

# The Qualitative Face of Big Data: Live Streaming and Ecologically Valid Observation of Decision-Making

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**The technological possibilities for new data sources in media psychology, such as online live recordings, called Live Streaming, are growing continuously. These sources do not only offer plentiful quantitative material but also access to ecologically valid and unobtrusive observation of problem-solving and decision-making processes. However, to exploit these potentials, epistemological and methodological reflection should guide research. The availability of Big Data and naturally occurring data sets (NODS) allows to revise the historical controversies on the eligibility of self-description. Drawing on such reflections, media psychology can contribute to renovate well established research methods, such as think aloud protocols, in order to improve their empirical potentials. Among the attempts to enhance these methods are phenomenology and ethnomethodology which offer a fruitful account to develop innovative data sources for self-description. Yet, these attempts do not support a recurrence of self-description's previous application but proposes an epistemological shift towards more subtle observations. To convey the potentials of media psychology, the risk of repeating classical mistakes, such as introspectionism, must be regarded. Beyond these fallacies, however, modern digital technology holds encouraging potentials which have already partly been sighted by video gaming research. Due to the similarity of digital environments to laboratory setups, there is a continuity from offline to online research, from traditional data to Big Data. Nevertheless, a true advance into new possibilities requires understanding the qualitative meaning of such data.**

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Media psychology has continuously gained relevance and reputation during the growth of digital media within the last decades. The scope of its applicability expands in correlation with the penetration of society by multimedia communication because the technological advances are intertwined with the digitalization of life. Life becomes accountable in the structures of the digital age that form the premises of contemporary and future daily routine. This technization of life provides substantial potentials for media psychology.

A remarkable realization of these potentials can be noticed in the field of research on so called "big data". As the work of Kern and colleagues (2014) on the representation of personality traits in social media demonstrates, the cyclopean amount of available behavioral data can be utilized to enhance the empirical reach of psychology. Moreover, the

focal point of this research is not only to exploit the immense amount of data but also to establish "unobtrusive methods" as an "ecologically valid vehicle for obtaining 'big data'" (p. 158). Media psychology accesses behavior beyond the artificial setting of laboratory investigations without forfeiting the standardization that is requisite for reliable empirical research.

Despite these noteworthy potentials of media psychology, its epistemological aspirations remain rather modest. Primarily, it strives to catch up with the mainstream psychology and to serve its epistemological projects continuing the traditions of cognitive psychology. Hence, media psychology aligns with a primarily behavioral investigation of human life, which implies relevant shortcomings regarding the experiential complexity of psychological processes. In other words, as long as media psychology does not reflect its epistemological presuppositions, it might not be able to tap the full potential that resides in the available data sources. Instead, a more integrative approach (that can be methodologically realized, e.g., as mixed-methods research) should be debated.

So far, the research interest of media psychology is mainly directed at comprehending the new domain of human behavior in the context of media, such as assessing the participatory structures in interactive media (e. g. Hamilton, Garretson, & Kerne, 2014), understanding the cultural communication via memes (e. g. Mazambani, Carlson, Reysen, & Hempelmann, 2015), or relating this behavior to other fields of psychological research, like aggression in video games (e. g. Hasan, Bègue, Scharnow, & Bushman, 2013) or the research on digital footprint in personality psychology (e. g. Farnadi, Sitaraman, Sushmita, Celli, Kosinski, Stillwell, Davalos, Moens, & De Cock, 2016). In other words, the potentials of media psychology have been exploited to amplify psychological research within the limits of its prevalent concepts in the first place (for a critical account on cognitive psychology see, for example, Wertz, 1993). Nevertheless, the discipline bears further possibilities that lie beyond the frame of cognitive psychology as the current (epistemological) paradigm (this paradigm is conceptualized for example in Neisser, 2014). These possibilities regard more fundamental matters of psychology's epistemology – the discipline's general faculty to provide understanding; and methodology – the discipline's specific concept to procure this understanding. Media psychology does not only expand the empirical basis for inductive hypothesis formation but also allows novel insight into elementary psychological questions, such as naturalistic (in the sense of 'ecologically valid') observation or the viabil-

ity of self-descriptive methods<sup>1</sup>. Whereas the progress in inductive investigations provided by media psychology, as in the case of “big data”, can be depicted as a contribution to quantitative research, its yet uncharted epistemological potentials additionally require qualitative approaches. The discussion about fundamental questions of psychological methodology needs to be supported by descriptions of experiential qualities that become available in the analysis of new media. The access to human behavior by means of technology has changed the very conditions of psychological research. Empirical research on the field of media psychology will not only provide evidence within the framework of cognitive psychology, but surpass it. However, this revolutionary potential of media psychology can only be furnished through theoretical controversy that faces the epistemological breaking points of (analogous) cognitive psychology.

The enterprise of extending media psychology’s impact beyond cognitive psychology’s limitations requires alternatives providing descriptions for the relevant experiences. Several fruitful approaches from alternate epistemological traditions can enrich the psychological debate. The perspective taken here employs phenomenology as an epistemological and ethnomethodology as a methodological contribution (for the methodological relation between dynamic decision-making research and phenomenology, see Wendt, 2017a). Phenomenology is a philosophical school of thought that emerged in the late 19th century, among others, in the work of Edmund Husserl (see Spiegelberg, 1960; 1971). Its central concern is the structural analysis of experience, viz. the constitution of consciousness. There has been a distinct influence of phenomenology on psychology throughout the history of the discipline. Ethnomethodology is an empirical concept that derives from phenomenological thinking (Pilnick, 2013). It has been established by Harold Garfinkel in North American sociology during the second half of the 20th century. Ethnomethodology’s main concern is to understand the structures of lifeworld by investigating the “methods that persons use to carry out the activities that make up their everyday life” (Churchill, 1971, p. 183). In the behavioral sciences, ethnomethodological thinking has influenced well-established concepts, such as conversation analysis (see, e.g., Maynard & Clayman, 2003). However, the choice of phenomenological perspective is not the only way to expand cognitive psychology’s reach. Several other epistemological traditions point in the same direction. Yet, as it shall be discussed, phenomenology provides the most promising conceptual horizon to promote the progress of psychology.

To render the scope of media psychology’s epistemological and methodological contribution to controversies within theoretical psychology, this article aims to sketch out the qualitative empirical use of digital subject matters by exploring a new data source: Live Streaming (for a conceptual outline see Wendt, 2017b). Live Streaming is a recent technological advance that is enabled by the increase of on-line bandwidth capacities. It is characterized as live broadcastings that “put the traditional consumer into the role of content creator” (Sjöblom & Hamari, 2016, p. 1). Streamers – the content-creators of streaming platforms, such as [www.twitch.tv](http://www.twitch.tv) – upload spontaneously created video material in real time, publishing it to a live audience. The content of these streams is not restricted to, but prominently features video games which are a well-established subject matter in media psychology (see Reeves, Yeykelis, & Cummings, 2015). The psychologically most rele-

vant property of Live Streaming is the detailed documentation of the streamers’ behavior, often by a webcam that is recording their analogous activity, and always by some output of their digital activity, such as gameplay, communication or creative production.

