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*Corresponding author: David Hensel,
Institute of Marketing, Helmut Schmidt
University/University of the Federal
Armed Forces Hamburg, Hamburg,
Germany
E-mail: hensel@hsu-hh.de

Reviewing editor:
Benny Briesemeister, Neurospective
GmbH, Germany

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Conducting neuromarketing studies ethically—practitioner perspectives

David Hensel^{1*}, Ana Iorga², Lisa Wolter³ and Judith Znanewitz¹

Abstract: Understanding consumer behavior has always been a marketer's goal. No wonder that, with the emergence of consumer neuroscience, which promised to shed light into what made consumers tick, companies were attracted to this new field. A major downside of this promising field is that especially commercial studies have struggled in the past with ethical issues. This may be the effect of less transparent ethical standards in the business world compared to academia. The potential of neuromarketing can only be exploited effectively, if trust in the industry rises and this correlates strongly with ethical behavior. Therefore, guidelines for conducting ethical neuromarketing studies have already emerged, but have not been evaluated from a practitioner perspective so far. Hence, the aim of this study is first to check the validity of additionally developed ethical aspects that are supplementary to the NMSBA (Neuromarketing Science & Business Association) code of ethics, contained in the EGNM (Ethical Guideline in Neuromarketing) guideline by determining whether there is a consensus with the answers provided by neuromarketing practitioners. The second objective is to refine the ethical guideline with additional aspects which are relevant for practitioners. Interview data, collected from 10 neuromarketing practitioners, showed that all seven aspects are important when conducting neuromarketing studies. Furthermore, the results indicate five additional ethical aspects that should be considered.

ABOUT THE AUTHORS

David Hensel, Ana Iorga, Lisa Wolter, and Judith Znanewitz are (neuro)marketing specialists with a passion for applying science to marketing.

David Hensel has over 7 years of experience in both implicit and explicit market research. He is responsible for the advertising research of the employer brand Bundeswehr.

Ana Iorga has over 10 years of experience as an advertising professional and entrepreneur, and leads a full-service advertising agency. In 2012, she founded Buyer Brain, a consumer neuroscience research lab.

Lisa Wolter has over 10 years of experience in the field of media and brand management. She consults to companies in media strategy issues and is a founder of the Hamburg Media School.

Judith Znanewitz has over 5 years of experience in implicit and explicit market research. She is responsible for research and consulting for the internal and external employer branding strategy of the Bundeswehr.

PUBLIC INTEREST STATEMENT

Understanding consumer behavior has always been a marketing objective. No wonder that, with the emergence of consumer neuroscience, which promises to shed light into what made consumers tick, companies are attracted to this new field. The current paper looks at several ethical issues raised by neuromarketing research and analyzes the Ethics Guidelines available to date. It then proposes some potential improvements, based on original research presented in the paper and on previous findings. Among the issues discussed are the need to restrict stealth marketing, protect vulnerable respondent groups (like children or people with mental diseases) and the appropriateness of applying neuromarketing research to help industries that promote unhealthy behaviors and products, like tobacco and alcohol. Another aspect addressed in the paper refers to the varied approaches of different stakeholders in the neuromarketing industry (e.g. neuromarketing vendors or beneficiary companies), regarding ethical issues that have emerged in this field.

Subjects: Ethics of Research; Consumer Psychology; Cognitive Neuropsychology; Cognitive Neuroscience; Business Ethics; Marketing; Marketing Research; Consumer Behaviour

Keywords: consumer neuroscience; ethics; practical guidelines; neuromarketing code; NMSBA; business ethics; consumer neuroscience and neuromarketing

1. Introduction

In the last few years, most of the debates concerning neuromarketing and ethics have focused on the commercial use of neuromarketing. The main issues were consumer manipulation and the lack of transparency in this field (Fisher, Chin, & Klitzman, 2010). Another important ethical issue refers to shortfalls in consumer autonomy (Murphy, Illes, & Reiner, 2008). Ramsøy (2014) states “while academic researchers are, or should be well versed in ethics codes of conduct, this is often not the case for commercial uses of neuroscience” (p. 498). Because of the commercial nature of the studies, some people fear that the data collected could be used unethically (Satel & Lilienfeld, 2013). According to Satel and Lilienfeld (2013), “in 2011, a consortium of consumer protection groups filed a complaint with the Federal Trade Commission against Frito-Lay for allegedly using neuromarketing” in order to determine emotional and subconscious reactions that would help “promote high-fat snack food to teens” (p. 43). This demonstrates that conducting neuromarketing research poses several ethical issues that marketers need to take into account.

