

Meta-Analytic Generalizations in Marketing

TAMMO BIJMOLT

University of Groningen

Yiming Li

University of Lucerne

Simon Hazée

UCLouvain, LouRIM

Christian Winter

Friedrich-Schiller-Universität Jena

Jacob Schjødt

Copenhagen Business School

Cite as:

BIJMOLT TAMMO, Li Yiming, Hazée Simon, Winter Christian, Schjødt Jacob (2026), Meta-Analytic Generalizations in Marketing. *Proceedings of the European Marketing Academy*, 55th, (133979)

Paper from the 55th Annual EMAC Conference, Bath, United Kingdom, June 2-5, 2026



Meta-Analytic Generalizations in Marketing

Session chairs:

Tammo Bijmolt (University of Groningen, The Netherlands) (submitting session chair)

Franziska Völckner (University of Cologne, Germany)

This special session includes the following presentations:

- Yiming Li (University of Lucerne, Switzerland) (presenter), and Tobias Schlager (University of Lausanne, Switzerland): *A Meta-Analysis of the Effects of Textual Paralanguage*.
- Antoine Juquelier (UC Louvain, Belgium), Simon Hazée (UC Louvain, Belgium) (presenter), Yves Van Vaerenbergh (KU Leuven, Belgium), and Ingrid Poncin (UC Louvain, Belgium): *Service Robots that Evoke Automated Social Presence: A Meta-Analysis*.
- Ad de Jong (Copenhagen Business School, Denmark), Peren Ozturan (Copenhagen Business School, Denmark), Constant Pieters (Copenhagen Business School, Denmark), Christian Winter (Friedrich Schiller University Jena, Germany) (presenter), Nicolas Zacharias (Friedrich Schiller University Jena, Germany): *Unveiling the Impact of Circular Economy Principles on Market-Based Outcomes: A Meta-Analysis*.
- Jacob Schjødt (Copenhagen Business School) (presenter), Edlira Shehu (University of Groningen, The Netherlands), and Tammo H.A. Bijmolt (University of Groningen, The Netherlands): *A Meta-Analysis of Appeal Content Effects on Donation Behavior*.

Abstract

With the substantial growth of scientific output in marketing and related disciplines, it has become increasingly important to derive empirical generalizations about relationships between key marketing phenomena. Primary empirical studies offer detailed insights into effects under a limited set of conditions, but quantitative literature reviews using meta-analytic methods make it possible to draw conclusions about the overall magnitude of relationships and the influence of a broad range of moderating factors. Such empirical generalizations facilitate the efficient and systematic accumulation and dissemination of scientific knowledge. Reflecting this value, the number of meta-analytic studies in marketing has increased markedly in recent years.

Typically, a meta-analytic review develops a novel conceptual framework, synthesizes the state of knowledge on a focal topic, and identifies fruitful avenues for future research. The objective of this special session is to bring together (i) researchers who conduct meta-analyses aimed at deriving empirical generalizations and (ii) researchers interested in the insights from recent meta-analytic studies on important marketing phenomena. In doing so, this special session continues a tradition established in recent years of highlighting the role of meta-analysis in advancing marketing science.

Declaration:

Each presenter has agreed to register for the conference and to present the paper; and none of the papers has been submitted to other conference tracks, and none has been presented previously at EMAC.

A Meta-Analysis of the Effects of Textual Paralanguage

Yiming Li (University of Lucerne, Switzerland) (presenter)

Tobias Schlager (University of Lausanne, Switzerland)

Textual paralanguage (TPL; Luangrath, Peck, and Barger 2017) includes elements such as emoticons and emojis. It can formally be defined as “written manifestations of nonverbal audible, tactile, and visual elements that supplement or replace written language and that can be expressed through words, symbols, images, punctuation, demarcations, or any combination of these elements.” (Luangrath, Xu, and Wang 2023; Luangrath, Peck, and Barger 2017). Notably, TPL constitutes the most significant advancements in digital language in the past century. While most languages remained largely unaffected throughout this period, TPL has emerged and continuously changed. For instance, the variety of paralinguistic elements (e.g., emoticons and emojis) has significantly increased (Luangrath, Xu, and Wang 2023).

