. That is, the message communicates (explicitly or implicitly) that when you use this product/choose this organization/engage in this behavior, you will - acquire new knowledge, AND/OR - learn about new topics.	0 = absent 1 = present Give code 1 if condition (1) AND/OR (2) under operationalization is satisfied
Optimizing the future α = .92 n = 8 (16.0%)	(1) The persuasive message portrays (visibly or audibly) one or more persons who optimize their future. That is, the person(s) - prepare for the future, AND/OR - maximize long-term payoffs. AND/OR (2) The persuasive message communicates that the promoted product/organization/ behavior contributes to optimization of the future. That is, the message communicates (explicitly or implicitly) that when you use this product/choose this organization/engage in this behavior, you will - be prepared for the future, AND/OR - maximize long-term payoffs.	0 = absent 1 = present Give code 1 if condition (1) AND/OR (2) under operationalization is satisfied
Novel social relationships α = .85 n = 4 (8.0%)	(1) The persuasive message portrays (visibly or audibly) social relationships that are novel (new). That is, the relationships did not exist before. AND/OR (2) The persuasive message communicates that the promoted product/organization/behavior contributes to social relationships that are novel (new). That is, the message communicates (explicitly or implicitly) that when you use this product/choose this organization/engage in this behavior, you will gain new social contacts.	0 = absent 1 = present Give code 1 if condition (1) AND/OR (2) under operationalization is satisfied

Note. Alphas (α) represent Krippendorff's alphas. Frequencies refer to the presence of each dimension in the 50 TV messages. Each dimension can be either absent (Code 0) or present (Code 1). Instructions for the coding instrument were as follows: (a) Your coding should be based only on the persuasive message itself—you are not allowed to read or search for additional information related to the message; (b) you are

allowed to watch the message more than once; (c) please enter your codes in your SPSS file, with your name added in the file name; (d) please enter your comments about each code in your SPSS file.

Final Coding

After this fine-tuning, we were confident that the coding could be performed reliably, and the two coders were asked to independently code the final sample of another 50 persuasive messages. Because we wanted to develop a coding instrument that is useful in future effect research focusing on appeals in persuasive messages, we analyzed existing television commercials. We selected full-motion messages (instead of slogans formulated for research purposes; Drolet et al., 2007; Fung & Carstensen, 2003; Sudbury-Riley & Edgar, 2016; Williams & Drolet, 2005), as we aimed to increase the ecological validity of the study. For the pilot coding and final coding, we used television commercials available from the online database Ads of the World (www.adsoftheworld.com). This database was used because it includes persuasive messages from 25 "industries," thereby covering a wide range of topics. The criteria for an industry to be included in the present study were that (1) the industry encompassed both emotionally-meaningful and knowledge-related appeals, and (2) the industries together presented a wide thematic variation. Based on these criteria, we selected five of the 25 industries (education, electronics & technology, financial services, health & beauty, and public interest). Finally, commercials produced in the U.S. and the UK were included.

For the two rounds of pilot coding, we selected the oldest television commercials for each of the five industries. For the final sample of 50 messages, systematic random sampling (Krippendorff, 2004; Neuendorf, 2002) generated 10 television commercials for each industry by selecting every third message. To ensure a random start, "number three" was determined by an online random item generator. The final sample included organizations, brands, campaigns and commercials that were not assessed in the previous rounds of pilot coding. All commercials had been aired between January 2015 and February 2016. The 50 messages and accompanying coding are presented in Appendix 2. Most messages are still available on www.adsofheworld.com and they can be requested from the authors.

Results

Table 2 shows the final coding instrument for emotionally-meaningful versus knowledge-related appeals, including the conceptualization (left column) and the operationalization (middle column).

Conceptualization of Emotionally-Meaningful Versus Knowledge-Related Appeals

The conceptualization distinguishes between emotionally-meaningful appeals (consisting of three dimensions: emotion regulation, optimizing the present, and close social relationships) and knowledge-related appeals (consisting of another three dimensions: knowledge acquisition, optimizing the future, and novel social relationships). Each of these six dimensions can be either present or absent in a message. Thus, the dimensions are not mutually exclusive or two end points of a continuum, and a persuasive message may contain one or more of the dimensions. This conceptualization of emotionally-meaningful and knowledge-related appeals preserves the multidimensionality observed in SST literature. This

optimizes theoretical validity (Rourke & Anderson, 2004) and ensures that the operationalization reflects the full domain of the concept being measured (Neuendorf, 2002). Moreover, it enables researchers to consciously choose which dimension(s) they want to focus on, thus avoiding unnoticed confounding of dimensions.

