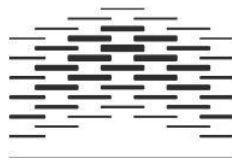


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Functional Behavioral Assessments  
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Functional Behavioral Assessment: A Review

M.A Thesis

Part 1

Knut-Aleksander S Brath

### Abstract

Functional Behavior Assessments (FBA) lead to socially significant behavior change interventions, and is currently considered a gold standard within the field of behavior analysis. This paper seeks to further elaborate on themes throughout the literature, as well as enlightening strengths and weaknesses of the different assessment tools, ranging from indirect functional assessments to experimental functional analysis. The findings of this review suggest it may be best to bypass descriptive assessments because of low levels of convergent validity, and instead use indirect and experimental assessments. These methods depending on which is chosen often lead to similar results and differentiation between functions. Furthermore, the review provides some alternatives to traditional experimental functional analyses when the procedure is compromised by the behavior of the client, or other factors during the assessment.

### Functional Behavioral Assessment: A Review

Functional Behavior Assessment (FBA) is used to uncover the function of problem behaviors in a wide range of populations so that a function-based treatment can be designed and implemented. FBA is a scientifically based process that may lead to one or more parsimonious falsifiable hypothesis, which in turn may be used to design treatments that are ethical, cost effective and produce socially significant change in the lives of those being assessed. FBAs involve indirect functional assessments, direct functional assessments and experimental functional analysis (EFA). These three categories represent different methods that differ in the amount of resources needed to carry them out, as well as in levels of contextual appropriateness, reliability and validity.

The term *function* or *functional* carry a wide array of meanings, and appear frequently in the behavior analytic literature. Some refer to the purpose or adaptive qualities of certain behavior either its topographical or contextual appropriateness. Other refer to the change or effect environmental events have on frequency, rate, intensity or topography of behavior (Fryling & Hayes, 2011). According to Mayer, Sulzer-Azaroff & Wallace (2014), the term functional refers to “the lawful manner in which the rate, form, or other pattern with which the behavior is repeated and relates to how the consequences of that behavior have influenced it previously” (p. 180). I will in this text refer to function as Mayer et al. (2014) and Skinner (1953) suggested; a change in an independent variable that has an effect or change in a dependent variable. Moreover, I limit my review to address the function of operant behavior.

#### **Common Functions of Behavior**

The function of a behavior may be very specific depending on the situation in which the behavior is evoked and refer to qualities of positive and negative reinforcement from the



environment and/or within oneself. Carr (1977) presented three hypotheses of variables maintaining self-injurious behavior (SIB) along with psychodynamic and organic causes for aberrant behavior. Social positive reinforcement otherwise referred to as *attention* includes reactions from the social environment to a behavior such as a negative remark, or praise. Social negative reinforcement also known as *escape* is the consequence which serves to eliminate or avoid aversive stimulation through other people. Material positive reinforcement also referred to as *tangible* which include the access to a preferred item or activity such as toy, candy or television shows. Lastly is automatic negative reinforcement, which include the direct elimination or avoidance of aversive stimulation. (Carr, 1977; Cooper, Heron & Heward, 2007). Another variation by Cipani & Shock (2011) of the functions is socially mediated and/or direct access to positive or negative reinforcement. Direct access refer to access to self-stimulatory consequence, or the termination, avoidance or access to an event within .5 seconds (e.g., turning the key to unlock door). Socially mediated access refers to the termination, avoidance or access to an event or condition mediated by someone else (e.g., asking someone to get a raincoat for you because it might rain).

Multiple functions of behavior are when a hypothesis reached includes positive, and negative reinforcement, and/or automatically reinforced behavior. Beavers & Iwata (2011) reported the increase in possibility of uncovering multiple functions when assessing aggregate behaviors, suggesting that multiple functions may be a product of operational definitions being too broad. Consider for example assessing an individual with tics in various forms; facial grimaces might serve a different function than swearing and screaming. If these different topographies were considered as tics it is possible that the behavior is multiply controlled, when in fact the facial grimaces were automatically reinforced, while the swearing and screaming was

maintained by escape from social stimulation. The prevalence of multiple functions of problem behavior is reported as low, but there seems to be a lack of applied research investigating this phenomenon (Beavers & Iwata, 2011). Considering this it is important to note the potential confounding effects of motivating operations (MOs) on behavior and identification of function. MOs act as establishing operations (EOs) or Abolishing operations (AOs), the latter acts as an altering of effectiveness of a reinforcing or punishing event, while EOs increase the effectiveness of such events. They also alter the behavior previously associated with the events leading to reinforcement or punishment (Laraway, Snyckerski, Michael, & Poling, 2003)

### **Functional Behavioral Assessments**

FBA's are used to develop hypothesis regarding variables maintaining non-adaptive or problem behavior in individuals with intellectual disabilities, but the assessments have also been extended to a wider population, being used in its original form or a mildly adapted form to include a range of topographies, individuals and contexts. This includes positive behavioral interventions and support (PBIS) in schools along with general and special education in the united states after FBAs became mandatory under the Individuals with Disabilities Education Act (IDEA; Solnick & Ardoin, 2010; Asmus, Vollmer & Borrero, 2012). It has also been utilized in Organizational behavioral management (OBM) (Fienup, Luiselli, Smyth, & Stein, 2013), Mental health, Acceptance and Commitment Therapy (ACT) (Holden, 2014) and health and commercial business (Mayer, Sulzer-Arazoff & Wallace, 2014).