Therefore, academics and practitioners have called for the development of a regulatory ethical guideline in neuromarketing (Briesemeister, 2015; Ulman, Cakar, & Yildiz, 2015). Most of the existing ethics codes are rather general, which can be useful, but does not clarify certain issues that are important for marketers (Hensel, Wolter, & Znanewitz, 2016). Accordingly, Hensel et al. (2016) created an extended guideline, the “EGNM” (Ethical Guideline in Neuromarketing) of a common piece, the NMSBA (Neuromarketing Science & Business Association) Code of Ethics, which provides guidelines on conducting neuromarketing studies ethically. Based on both a literature and a market analysis, they identified and incorporated seven additional aspects concerning the implementation of neuromarketing studies in general.

Since neuromarketing is a very practical field, it is important to integrate the practitioners’ point of view regarding the supplementary codes. Hence, the aim of this study is to refine and improve the EGNM guideline from Hensel et al. (2016) by looking for consensus with the answers provided by neuromarketing practitioners. Expert interviews helped the researchers to gather direct feedback and new directions at the same time. To this end, we held 10 semi-structured interviews with neuromarketing practitioners, discussing what is important from a business perspective when conducting neuromarketing studies.

The paper is structured as follows: First, we provide the conceptual background to the study, briefly analyzing the ethics of neuroscience in marketing research and practice. Next, we evaluate the consensus between EGNM guideline (Hensel et al., 2016) and expert answers from neuromarketing practitioners, furthermore refining the ethical guidelines with the findings from the expert interviews. We then provide a final discussion, draw some conclusions and outline avenues for future research in the field of neuromarketing ethics for business practice.

2. Code of ethics status quo in neuromarketing research

Both marketing professionals and academics highlight the importance of developing a regulatory framework that applies specifically to neuromarketing (Briesemeister, 2015; Ulman et al., 2015). Yet, few researchers have addressed this topic so far. Some of those who have done so, like Kimberly Clark, have argued that it is unlikely that potentially unethical practices will be deployed by scientists who call themselves neuromarketers. The ethical issues would most probably stem from the *commercial application* of established neuromarketing findings (Clark, 2016). A recent ethical guideline for conducting neuromarketing studies, the EGNM is provided by Hensel et al. (2016). The focus is on practitioners and not the scientific perspective, because, according to Ramsøy (2014) most ethical

problems occur in business usage. This does not, however, inevitably exclude its use for (academic) neuroscientists. Hensel et al.'s (2016) EGNM is grounded in Roskies (2005) considerations on the ethics of neuroscience and extends the NMSBA Code of Ethics (2013) by integrating, *inter alia*, the five-star code of ethics from Murphy et al. (2008). Since neuromarketing technologies and tools are continually evolving, an ethical guideline in this field also needs ongoing improvements from both academics and practitioners. A regular update and discussion with hands-on neuromarketers, researchers, and organizations like the NMSBA is surely necessary in this dynamic environment. In this study, we focus on practitioners' improvements of the abovementioned guideline. Thus, this paper sheds light on the business perspective of using ethical guidelines in neuromarketing and closes with suggestions for further enhancing the current framework.

Several parties are involved in the neuromarketing research process—the beneficiary companies that commission the studies, the research agencies that carry them out, the participants involved and the general public. All of these stakeholders have different views on the ethical issues raised by neuromarketing research and it is therefore important to integrate the “big picture.” Their various views are shaped according to their direct interests in the field (applicable for the first two categories) or to the image conveyed by mass media, which is valid for the participants and general public).

Pop, Dabija, and Iorga (2016) published a comparative analysis, looking at the results of several studies that they performed on different categories of stakeholders. The first study was conducted on companies from all over the world, working in the neuromarketing field (Pop, Dabija, & Iorga, 2014). The second study was of advertising agencies that use findings from neuromarketing research to create better and more efficient communication campaigns. The third study looked at the approach of beneficiary companies regarding the ethical issues raised by neuromarketing research.

Based on a literature review, De Oliveira, De Moura Engracia Giralid, Jabbour, Netto, and Betti (2015) discussed ethical issues within the field of neuromarketing research and developed a framework of ethical mapping. Furthermore, Olteanu (2015) focused on neuroimaging studies in particular and examined the issues for several involved parties, i.e. study participants and researchers. In this context, the Olteanu (2015) offers a guideline of 10 principles that neuromarketing practitioners should implement in neuroimaging research.