Live Streaming bears a great resemblance to the material used by classical methods of empirical psychology, such as introspection and think aloud protocols (Wendt, 2017b). However, the data obtained through Live Streaming differs from its analogous predecessor in crucial aspects, especially its ecological validity. With more than a hundred million unique users every month on the streaming platform [www.twitch.tv](http://www.twitch.tv) (Sjöblom & Hamari, 2016), Live Streaming can be easily reckoned as a source of Big Data. In reference to relevant work about the subject matter of video gaming, the investigation of Live Streaming can help to excavate the contribution of media psychology to fundamental epistemological and methodological controversies. The following line of arguments consists of four subsequent steps. First, Live Streaming as a novel data source is presented and analyzed regarding the fundamental psychological problem of the investigation of experience. In the course of it, the consideration of subjectivity shines forth as the crucial question for an adequate methodology. Second, the historical and contemporary psychological account on this question of subjective experience is elucidated and criticized from the standpoint of phenomenology. Phenomenology promotes the investigation of consciousness in a peculiar form unlike the well-established models from cognitive psychology. Third, ethnomethodology is introduced as a methodological approach that aligns with phenomenology and, therefore, can be used to develop an alternative approach within psychology, as well. Fourth, the outline of a phenomenological psychology of experience can be brought together with the data source of Live Streaming. This methodological concept offers a sufficiently complex framework for an advancement of research on dynamic decision-making. Hence, the general purpose is to make a contribution to an eventual breakthrough of the “impasse” (Ohlsson, 2012) in problem-solving and decision-making research.

## Video games research and Live Streaming

In the formal terms of media linguistics (Schmitz, 2015), Live Streaming is a transient, current, oral form of communication based on dynamic images. In the prototypical case of video games as Live Streaming’s subject matter, the focal compounds are video capture of the streamer by webcam, video capture of the content by camera or computer screen capturing, the streamer’s audio track which is captured by microphone, the audio track of the content which is captured by microphone or direct computer audio capturing, and (optionally) the (most commonly) written interaction with the audience. However, Live Streaming is applied to record behavior in various domains of everyday

<sup>1</sup> The notion of ‘self-description’ is used in a broad sense in this text. The terminology is relevant because of important epistemological concerns. One might think that the notion of ‘description’ entails a cognitive effort. Thus, the term ‘self-description’ would be inadequate to subsume the concept of ‘think aloud protocols’ because they are designed as effortless verbalization (see Ericsson & Simon, 1980; Fox, Ericsson, & Best, 2011). However, in this text, ‘description’ should be understood as a most fundamental form of self-reference that is characteristic for self-consciousness. A different notation could be ‘self-report’.

life, such as tailoring objects, creating art (e. g., music, painting), outdoor sports, and political discussions. The only formal restriction is the recordability and the ethical limitations of the provider which is hosting the stream.

Research on Live Streaming is scarce, and the few available sources mainly focus on the participatory possibilities of the interactions with the audience (Hamari, & Sjöblom, 2016, 2017; Hammilton et al., 2014; Wendt, 2017b). Moreover, Live Streaming is prevalently understood as a contribution to video gaming research. Yet, without contradicting this approach of research, Live Streaming can also be framed in a wider sense as a data source for the general observation of behavior. The domain of video gaming, thus, becomes a mere example for the possibilities of the investigations to which Live Streaming can provide experiential data. In the words of Reeves, Greiffenhagen, and Laurier (2016): “we instead provide an example-driven explication of the perspective to examine video game play phenomena as sites of social order” (p. 6).

Such a shift of perspective from the domain of video games to video games as an example of general behavior is analogous to the difference between continental and North American research on problem solving behavior (Frensch & Funke, 1995): While North American research focusses on problem solving in different domains, the European perspective highlights different types of problem solving behavior. Equally, Live Streaming can either be an instantiation of video gaming as a domain of behavior, or it can be a data source to observe certain types of behavior. These views are complementary, not exclusive, but they switch the priorities of investigation. While for video gaming research the subject matter of observing streamers play video games is indispensable, the different types of situations within the video gaming context become optional. For problem solving research on the other side, it is facultative whether Live Streaming contains video games but the structures of experience are in the center of attention. This alternation of scientific attention can be seen as the main reason for a different range in research on video gaming. While domain specific investigations aim to explore the peculiarities of gaming, the more general approaches use gaming as an exemplary occasion to gain insight on universal properties of behavior. Since current media psychology is mainly influenced by research on domains of behavior, it appears to be a comprehensible result that media psychology currently neither reaches out actively for a revision of psychology’s epistemological foundations, nor searches for an innovation of the observation of experience and behavior when reflecting on Live Streaming. Nevertheless, these potentials are given and should be acknowledged as well as utilized.

To redeem these potentials, two introductory steps are required: [1] the methodology of video gaming research will be sketched out as the exemplary frame of reference within media psychology, and [2] the epistemological context has to be specified. For the first step, the frame of video gaming research bears explicative use in the above mentioned limits of an “example-driven explication” since there is a sufficiently validated and applied congruence by structure between video gaming and several paradigms of psychological research (e. g. Gordon, 2015; Järvelä, Ekman, Kivikanigas, & Ravaja, 2014), such as problem solving paradigms (e. g. Güss, Tuason, & Orduña, 2015; Rach & Kirsch, 2016). Equivalently, cognitive tasks are used as a comparison to improve the understanding of video games (see Järvelä et al., 2014, p. 93).

## The methodology of video gaming research

The methodological reflection on video gaming research approaches its subject matter from two points of view, [A] content analysis and [B.1] experiential or [B.2] behavioral observation. Content analysis aims to cover the uniqueness of video games by their material and structural properties analyzing the mechanisms and functions that formally construe the video game. Therefore, content analysis renders video games as empirical paradigms which can be used in scientific research in so far as there exists a possible control to their stimuli which requires a thorough understanding of their architecture. Experiential and behavioral observation on the other hand turn towards the subject experiencing the video game, trying to grasp the typical situation of exposure to this kind of experiential object.

Schmierbach (2009) offers a review of content analysis of video games, dealing with its accomplishments and challenges. He mentions six steps of content analysis: “unitizing, sampling, recording/coding, reducing data, drawing inferences, and narrating the result” (p. 148). “Unitizing” is the task to select distinguishing units of description. Such units can be “physical, syntactical, categorical, propositional, and thematic” (p. 152) and offer the possibility to isolate single events or actions to make them accessible for scientific interpretation. Although the most elementary structure of computer application has a natural unit of bits, these can barely be used as material in behavioral sciences. As a result, content analysis needs to conceptualize valid units of description that serve the respective investigation without deforming the video game’s own structure. Järvelä et al. (2014) use the term “event-based analysis” in a similar fashion, pointing out some critical considerations: “Event-based designs, however, introduce some additional considerations for the researcher. The choice of event coding is based not only on the game’s available actions, but also on how isolated these actions occur during gameplay. Often there are over-lapping events that are hard to differentiate from each other” (p. 96).