The hypotheses obtained from an FBA should include the motivational operations (MO), antecedent event and the consequence. It is also helpful to evaluate skill deficits, which may preclude an individual from gaining access to the naturally occurring reinforcement contingencies that maintain adequate behavior in the majority of the population (e.g., if someone engages in

problem behavior for attention this person may benefit from social skills training). With this hypothesis, interventions are designed that match the proposed functions of the problematic behaviors, which often utilize differential reinforcement, skill-training, and/or stimulus control interventions.

### **Interventions derived from behavioral functional assessments**

Several different methods have been developed with regard to different settings such as schools, in-home services, group home service, and organizational work. Many of these interventions aim to teach and differentially reinforce appropriate behavior and reduce problematic or contextually inappropriate behavior, while others aim to change the antecedent stimulus that often evokes the problem behavior. There may also be manipulations of motivational operations (MO) through a wide range of methods; this can be done by either changing the frequency of which a reinforcer is delivered or through skill shaping, chaining and differential reinforcement (e.g., social skills training) (Cooper et al., 2007; Cipani & Shock, 2011; Mayer et al., 2014). The intervention designed from the FBA should be included as part of the functional assessment to verify the hypothesis. Moreover, as suggested by Lerman, Iwata, Smith, Zarcone, and Volmer, (1994) the functions of behavior may change over time and sufficient repetitions of the FBA and continuous evaluation of data should be a natural part of behavioral interventions for problem behavior.

### **The categories of assessments**

#### **Indirect functional assessments**

The indirect also called anecdotal functional assessment relies on interviews and/or secondhand information through the use of semi-structured interviews, questionnaires and checklists (for an example see Iwata, Deleon & Roscoe, 2013 p. 274). With this comes many

confounding variables that may affect the results and caution should be made when utilizing the results in design of interventions. There is however some controversy on this topic and especially related to different questionnaires and interviews predictive validity (Iwata et al., 2013). Some common tools include the Motivation Assessment Scale (MAS), Functional Analysis Screening tool (FAST), Functional assessment interview form (FAIF) and Questions about behavioral function (QABF) to name a few. These questionnaires include questions that assess the different functions of behavior, attention, tangible, escape and automatic. The QABF for example contain 25 items of questions utilizing a likert-scale to score frequency of occurrence (Matson & Singh, 2005). The FAST includes similar questions but rely on yes, no and unsure as answers for the different questions, which lead to a numeric value that indicates a function (Iwata, Deleon, & Roscoe, 2013; Ward-Horner, Seiverling, Sturmey, & 2011).

### **Descriptive functional assessments**

Descriptive functional assessments refer to a set of observational strategies to identify a function of behavior. The common practice with regards to their use is, a professional behavior analyst, trained staff and/or caregivers who observe an individual in a naturalistic setting, recording antecedent, behavior and consequences. Data is often collected over a significant amount of time, or until a satisfactory amount of occurrences has been recorded to convey a hypothesis about function. Some common methods included in this practice are narrative ABC recording, Structured ABC recording; scatter plot, conditional probability and conditional/background probability. They may be utilized either alone or complimentary to each other, and yield different types of data. Mainly the recording of several events including MO's, temporal location, but most commonly record the direct acting antecedent and consequences relating to the behavior(s) being observed. Data may be collected using a narrative open ended

form where the observer writes the antecedent event, the behavior in question and the consequence that follows (Mayer et al., 2014; Lancioni, Nirbhay, O'reilly, Sigafos & Didden, 2007). Conditional or conditional with background probability statistics, show correlational statistics between environmental events and the likelihood of some antecedent or consequence event occurring contingent upon antecedent and/or consequence related to the problematic behavior, and how often these events occur in lieu of other adaptive behavior. Another prominent but less researched descriptive method is a structured form for collecting ABC data which include broad predefined antecedent, and consequent events where the user checks or marks what antecedent, and consequence occurred contingent on the problematic behavior (Mayer, Sulzer-Azaroff & Wallace, 2014; Lerman & Iwata, 1993). Scatter-plot assessments may also aid in identification of function and is commonly collected using either whole or partial interval recording throughout a day. It informs the analyst when problematic usually occur and such events can either be specifically targeted for an intervention, or it may be avoided all together (Kahng et al., 1998).

### **Experimental functional analyses**

Based on the hypothesis for self-injury by Carr (1977), Iwata, Dorsey, Slifer, Bauman and Richman (1982/1994) developed an operant methodology for uncovering the maintaining variables for self-injury that utilize a multi-element research design where a client is exposed to different conditions assess under which condition behavior is more and/or less likely to occur. This methodology has been extended to a range of settings and populations, evidenced by the increasing number journals publishing results from EFA's (Beavers et al., 2013).