It is worth mentioning that none of the stakeholder groups considered neuromarketing to be an inherently unethical practice. However, the first study revealed that neuromarketing practitioners were concerned about their companies' reputation and the way media reported on the industry as a whole. The concern with media stemmed from the fact that journalists were often poorly informed about the scope or procedures of neuromarketing research and were focusing excessively on the manipulative side of the story (Pop et al., 2014). In their daily activities, the surveyed companies took into account the Ethical code issued by NMSBA and some of them had implemented internal conduct codes that were even more strict than external ones. They made sure that participants were fully informed, by providing them with a detailed description of the tools and procedures that were going to be used, and by requesting signed consent. Furthermore, collected data were anonymized and the databases containing raw data or results were not shared with third parties.

The second study performed by Pop et al. (2016) asked CEOs and managers of advertising agencies to compare neuromarketing to traditional research, in terms of efficiency and ethicality. Not surprisingly, twice as many advertisers thought of neuromarketing as more efficient than traditional research, whereas traditional research was seen as the more ethical of the two. An interesting finding is that some of the neuro tools are considered to raise fewer ethical issues than others. For example, people are more comfortable with the use of biometric recordings, facial coding, eye tracking, or implicit association, than with electroencephalography, galvanic skin response, or fMRI.

Advertisers were asked specifically what they think about the manipulative aspect of neuromarketing research. The unanimous attitude was that the ethical issues arise not from data collection, such as the tools and methodologies used when conducting research, but from the way that data are used. For example, they believed that it would be unethical to use neuromarketing to influence a political election.

The third category of stakeholders, which was studied by Pop et al. (2016) was represented by beneficiary companies—those buying neuromarketing research. It should first be mentioned that most companies have limited exposure to or experience with neuromarketing research. Therefore, their opinion is based heavily on the information acquired through different media channels, specialty books or websites. One interesting finding is that the research scope (be it academic or commercial) influences respondent perceptions of research ethicality. Scientific research is considered to be more ethical than its commercial counterpart. On the same note, respondents were more positive about the ethics of research aimed at solving social issues, like curing compulsive shopping or pathological addictions.

The conclusion emerging from the comparative analysis was that all commercial stakeholders bear a responsibility for making sure that their conduct complies with the ethical codes and that respondent rights and privacy are protected.

3. Theoretical framework

Neuroethics has evolved as a new and independent field, due to the ethical issues raised by brain research (Fuchs, 2006). The term was first used in 2002 by William Safire (Sebastian, 2014), and subsequently, different authors describe neuroethics in different ways. Illes and Bird (2006), for example, believe that neuroethics should deal with the social, legal, and ethical issues raised by neuroscience research. A different view is that of Gazzaniga (2006), for whom neuroethics should be concerned with the way society deals with issues like the philosophy of life and lifestyle, or fatality and illness, based on prior knowledge about how the brain works.

Ethical issues are classified by Murphy et al. (2008) into two groups: (1) protection of various parties who may be harmed or exploited by the research, marketing, and deployment of neuromarketing and (2) protection of consumer autonomy if neuromarketing reaches a critical level of effectiveness. Hensel et al. (2016) go further and identify five angles within the two groups: (1) *protection of research subjects*, (2) *protection of vulnerable populations from marketing exploitation*, (3) *full disclosure of goals, risks, and benefits*, (4) *accurate media and marketing representation*, and (5) *internal and external scientific validity*. This code builds the basis for the expert interview guideline in this study and is summarized in the following section.

3.1. Protection of research subjects

Several aspects are taken into consideration when looking at the protection of test participants. One of them deals with the management of incidental results or clinical findings that are not directly related to the objective of the research. Other aspects look at the impact of high incentives on respondents, at the procedures in place to ensure informed consent and respondents' rights (e.g. the right to unilaterally terminate a study) (Murphy et al., 2008).

3.2. Protection of vulnerable niche populations from marketing exploitation

Another sensitive ethical issue raised by neuromarketing research deals with communicating with and protecting niche populations, such as young children or teenagers that may not be able to protect themselves when faced with advertising messages perfected using neuroscience (Murphy et al., 2008). Pop et al. (2016) argue that targeting these groups with messages that promote unhealthy habits (like smoking or eating sweets), is less ethical than prompting adults with the same messages, as the former in particular, lack the power to resist persuasive messages and to refrain from acting on them.

