BEHAVIORAL CODING

Behavioral coding is a simple, noninvasive, observational research method used to quantify a participant's actions within an environment or with a particular stimulus.

What is behavioral coding?

This tool is used in research to identify and observe notable behaviors that then are recorded (aka coded) to track trends and patterns in behavior. Behavioral coding can provide an indication of the participant's experience or demonstrate how circumstances dictate certain responses (Chorney, McMurtry, Chambers, & Bakeman, 2014).

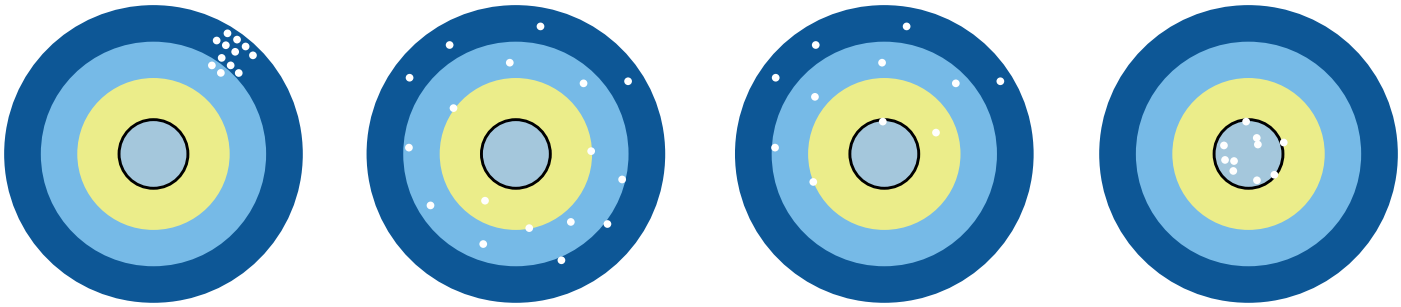
Some Observations to Consider with Behavioral Coding

Behavioral coding can be useful when trying to understand the user experience without disrupting it. However, it is important to keep certain things in mind to ensure good and actionable data.

Before any coding takes place, it is important that there are defined research objectives and goals to help determine what behaviors are of most interest. Certain behaviors, or lack thereof, are categorized based on predetermined sets of rules. Similarly, multiple behaviors can occur simultaneously, and the coder must be prepared to record all information as well as provide accurate start and stop times for each behavior. This is often accomplished by using coding software and multiple coders. The duration of the observation is intentional (for example, from entering a room until leaving or from the start of a meal to the end), often based on a stimulus, clinical restrictions, past research or a combination of these options (Chorney et al., 2014). Observations can be conducted via an audio/video recording or live. Regardless of which form of data collection is chosen, research with behavioral coding should include a review period to ensure that the information is correctly gathered. By analyzing and reporting the participant's responses to a type of exposure, a visual output of sequential behaviors can be developed to identify patterns and motivations.

The information gathered in behavioral coding gives insight not only into the final reaction but also a timeline of the experience in its entirety, not only about behavioral frequencies but also changes in behavior over time or when exposed to varying stimuli, and how behaviors may relate to one another sequentially. When a participant is undergoing observation for behavioral coding, it is crucial that the researcher does not intervene or influence the behaviors in any way in order to ensure the validity of the results. One potential flaw in the behavioral coding method

is the possibility of participant reactivity, an alteration in how someone behaves due to the awareness of being observed (Chorney et al., 2014). To minimize the influence of the coder (the influence of the participant knowing they are being watched), it is crucial to remain as unobtrusive as possible and to provide a buffer period for the participant to acclimate. Ecological validity (the extent to which the findings of a research study can be generalized to real-life) occurs when the exposure is in a natural environment. As with any research on behavior, the ability to have control in a lab setting allows us to isolate behaviors from more naturalistic noise or real-world distractions and understand what drives or influences those behaviors.



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Cues about Coding

When specific labels represent behaviors, it is known as a behavioral code. Behavioral coding can be categorized into two groups: topographical and dimensional coding. Topographical coding measures how often a behavior occurs, while dimensional coding analyzes the intensity of the behavior (Heyman, Lorber, Eddy, & West, 2014). Choosing which method of behavioral coding to implement is based on the research objectives and needs, but often, one of the two coding systems is chosen due to cost constraints. Both coding systems are reliable and valid (Heyman et al., 2014).

Coding has multiple types of dimensions, ranging from a general context to specific behaviors of interest. Yet, while analyzing behavioral coding, understanding how it is measured is imperative. There are multiple ways to conduct behavioral coding based on predetermined rules developed prior to fielding the research. While this list is not comprehensive, here are some of the most commonly utilized methods:

Specific interactions are analyzed via a scale or measured through a count. For example, observers may log how frequently a participant's mouse hovers on a logo.