While “unitizing”, “sampling”, “recording/coding”, and “reducing data” are rather formal and fundamental procedures of content analysis, “drawing inferences” and “narrating the results” require more interpretation, such as the assessment of “types of players” (p. 158), e. g. in the investigation by Klug and Schell (2006), competitors, explorers, achievers, jokers, and performers are labeled separate types of players. These categories result from the combination of above mentioned “distinguishing units” in the experimental participants’ behavior. In the words of Newell and Simon (1972), the content analysis provides the elements to the “problem space” of a video game as an empirical paradigm. Consequently, the empirical behavior can be seen as a combination of this problem space’s possible states. Similarly, several authors proposed game taxonomies based on content analysis of gameplay, that often relate to general theory of games: Järvelä et al. (2014, p. 94) mention “competition, chance, simulation, and vertigo”; “narrative, ludology, and simulation”; or “the level of chance vs. skill, fiction vs. non-fiction, and physical vs. virtual”.

Without a doubt, these steps of content analysis are necessarily preceding any investigation based on Live Streaming data (in so far as it – exemplary – contains video games). Yet, as Oswald, Prorock, and Morphy (2014) comment, this “common mainstream psychological research strategy of evaluating game content in order to understand games and to determine psychological effects on players has

inherent limitations” (2014, p. 120). As a complementary contribution, experiential or behavioral observation are required. However, the direction towards this matter is already tacitly acknowledged by Schmierbach (2009, p. 150) as he says that “[t]wo particular challenges - interactivity and multiplayer options — warrant further discussion” (see also Järvelä et al., 2014). Without this turn towards behavior and experience, video games become just another experimental paradigm added to the list of problem solving tasks, entirely missing out on the valid potentials of video gaming as well as Live Streaming research. It is especially interactivity that qualifies playing video games as complex problem-solving and dynamic decision-making (Rach & Kirsch, 2016).

Within the second methodological point of view in video gaming research, behavioral observation differs from experiential observation. From the standpoint of cognitive psychology, only the prior can be affirmed without fundamental concerns. An elaborated attempt on such behavioral observation can be found in Cowley and colleagues (2014) who propose the PPAX framework that connects so called “experience patterns” (measured as psychophysiological data and therefore rather “behavioral” than genuinely “experiential” in the present meaning) with “patterns of events” (in the sense of “distinguishing units” of content analysis). By the authors’ judgement, “the experience of gaming is not only a series of individual emotional reactions, but also of patterns of cognitions and emotions, all of which are reflected in the player’s real-time physiological reactions” (p. 42). Consequently, they aim to integrate psychophysiological observation from the person playing the video game with the content analysis of the video game’s output, creating a genuinely cognitive psychological contribution to video gaming research. In behavioral observation of this kind, content analysis’ independent variables are used to predict behavioral dependent variables, such as the actions in gameplay or psychophysiological – especially neuropsychological – activity.

### The problem of subjectivity

Despite proposing a handy and fruitful approach to the observation and investigation of video gaming behavior, the authors subscribe to a neuro-reductionist account of experience, identifying it with psychophysiological activation. The main concern about this endeavor has to be the subjectivity of experience. Cowley et al. attempt to account for it and try to solve the matter by adopting computationalism: “The subjectivity of the experience of play means that measurements cannot be easily validated or verified. [...] Thus, player learning needs to be accounted for by some refinement of machine learning” (p. 55). This solution to the problem of subjectivity has been widely accepted among cognitive psychologists since the paradigm of cognitive psychology subscribes to a mechanistic view understanding cognition as information processing (Hutto, 2008). PPAX is a data driven approach with high aspirations. Yet its results do not point towards epistemology and methodology but remain within the predominant domain specific investigations. Its main contribution is practical, e. g. allowing to enhance game designs. From a less orthodox point of view, such as phenomenology this solution cannot authentically suffice to account for subjectivity. Without this critical step, video games research based on mere behavioral observation might still be able to deliver a productive contribution to cognitive psychology, inves-

tigating “a multitude of concepts central to psychology, from memory encoding, to social skills and decision making” (Järvelä et al., 2014, p. 85), but it will not redeem its critical epistemological and methodological potentials.

Beyond cognitive psychology, not only the observation of behavior but also of experience is necessary to comprehend video gaming and its players. Several investigations on video games have tried to approach this rather opaque and vague issue which cannot be addressed by behavioral observation alone. For example, Ward and Sonneborn (2009) described the great variety of creative expression in virtual worlds where “people represent themselves and interact with others” (p. 213). These aspects transcend the linearity certain video games appear to contain by concept. Creativity in video games is an ideal indicator for what can be observed beyond the structural analogy to paradigms of experimental psychology.

More directly concerned with the possibility of experiential observation, Oswald et al. (2014) investigate the “perceived meaning of the video game experience”. The authors attempt to inquire the experiential and social aspects of gameplay by using open-ended questions. Explicitly criticizing the limitations of content analysis, they conclude “that asking players about their perceptions of their game experience, rather than asking them to rate the content of the game played, can be a valid research tool” (p. 121). Another approach to the experiential dimension of video gameplay is Tanenbaum’s “Hermeneutic Inquiry for Digital Games Research” (2015). In order to get hold of subjective experience, he frames “digital games as texts” (p. 59) in the tradition of hermeneutics (especially Gadamer) and close reading. This allows him to account for subjectivity through the meaning of the text as its manifestation: “In a digital text, the reading must be able to account for the indeterminate nature of the experience” (p. 69). Moreover, his approach allows to deal with the above mentioned problem of interactivity by framing it as “changing the ordering of a reading, as is the case in hypertext fiction” (ibid.).

Although these contributions approach the pertinent problem of subjectivity as a central epistemological topic, they cannot discard the methodological critique executed by cognitive psychology over the course of the last decades. Oswald et al. (2014) and Tanenbaum (2015) do not sufficiently consider the limitations of self-descriptive methods, such as introspection and think aloud protocols. Throughout the history of psychology, these methods have been the occasion of major controversy about their applicability – and thereby: about the possibility of psychological research on crucial topics, such as cognition, consciousness and the self. Video gaming research cannot neglect the difficulty to obtain a valid access to subjectivity. However – and this is the claim of this article –, research on new media, such as Live Streaming, can provide an incremental contribution to this eminent and everlasting controversy. Before outlining the way in which Live Streaming can augment video gaming research to contribute to the epistemology of psychology, a word on this controversy.

### The controversy about the validity of self-description

The second introductory step invokes the history of psychological research on self-description. The historical preface of the epistemological problem at hand reaches back to the origin of experimental psychology in the early twentieth century. A crucial theoretical antinomy between the psy-

chological laboratories of Leipzig and Würzburg was the rejection of the observability of higher cognition by Wundt, on the one side, and introspectionism advocating the observability of higher cognition by Külpe and his colleagues (see Galliker, 2016; Wendt, 2020), on the other. While Wundt proposed a psychological methodology that traces back experience to elementary behavior which could be demonstrated in laboratorial experiments, the psychology of thought elaborated complex instructions for experimental subjects to accurately describe their self-perception, such as the “systematical experimental self-observation” (Ach, 1905).