Table 1. Seven additional codes by Hensel et al. (2016)

Additional ethical codes	Neuromarketing code of ethics from Murphy et al. (2008)				
	1. Research subjects	2. Vulnerable populations	3. Full disclosure	4. Accurate representation	5. Scientific validity
Incentives should be appropriate to avoid distortions of participants' behavior	x				
Prevent manipulation of consumer behavior ("stealth marketing")		x			
Protect vulnerable groups (e.g. elderly, infants, disabled) from marketing exploitation		x			
Participation of vulnerable groups (e.g. disabled, adolescents, elderly) should be subject to particular care	x				
Debriefing in case of covert data collection/incomplete disclosure			x		
Disclosure of tools and measurement scales when possible				x	
Ensure detailed rules for acting ethically with respect to communication of neuromarketing results				x	

3.3. Full disclosure of goals, risks, and benefits

When conducting a neuromarketing project, researchers should transparently communicate the procedures they have in place, including written materials and verbal commands, which ensure that they comply with the ethical standards adopted by the industry (Murphy et al., 2008).

3.4. Accurate media and marketing representation

Disclosing the methodology and measurements used in a neuromarketing research is of considerable importance (Murphy et al., 2008), especially in the business environment, where methodological transparency and metrics' validity are truly essential. Transparency and validity are important not only for business interactions, but also for building trust among the general public and to "promote the development of effective technologies" (p. 299).

3.5. Internal and external scientific validity

Validity becomes extremely important when using neuroscience research in industries that do not have a formal watchdog, like the Food and Drug Administration (FDA) (Eaton & Illes, 2007). "There are challenges in initial and sustained product validity in the commercialization of any marketing product influenced by neuromarketing research" (Murphy et al., 2008, p. 299).

The EGNM delivers, *inter alia*, an overview of ethical challenges for practitioners. This is achieved by expanding the NMSBA Code of Ethics (2013) with seven additional aspects and a systematization based on the five star code of ethics (see Table 1).

Hensel et al. (2016) stated *inter alia* that the identified seven codes should be additionally reflected on by practitioners. Therefore, these findings were checked by means of expert interviews and investigated by the authors, the results of which are presented in the following section. The EGNM will be further developed with the interview findings.

4. Methodological framework

Due to the lack of research in the field of neuromarketing on ethical guidelines, we conducted an exploratory, qualitative study. The approach is useful for further developing existing theory on ethical aspects in the field of neuromarketing and to generate new theoretical insights in this research

area, by gathering data and information on unexpected aspects. Qualitative data allows for an open-ended approach, which is needed to answer exploratory questions like those of our research (Graebner, Martin, & Roundy, 2012; Pratt, 2009). We interviewed 10 experts who have in-depth knowledge of neuromarketing practices through their daily work, in order to explore the general dynamics and characteristics of ethical aspects in conducting neuromarketing studies. Their varying experiences with different neuromarketing studies allow generalizations to be made, as well as the identification of differences and similarities between individual experiences. A close examination of interviewees' personal interpretations and experiences is enabled by the qualitative approach of using interviews (Denzin & Lincoln, 2011), which yields a rich and nuanced description (Weick, 2007). Consequently, a qualitative approach helps to focus on additional ethical aspects that should be considered in neuromarketing studies and that entail a new ethical code for such studies.

5. Research context and sample

To provide substantial insight into ethical aspects of conducting neuromarketing studies, we interviewed 10 practitioners, assuming that they had a certain level of expertise due to their work and experience, and with very different backgrounds, in order to maximize the diversity of opinions. They comprise founders, directors, and research officers of international (neuro)marketing companies conducting neuromarketing studies (see Table 2).

These representatives are selected in order to ensure the replicability of the findings and to extend our theoretical framework (Eisenhardt & Graebner, 2007). Their experience with and knowledge of neuromarketing studies gives them the capacity to provide detailed insights into ethical aspects in practice, and to make meaningful generalizations. We thus attempt to minimize bias caused by impression management or retrospective sense-making by “using numerous and highly knowledgeable informants who view the focal phenomena from diverse perspectives” (Eisenhardt & Graebner, 2007, p. 28). The insights of the different interviewees allow us to compare their experiences, in order to find similarities and differences between them (Yin, 2014). According to a theoretical sampling strategy, we chose the interviewees for “theoretical” reasons, instead of sampling interviewees from a chosen population (Eisenhardt, 1989a). They were selected according to working experience and position within their companies and the possibility of carrying out a personal interview. We preferred personal interviews in order to create a trustful atmosphere, in which interviewees are usually more willing to give insights into a sensitive issue such as ethics (Jehn & Jonsen, 2010).