Several methods have been provided but the most common (89%) (Beavers et al., 2013) is the standard ABC FA suggested by Iwata et al., (1982/1994) include manipulations of

antecedents and consequence events including MO's. Some general recommendations are to always include two or more conditions to evaluate cause and effect relations. The conditions should involve an alone condition to check for direct access to reinforcement (sensory), an attention condition to check for positive reinforcement in the form of attention from peers/caregiver/teachers, a play condition (control for MO for social and automatic reinforcement), a demand condition to test for negative reinforcement related to demands and possibly a tangible condition to check for positive reinforcement related to items, food, toys, etc. (Mayer et al., 2014). This order should be followed to manipulate MOs and increase the likelihood problematic behavior occurring during the condition most likely to maintain problem behavior. The tangible condition may induce higher frequency of problematic behavior and establish a new behavior, consequence relation and therefore should omitted when no indication is given that tangible items maintain problematic behavior. A session meaning one test of one condition should last between 5 to 15 minutes. (Beavers et al., 2013 p 11; Smith et al., 2012).

### **Application and Research on Indirect Functional Assessments**

Sturmev (1994) reviewed the psychometric data of some of the common indirect methods and found that little independent research had been done to evaluate their psychometric robustness. He reported reliability of the measures were overall low in the four evaluated assessments, two of which are common today; MAS, and the FAIF. These results hold true today for most indirect functional assessment, with the exception of a more recent questionnaire; the Questions About Behavioral Function (QABF; Matson & Vollmer, 1995; Matson & Singh, 2005). Wasano, Borrero and Kohn (2009) also reached a conclusion where the indirect measures are similar to the hypothesis gained from EFA. They do however clarify that this might be caused by the topography of Pica, which may more often than not have an automatic/sensory function.

They also point out that a larger sample would be needed to more firmly establish the utility of indirect assessments and that it needs to be studied for different topographies. Similar findings were also reported by Healy, Brett and Leader (2013) in their literature review of comparisons between QABF and EFA.

Research seems to show that QABF have acceptable reliability and predictive validity, as well as a significantly larger body of independent research (Matson & Minshawi, 2007). Given the larger research base available and the growing popularity of QABF the current section will mainly refer to research and conclusions raised with the QABF in contrast to descriptive functional assessment and EFA. With the QABF there seems to be adequate test-retest reliability, modest to good inter-rater reliability, good internal consistency and stability over time (Tarbox et al., 2009 p. 495; Bienstein & Nussbeck, 2009; Shogren & Rojahn, 2003). While reviewing the data in their study there seems to be a greater visual differentiation of functions shown in the EFA compared to the QABF although the QABF reached exact agreement with the EFA 24 times for the 32 participants. Therefore this study conclude that QABF is an effective tool for finding behavioral function, however mentioning that a weakness of the study is the lack of verification through an evaluated intervention based on the results from the QABF and the EFA.

Other studies, however, conclude that indirect assessments are not satisfactory for clinical use. Iwata et al., (2013) report 63.8 percent convergent validity between their FAST and EFA, therefore conclude it to be a poor substitution to experimental means. Koritsas and Iacono (2013) conclude in their comparison of QABF and MAS that both measures may be unreliable based on low inter-rater reliability on individual items in the checklists as well as poor agreement between raters on the function of behavior (p. 755). McDonald, Moore & Anderson (2012) and Alter, Conroy, Mancil, & Haydon (2008) also concluded that both indirect and direct means of

functional assessments were of limited value in the design of interventions where both reached a different function than the EFA. The results of the EFA were later verified by a short intervention.

### **Discussion**

Many will agree that EFAs to assess function are more precise and trustworthy, but this may, as stated by Matson & Mishwani (2007) have more to do with a professional's orientation towards behavior analysis or other disciplines rather than a data informed judgment, as there is good evidence of indirect assessments utility, particularly QABF. It is important to mention there is still limited availability of completely independent research on the QABF and even less availability of research on other indirect methods for assessing function. Other issues appear when many of the studies do not verify their functional hypothesis through an intervention (Watkins & Rapp, 2013; Healy, Brett, & Leader, 2013; Tarbox et al., 2009). It is also observed in the studies mentioned a rather high frequency of multiple functions. Studying several topographies of problem behavior for each participant may cause multiple functions, but the authors do not indicate that this is the case. This does not concur with other findings that demonstrate multiple functions as rare and often caused by operational definitions that aren't sufficiently specific, or including different behavior topographies under the definition of problem behavior (Beavers & Iwata, 2011). This may be acceptable seeing as tiny, and even unnoticeable variations in topography may occur (e.g. change of voice pitch or intensity of the behavior) that alter the function of the behavior in question. The former may also be quite likely as individuals exhibiting problematic behavior quite often have more than one behavior in their repertoire that seem problematic, which caregivers and other professionals may not be able to distinguish.



The strengths of checklists, semi-structured interviews and questionnaires remain because of their less restrictive nature, the sheer practicality in regards to financial costs, time and its simple and straightforward utility for paraprofessionals who may or may not be well versed in behavior analysis. It also provides valuable information for design and ideas for further more thorough EFAs and intervention planning (Mayer et al., 2014). This may be especially true when two or more informants report similar functions of a problematic behavior (Smith, Smith, Dracobly, & Pace, 2012; Iwata et al, 2013). It may also serve as a valuable asset for a case manager in gaining trust and rapport with the client's employees, caregivers and/or teachers. To decline all indirect assessments seem foolish as their reliability and validity differs, a goal should be to investigate which tool might be a better choice.