Reflecting the importance and those developments, research on TPL elements has a long tradition of over 23 years (Walther and D’Addario 2001). The research findings on the consequences of TPL can be best described as mixed and today it is unclear whether TPL has positive effects, and if so, under which circumstances. While some studies found positive effects of TPL, other research on consumer and behavior revealed that using TPL yielded mixed consequences (Glikson, Cheshin, and Kleef 2018; Lee, Kim, and Lee 2021; Amit, Danziger, and Smith 2022; Kim, Forcum, and Giebelhausen 2024). Accordingly, the results on the effects of TPL vary considerably and there is a lack of a conceptual framework to systematically compare and examine the effectiveness of TPL from different angles.

This meta-analysis aims to address this gap by presenting a conceptual framework linking different outcomes of textual paralanguage across multidisciplinary research. It also provides insights into understanding under which conditions and in which contexts TPL is more effective at generating favorable (or unfavorable or even unintended) consequences. This work synthesizes 239 effect sizes from 40 empirical papers across fields such as marketing, digital communication to yield a comprehensive of the consequences of TPL. This meta-analysis paper compares the strength of TPL effects and identifies factors that may attenuate or amplify its impact. The structure of TPL consequences covers behavior and intention, message evaluation, affective response, attitude as well as marketer unintended effects.

The results indicate that the use of TPL seems to affect affective response primarily ($r = .49$, $B = .53$, $p < .001$), while the effects on other outcomes are relatively smaller. Second, TPL has small to medium impact on social norm violation ($r = .21$, $B = .20$, $p < .001$) and

consumer skepticism ($r = .23$, $B = .23$, $p < .001$) while the effect on negative responses is small but not negligible ($r = .12$, $B = .12$, $p = .033$). Furthermore, in a service and product context, the effects of TPL are either non-significant (i.e., service; $B_{\text{service}} = -.01$, $SE = .04$, $p = .868$) or even negative (i.e., product; $B_{\text{product}} = -.17$, $SE = .01$, $p < .001$). This implies that firms should be particularly cautious about where to apply TPL when they aim to facilitate positive consumer responses. Consistently, TPL is positive when it comes from other humans, but backfires when chatbots use it ($B_{\text{chatbot}} = -.10$, $SE = .01$, $p < .001$). This goes hand in hand with the positive effects primarily unfolding in a communal ($B_{\text{communal}} = .11$, $SE = .02$, $p < .001$) and informal context ($B_{\text{informal}} = .31$, $SE < .01$, $p < .001$). The findings provide a better understanding of when the full effect of TPL unfolds and allow us to address the heterogeneity of its effects on consumer responses. Notably, the context (e.g., informal, communal) and the usage by humans instead of chatbots point towards the important role of authenticity in communication via TPL: All contexts emphasize that using TPL in an unauthentic way might backfire. Future research can future examine this mediating process and whether it could distinguish between whether the response is positive or negative.

Overall, these insights advance current research on TPL and provide insights for marketing practitioners by providing a more comprehensive model of the effects of TPL thereby synthesizing prior work which had been scattered thus far.

References

- Amit, E., Danziger, S., & Smith, P. K. (2022). Medium is a powerful message: Pictures signal less power than words. *Organizational Behavior and Human Decision Processes*, 169.
- Glikson, E., Cheshin, A., & Kleef, G. A. V. (2018). The dark side of a smiley: Effects of smiling emoticons on virtual first impressions. *Social Psychological and Personality Science*, 9(5), 614-625.
- Kim, C. H., Forcum, L., & Giebelhausen, M. (2024). When and why do artifact emojis lead to backfire effects on consumer response? *Journal of Consumer Behaviour*.
- Lee, J., Kim, C., & Lee, K. C. (2021). Investigating the negative effects of emojis in Facebook sponsored ads for establishing sustainable marketing in social media. *Sustainability*, 13(9), 4864.
- Luangrath, A. W., Peck, J., & Barger, V. A. (2017). Textual paralanguage and its implications for marketing communications. *Journal of Consumer Psychology*, 27(1), 98-107.