Table 2. Overview of position and experience of our interview partners

Position	Academic degree	Experience
Founder and Joint Managing Director	PhD in Psychology	Active in the field of neuromarketing for 10 years
Co-Founder and Chief Research Officer	PhD Psychological & Brain Sciences	Active in the field of neuromarketing for 16 years
Chief Operating Officer and CEO	Master of Business Administration	Active in the field of marketing for 25 years and in the field of neuromarketing for 6 years
Founder and joint Managing Director	PhD in Psychology	Active in the field of neuromarketing for 10 years
Founder and Managing Director	PhD in Computer Science	Active in the field of neuromarketing for 14 years
Founder and Owner	PhD in Psychology	Active in the field of neuromarketing for 5 years
Scientific/Academic Director and CEO	PhD in Germanic Philology	Active in the field of marketing for 30 years
Marketing consultant	MS in International Business and Management Development	Active in the field of marketing for 15 years
Head of Consumer Research	PhD in Economics	Active in the field of neuromarketing since 6 years
Head of Strategy	Master of Science in Management	Active in the field of neuromarketing for 7 years

6. Data collection and analysis

The qualitative study was based on data gathered from semi-structured interviews with neuromarketing practitioners. The interviews took 30–60 min and were conducted over a period of three months. Semi-structured interviews enabled us to ask a standard set of questions, but also allow to reactions according to the responses of the interviewees. The questionnaire was drawn up by the authors, referring to their earlier analysis of ethical challenges in neuromarketing (Hensel et al., 2016). There were 17 questions in total and the interviewees were instructed to answer the questions according to their experiences and views. The first phase of the interviews included four open-ended questions, in order to obtain background information about the interviewees and their professional experience in the field of neuromarketing. Thirteen more open-ended questions were posed in the second phase of the interviews, so as to explore general ethical aspects in conducting neuromarketing studies, the practical relevance of the five-star code of ethics by Murphy et al. (2008) and the neuromarketing tool-based view of ethical aspects.

The interviews were transcribed and anonymized. Data analysis followed procedures recommended by Corbin and Strauss (2015) and Miles, Huberman, and Saldana (2014). According to the structure of the interview questions, interviews and documents were coded with both *inductively* and *deductively* developed codes. If an interview passage could not be assigned under one of the codes, a new code was created. All interviews were coded by following the scheme that resulted from an inductively and deductively code construction. The analysis focused on structuring and summarizing the interview material. At the beginning, we analyzed each interview separately. Afterward we compared the interviews across the categories to identify differences and similarities (Eisenhardt, 1989b). This resulted, firstly, in the identification of the seven ethical aspects of the EGNM by Hensel et al. (2016) and, secondly, in the identification of additional ethical aspects. In sum, the data were analyzed iteratively, switching between the qualitative data and an emerging structure of theoretical arguments (Corbin & Strauss, 2015; Miles et al., 2014).

Our research context was selected as a theoretically relevant case for the following reasons (Eisenhardt, 1989a):

- Academics and practitioners call for regulatory ethical guidelines in neuromarketing (Briesemeister, 2015; Ulman et al., 2015).
- Hensel et al. (2016) stated that, *inter alia*, the seven identified ethical codes should be additionally investigated by practitioners.
- Neuromarketing Ethical Codes are still in their infancy.

7. Results

7.1. Confirmation of the seven additional codes by Hensel et al. (2016)

Hensel et al. (2016) identified seven additional ethical codes (see Table 1). All additional ethical codes were identified in the interviews with the practitioners. Table 3 provides an overview of the additional codes, with selected illustrative quotes, extracted from the interview data.

7.2. Five additional codes evaluated in interviews

Furthermore, five additional ethical aspects were extracted from the interview data. The following Table 4 provides an overview.

8. Discussion

8.1. Discussion of the seven additional codes from Hensel et al. (2016)

Hensel et al. (2016) developed seven additional ethical codes for conducting neuromarketing studies for practitioners. The relevance of these additional codes is supported by their presence in the expert interviews. The first additional code is about determining the correct number of incentives for