### On introspectionism

These methods to observe higher cognition proposed by the Würzburg school are the prototypical case of introspection. Its basic structure contains the exposure of the subjects to an experimental scenario, usually a problem solving task, and afterwards a protocol of their experience in dialogue with the scientist. The main challenges to improve introspection which have been faced by the Würzburg psychologists, were of a technical kind. A major concern was the relation between thought and language since the protocols of introspection had to be elaborated in verbal exchange while cognition was assumed to be of a different nature. By experimental manipulation, the experiential circumstances were to be varied in order to control the congruence between linguistic description and experience (see Fahrenberg, 2015). The Würzburgian psychologists proposed the education of participants as an important step to improve the reliability of introspection. Experts of self-observation were thought to be able to pay attention to the crucial changes in cognition more closely and to apply a vocabulary that precisely represents the involved processes.

Wundt’s comment on the introspective attempts in Würzburg was thoroughly critical. In his opinion, the procedures were lacking experimental control and could not be repeated, therefore being unreliable. He was demanding strictness in experimental designs and the foundation of empirical work in elementary processes that could be manipulated and observed unequivocally. The initial direction of experimental psychology towards laboratorial settings with meticulous control of stimuli, as elaborated by Wundt himself, was clearly opposed to the introspective approach.

The course of further development in behaviorism and cognitive psychology mainly favored Wundt’s approach, but also brought forward valid critique of introspectionism, such as most prominently by Nisbett and Wilson (1977), which appeared decisive, especially from the standpoint of the prevailing paradigms, ultimately leading to “the disappearance of introspection” (Lyons, 1986). The main doubt against methods to investigate higher cognition is the fallibility of self-description: It is not evident insight into the own mind guiding the observations of subjects, which is subsequently corrupting all self-descriptive data. Nevertheless, the validity of introspection remains to be a topic even after the method has been renounced by the mainstream scientific community. Recent publications reexamine the possibilities to make use of introspection in contemporary psychology, such as Jäkel and Schreiber (2013). Still, introspection is only discussed as a methodological reference, not as an equal alternative to the established forms of psychological investigation.

Think aloud protocols, however, the second major self-

descriptive method, have not been renounced quite as strictly as introspection within cognitive psychology. Their usage has been popularized in the course of the growth of problem-solving research following the methodical innovations by Simon and Newell in the 1960s (for a discussion of the methodological relation between problem-solving research and psychology of thought, see Wendt 2019). The first major difference between the two self-descriptive methods is that, in think aloud protocols, there is no immediate conceptual influence onto the data. For the case of the classical experiments of the Würzburgian psychology of thought, this means that the thought-protocols of the educated participants were imbued with interpretations based on their own theories of mind. Second, think aloud protocols are usually created during the experiential episodes of the subject and not afterwards. Consequently, think aloud protocols can be understood as mere protocols of (verbal) behavior over the course of a psychological experiment.

All the same, the misdirecting name of think aloud protocols symbolizes an inherent ambivalence. The apparent claim of think aloud protocols is to offer some access to thinking. Nevertheless, contemporary psychology mainly utilizes the method to observe behavior, not to investigate higher cognition. Likewise, the above introduced separation between behavioral and experiential observation delimits the subject matter of think aloud protocols – strictly speaking, they are used as “speak aloud protocols”, a title that demystifies and clarifies the method’s current application, but at the same time reveals that the method’s current interpretation has only a small conceptual scope.

The rich body of recent work on think aloud protocols (e. g. Barkaoui, 2011; Elling, Lentz, & De Jong, 2012; Koro-Ljungberg, Douglas, Therriault, Malcolm, & McNeill, 2013) does not coincide methodologically with the aspirations of the Würzburg school to observe higher cognition. In other words, cognitive psychology has excluded the introspectionist approach to observe experience for methodological reasons and the think aloud research used in cognitive psychology is not concerned with experiential observation. In cognitive psychology, self-descriptive methods exclusively try to observe behavior.

### The phenomenological approach to self-description

Beyond the mainstream tradition of psychology, however, the endorsement of self-description by phenomenology remained unharmed by the attempts of critique and dismissal. The primary reason for this dissociation between different traditions of theory is that phenomenology was never depending on experimental sciences but continuously drew on philosophical discourse. Consequently, experimental methodology remained secondary to phenomenology. The empirical claims of phenomenology rather originate from its fundamental conviction that only experience is an original source of insight. Consequently, phenomenological thought bears the potential to inspire new directions in experimental psychology. This understanding structurally coincides to a certain degree with self-descriptive methods as they were proposed by the Würzburg school, offering a separate attempt to advocate self-description as experiential observation. To put it differently, since critique of self-description does not apply to phenomenology, the discussion about these the value of these methods can be renewed. It transgresses to a different epistemological level. Doubts against the historical dismissal of introspec-

tion arise.

Notwithstanding, this expansion of the theoretical horizon of psychology in the direction of phenomenology does not imply a return to naïve self-descriptive methodology. Phenomenology does not uncritically rehabilitate the empirical mistakes caused by irresolute or speculative experimental designs (for an attempt to reconcile phenomenology and psychology of thought in experimental psychology, see Wendt, 2020). However, it allows for a review of the discourse about self-description that has been silenced prematurely, discarding crucial empirical potentials within experimental psychology.

The fundamental endeavor to criticize the rejection of self-description as experiential observation can be found in Pettimengin and Bitbol (2009). The authors show that a rehabilitation of self-descriptive methods requires a third point of view which deviates from both, the naïve rationalist attitude that claims the evidence of thought and the naïve sensualist attitude which claims the inaccessibility of thought. What has traditionally been called thinking, is a complex phenomenon that needs to be revisited from a more elaborated epistemological perspective. Investigating possibilities to reutilize self-descriptive methods does not require to reject the empirical critique carried out by cognitive psychology, nor to approve the naïve concepts of infallible comprehension of one's own state of mind. However, cognitive psychology's insights are detached from their epistemological premises. To support self-description does not imply an uncritical affirmation but an integrated critical view that considers a usage of self-description that has not been explored yet.

This renewal of controversy about self-description is not exclusive to phenomenology. There are several other epistemological traditions that propose a comparable third way of approaching thought. Cultural-historical psychology, established by Vygostky (1934/1986), understands thought as the internalization of communication via egocentric speech. From this point of view, understanding thought becomes accessible when approaching it through intersubjectivity. Equally, symbolic interactionism assumes the priority of interaction: "If we had not talked with others and they with us, we should never talk to and with ourselves" (Dewey, 1958, p. 170). Another similar and more recent approach is Dialogism as proposed by Linell (2009). He understands cognition as embedded, enacted, extended and ecological, thereby claiming that it is accessible to scientific observations. In active externalism, a cognate contemporary concept by Clark and Chalmers (1998) is labeled "extended mind" (in the broader context of the philosophy of embodiment, see Fuchs, 2017).