### **Application and Research of Descriptive Assessments**

In general there is a larger amount of research than what can be covered in the brief review, especially considering studies including descriptive methods and a verification component (e.g., VanDerHeyden, Witt & Gatti, 2001; Mace & Lalli 1991; Lalli, Browder, Mace, & Brown, 1993). VanDerHeyden et al., (2001) utilized a descriptive assessment with conditional probability for a special education classroom resulting in the hypothesis of the behavior being social reinforcement from the teacher being the function. A differential reinforcement procedure was then initiated with a reversal design showing clearly differentiated responding during the treatment and reversal condition. Lalli et al., (1993) found in a similar study, except for the hypothesis of multiply controlled behavior, concluded descriptive assessments useful in developing effective treatments for classroom behavior. Lalli & Mace (1991) use both descriptive assessments and EFAs to identify a potential function and verify only one function as maintaining the problem behavior, despite the descriptive assessments hypothesis of both escape

and attention being the maintain contingency. There is however less research with regards to the convergent validity between different methods of descriptive functional assessments and EFAs, but Penche et al., (2009) report that the different methods of descriptive assessments yield similar conclusions about function, but rarely correspond with the findings of an EFA. (Mace & Lalli 1991; Lerman & Iwata, 1993; Harding et al., 1999; Alter et al., 2008; Thompson & Iwata, 2007; Tarbox, 2009; Camp, Iwata, Hammond, & Bloom, 2009; Pence, Roscoe, Bourret, & Ahearn, 2009). The general finding throughout these studies with regard to descriptive functional is it's limited agreement between the results compared with EFAs, thus supporting the recommendation to move directly from indirect functional assessments to EFA (Tarbox, 2009; Beavers & Iwata, 2014). Some limitations do however appear throughout the research mentioned, but be cautious and do not consider this an exhaustive list of research. All of the studies above rely on results from the EFA and do not include treatments based on the results of either, thereby not verifying the hypothesis gained from either assessment tool. Therefore we might have limited knowledge regarding the effectiveness of treatments developed through either assessment. The current author has failed to find any review articles indicating how often EFA lead to effective interventions, there is however a great deal of studies suggesting this to be the case, but to which extend EFAs aid design of effective interventions compared with other functional behavioral assessments may be unknown.

However these methods might be one of the most common practices for identification of function because they do not include manipulations of environmental variables that change the rate, frequency, form or intensity of the behavior. It also to some extent avoids the potential confounding variables included in secondary verbal reports as used in interview-based assessments. Where research regarding the use of indirect assessments are unclear in their results

and utility, the consensus with regards to descriptive assessments seem to be clearer. The current recommendation is to bypass the descriptive assessment and move directly from indirect to an EFA (Tarbox et al., 2009; Beavers & Iwata, 2014; Pence et al., 2009). Even though this recommendation stands, descriptive assessments remain popular and frequently used in research and clinical settings (Tarbox et al., 2009). Other issues relate to the varying amount of time spent utilizing the different assessments, while some studies report the time spent observing using the descriptive assessment and conducting the EFA, some do not. While this may not be an inherent weakness, seeing as an FBA should cater to a range of differences with regards to frequency, intensity, population, contexts and so forth, it may cause us to reject potentially effective tools for uncovering function.

### **Discussion**

Discussions and data analysis regarding the utility of descriptive assessments may also be determined to some degree by practice variations across countries. Since much of the research originate from the US where behavior analytic practice is largely provided in the home and with spurious contact between the behavior analyst, the child and the caregivers. Where European countries provide services for people with intellectual disabilities through institutions such as kindergarten, school and/or group homes where specialized staff continuously interact with the individual potentially collecting more reliable data. Data in these settings may also be easier to collect if continuous ABC recording is part of the general data collection and reporting for the person receiving services.

Little research seems to compare different types of descriptive assessments to results of other descriptive methods (Matson, & Kozlowski, 2012; Lerman, Hovanetz, Strobel, & Tetreault, 2009). This is unfortunate, especially if the methods are generalized into one category and this

category is concluded as less effective and trustworthy than other categories of assessments. It may limit the continued scrutiny of the several methods within descriptive functional assessments, when in fact they may be suited particularly well for certain situations and populations. For example, narrative ABC forms may be difficult and labor intensive procedures and it may be better suited to provide untrained individuals with structured ABC forms (Lerman, Hovanetz, Strobel, Tetreault, 2009). Since narrative ABC forms may result in unspecific antecedents, behavior and consequences, which may or may not be suitable for designing an intervention. Scatter-plot data can also be taken in several different forms such as partial or whole interval recording to identify the temporal location of problematic behavior. While this does not clearly describe direct acting environmental events it may provide useful information with regard to MO's and daily common activities or settings that may induce problematic behavior. It may also be insensitive to thin schedules of reinforcement depending on the time spent observing and the frequency of the clients problematic behavior.