Table 3. Additional codes and selected verification interview quotes

Seven additional codes by Hensel et al. (2016)	Illustrative quotes
Code 1: Incentives should be appropriate to avoid distortions of participants' behavior	According to their participation, participants are [...] given fair compensation for their time
Code 2: Prevent manipulation of consumer behavior ("stealth marketing")	I would say that an ethical problem is that one could probably implicitly push underneath something or that the study could be used to develop advertisements, which is so tricky, it will seduce us into buying something that we usually wouldn't
Code 3: Protect vulnerable groups (e.g. elderly, infants, disabled) from marketing exploitation	In cases that involve minors, we only take on projects that foster the betterment of their mental or physical well-being
Code 4: Participation of vulnerable groups (e.g. disabled, adolescents, elderly) should be subject to particular care	When children are involved, we obtain consent by parental proxy
Code 5: Debriefing in case of covert data collection/incomplete disclosure	<p>Given the nature of the data we collect, it is a pleasure to personally debrief participants on our studies</p> <p>Generally stated, we debrief all participants in lay terms and answer all questions to the best of our ability</p> <p>Following their participation, participants are debriefed on the nature of the research question [...]</p>
Code 6: Disclosure of tools and measurement scales when possible	<p>Even the algorithms we use are public available information, because we obtain these algorithms from reputable scientific sources. We only utilize neuromarketing tools when we are absolutely convinced that they are scientifically based and have been proven by independent parties. As such, everything we do has already been completely documented and is from published sources</p> <p>We only use equipment and protocols that have been validated by the scientific community</p>
Code 7: Ensure detailed rules for acting ethically with respect to communication of neuromarketing results	The real ethical problems in our business are the overpromises (and even lies) of companies and/or "neuro TV evangelists," who cause great harm to our industry. [...] Many people without experience in marketing and with no neurology knowledge are conducting research and doing business consulting

Table 4. Five additional codes from neuromarketing practitioners' interviews

Additional aspects	Illustrative quotes
Sufficient sample size for neuromarketing studies	<p>This is a way to ensure validity and in general, to conduct data collection correctly for the target group and a sufficient number of cases</p> <p>We need at least 20 data points to draw a valid conclusion. This is the minimum amount of data points for scientific studies</p>
Specific quality check of neuromarketing data	We actually go through each individual data-set manually and look at the data quality, correct for artifacts, etc., in order to reach the highest possible level of data quality
No NM for optimization of "unhealthy" products (e.g. tobacco or alcohol industry) (especially with respect to youth customers)	<p>We would never run studies that could endanger the health of people. For example, we have never managed studies for the tobacco industry</p> <p>Cigarettes, by which people harm themselves, or alcohol. Where it would help the tobacco companies to influence even more young people, so that more start smoking and harm themselves or even die younger. This is all highly ethically problematic</p>
No use of non-scientific methods	<p>From our point of view, the use of Toy Tools and this associated non-professional issue are the real ethical problem in our business</p> <p>First and foremost, we only work with equipment that meets scientific standards. We do not use any toy EEGs, no cheap eye trackers or things which you can somehow have huge accuracy drifts from</p> <p>Only use the ones validated by the scientific field of neuroscience</p>
Conducted by neuroscientists for studies with complex methods (e.g. fMRI)	<p>[...] EEG, Eye tracking and fMRI with neuroscientist's guide</p> <p>All our studies are conducted by neuroscientists and can be checked by any neurologist or marketing expert</p>

participating in a study. The level of incentives should be appropriate to avoid distortions of participant response behavior. The undue influence of (excessively high) incentives for participating on the validity of the study is also mentioned by Murphy et al. (2008) and Ulman et al. (2015); it could, for example, result in indirect coercion of the research subject. Several experts mentioned this issue in their interview.

The second additional code concerns the prevention of consumer behavior manipulation (“stealth marketing”). Nowadays, such stealth neuromarketing is not really possible with current neuroscience technology (*despite speculation along these lines in the media*) (Loiacono, 2009). But someday, advanced technology in neuroscience might enable corporations to influence consumer behavior without their awareness of the manipulation (Murphy et al., 2008). If this scenario does arise in the future, the application of “stealth marketing” should be restricted, especially with respect to specific advanced neuroscience tools. Concerns about an (excessively) effective technological advance of neuroscience tools in neuromarketing practice, is also reflected in the interviews with practitioners and should be regulated by an ethical code as early as possible.

The next two additional codes apply to protection from marketing exploitation (code No. 3) and particular care in participation (code No. 4) of vulnerable groups (e.g. elderly, disabled, infants, and adolescents¹). The participation of children and physically or mentally disabled persons in neuromarketing studies should be regulated, at least through requiring informed consent from their legal guardian. Especially the participation and protection of children is mentioned in most of the interviews. Children represent a sensitive population that can be easily manipulated. Their neural inhibitory mechanisms are not yet mature, so that they find it extremely difficult to refrain from using products that appeal to them, the moment they want them. Therefore, neuromarketing companies are not encouraged to perform research on young children, as they would be helping advertisers take advantage of their lack of sophisticated reasoning and self-control. Some practitioners generally refuse to have anything do with neuromarketing studies with children. Other interview partners demand informed consent from their legal guardian when doing research on children. One interview partner only, conducts neuromarketing studies with children and only in presence of their legal guardian.