These alternate traditions share the epistemological common ground to oppose cognitive psychology as monologism. Following Steffensen (2015, p. 110), "monologism is not a theory, but rather a handy term for a conglomerate of long-held views in the communicative and cognitive sciences", such as the information processing model of cognition, the transfer model of communication, and the code model of language. For example, monologism conceptualizes language as internal, instrumental and individual and therefore inaccessible for observation. The very basic epistemological assumption of monologism is the primacy of the first person perspective. This view can be supported, for example, by the ontological assumption of a monadic self as the core of personal existence as it has been assumed in rationalism, or by the concept of private agency of all cognitive processes in empiricism. Consequently, mo-

nologism cannot consider experiential observation as valid or possible. By opposing monologism, other epistemological approaches implicitly scrutinize this methodological restriction. As a result of the critique, the rejection of self-descriptive methods is exposed as the consequence of its epistemological premises.

Nevertheless, phenomenological thinking offers a decisive further asset for theoretical psychology that is not contained in the other traditions. The extensive body of reflection on psychological problems in the history of phenomenology anticipates many possible epistemological objections. Phenomenology does not commence its thought with the epistemological foundations of psychology but reaches further to the philosophical origins. The work of the original phenomenologists, such as Edmund Husserl, Martin Heidegger, Maurice Merleau-Ponty, or Jean-Paul Sartre (see, e.g., Zahavi, 2005), deals with the question at hand as part of more fundamental reflection. Already one of the very first phenomenological contributions, the prolegomena to Husserl's "logical investigations" (1901), were dedicated to the critique of psychologism – the reduction of logic to psychology. In other words, phenomenology does not only oppose cognitive psychology's take on self-description, but also delivers extensive arguments that consider the roots of the opposition to monologism. However, this cannot be the place to replicate the entirety of phenomenological thought, but to offer exemplary insight. Overall, there is no use to carry these debates deeply into psychology. Their place will remain to be the philosophical reflection. But these remarks still are important because they demonstrate that there exist alternate schools of thought that are well-founded. However, the practically more exigent question is how these alternate views can augment empirical psychology regardless of its contemporary affiliation to cognitive psychology. Throughout the twentieth century, phenomenology has unsuccessfully tried to have a vital influence on empirical psychology. Its traces are the so-called "phenomenological psychology" as a side issue to the main developments in the discipline (see the exhaustive historical analysis by Spiegelberg, 1972). But media psychology opens a new window of opportunity for further inspiration by phenomenology.

## Psychological perspectives from Ethnomethodology

The two introductory steps set a context for the possible advances of psychological research. Experiential observation and self-description are two original issues within psychological methodology. From the methodological standpoint, these possible advances are of a qualitative semblance. They do not immediately favor greater mathematical yield from data but an enrichment of its interpretation. Due to the current focus on domains of behavior, however, psychology research commonly prioritizes the prior and refuses the latter. Only to prove any omitted qualitative potentials would not pose an actual contribution. It requires an epistemological justification of possible benefit from a revision of these two issues. Based on elaborated philosophical reasoning, phenomenology proposes the (re-)integration of both approaches into psychology.

Yet, even if the arguments of phenomenology on these issues were generally accepted by psychologists, this would not evoke any factual change to empirical psychology – this constraint is widely underestimated in philosophical discourse. The epistemological justification alone is not sufficient to motivate a development in scientific systems, such

as psychology (as pointed out in the debate about critical rationalism by Lakatos against Popper, see Lakatos, 1978; Macho, 2016). Additionally, it requires a methodological program that employs the epistemologically demonstrated advantages. This program cannot consist alone of sheer ad hoc propositions as frequently and vaguely arrogated in purely theoretical debate. Empirical progress must be founded on a methodological system that can unite the epistemological innovation with the state of the art. Returning to the already standards of research which have already been overcome, e. g., the systematical experimental self-observation, does not serve the purpose to benefit psychology, either. A reactionary step like that would not correspond with the possible improvement that has been sketched out based on phenomenology. The past applications of self-description can only be seen as a critical counter-image to the novel efforts.

A similar situation of implementing phenomenological thought to empirical science has already occurred in sociology. After Schutz' comprehensive effort to apply phenomenological thought to the discipline's epistemology, it was upon Garfinkel's "ethnomethodology" in North America and Berger's and Luckmann's "sociology of knowledge" in Europe to establish empirical programs (see Eberle, 2012). By now, both of these programs spawned fruitful traditions of empirical research. Still, as Graumann (1991) pointed out, a similar implementation of phenomenology has still not succeed in psychology. Yet, psychology can learn from the ethnomethodological tradition and adapt the blueprint for empirical implementation of phenomenological thought. These circumstances are decisive in the application of media psychology in decision-making research. Here, phenomenological thinking can redeem the lost potentials of experiential observation which reside in self-description after it was omitted in twentieth century's psychology due to the lack of adequate data sources. Live Streaming serves as a prime example for this potential as it is a digital data source to be explored by media psychology. The missing link is an empirical program that is directed towards this possibility. Ethnomethodological practice supplies phenomenology with the skeletal frame.

The relation between ethnomethodology and the question of experience There is no great value to a lengthy introduction to ethnomethodological concepts. They are already available in literature and mostly oriented on sociological application (see, e.g., Button, 1991; Lynch & Peyrot, 1992). The use of ethnomethodology for psychology resides in the contribution of the theory to the adjustment of psychological methodology and the phenomenological review of psychological epistemology. On a side-note to bypass misunderstandings, it should be added that "ethnomethodology is not a new methodology, but rather a theoretical perspective" (Churchill, 1971, p. 185). Still, in this context the most useful part of this theoretical perspective is its methodological contribution to an application of phenomenological thought in empirical sciences. Therefore, the benchmark is self-description and the aim is to renovate it, although not in the way in which they have been used so far in psychology, but rather, through transformation by phenomenological reflection. The prospect of this approach depends entirely on media psychology: As shown above, the failure of self-descriptive methods is not a result of their epistemological unsuitability but of the deficiency in observational opportunities. These opportunities are now given through technological progress, such as the emergence of Live Streaming.

Thus, on the one hand, the phenomenological understanding of self-description is different from introspectionism (such as Würzburg school), on the other hand it differs from cognitive psychology and its Wundtian predecessors. The vital difference from both other standpoints is the object of investigation. Phenomenology does not seek to inquire higher cognition as conceptualized by experimental psychology, but the essential constitution of its even more fundamental experiential compounds, such as pre-reflective consciousness. This is an implicit critique of introspectionism which postulates its subject matter as an object of experience although it is an abstract concept that cannot be confirmed by phenomenological analysis. At the same time phenomenology offers a critique of cognitive psychology's sensualism which claims the validity of physical measurement of behavior while neglecting that the original source of all data is experience.