- Luangrath, A. W., Xu, Y., & Wang, T. (2023). Paralanguage classifier (PARA): An algorithm for automatic coding of paralinguistic nonverbal parts of speech in text. *Journal of Marketing Research*, 60(2), 388-408.
- Walther, J. B., & D'addario, K. P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. *Social science computer review*, 19(3), 324-347.

Service Robots that Evoke Automated Social Presence: A Meta-Analysis

Antoine Juquelier (UC Louvain, Belgium)

Simon Hazée (UC Louvain, Belgium, presenter)

Yves Van Vaerenbergh (KU Leuven, Belgium)

Ingrid Poncin (UC Louvain, Belgium)

Abstract

Service robots, which include physical robots and conversational agents such as chatbots, are increasingly used in customer-facing roles to enhance social interactions. Their adoption has grown rapidly, with examples such as Bank of America's chatbot handling billions of interactions and Amazon investing heavily in Alexa's social capabilities. Despite these advancements, creating effective social capabilities remains challenging, as negative interactions can lead to significant customer attrition. Reflecting this tension, the Marketing Science Institute (2024) has identified understanding how service robots enrich customer experiences through social connection as a top research priority.

At the center of this discussion is the concept of automated social presence (ASP), defined as the extent to which a service robot evokes the perception of interacting with a socially present other (Van Doorn et al. 2017). ASP, rooted in social presence theory (Biocca et al., 2003), has become a key construct in service robot research, with over 100 studies evaluating its effectiveness across disciplines such as marketing, service, tourism, and information technology (e.g., Guha et al. 2022; Holthöwer and van Doorn 2023). Yet, findings remain inconsistent. While some studies report positive effects (e.g., Konya-Baumbach et al. 2023), others report null or negative effects of ASP on customer experience (e.g., Park and Lee 2023). Thus, clear guidelines are lacking, despite firms' need to align AI capabilities with marketing goals to strengthen connections with customers.

In response, the present study uses a meta-analysis of 138 studies ($N = 41,681$) to enhance our understanding of the role of ASP in influencing customer reactions to service robots. Building on van Doorn et al.'s (2017) seminal work, we develop and test a comprehensive framework to address four key questions: (1) Does ASP enhance customer outcomes? (2) What mechanisms drive this effect? (3) What moderators influence these relationships? and (4) Which configurations of service robot features evoke ASP? In doing so, we make several contributions.

First, this meta-analysis shows that ASP is positively associated with satisfaction, engagement, and loyalty, though it does not improve psychological well-being. These findings provide actionable insights for managers and help resolve skepticism about ASP's effectiveness. Second, we show that ASP operates through social cognition—such as perceptions of warmth and competence—and psychological ownership, including adaptability and attractiveness. While previous research focused on isolated pathways, this meta-analysis captures the full spectrum of relationships proposed in the ASP theoretical framework and clarifies which pathways account for ASP's effectiveness. Third, this study shows that the effects of ASP depend on contextual factors such as the emotional intensity and the time horizon of the service encounter, thereby explaining prior inconsistencies and improving understanding of ASP's generalizability. Finally, this meta-analysis explores the antecedents of ASP by introducing a two-dimensional taxonomy of service robot features, grouped into identity and capability dimensions. Using a novel methodological approach called crisp-set Qualitative Comparative Meta-Analysis (csQCMA), it captures how combinations of features jointly influence ASP. Unlike traditional meta-analytic techniques that assume a single dominant configuration, our csQCMA approach leads to the identification of multiple causal pathways, offering a more nuanced understanding of complex relationships.