The strengths associated with descriptive functional assessment lie in its observational nature, which may provide extended information regarding maintaining contingencies such as clearer depictions of what the teacher/caregiver/staff does when problem behavior occurs. It also helps in describing the problem behavior(s) in question, arriving at a satisfactory operational definition. Consider indirect assessments, where the interviewee may talk about several topographies, contingencies and incidents making the contingencies, topography and situation less clear for the interviewer thus leading to an incomplete assessment. It also has great potential for being a part of regularly scheduled and mandated reporting. Such recording may also help in data collection regarding baseline frequency, duration, intensity and latency (Samaha et al., 2009). It may also be used on parent/teacher/staff to evaluate the current contingencies that

maintain their responding to the problem behavior, thereby providing some information of whether or not the environment support problematic behavior (Penche, et al., 2009). It may also be more suitable for situations where problematic behavior occurs at a low rate such that EFA may not observe differentiated levels of responding because of insufficient levels of responding (e.g., Radford & Ervin, 2002). Lastly it may guide the design of an EFA by identifying what conditions are unlikely to support problematic behavior and excluding them from further analysis(Beavers, Iwata & Lerman, 2013)

The most prevalent limitation to descriptive assessments is that the data is purely correlational and prone to several errors as such. Since three out of four conditions generally studied under descriptive functional assessments include some sort of social consequence there is a significant likelihood that attention or social positive reinforcement will be hypothesized as the maintaining variable. Another issue is the description of antecedent events, which relate to the often-prevalent lack of MO consideration in the analysis. Consider the possibility of deprivation and its effect on behavior, which may coincide with a discriminative stimulus, thereby causing the analysis to be wrong because the discriminative stimulus may in fact have nothing to do with the behavior (Cipani & Shock, 2011). These issues related to the temporal correlational nature of descriptive assessments remain but may be countered effectively if a competent professional with behavioral training (Lerman et al., 2009) collects data. However given the necessary time needed to complete such an assessment adequately time may be better spent having the trained behavior analyst conduct an EFA. This is of course reliant on the situation in which services is provided where the contextual situation may limit the use of an EFA. With regards to MO's the use of scatter plot assessment can aid in the identification of deprivation and satiation that can easily be added to a standard ABC chart and may provide valuable information.

### **Application and Research on Experimental Functional Analysis**

While the research concerning standard EFAs has been well accounted for in the literature, and the quantity of research is insurmountable for this review (see. Beavers et al., 2013 for a thorough review), there are variations that aid in application for cases where traditional EFAs may prove unsatisfactory. It is especially important considering the ethical considerations needed prior to conducting an EFA – since it can evoke severe problem behavior that may cause severe injury to the client or other individuals and property in the environment. Some recurring themes that have led to manipulation of the common EFA methodology are behavior that is of high intensity and low rate, behavior that is difficult to measure quantitatively because its occurrence precludes further occurrences such as elopement or other topographies that changes the environment so it has to be reestablished before the behavior can reoccur.

Low-rate problem behavior may not be well suited for evaluation using a standard EFA because the assessment may risk not observing the problem behavior during the examination period, and the possibility of not showing differentiation across conditions tested. This has been tackled by conducting longer sessions within each condition or beginning a condition sequential to problem behavior (Kahng, Abt, & Schonbachler, 2001; Tarbox, J, Wallace, Tarbox, R, Landaburu, & Williams, 2004; Davis, Kahng, Schmidt, Bowman, & Boelter, 2012). Both approaches show increased differentiation when conducting the altered EFA and may be a viable alternative for assessing low-rate behavior. With regard to application of both approaches some resource-based limitations arise considering the need for trained staff to conduct the modified EFA's throughout the day for several days, thereby limiting the potential for adopting the approach (Davis et al., 2012). Another prominent issue, especially with the all-day EFA is the level of deprivation the client is exposed to. When this is unacceptable beginning an EFA

condition following problem behavior can be a viable alternative. Considering these two issues there may be a greater need for limiting the amount of time spent using the modified EFAs and utilize descriptive and indirect functional assessments to reduce the amounts of conditions to be tested with the EFA.

With high intensity behavior or environment altering behavior the use of latency as an index of behavior may provide a viable alternative to evaluating function rather than the use of rate as is common with traditional EFAs. Thomason-Sassi, Iwata, Neidert & Roscoe (2011) evaluated this using three experiments and found latency EFAs to have a high degree of accuracy compared with the traditional EFA. Latency EFAs reduce the need for long durations of the different conditions of an EFA because it is possible to end the condition upon the first occurrence of the measured problem behavior. The authors do however mention that consideration of discriminative stimuli may be significantly more important when utilizing a latency EFA rather than a traditional because the latency measure may repress the potential for discriminative control.

While attempts at limiting amount and duration of conditions have shown promise when studying severe problem behavior it may be unacceptable to evoke the problematic behavior all together. In such cases it may be wise to conduct a functional analysis based on known *precursor behavior* (e.g. threats of violence) to the problematic behavior. This may be a promising approach where it is possible that treatment of the precursor behavior may provide earlier access to a response class hierarchy ending with severe problem behavior, thereby interjecting before the topography of severe problem behavior. This may however be a lengthy task because there should be certainty that a precursor behavior is within the same response class as the problematic behavior (Dracobly & Smith, 2012).

Ethically responsible practices are of grave importance for any field in the human services profession. While EFA's are effective tools for developing interventions they may cause discomfort and have potential for being less than ideal when presenting it them to people who have limited knowledge and experience with behavior analysis. This may however be avoided if participants caregivers and staff have been adequately informed about the process, and ideally included in the process. Considering the approval of EFA methodology it seems including caregivers and staff in the process, raises their belief in its utility for developing interventions as well as their agreement related to the momentary discomfort caused by an EFA. (Langthorne, & McGill, 2011).