On the matter of self-description, the decisive leap into phenomenology is taken by regarding Heidegger's concept of "Dasein" (1927/2006), in Sartre's (1944/1993) words, human reality: "réalité humaine"; or Schutz' concept of "lifeworld" (Schutz & Luckmann, 1973). In short, the existential situation of the experiencing subject does not occur in lucid confrontation with the material immediacy of what is merely existing, but mediated by an approach to the world that perceives things and objects, not as essences. This "natural attitude" (Schutz & Luckmann, 1973) of everyday life's lifeworld is a way of experiencing that which conceals the very existential situation in which every subject is originally involved. However, in certain occasions, the immediacy of being appears through the veil of everyday life, for example, in experiences of existential fear. If so, the rules that constitute the natural attitude of everyday life appear as the structure of being-in-the-world (Dasein). In reference to the question of self-description, it is a naïve fallacy to assume congruence of the object language which is used by subjects in order to describe their experiences with the language of psychological description. The experimental situation cannot be encountered by the subject with the same attitude as it is encountered by the scientist. Self-description may not be interpreted as genuine expressions of what is really happening, but as expressions of a spontaneous creation of an order to things in being-in-the-world (Dasein). Reading think aloud protocols and introspection as objective communication inevitably leads to a misunderstanding of the actual experience. These protocols and dialogues with the experiencing subject are the documentation of the spontaneous emergence of everyday life as order that transcends the experimental design.

Ethnomethodology serves to discover this exact process of creating rules that structure everyday life and, thus, analyzes the order that is fundamental for the experimental situation. Rules and norms are considered "methods" from the subject's experiential point of view: "the most important assumption that drives ethnomethodological approaches is the methodic and orderly character of everyday activities that appear chaotic and messy at first glance" (Reeves, Greiffenhagen, & Laurier, 2016, p. 23). In self-description, psychology does not observe immediate processes of thought and action. Behavior and experience are always located within an order. In the "natural attitude", this order is generated pre-reflectively. This does not exclude linguistic processes. However, the verbal acts cannot be seen as neutral communication because they are a constitutive part of the creation of order: "Ethnomethodologists analyze 'indexical communication' (as opposed to 'ob-

jective communication<sup>4</sup>) and use the documentary method of interpretation” (Gallant & Kleinman, 1983, p. 5) – “In the documentary method of interpretation the individual uses conversational utterances as documents to create a fictive sense of social order” (ibid.). As a result, the meaning of the situation becomes salient. For psychology, this means that there is no sufficient reason to assume that different subjects who partake in the same experience are actually comparable. The comparison is not enabled by the design alone but must be traced back to the individual case. The observation of experience is not contingent but a sufficient condition for holistic psychological research.

The most important methodological consequence of ethnomethodological thinking is to focus on how subjects intuit the situations that they encounter instead of investigating what they are doing on the material level of experimental design. This shift equals the above mentioned shift from domains to types of behavior and experience. Observational setups in different contexts do only instantiate occasions for the creation of order. The main effort should not be to simply obtain a greater variation of occasions but a greater variation of types resp. “typifications” (Schutz & Luckmann, 1973). Psychologically speaking, focusing on the creation of order in experience allows to understand the normative and cognitive construction of events. Ethnomethodologists concentrate on social interactions as subject matter, yet ultimately “[i]n looking for an underlying structure, ethnomethodologists bracket interaction, effectively making actors and their audiences epiphenomenal” (Gallant & Kleinman, 1983, p. 12). This means that social interaction primarily is nothing but the location of the spontaneous emergence of order and “nothing is ‘brought in’ from outside the interaction” (Dennis, 2011, p. 351). Every situation is the scenery to the accomplishment of reality. As Garfinkel, the founder of ethnomethodology, concludes, these circumstances imply “that actors make their actions observable, tellable, reportable or—in his famous wording—‘accountable’” (Eberle, 2012, p. 288). In self-descriptions, psychology can reveal the traces of the creation of order in being-in-the-world which follows the rules of the “natural attitude” or possible other attitudes which are evoked by the situation.

The methodological utility of ethnomethodology for psychology

For the methodology of psychology that is concerned with self-description, this means that the attention shifts from the – naively assumed possible – observation of objective experience in an experimentally given order to the observation of the creation of subjective order. This approach does not quest for higher cognition, as the Würzburg school did, since the situation and not the monologue is primary, “thinking is derived from communication” (Eberle, 2012 p. 284). It rather investigates “the grammar or logic which orders or systematizes the articulation of acts, and in particular, speech acts” (Gallant & Kleinman, 1983, p. 8). Think aloud protocols and introspection cannot be seen as direct access to immediate behavior, anymore. They bear witness to the formation of social order which constitutes the meaning of the words in which they are articulated. Despite losing this naïve claim on an observation of immediate experience, self-descriptive methods only gain influence because they are recognized as the site of the formation of order which even precedes the experience itself. The investigation of idiosyncratic mental situations in subjective life must be complemented by the understanding of structures that precede these situations. In a think aloud

protocol, every spoken word is evidence of the experiential order which (self-)constitutes it, but the single mind’s cognitive process itself remains absconded. It can become object to speculative models of cognitive psychology, but in the end, all relevant processes occur in and as the order that constitutes them. Regardless of whether it is a speculative reality, such as neurons, electric circuits or eternal souls, that operates, the content is the experiential order.

This shift has a distinct impact on the methods’ use. Ethnomethodological self-description is not used as a data source for behavioral observation: word count, fluency or vocabulary have no transparent meaning by themselves. Instead, ethnomethodology studies the variety of order in human experience – as experiential observation. Therefore, the use of self-description cannot target the experimental design as loosely as it is currently applied in psychology anymore. On the contrary, the value of observation becomes dependent on how well the design can serve the self-description. The course of methodology has to be inverted. For example, experiments that preemptively frame the order of the situation by their setup do not favor the use of self-description, no matter the content. The issue of compliance in psychological experiments transforms from a question about the quality of data into a constituent of experience and its observation.

At this point, the pieces fall together as video game research and Live Streaming unfold their remarkable contribution to psychology under the conceptual influence of phenomenology and ethnomethodology. Video games are games. From an ethnomethodological perspective, Kew (1986, p. 305) writes that “games are subsumed under the paramount reality of the social world - hence the so-called paradoxical nature of games”. Game theory highlights that games offer a space for artificial rules within the higher-level order of everyday life. In ethnomethodological terms, they offer a primary example to observe the encounter with novel situations in which subjects create order. Still, as Dennis emphasizes, this gaming context remains to be only contingent as it as an exemplary domain: “ethnomethodologists are suspicious of the notion of context, as it rarely provides for the accurate description of particular settings of interaction. Instead it renders particular interactions ‘instances of’ broader sociological or lay categories” (Dennis, 2011, p. 354). However, the aim of research that employs self-description should be redirected to the observation of the emergence of order in experience. Consequently, situations in which the interaction with novel rules is pertinent are ideal material for such investigations. These methodological circumstances qualify Live Streaming as a promising data source because they are structurally equivalent to self-description and regularly contain video games as their subject matter.