Additional code No. 5 is about debriefing the participants when research design does not allow fully informing the participants in advance. A proper debriefing informs the participants about the purpose of the research and why deception was necessary and legitimate. The American Psychological Association (APA) recommends leaving the participant with a positive attitude (American Psychological Association, 2010, code 8.03). The interviewed practitioners confirmed the issue with research designs which often do not allow the briefing of participants in advance (e.g. for unaffected brand knowledge). But debriefing the participants after a study was conducted by nearly all of the interviewed practitioners.

The sixth and seventh additional codes are related to the disclosure of tools and measurement scales, and the communication of the neuromarketing results. The companies’ fear of making premature claims about the predictive power of neuroscience for consumer behavior, is reported by Fisher et al. (2010). They analyzed 16 neuromarketing companies and only 13 of them described their methodology. In many cases, the descriptions were insufficient to determine what was being done. Therefore, Fisher et al. (2010) did not find much evidence that neuromarketing works or is effective on the basis of the studies included. This could be prevented, if private companies were to publish their methodology and results. This was a controversial issue in the interviews with the practitioners. On the one hand, they confirm that their methodology and measures are fully published and validated by the scientific community. But on the other hand, also confirmed in the interviews, their unique, specialist knowledge about the methodology and measures gives the companies a competitive advantage on the market and, therefore, will not be fully disclosed. Accordingly, the disclosure of tools and measurement scales refers to a controversial ethical code for neuromarketing practice. Neuromarketing should strike a balance between the scientific way of fully disclosing

the tools used in the studies and the need for competitive advantage through (proprietary) company knowledge. But too little transparency does not support the overall neuromarketing industry, and prevents a rapid adoption of probably helpful knowledge.

Further on, one expert noted that he does not see an ethical problem in neuromarketing and that he could not make up his mind about the topic until now. This shows the importance of integrating practitioners into the discussion to stimulate their ethical thinking.

8.2. Discussion of the five additional codes evaluated in interviews

8.2.1. Sufficient sample size for neuromarketing studies

The sample size used in neuromarketing studies has been subject to ongoing debate, with supporters of traditional research complaining that neuromarketers use small sample sizes which are insufficiently large to draw valid conclusions. One of the main sampling differences between neuromarketing and traditional research is that the former does not require a representative sample for the whole population. This is the case because, in neuromarketing research, the subgroups to be studied are defined prior to starting the actual study, based on demographic or behavioral criteria that are relevant for the objectives of the study. According to Genco, Pohlmann, and Steidl (2013), neuromarketing studies that record brain activity can be run within smaller sample sizes, as the random noise in brain measurements is not as high as in survey responses. This is consistent with the findings of Sands (2009), that the optimum sample size for EEG research is around 30–40 people.

The sample size depends on the tools or techniques employed—brain measurements require fewer respondents, while studies performed with facial coding or implicit association would benefit from a larger sample size. When designing a neuromarketing study, it is advisable to plan for some extra respondents, just in case some of the data needs to be discarded, or some of the respondents quit during the process. Also, there needs to be a balance between the costs of recruitment and data collection and the incremental benefit of increasing the sample size. Last but not least, how the sample is chosen is equally important, as a large sample from a biased population will be as worthless as a sample that is simply too small.

8.2.2. Specific quality check of neuromarketing data

GIGO is a widely used concept in computing and mathematics—it stands for “garbage in, garbage out.” This couldn’t be more true, as far as neuromarketing research is concerned—if the data used as input is not appropriately cleaned and processed, the results cannot be trusted.

Another challenge regarding the quality of the recorded data derives from the fact that in neuromarketing research, one works with small samples (see above discussion). Therefore, researchers need to check the quality of the recordings during the data collection phase—pay attention to the sensors, in order to notice any potential malfunction, instruct respondents to follow the instructions and not engage in a behavior that could jeopardize the process (move or speak during the recording), as that will reduce the accuracy of data available for analysis.

This aspect ties in nicely with the issue discussed above about the sample size, where one needs to make sure that there are enough respondents to allow for discarding collected data, if required.