### **Conclusion**

This review has examined FBA and compared different FBA approaches to the well-established EFA. Indirect functional assessments include several different methods (MAS, QABF, FAST, FAIF etc.) and the data for these are spurious with each method holding distinct strengths and weaknesses. There is a debate in the field about whether or not indirect assessments are acceptable to use when developing an intervention and it may be a judgment based decision rather than an empirical one given the lack of data and the strengths of the current findings (Matson & Minshawi, 2007). Given the limited amount of studies this may hold true, and it is undoubtedly worthwhile to further investigate indirect functional assessments utility in intervention design and implementation. The discussion and research with respect to descriptive functional assessments seem to be more one-sided with a greater agreement that results are not satisfactory compared with EFAs. It may therefore be best to exclude the descriptive assessment altogether and move directly from an indirect assessment to an EFA, especially if resources and time is limited (Tarbox et al., 2009; Pence et al., 2009). The EFA has been well accounted and



proven to be a reliable measure for providing information needed to assume a function and develop interventions. EFAs remain the measure of which other assessment tools are compared with, but without a thorough review of studies conducted and whether or not the EFA results in viable treatment plans compared with other approaches it may be hard to say whether or not this approach results more frequently in effective interventions than indirect and descriptive assessments. While these are some of the more prominent issues for further investigation, it may be important to further evaluate and research an optimal assessment method for different settings and behavior topographies. While the EFA has seemingly unending potential, they are resource demanding and in some cases such as the low-rate, high intensity, and environment altering behaviors they may prove to be limited. As Matson and Minshawi (2009) state, there may be a divide between the professionals who prefer EFA to descriptive and indirect assessments, but both approaches may prove to be equally valuable. Therefore it may be more important in the future to develop efficient and simpler means to conduct FBAs – in order meet a larger audience of professionals and clients.

A limitation to note in this review was the limited amount of time and resources for a thorough review of each single case, such that a confident conclusion could be made concerning each method. This review would likely have gained reliability and validity had its topic been narrower to include maybe one category of the FBAs. I do however believe that the current review emphasize issues that deserve more attention and may provide important for further optimization of the FBA methodology along with the furthering the application of behavior analysis.

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A comparison of Narrative ABC and Structured ABC forms for identification of Function of  
Problem Behavior

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### **Abstract**

Functional Behavioral Assessments guide clinicians and researchers to uncover the contingencies maintaining problem behavior and create a hypothesis that guide the development of an effective behavioral intervention. There are several methods for collecting data and developing such a hypothesis and this study sought to identify whether or not a different descriptive form may produce a benefit over another. The study included 45 undergraduate students, where 22 of them received a structured ABC form and the remaining 23 a narrative ABC form. The participants were asked to view videos of actors and real-life events with individuals engaging in problematic behavior and create a hypothesis regarding the maintaining contingencies. The independent variable was the usage of either Narrative or Structured ABC forms and the dependent variable was the reached hypothesis developed by the participants. The results were negligible but the group receiving the narrative ABC form scored slightly more accurately overall. Findings suggest that trained individuals can utilize both forms and arrive at similar hypotheses and it remains a choice of preference of which form to use. The findings are in disagreement with another similar study, which found participants to be slightly more accurate using a structured ABC form.

### Narrative and Structured ABC Forms

Functional Behavior Assessments (FBA) guide clinicians and researchers to uncover the maintaining contingencies of problem behavior, thereby developing interventions for socially significant behavior change. To ensure best practice and increased reach of the methods to different professions research is needed to identify strengths and weaknesses, then use the information to develop the technology of FBA. Within the overarching term FBA there are different methods that rely on varying degree of intrusiveness to the environment of the individual whose behavior is under study. Indirect functional analysis is recognized by its use of checklists and interviews of individuals who have frequent contact with the client. Descriptive functional assessments are characterized by continuous direct observations of problem behavior and the surrounding events. Lastly experimental functional analysis utilizes environmental manipulations to identify the conditions under which the behavior is most likely to occur. While all of these methods may yield valuable information independently, it is recommended that these methods are used collectively (Lerman, Hovanetz, Strobel, & Tetreault, 2009).

Skinner (1953) conveyed the view of behavior as functional, meaning that a change in an independent variable results in a change in the dependent variable. He further elaborated this by outlining the need to identify the events, that have an effect upon the behavior of individuals (p. 23). While he did not elaborate on strict functional assessments, he stated the goal of functional assessments as we see it today. Carr (1977) proposed an operant hypothesis of self-injurious behavior outlining how environmental events may produce positive or negative reinforcement contingent on the problem behavior. proposed an operant hypothesis of self-injurious behavior, outlining how environmental events may produce positive or negative reinforcement contingent on the problem behavior. He also elaborated on the sensory stimuli products of such behavior,

that have the potential for being positive or negative reinforcers “within the skin”. This hypothesis has been extended to other topographies of behavior since then and the functions he proposed have been further separated in later years to include: Attention, tangible, escape, and/or automatic. *Attention* refers to positive reinforcement delivered by someone else, excluding deliverance of tangibles which has its own category. *Escape* refers to negative reinforcement, escape or removal of stimulation contingent upon a behavior. Lastly *automatic* reinforcement may be direct acting negative and/or positive reinforcement, often private, and therefore not directly malleable by the social environment (Iwata et al., 1994; Cooper, Heron & Heward, 2007).