Reeves et al. (2016) deliver a comprehensive review on ethnomethodological investigations of video gaming. Considering various prior publications, the authors state that the observation of video game play allows a prime access to, e. g., sequentiality as a constituent of social order:

“Simple but exquisitely timed sequences actions constitute individual players’ own analyses; analysis that is not a purely cognitive phenomenon (hidden inside a player’s head), but that is visible through the unfolding actions on the screen (e.g., whether to run left or right; stop or continue running). Consequently, through their on-screen actions, players can build up a shared understanding of the ongoing game activity. Put another way, the players display in, and through, their torquing of torsos and changes

in forms of talk that they are both oriented toward this point in the sequence as an opportunity for further actions to take place away from the focus of the screen” (Reeves et al., 2016, p. 14).

Furthermore, they conclude that “[t]he point of note is, once again, to highlight the interdependence of actions ‘in the game’ that are available on-screen and player talk as an ongoing conversation that analyses play ‘at the screen’” (p. 15). Here, the various previously distinguished aspects of video game research unite. Content analysis and behavioral observation convey experiential observation as located by phenomenology in each present situation. The remaining methodological gap is to investigate these processes in the natural environment of digital experience which is the crucial contribution of media psychology.

### The natural environment of digital experience

As shown before, Live Streaming is a data source that resembles the data sources used by the traditional methods of self-description, think aloud protocols and introspection. Moreover, Live Streaming is a source of naturally occurring data sets (NODS) and Big Data. NODS are data that occur as a product of social institutions of any kind and can be investigated by empirical sciences, such as “patterns of website links, dictionaries, logs of group interactions, collections of images and image tags, text corpora, history of financial transactions, trends in twitter tag usage and propagation, patents, consumer product sales, performance in high-stakes sporting events, dialect maps, and scientific citations” (Goldstone & Lupyan, 2016, p. 548). The advantages of NODS are various: external validation for experiments, distinguishing theoretical accounts of real-world outcomes, discover patterns of information latent in environments, create stimuli for experiments, inform the construction of computational models of cognition (see Goldstone & Lupyan, 2016). This usability of NODS originates in their ecological validity which is also the key feature to enable the ethnomethodological account on the field.

#### The subject-matter of Live Streaming as Big Data

Live Streaming is not designed to serve psychological investigations. Its properties coincidentally concur with the data requirements of self-descriptive methods (even surpassing the methodic standard of think aloud research which, until now, only optionally employs video recording). From the standpoint of theoretical reflection of experimental design, a decisive feature of data must be the standardization of production. For Live Stream material, this standard, however, is met in detail equivalent to experimental practice of psychological laboratories. The main difference between Live Streaming and traditional data sources for self-descriptive methods is that the former, until now, cannot be object to experimental manipulation. Yet, this is the case for all types of NODS. It is not necessarily a disadvantage. It only reduces the variability of hypotheses that may be tested with the available data. The major advantage, however, is, that NODS host “the possibilities of discovering principles of behavior without conducting experiments” (Goldstone & Lupyan, 2016, p. 548) – an enterprise which concurs with phenomenology and ethnomethodology.

In other words, not to satisfy the condition for experimental manipulation does not disqualify the data. It necessitates a profound and detailed understanding of the situation which is encountered by subjects in a naturalistic environment, an expertise promoted by ethnomethodol-

ogy: “an ethnomethodologist must not only be acquainted with the field but be a competent practitioner of that type of work setting him- or herself” (Eberle, 2012, p. 294). This demand is familiar to a recommendation proposed by media psychology: “Having firsthand experience enables scholars to make informed decisions about the suitability of available games as stimulus material for research purposes” (Elson & Quandt, 2016, p. 54). The NODS of Live Streaming remain opaque without advanced qualitative methodology which serves to prepare the psychological interpretation. But this challenge can be dealt with by employing non-reductionist concepts.

Upon liberating the empirical program from the limited scope of exclusively experimental research, the actual opportunity inherent to investigating Live Streams can be cherished. Goldstone and Lupyan (2016, p. 552) label research based on NODS “cultural neo-ecological psychology” which relates to the tradition of ecological psychology. The focus is to explore rich naturalistic environments that offer access to the observation of genuine behavior based on a theoretical take on what a situation is. Such a naturalistic environment is present in Live Streaming, it is the natural environment of digital experience. In a psychological laboratory filled with computers, on the other hand, an artificial atmosphere prevails which is evoked by the institutional circumstances of the laboratory. In such cases it is ensured and required that the subject is aware of this context. A forcible effect on the subject’s experiential order is dominant. Streamers, on the other hand, are immersed into the situation without any prior coinage of social rules as an experimental setup. In any other situation with an equivalent degree of naturalism, it has been impossible to reproduce the same consistency with data from self-descriptive methods. Technological advance created a primordial field of experiential observation in a natural environment of digital experience. These circumstances allow (media) psychology to respond to the criticism that has been articulated by ecological accounts throughout its history, classically by thinkers such as Lewin (for a controversial take on the notion of the situation in the history of psychology see Schott, 1991).

The most important consecutive question is how research of this kind relates to the established psychological methodology. A defensive approach to advertise a possible benefit from naturalistic observational sources, especially in so far as qualitative interpretation prevails, has been to use them in an exploratory or validating manner. Either they serve to procure supplements of future laboratory research or they scale up laboratorial investigations to a bigger circumference. A more confident approach to the usage of NODS can be to emphasize the autonomy of their impact. Ultimately, it is pragmatically impossible to reproduce a truly naturalistic setting in an experimental laboratory. On the one hand, laboratories cannot substitute natural environments, and on the other hand, “NODS should supplement, not supplant, experiments” (Goldstone & Lupyan, 2016, p. 551). There is no inherent priority or hierarchy among them, the application of these methodological alternatives depends on the subject matter. Research traditions cannot hot-wire this phenomenological principle of subject adequacy. In other words, methods have to serve the subject matter and should not preempt it.

## Difficulties for the new research program

To advocate the implementation of naturally occurring data sets, such as Live Streams, ultimately leads to an endorsement of ambitious psychological research. The potentials that can be made available by exploiting new media will only be redeemed by qualitatively elaborated research approaches and substantial hypotheses. A blind application of methods on new data sets is committed to its unconsidered methodological scope. The qualitative face of Big Data remains to be the face of analogous psychology if media psychology does not emancipate from its predecessor which could not anticipate the recent technological developments. One risk about a merely fragmentary advance in media psychology is to reduce Big Data to its quantitative side which can be labeled “bigger is better ideology”. In the words of Goldstone and Lupyan (2016, p. 563):

“Beginning with what this topic is not about is arguing for a ‘bigger is better’ ideology. In particular, we have eschewed framing this topic in terms of ‘Implications of Big Data for Cognitive Science’ despite the current zeitgeist surrounding ‘Big Data.’ Bigger is not necessarily better when it comes to data (e.g., Roberts & Winters, 2013 for discussion). Many computer scientists interested in Big Data are interested in developing technologies that allow users to process tera-, peta-, and exabytes of data. However, some of the data sets that have been most psychologically revealing, like John Anderson’s emails and taxi drivers’ logs, are mere megabytes or less”.