In sum, our study addresses a critical gap by focusing directly on ASP and offering theoretical, methodological, and managerial contributions.

References

- Biocca, F., Harms, C., & Burgoon, J. K. (2003). Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence: Teleoperators & Virtual Environments*, 12(5), 456-480.
- Guha, A., Bressgott, T., Grewal, D., Mahr, D., Wetzels, M., & Schweiger, E. (2023). How artificiality and intelligence affect voice assistant evaluations. *Journal of the Academy of Marketing Science*, 51(4), 843-866.

- Holthöwer, J., & Van Doorn, J. (2023). Robots do not judge: service robots can alleviate embarrassment in service encounters. *Journal of the Academy of Marketing Science*, 51(4), 767-784.
- Konya-Baumbach, E., Biller, M., & von Janda, S. (2023). Someone out there? A study on the social presence of anthropomorphized chatbots. *Computers in Human Behavior*, 139, 107513.
- Marketing Science Institute (2024). Research priorities 2022-2024. Cambridge, Mass.: Marketing.
- Park, A., & Lee, S. B. (2023). Examining AI and systemic factors for improved chatbot sustainability. *Journal of Computer Information Systems*, 64(6), 728-742.
- Van Doorn, J., Mende, M., Noble, S. M., Hulland, J., Ostrom, A. L., Grewal, D., & Petersen, J. A. (2017). Domo arigato Mr. Roboto: Emergence of automated social presence in organizational frontlines and customers' service experiences. *Journal of Service Research*, 20(1), 43-58.

Unveiling the Impact of Circular Economy Principles on Market-Based Outcomes: A Meta-Analysis

Ad de Jong (Copenhagen Business School, Denmark)

Peren Ozturan (Copenhagen Business School, Denmark)

Constant Pieters (Copenhagen Business School, Denmark)

Christian Winter (Friedrich Schiller University Jena, Germany) (presenter)

Nicolas Zacharias (Friedrich Schiller University Jena, Germany)

Growing awareness of climate issues and resource limitations has intensified interest in the circular economy (CE) – an economic system that minimizes environmental harm by pursuing value redesign, value retention and value regeneration options (Sönnichsen et al. 2025). It does this by utilizing resources for consecutive use cycles, rather than disposing of them after a single use, enhancing sustainability at both the business and societal level (Khanra et al. 2021). The CE concept is hard to define and has been subject to numerous definitions. Yet a common denominator is that it aims to make better use of the world's natural resources (Velenturf and Purnell 2021) based on three fundamental principles:

- (1) Designing out waste and pollution

- (2) Keeping products and materials in use as long as possible
- (3) An intentional regenerative systems approach

These three principles challenge linear business model activities, management processes and organizational capability (Korhonen et al. 2018). To implement them, circular business operations must achieve multiple outcomes. So far, CE has primarily been discussed under environmental and regulatory perspectives. However, there is little coherent knowledge on the distinct market-sided potentials of strategies based on the three CE-principles, i.e., whether, when and why costumers value which CE-activities.

Against this backdrop, we strive to provide meta-analytic evidence to answer these questions. Specifically, we conduct an extensive search for empirical studies, including a keyword search in electronic databases (e.g., Web of Science and Google Scholar), and forward-backward citations of landmark papers to collect all articles addressing CE, or one of the CE-principles, or any activity related to one of the principles (e.g., recycling, sharing-economy) and at least one of a wide range of established market-related outcomes (e.g., purchase intention, sales). To support the screening of the large number of identified articles, we develop and extensively validate a framework to triangulate several flagship classification LLMs to serve as virtual research assistants, based on previous suggestions on employing AI in qualitative research (e.g., Olawade et al. 2025). We then proceed to hand-code and integrate a large number of effect sizes from marketing and related fields during the period of 2000-2025 to develop a theory driven moderated mediation framework answering our research question.