There are several methods within each subcategory of FBA, but the discussion has largely focused on the comparison between indirect, direct and experimental functional analysis. Experimental functional analysis (EFA) is viewed as the best option in most cases but when the best option does not fit the circumstances, or there is a lack of knowledge and skill available to utilize and analyze data from experimental analysis it is important to find close to or equally precise ways of measuring and interpreting data (Beavers, Iwata, & Lerman, 2013; Pence, Roscoe, Bourret, & Ahearn, 2009). Interviews such as the Questions About Behavioral Functions (QABF) show promising results while other indirect measures are generally advised against as a method used to verify function. They do however provide clinicians with important information that can be used for further assessments and treatment design (Beavers & Iwata, 2014; Iwata, Deleon, & Roscoe, 2013; Matson & Minshawi, 2007). Direct functional assessment rely on first-hand information, along with data analysis to identify which discriminative stimuli and consequences maintain the problematic behavior. Although this category of functional assessments holds a range of methods for direct observation, this paper will mainly focus on

descriptive narrative ABC recording (Bijou, Peterson, & Ault, 1968), and a structured variation of the ABC form that provides a checklist format where events are predefined leading the observer to simply score each incident of the behavior within these categories. These scores lead to a numeric value suggesting the possible function of the behavior in question (for an example see Cooper et al., 2007, p 507). In other cases structured ABC forms may look similar but specifically designed for each case to ease the recording process, this can for example mean you have the possibility of recording known occurrences of problem behavior, and environmental events that are within a spectrum of positive social reinforcement, and social negative reinforcement and choose to omit the possibility of automatic reinforcement because it is either unlikely or it has been established previously that it does not serve as the function. The inherent weaknesses of descriptive functional assessments remain an important roadblock to quality assessments and include; (1) a tendency to view almost all behaviors as a result of attention. This is likely occurring because each condition has a social component, that is, escape is often granted by other people, such as “go out in the hallway, if you’re going to scream in the classroom”. While attention is delivered in the previous example it may also be possible that leaving the classroom is the maintaining consequence. This is also the case for tangible maintained behaviors where the tangible may be given to the individual simultaneously as verbal utterances (attention).

(2) It may not provide valuable information regarding motivating operations. This may however be addressed if the observation period is sufficient and other data along with antecedent, behavior and consequence is considered, for example scatter plot data. (3) Intermittent reinforcement schedules may be difficult to uncover, especially with short term ABC observations, and (4), the accuracy of data collection may vary greatly depending on the skills and training of the observer

(Cooper et al., 2007, p. 509; Cipani &, Schock, 2011, p. 55). It may be that slight variations to the recording format of ABC forms reduce issues regarding reliability and validity of ABC data.

The purpose of current study was to investigate which ABC form may be more accurate and efficient at reaching hypotheses regarding functions of problem behavior, when individuals with behavioral training utilize them. Furthermore it seeks to contribute to a discussion regarding better practice of assessments when experimental analysis is not a viable option. At the time of writing the author could only find one study published where a structured ABC form has been compared with a narrative ABC form. Lerman et al. (2009) recruited 12 individuals working in special education and three paraprofessionals to collect data using both structured and narrative ABC recording forms. Their experience with functional assessments varied but many had been exposed to it previously. They were shown videos of actors portraying a client with problem behavior in natural settings and asked to score these videos using both structured and narrative ABC forms. The results demonstrated slightly more accurate identification of antecedent, behavior and consequences when structured ABC forms were utilized over narrative. The Structured ABC form was also preferred by the teachers and the authors noted that it may be easier to note ABC data when you do not need to write down novel events each time in order to explain the contingencies at play. While this study was similar to Lerman et al. 2009 there were important differences. This study had 45 participants and half of them used only one of the assessment forms, where Lerman et al. 2009 had 12 participants use both forms. There was also a significant difference in terms of experience, and professional orientation of the participants. The current study had undergraduate students with behavioral training as participants and their study had teachers and paraprofessionals with an above 7 years of average time in practice.

## Method

### Participants and Setting

Forty-five undergraduate students, enrolled in three-year bachelor's degree programs in either social work or learning psychology with emphasis on behavior analysis, were assigned to either the narrative or the structured group. All participants had recently had lectures on functional behavioral assessments. The data was collected over two occasions, once with the social work cohort, and once with the teaching psychology cohort. It was collected after a regularly scheduled class in the same classroom. Participants were not given class credit or other rewards as compensation, and participation was voluntary.

Twenty-two participants received the structured form, and 23 received the narrative form. The group receiving the structured ABC form had an age average of 27,6, the average years in practice was 5.8 and every participant was part-time employed with an average of 30%, based on 37,5 hrs/week. The narrative ABC group had an age average age of 25 and the average years in practice averaged 2,9. Every participant reported being part-time employed with an average position of 19% based on 37,5 hrs/week.