It is important to see that the current approaches to utilize media psychology’s potentials do not yet exhaust them. Schmierbach (2009, p. 160) recommends the “careful training of players”. Such an approach might be creative and bold but needs to be compared to the efforts by the Würzburg school which relied on experts of introspection. The difference between amateurs of introspection and experts is just gradual. In order to reintegrate self-descriptive methods as experiential description, however, psychology requires a leap, not a step. Tanenbaum’s (2015) hermeneutic attempt also does not sufficiently regard the challenges to self-descriptive methodology. Psychology has accumulated valuable critique of introspection and think aloud protocols throughout a century of research. This critique cannot be the enemy of self-description but purifies empirical methodology of deficient application. The author employs naïve introspectionism which has been overcome methodologically. To use self-descriptive data requires an elaborated foundation on phenomenology that directs the method towards the implicit constituents of experience in being-in-the-world and the “Structures of the lifeworld” (Schutz & Luckmann, 1973).

The theoretical reflection on self-descriptive methods based on new data sources has led to the submission of a neo-ecological account of media psychology inspired by ethnomethodology. These abstract contemplations must be complemented by a practical perspective that displays the immediate empirical utility of such thinking. The features of such neo-ecological and phenomenological self-description research demonstrate two advantages. First, they grant access to the investigation of phenomena that have been excluded from psychology by the paradigm of cognitive psychology. This is the realm of experiential observation. Second, they cut the Gordian knot of naturalistic research designs by encountering the requisite standardization of laboratory research in the field. However, as a matter of practicability, it is not clear yet how such research can be performed. Some exemplary problem so-

lutions can give an idea.

## The challenges of Live Streaming research

There is only little use to an unprepared examination of Live Streaming material. It can give an introductory impression of its structure to introduce the scientist to the medium. But this cannot and should not be the launch of a critical investigation because this would be nothing but the notorious exploratory survey, but even more fatally, it would mean to concede to the naïve perspective of everyday lifeworld and being-in-the-world. Ethnomethodologically revised self-description seeks to encounter the breaking points of experiential order. These breaking points are rarely encountered in laboratorial investigations because the experimental social order does not depend on the individual’s experiences, it is too stable.

From an ethnomethodological point of view, “members of the society are continuously engaged, without hope of relief, in creating and maintaining the social and natural world” (Churchill, 1971, p.185). In the setting of a laboratory, this is a rather simple task because the situation is open and spontaneous for the subject who just engages passively in whatever experience he might encounter (for a phenomenological reflection of the laboratory as the place of situated experience, see Wendt, 2018). In the setting of Live Streaming on the other hand, the Streamer is continuously exposed to the obligation to maintain the situational order by herself; e. g., in the case of a video game “[o]ne has only to consider, for example, the reactions towards undue violence in games to be reminded that games [...] are fragile and permeable enterprises, defined as they are by constraints on conduct and also by action opportunities that do not apply in everyday life” (Kew, 1986, p. 308).

An outburst of fury is nothing to regularly happen in an experimental laboratory – if it ever happens, it is most likely that the experiment will be interrupted – but it is a common event in Live Streams. Experimental settings are not existentially fragile but integrated and stable scenarios. In its starting point, research on Live Streaming, ultimately, transcends the structures of lifeworld by empirically determining the breakages of the given order. This approach avoids the psychological tendency to affirm the given social order. Wundtian methodology assumes that the elementary processes underlying the macroscopic phenomena are essentially neutral and independent of the situation. Yet, from a phenomenological point of view, this is a fatal assumption because these elementary processes are equally influenced by the experiential rules of a laboratorial situation as the higher order phenomena they aggregate.

The moment of a collapse, emergency, or confusion of the experiential order, however, is not the target, but the access of research on self-description. Such moments themselves are also phenomena that are object of experiential observation. They are the empirical occasion for a phenomenological bracketing of the circumstances which isolates essential constituents of experience. This experiential observation must be led by a concurrent construction that frames the horizon of such constituents (see Holzhey, 1991, p. 9). In other words, it requires an educated expectation of what to encounter at the fracture of lifeworld. In the case of a problem-solving situation, for example, the notion of the problem as an ordered situation appears when the subject suffers a loss of experiential stability. Goldstone and Lupyan (2016, p. 549) enumerate several of such possible subject matters: “principles of judgment, perception,

categorization, decision-making, language use, inference, problem solving, and mental representations”.

Under these circumstances, the laboratorial situation is not the gold standard of observation but a reference. Live Streaming offers unique observational opportunities that cannot be replicated in the laboratory. Some streamers, such as the Canadian Octavian Morosan (see [https://www.twitch.tv/nl\\_kripp](https://www.twitch.tv/nl_kripp)), have uploaded material of more than 10.000 hours over the course of a decade. These individual cases are not exceptional to the medium of Live Streaming. Laboratorial investigations can only complement research that is based on Big Data of such extent. Ultimately, the value of ecological validity must be reframed. Without phenomenological reflection, the notion of ecological validity remains to be abstract, a mere property of data. Seen from the perspective of ecological psychology, however, naturalistic settings are a tempting liberation to breach out into the “real-world data sets that affect and reveal human behavior” (Goldstone & Lupyan, 2016, p. 549). Media psychology offers the opportunity to embrace this liberation without forfeiting precision.

Indubitably, the concern of the “(un)trustworthiness of the data” (Greiffenhagen et al., 2015, p. 469) is not eliminated but its further solution is methodological reflection since the basic concern of standardization is dealt with in new media, such as Live Streaming. Equally, the “data collection process” (Tanenbaum, 2015, p. 75) must be considered an obstacle to establishing self-description. But this problem is not essentially different from data collection in traditional methods of self-description. These problems can only be temporary because the continuous technological advance favors the program of such self-descriptive research. Elson and Quandt (2016) already propose modding as a possible solution to increase the complexity of available data sets: “the most important properties of this data are that it be accessible, easily perused, and easily cited” (p. 76).

All in all, in terms of ecological psychology, real-world research allows to consider the entire variety of possible situations while the laboratory frames only one specific context of social order that predetermines experience and its observation. This is the qualitative face of Big Data. They are not only an amplification of available material but the leap into new subject matters of observation. However, these possibilities cannot be exploited adequately unless under the guidance of critical methodological reflection. Phenomenology and ethnomethodology offer a complex and resilient foundation to reform psychological self-description in the occasion of new media, such as Live Streaming. These circumstances configure the revolutionary potentials of media psychology. To harvest them is a matter of intelligent and creative research design.

A more practical question for experimental research is what a design for a concrete investigation could look like. A promising example can be given thanks to the recent rise in popularity of the game of chess in the Live-Streaming community. Just as problem-solving and decision-making research has received a valuable impulse by virtue of the analysis of the game of chess in grand masters and amateurs as early as in the seminal work of Adriaan de Groot (1946), Big Data analysis of problem-solving experience in Live Streaming might benefit from the starting point of a rather simple problem that nonetheless allows the research to benefit from the valuable properties of Live Streaming as Big Data. However, the most important task is to develop a means of preserving the qualitative depth in the

data without losing the width of Big Data. A promising solution could be theory of action on the side of the theoretical foundation and video processing on the side of data analysis. Ultimately, this consecutive step is the task of projects to come.

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