8.2.3. No neuromarketing studies for optimizing “unhealthy” products (e.g. tobacco or alcohol industry) (especially with respect to youth customers)

The NMSBA Code of Ethics does not explicitly ban neuromarketing vendors from working for potentially controversial industries, like tobacco, alcohol, or politics. Therefore, it is up to the industry players to impose self-regulating policies that prevent the use of consumer insights gained through neuromarketing research on those potentially harmful groups. In the last few years, NMSBA community members have expressed their interest in updating the Ethical Code, so as to better reflect the industry values and establish a balance between their economic interests and external ethical pressures (Clark, 2016).

8.2.4. No use of non-scientific methods

There is a lot of hype around neuromarketing research and the rapid advancement of technology plays an important role in maintaining that hype. That occurs because technology vendors are eager to be the first to get their tools on the market and increase their market share, sometimes at the expense of sound scientific principles and practices. Therefore, when choosing between different tools or technologies, one needs to take into consideration publications and third-party assessments of those particular tools.

8.2.5. Conducted by neuroscientists for studies with complex methods (e.g. fMRI)

Neuromarketing companies initially developed around neuroscientists who were working in universities and had access to medical equipment and data analysis software. As the field attracted more attention, and decision-makers from the business world started to understand its commercial potential, more and more companies jumped on the bandwagon. Nowadays, most neuromarketing vendors employ neuroscientists either as full time staff or consultants. One of their roles is to ensure that the claims and findings extrapolated from brain recordings are grounded in science and that salespeople do not get carried away in promising clients that they can solve all manner of problems with neuromarketing research.

9. Conclusion and outlook

The aim of our study was to check recent codes, especially that from Hensel et al. (2016) for consensus with the answers of neuromarketing practitioners, with the aim of refining them with additional relevant aspects. The paper was based on a qualitative study, interviewing 10 experts about their experiences with ethical aspects of neuromarketing studies.

We consider the recent aspects raised by Hensel et al. (2016) as relevant for marketing practitioners, as all experts mentioned the additional codes from Hensel et al. (2016): *fair level of incentives, restriction of stealth marketing, protection and participation of vulnerable groups, debriefing of participants, disclosure of tools/measurement scales and accurate communication of the results*. This conformity validates the relevance to these ethical aspects, also from a neuromarketing practitioner perspective. Furthermore, we extracted five additional ethical aspects: *A sufficient sample size for neuromarketing studies, the need for a specific quality check of neuroscientific data, no neuromarketing studies for optimizing “unhealthy” products, e.g. tobacco or alcohol industry, especially with respect to youth customers*, and particularly *the problem of using non-scientific tools and methods in neuromarketing*.

Such a study is not without limitations. First of all, we only interviewed neuromarketing practitioner experts on this topic. Interviews with academic researchers about ethical aspects would also be useful, because of the close relationship between neuromarketing and neuroeconomics. There is, thus, also potential for interdisciplinary research. This again leads to a future study path, which should shed light on the academic perspective in the field. Another limitation is the sample size, which is caused by the qualitative nature of the given expert interview approach. After the qualitative identification of the five new codes as next, a quantitative approach would be necessary to confirm these findings (Graebner et al., 2012). Besides the perspective of users, be they academic or practical, the view of participants also needs to be taken into account when developing an integrated guideline.

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Author details

David Hensel¹
E-mail: hensel@hsu-hh.de
Ana Iorga²
E-mail: ana@buyerbrain.com
Lisa Wolter³
E-mail: l.wolter@hamburgmediaschool.com

Judith Znanewitz¹

E-mail: znanewitz@hsu-hh.de

¹ Institute of Marketing, Helmut Schmidt University/University of the Federal Armed Forces Hamburg, Hamburg, Germany.

² Buyer Brain, Bucharest, Romania.

³ Hamburg Media School, Hamburg, Germany.

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Note

1. Adolescence extends into the early 20s (Steinberg, 2002) and their participation should be regulated, because of their biological vulnerability (Pechmann, Levine, Loughlin, & Leslie, 2005). Adolescents are fundamentally different from adults in terms of impulsivity, “planfulness,” and sensitivity to peer influence (Johnson & Giedd, 2015). The brain system of adolescents underlies different conditions to those of adults. Their frontal lobe and amygdala are still under construction (Durstun et al., 2001). Furthermore, some researchers believe that adolescents’ reward system (limbic system) is more reactive than adults’ (Galvan et al., 2006). Furthermore, the connection between frontal lobe and amygdala is incomplete. Thus, the frontal lobe exerts less control over the amygdala, and exerts less influence over emotions and behavior than a fully mature frontal lobe of adults. In most cases, adolescents have less influence over emotions and behavior than fully mature adults (American Medical Association, 2005).

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