This work makes four key contributions to the literature. First, we develop new empirical generalizations on the magnitude of the impact of each of the three CE principles and market-based performance outcomes. Second, we provide a comprehensive understanding of the moderators of the relationship between each of these three principles and market-based performance outcomes. Knowing the factors that strengthen or weaken the CE principle-market-based performance outcome relationship is essential for managers and public policymakers who aim to encourage to adopt CE-based practices. Third, we provide a validated methodological framework guiding research with specific examples and code in employing artificial intelligence as virtual research assistance in meta-analyses. Fourth and finally, we develop a future research agenda based on the findings of this meta-analysis.

References

- Khanra, Sayantan, Puneet Kaur, Rojers P. Joseph, Ashish Malik, & Amandeep Dhir (2021), “A Resource-Based View of Green Innovation as a Strategic Firm Resource: Present Status and Future Directions,” *Business Strategy and the Environment*, 31 (4), 1395-1413.
- Korhonen, Jouni, Antero Honkasalo, & Jyri Seppälä (2018), “Circular Economy: The Concept and its Limitations,” *Ecological Economics*, 143, 37–46.
- Olawade, David, Deborah Omeni, Manisha Nitin Gore, & Manizha Hadi (2025), “Enhancing qualitative research through virtual focus groups and artificial intelligence: A review,” *International Journal of Medical Informatics*, 203, 106004.
- Sönnichsen, Sönnich, Ad de Jong, Jesper Clement, Roger Maull, & Chriss Voss (2025), “The Circular Economy: A Transformative Service Perspective”. *Journal of Service Research*, 28 (2), 228-245.
- Velenturf, Anna P. M. & Phil Purnell (2021), “Principles for a Sustainable Circular Economy,” *Sustainable Production and Consumption*, 27, 1437–1457.

A Meta-Analysis of Appeal Content Effects on Donation Behavior

Jacob Schjødt (Copenhagen Business School) (presenter)

Edlira Shehu (University of Groningen, The Netherlands)

Tammo H.A. Bijmolt (University of Groningen, The Netherlands)

Charitable organizations depend heavily on effective donor communication, yet empirical findings about donation appeal effectiveness are highly fragmented. Prior research has examined many content variations (e.g., social norms, victim framing, agency signals), but studies differ substantially in design, context, channels, and outcomes (e.g., Kessler & Milkman 2018; Xu, Mehta & Dahl 2021; Esterzon, Lemmens & Van den Bergh 2023). As a result, nonprofit managers lack generalizable insights into which content strategies reliably increase real-world monetary donations. To address this fragmentation, we conduct the largest synthesis to date of randomized field experiments on monetary donation behavior. Across 174 studies (1967–2022) and 17.8 million potential donors, we quantify:

1. The average causal effect of changing appeal content on donation likelihood and amount.
2. The relative effectiveness of the most widely studied content elements.
3. How these effects are moderated by communication channel, donor characteristics, and charitable cause.

We conducted an extensive literature search across published and unpublished work from 1970-2022, including only randomized field experiments that measured real monetary donations. Laboratory studies, intention measures, and non-monetary donations were excluded. Effect sizes were standardized using Cohen's *d*, and hierarchical random-effects models were estimated to account for dependencies among effect sizes and heterogeneity across studies.

Eight main content elements emerged from the literature: impact, victim effects, compliance techniques, social norms, benefits, personalization, donation scales, and agency. Using Lasswell's communication model (Lasswell 1948) as a guiding framework, we estimated the main effect of each of the eight content elements on donation behavior, and the potential moderating effect of the communication channel through which the appeal was delivered, the characteristics of the donor, and of the charitable cause. Figure 1 presents our conceptual framework.