We retained the terminology "emotionally-meaningful" versus "knowledge-related," as used in SST literature, as this helps to distinguish these appeals from other emotional appeals (e.g., Brader, 2005; Lee & Hong, 2016; Nabi, 2015). Because persuasive messages routinely appeal to emotions (Brader, 2005), it is important to be specific about the type of emotional appeal a study focuses on. The concept of "appeals" is appropriate because this is a widely used concept in persuasive communication (e.g., Brader, 2005; Buijzen & Valkenburg, 2002; Nabi, 2015), referring to a specific message strategy chosen to relate to certain tastes and preferences of a target group (Buijzen & Valkenburg, 2002). In our case, the messages appeal to goals as specified in SST.

Operationalization of Emotionally-Meaningful Versus Knowledge-Related Appeals

Table 2 shows the final operationalization for each dimension, the Krippendorff's alpha, and the frequency of how often the dimension was present in the final sample of television commercials ($n = 50$). Intercoder reliability ranged from 0.82 to 1.00, demonstrating that the dimensions were operationalized such that coding can be reliably performed.

To optimize theoretical validity, the operationalization includes formulations that are explicitly derived from how SST literature describes emotionally-meaningful and knowledge-related goals. For instance, emotion regulation refers to experiencing positive states, emotional meaning in life, emotional intimacy, feelings of social embeddedness, and avoidance of negative states (Carstensen et al., 1999). Using these formulations from SST literature not only ensures that the operationalization is theory consistent but also helps to avoid confusion with other definitions of (in this case) emotion regulation (e.g., Gross, 1998) and related concepts such as mood management (e.g., Reinecke et al., 2012; Zillmann, 1988).

For each dimension, the operationalization outlines two ways in which a message can appeal to SST goals. First, the message portrays person(s) or social relationships that act in line with SST goals. For emotionally-meaningful appeals, this means that (1) persons engage in emotion regulation (i.e., they experience positive states), (2) they optimize the present (i.e., they focus on the present experience), and (3) social relationships are emotionally close (i.e., relationships involve persons who care about each other). For knowledge-related appeals, this means that (1) persons engage in knowledge acquisition (i.e., they learn about new topics), (2) they optimize their future (i.e., they maximize long-term payoffs), and (3) social relationships are novel (i.e., the relationships did not exist before). This operationalization focuses on people as portrayed in the message (visibly or audibly) and thus resembles "target affect" (which refers to the emotions expressed by candidates in political messages) in contrast to "observer affect" (which refers to emotions felt by the audience; Jones, Hoffman, & Young, 2012).

Second, the message can appeal to SST goals by communicating that the promoted product/organization/behavior will contribute to these goals. To make coding as univocal as possible, the operationalization asks coders to check whether the following sentence is applicable: "The message communicates (explicitly or implicitly) that when you use this product/choose this organization/engage in this behavior, you will . . . [avoid negative states]." For example, a commercial for wireless headphones showed all possible problems while using a headphone with wires, communicating that by using wireless headphones you will avoid negative states. Again, the operationalization aimed to stay close to content features, without taking evoked feelings into account.

Discussion

This study aimed to provide a conceptualization and operationalization of emotionally-meaningful versus knowledge-related appeals in persuasive messages. The presented coding instrument identifies three dimensions of emotionally-meaningful appeals (emotion regulation, optimizing the present, and close social relationships) and three dimensions of knowledge-related appeals (knowledge acquisition, optimizing the future, and novel social relationships).

Our conceptualization and operationalization differ from previous translations of SST goals into content features in persuasive messages (Drolet et al., 2007; Fung & Carstensen, 2003; Sudbury-Riley & Edgar, 2016; van der Goot et al., 2015b; Williams & Drolet, 2005) in at least three ways. First, by retaining the SST terminology of "emotionally-meaningful" versus "knowledge-related," and by literally using SST formulations in our operationalizations, we aim to clearly differentiate between these appeals and other types of emotional appeals (e.g., Brader, 2005; Nabi, 2015). Some advertising studies testing hypotheses derived from SST (e.g., Sudbury-Riley & Edgar, 2016; Williams & Drolet, 2005) used conceptualizations of emotional versus rational appeals that are in line with general definitions of these types of appeals (e.g., Andreu, Casado-Díaz, & Mattila, 2015). In these cases, emotional appeals presented emotional attributes of a product, whereas rational appeals presented rational and functional attributes of a product. Because our conceptualization is more explicitly deduced from SST literature, it should advance future studies that aim to test SST-derived hypotheses.