If an option is chosen with either a yes or no, such as if the participant uses a phone case during the session.

Comparing the nature of behaviors is useful when trying to determine the percentage of male to female coworkers on financial projects.

Codes can be physical or social. Physical codes, such as squinting, can be categorized by software, while social codes, such as sensitivity to a topic, require human judgement (Chorney et al., 2014). Coding types can also be categorized as either microcoding or macrocoding depending on how specific or broad a sample of behavior is that is being analyzed. The codes are dependent on context, and certain types of codes and ratings may be more useful to capture the target behavior.

Collecting Samples, Collecting Stats...

Choosing how behaviors are measured is just as important as the frequency of the behaviors. Does the order or timing of the behavior play an influence? It is important to be able to confidently answer this question in order to run the appropriate statistical tests that capture the answers to such questions. The frequency of behavioral coding deciphers the statistical outcomes after fielding is completed. To complete statistical methods such as ANOVA or a regression on outcomes, behavior may only need to be measured once. Other statistical measures are observed at various points to complete a repeated measure design (Heyman et al., 2014). When there are multiple levels to an experiment, repeated measures of behavior are noted. For example, a ten-minute interaction observes if the participant's fist is clenched once a minute. The ten recordings gathered per participant create a multilevel output since there is one behavior noted several times within one session.

When using frequency, duration or intensity of the behavior, it is generally associated with global ratings. Global ratings are utilized when the research focuses on the behavior over a period of time and are associated with research that focuses on the outcome (Chorney et al., 2014). When sampling rates are measured systematically for one regulated time (i.e. code once every thirty seconds), it is known as instantaneous sampling. This method of sampling is uncommon due to the restrictive nature of only focusing on a minimal amount of the overall experience. Instantaneous sampling cannot include findings on timing, duration or frequency due to its limited observations. This form of sampling can be useful when reporting on a situation in vivo or if additional exercises are completed outside of the observation period.

There are two other forms of sampling implemented in behavioral coding research. Interval sampling, also known as sampling rate, continuously observes behaviors and indicates if the behaviors are present within periods of importance. Interval sampling does not include information on onset or offset of the behavior, only that the behavior occurs inside or outside the interval (Chorney et al., 2014). For a more comprehensive approach to behavioral coding, continuous recordings involve constantly making note of a target behavior. This is obviously a very time and resource intensive process, but it captures a strong representation of the timing, rate, duration and order of behaviors.

Concluding Thoughts

In psychological research, behavioral coding can be a useful tool for more challenging populations, such as pediatrics or chronic pain populations, due to its nonintrusive nature. This method is extremely useful when self-reporting is impossible (e.g. infants), not practical (e.g. ongoing interactions) or not a reliable representation of behavior. But more importantly for us, behavioral coding is ideal for market and consumer research. With behavioral coding, researchers can quantify behavior without interrupting the experience to gain a strong understanding of the interactions taking place.

While behavioral coding has a lot of benefits, it can be time consuming and complex. Currently, there is no exhaustive representation of ways to identify all bodily behaviors, thus leaving room for subjectivity while using this method (Witkower & Tracy, 2019). While the observer may be able to minimize bias, it is impossible to completely eradicate subconscious associations. Taking precautions, such as filming the sessions or using specialized software, will help to lessen the potential of inaccurate behavioral coding. Paring behavioral coding with other research tools can also create a more comprehensive understanding of the human behavior of interest, such as with neuro or physiological measures of emotion. Using behavioral coding complimented by traditional neuro or physiological measures can provide deeper insight into consumer nonverbal communication. HCD Research strives to promote quality research by using the right tools for the right question.

IF YOU ARE INTERESTED IN USING A MODALITY, SUCH AS BEHAVIORAL CODING, TO PROGRESS YOUR RESEARCH, PLEASE CONTACT HCD RESEARCH VIA EMAIL INFO@HCDI.NET OR CALL 908.788.9393.

CITATIONS

Chorney, J. M., McMurtry, C. M., Chambers, C. T., & Bakeman, R. (2014). Developing and modifying behavioral coding schemes in pediatric psychology: a practical guide. *Journal of pediatric psychology*, 40(1), 154-164.

Heyman, R., Lorber, M. F., Eddy, JM., & Schellati, T. (2014). Behavioral observation and coding. In HT. Reis, & CM. Judd (Eds.), *Handbook of research methods in social and personality psychology* (2 ed., pp. 345-372). New York: Cambridge University Press

Witkower, Z., & Tracy, J. L. (2019). Bodily communication of emotion: evidence for extrafacial behavioral expressions and available coding systems. *Emotion Review*, 11(2), 184-193.