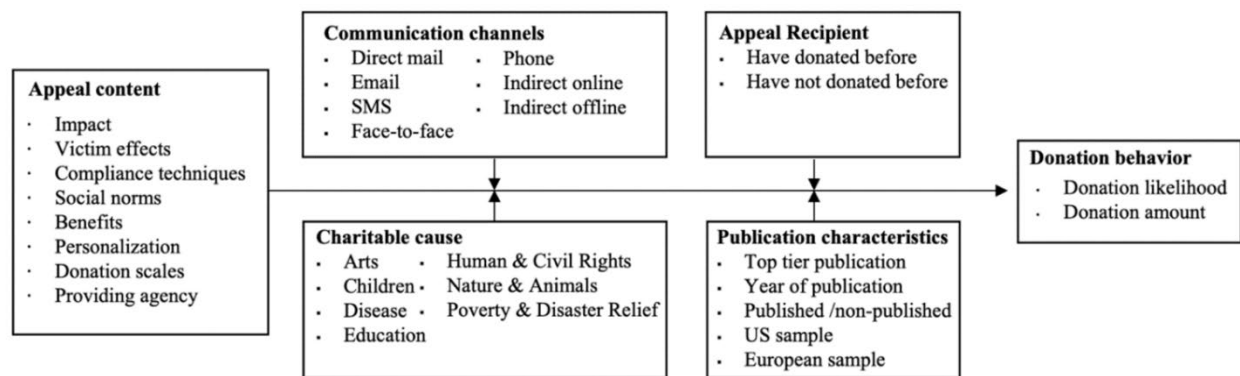


Figure 1. Conceptual Framework

Across all studies, changing donation appeal content was found to have a positive effect on donor behavior. The average effect of changing donation appeal content on donation likelihood is $d = .134, p < .001$ and the effect on donation amount is $d = .040, p = .047$. However, the effectiveness of content varies considerably across content elements. Compliance techniques and agency cues consistently increase both donation likelihood and donation amount and produce the largest overall effects. Victim framing and social norms increase the likelihood of donating but show no reliable effect on donation amounts. Impact information, personalization, donation scales, and donor benefits show no significant average effects on either outcome.

Moderation analyses reveal that content effects depend strongly on context. For instance, face-to-face and phone channels amplify the effects of compliance techniques and social norms, while face-to-face interactions weaken the impact of content emphasizing donation effectiveness. The effects of content are also stronger for new donors than for existing

ones, suggesting that experienced donors either rely less on message content or are more skilled at recognizing persuasion attempts.

This meta-analysis provide evidence that the content of donation appeals has a meaningful influence on real monetary giving, particularly on the likelihood of donating. Among all tested content elements, compliance techniques and donor agency stand out as the most consistently effective strategies. At the same time, the results challenge commonly held assumptions about the power of impact information, which shows no significant average effect despite its prominence in research and practice.

Most importantly, the analysis demonstrates that appeal content cannot be understood without considering its context. Effects depend on the channel used, the donor's relationship with the charity, and the cause being promoted. These findings underscore the need for donation research that incorporates contextual moderators and for nonprofit practitioners to tailor content strategically to specific channels and audiences. The results offer a unified understanding of donation appeal effectiveness and provide actionable insights for improving real-world fundraising outcomes.

References

- Esterzon, E., Lemmens, A., & Van den Bergh, B. (2023). Enhancing Donor Agency to Improve Charitable Giving: Strategies and Heterogeneity. *Journal of Marketing*, 87(4), 636-655.
- Kessler, J., & Milkman, K. (2018). Identity in Charitable Giving. *Management Science*, 64(2), 845–859
- Lasswell, H. D. (1948). The Structure and Function of Communication in Society. In L. Bryson (Ed.), *The communication of ideas*, New York: Harper and Row, 37-51.
- Xu, Lidan, Ravi Mehta, Darren W. Dahl (2021). Leveraging Creativity in Charity Marketing: The Impact of Engaging in Creative Activities on Subsequent Donation Behavior. *Journal of Marketing*, 86(5), 79-94.