Second, whereas the SST literature and previous advertising studies did not explicitly distinguish among these dimensions, the current multidimensional approach encourages researchers to purposefully choose which dimension(s) they will focus on. By using the dimensional structure in the coding instrument, and by encouraging researchers to clearly state which of the dimensions they intend to study, we hope to avoid further unnoticed confounding of dimensions.

Third, the operationalization stays as close as possible to content features, without taking evoked feelings into account. Particularly in research on emotional appeals, confusion may arise when conceptualizations of emotional appeals include emotions that are triggered, elicited or evoked (e.g., Lee & Hong, 2016), because these elicited emotions are often also conceptualized as mediators in subsequent persuasion processes (e.g., Kühne, Weber, & Sommer, 2015; Lecheler, Bos, & Vliegenthart, 2015; Nabi, 2015). To advance effect research, it is necessary to first clearly identify content features, focusing on the properties of the stimulus (i.e., the reference objects that cause emotions and appraisal; Bartsch,

Vorderer, Mangold, & Viehoff, 2008), before testing hypotheses about subsequent persuasive effects including emotional responses.

How to Use the Coding Instrument

The main purpose of the presented instrument (see Table 2) is to guide the selection and/or design of persuasive messages in future effect studies aiming to test hypotheses derived from SST. We envision that these studies will investigate the prediction that older adults respond more favorably to emotionally-meaningful versus knowledge-related appeals, whereas younger adults generally lack this bias. Depending on their specific research questions, researchers might want to test the effects of emotionally-meaningful appeals (with its three dimensions) versus knowledge-related appeals (with its three dimensions), or test the differential impact of separate dimensions within the appeals. In any case, we encourage researchers to state explicitly which of the six dimensions they are investigating.

Subsequently, we suggest that researchers use our operationalizations of the dimensions they choose to examine. Within each dimension, the instrument entails (1) SST-based operationalizations (i.e., formulations about SST goals) and (2) appeal-related operationalizations (i.e., formulations about how persuasive messages appeal to these goals). Per dimension, the SST-based operationalizations include several indicators. For example, the dimension "knowledge acquisition" contains two SST-based items: "acquire new knowledge" and "learn about new topics." Our main argument for considering these two items as indicators of the same dimension, without asking coders to distinguish between the two, is theoretical: SST does not distinguish between these separate formulations either.

The appeal-related operationalizations outline two ways in which a message can appeal to the SST goal: (1) the message portrays person(s) or social relationships that act in line with the goal, and/or (2) the message communicates that the promoted product/organization/behavior will contribute to this goal. We recommend researchers to clearly report which of these two ways of appealing to a goal (or both) the study focuses on. This will allow unravelling which of these ways of appealing to a goal is most effective for an older target group.

On a more practical level, researchers who will use the coding instrument in the process of stimuli development need the following resources: the coding instrument, persuasive messages, and (potentially) training sessions with coders. The formulations in the instrument (see Table 2) are the exact instructions we worked with. To gain understanding of the dimensions and its operationalizations, the messages listed in Appendix 2 can be used as exemplar material. To familiarize themselves with the instrument, the main researcher(s) and research assistants may conduct one or two rounds of coding and hold training sessions. Subsequently, researchers may find messages in Appendix 2 that are suitable as stimuli in the effect study. Alternatively, they may instruct trained coders to code existing persuasive messages until they find stimuli that are appropriate for their study, or they can use the coding instrument as guideline when editing existing messages or creating new ones.

Lastly, although not the main aim of the coding instrument, the instrument could be used as a manipulation check in SST-based persuasion research. The coding instrument can be used to measure the extent to which research participants experience persuasive messages as emotionally-meaningful versus

knowledge-related. This allows to verify whether the participants perceive the stimuli in the way intended in the study design.

Besides application in persuasive communication research, our operationalization and conceptualization may also be useful for studies that aim to elucidate the influence of life-span development (in particular the role of goal setting) on media experiences (e.g., Bartsch, 2012; Hofer, Allemand, & Martin, 2014; Mares, Bartsch, & Bonus, 2016). In particular, the dimensional structure should prove to be useful.

Additional Research Directions

Because conceptualizations in SST literature are rather ambiguous, communication researchers have room to interpret and work with SST concepts in various ways. This is not only apparent in persuasive communication research but also in communication research focusing on media selection and responses. Considering media research that incorporated SST, three additional questions arise that should be considered when planning persuasion research that aims to embed SST notions.

First, in our operationalization, we use the SST-based formulation that "emotion regulation" refers to experiencing positive states (feeling good), emotional meaning in life, emotional intimacy, feelings of social embeddedness, and/or avoiding negative states (Carstensen et al., 1999, p. 166). However, several media studies distinguish between hedonic happiness and eudaimonic happiness. Hedonic happiness refers to the presence of positive affect and absence of negative affect, whereas eudaimonic happiness or meaningfulness refers to the fulfillment that one experiences when perceiving insights about life purpose, life meanings, and to the feelings of flourishing that accompany living a life that embodies virtue (Hofer et al., 2014; Oliver & Bartsch, 2011; Oliver & Raney, 2011; Slater, Oliver, & Appel, 2016; Wirth, Hofer, & Schramm, 2012). In view of this distinction in media research, it seems worthwhile to elucidate the effects of persuasive messages that appeal to the goal of hedonic happiness versus the goal of eudaimonic happiness.

Second, media research has started to incorporate the SST notion that aging gives rise to mixed emotions and, more specifically, to poignancy (i.e., the mixture of happy and sad feelings; Carstensen et al., 2011). As mentioned, older persons increasingly focus on emotionally-meaningful goals, implying an intensified desire for more positive and less negative emotion. However, when time is constrained, emotional experiences become increasingly more complex. Ersner-Hershfield, Mikels, Sullivan, and Carstensen (2008) describe this as follows:

> This increased focus on pursuing emotionally-meaningful goals in the present leads to an intensified desire for and ultimate experience of more positive emotion and less negative emotion over time, as is observed with older adults. However, when time is constrained and people become progressively aware of the finitude of life, emotional experiences become increasingly more complex. Such states are positive given the pursuit of emotional goals but come to entail a mix of negative emotions because endings, by their very nature, also increase the anticipation of last times. (p. 159)

In other words, in their goal setting, individuals increasingly strive for positive emotions; however, the conditions elicit richly complex emotional experiences such as happiness tinged with sadness (Carstensen et al., 2011, p. 22). Although these mixed emotional experiences are not part of individuals' goal setting (but rather a consequence of a life in which emotionally-meaningful goals dominate), and thus not of our current conceptualization, they are worth studying in relation to persuasion and communication. Therefore, future persuasion research could examine the effects of appeals that highlight conflicting emotions (as in Williams & Aaker, 2002) and should consider mixed emotional responses and poignancy as mediators or dependent variables (as in Slater et al., 2016).

Third, several media studies using SST for hypothesis development assessed arousal as a complementary factor influencing age differences in media content selection (Mares et al., 2016; Sands, Garbacz, & Isaacowitz, 2016), as SST considers excitement and thrill-seeking as a by-product of the knowledge-related goals that dominate when people are young (Carstensen et al., 1999). For television viewing, Sands et al. (2016) concluded that older adults' preferences for low arousal may be even stronger than their preference for positivity. For advertising, a study found that older adults showed higher recall and liking for calm instead of arousing television commercials, whereas younger adults showed the opposite pattern (van der Goot, van Reijmersdal, & Kleemans, 2015a). The findings in a study on age differences in responses to emotionally-meaningful versus knowledge-related commercials were less straightforward, leading to the suggestion that arousal potentially "overrides" the positive effect of emotionally-meaningful content (van der Goot et al., 2015b). Therefore, we recommend that future studies consider both appeal type and arousal when aiming to understand age differences in responses to persuasive messages.

Limitations

This study has some limitations. First, the coding instrument was developed using television commercials related to topics ranging from health to public interest and marketing. The question remains whether the instrument is also applicable to other topics, persuasive messages in other modalities, and other types of media content. Although it is likely that (with some rephrasing) the coding instrument can be applied in other contexts, studies are needed to confirm this.

In addition, one may wonder whether the age of the persons visible in the messages affects the coding. Although we have reasons to assume that such an impact did not play a role in our coding, this should be tested by coding messages in which the age of the person(s) is manipulated.

Moreover, this study aimed to develop a coding instrument and did not intent to draw conclusions about the extent to which the dimensions occur in a population of persuasive messages. However, interesting questions arise concerning the extent to which the dimensions are present in certain types of messages, particularly in messages that specifically target older adults. Additional quantitative content analyses are required to address such questions.

Conclusion

Socioemotional selectivity theory (SST) supports the strong prediction that older adults respond more favorably to emotionally-meaningful versus knowledge-related appeals, whereas younger adults do not show this bias. We developed a conceptualization and operationalization of emotionally-meaningful versus knowledge-related appeals, presented in a theoretically valid and reliable coding instrument. Researchers are encouraged to use this instrument in the selection and design of persuasive messages in effect studies that aim to test hypotheses derived from SST. This will help make future studies more conceptually comparable and thereby advance our knowledge of effective persuasive communication with the aging population.

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