***Ethical consideration.*** This study was reported to the Norwegian social science data services for an evaluation of data-collection and storage of potentially sensitive information. The study was deemed unnecessary to report because it did not utilize electronic recording of sensitive information, nor did it manually record information about individuals attending except for age, studies and experience (See Appendix, 1 for receipt)

### Procedure

During scheduled classes the students were informed about the experiment and asked to participate after class instruction had ended. The participants were free to sit where they pleased in the classroom but were asked to move apart if they sat next to each other. The experimenter then introduced the project and a form of either structured or narrative ABC was delivered for every other student. That is, structured, narrative, structured, narrative and so on. They were asked to fill in information regarding education, age, years in practice and a rough estimate of how many percentages their position equate to depending on a regular workweek. Participants were then presented four video clips with problem behavior maintained by attention, escape, tangible and automatic. After each clip there was a short explanation of why the clips depicted one of the four functions, and if needed questions were answered briefly. The forms were presented using pre-filmed clips explaining and showing how to use them. The experiment then started and each participant was asked to note and assess the function on six different video clips (described in detail below), concluding on their form which function they thought was most likely maintaining the problem behavior. Two of the five clips included actors and were collected from an instructional sequence previously used by a professor at the university college; the participants had not seen the clips before. The remaining four clips were collected from YouTube, and edited to show occurrence of one problem behavior and the environmental events. The experimenter collected the forms and the participants were given an explanation and the correct answer to each clip.

### **Clip one**

Clip one includes actors and lasts for 59 seconds. It depicts a man drinking chocolate milk sitting next to his service provider. When his cups seems empty he tilts his head back, followed by putting his fingers into the cup he then starts hitting himself on the head. And the service



provider leans in and asks “What is it, is the cup empty, would you like some chocolate milk?” followed by the service provider pouring chocolate milk into his cup. He then drinks the cup and calms down.

### **Clip two**

Clip two also includes actors and lasts for 30 seconds. There are two young girls, Allison and Ina. Allison asks Ina who is playing with an electronic tablet, if she wants to go out and play. Ina declines the offer and continues playing on her tablet. Allison then begins lying about her dad, and offers to tell Ina more of she comes out with her to play. Ina agrees and they run out of view.

### **Clip three**

Clip three is the first clip not including actors. The clip is edited from an episode of the TV-show called “Supernanny” and the clip lasts for 2 minutes and 27 seconds. It shows a young girl saying bye to her father. When he leaves she starts crying and screaming. The mother then carries her daughter to the back of the house while dad leaves. After 14 minutes (edited to shorten the video clip) of crying the father reappears and ignores the child, it is not until she starts calming down that he begins interacting with her again.

### **Clip four**

Clip four lasts for 29 seconds and is adapted from a documentary series on BBC with Louis Theroux, in an episode called “Autism”. It shows a young boy working with a task at school. His caretaker informs him that the pause has begun. The boy walks over to a shelf and leaves his work materials and then moves on to hit and scream directed at his caretaker. Another caretaker enters the picture and they resume with holding the boy.

### **Clip five**

This clip is also adapted from the documentary series by Louis Theroux and the BBC. It shows the young boy sitting by a desk drawing. The interviewer is talking with his parent when his younger sister enters the house and is welcomed by the family and interviewer and asked some questions about her day. The young boy then starts screaming and engaging in violence towards objects and self-injury. His mother makes a short remark at the young boy and begins holding and soothing him, while asking for his father to come help hold and the boy.

### **Agreement on function and data collection**

Each video-clip shown to the participants was discussed in a laboratory group with doctorates and master's degree holders, and students. Agreement on function was achieved for each video clip. Because each clip contained one or two occurrences of problem behavior, and attention always occurred as a consequence along with a tangible, the score of attention and tangible were noted as the same function.

Data was analyzed using the participants proposed function, based on each individual clip. When their hypothesized findings were identical with the function assumed by the expert panel it was scored as correct, when their answers were different it was scored as incorrect.

### **Forms**

The narrative ABC group received a narrative form that asked each participant to freely describe the events within the parameters of antecedents, behavior and consequence. The structured ABC group received a form developed by Michelle Wallace, PhD, which was translated by the current author and continuously evaluated in laboratory meetings with the faculty and other students (see Figure 1). It included broad categories to represent the environmental antecedents and consequences to a predefined problem behavior. The behavior was previously defined and each check mark represented the occurrence of the defined behavior.

Each category represents one or more functions and the amount of check marks within each category is summarized to a numeric value that suggests the function. Participants were however prompted to evaluate their data sets and conclude which function maintained the behavior. Naturally some variations occurred when translating the different categories of the contingencies, but they were discussed at length in the laboratory group and deemed acceptable. Some other distinct variations were made. The header where the English version asks to identify up to three behaviors was reduced to one cell with one behavior so participants did not write more than one behavior. Date, time and observer information was changed into “clip #” and predefined by the experimenter. Information about the individual, school grade and a short description of use was removed and exchanged for a box titled “What is the function?” where the participants wrote down their conclusions. A summarization box was added for the consequence “Irettesetelse og beskjed om å gjenoppta oppgave” meaning “Reprimand and redirection back to task”, giving it a point to negative reinforcement considering the occurrence of a possible short break in-between problem behavior and continuation of given task. This was also done for the “Alene” category, meaning “Alone”, to open for the possibility of evaluating intermittent schedules.

### Results

As can be seen in Figure 2, clip one showed 95% of the structured group concluding with positive reinforcement (attention and/or tangible) as the maintaining consequence, 5% give an answer not related to any function category. The narrative group shows 100% of participants concluding with positive reinforcement. The result are not significant  $X^2(1, N = 45) 1.06 p < .05$ . Results for clip two shown in Figure 3, showed the structured group concluding with positive reinforcement in 77% of the cases, 9 % conclude negative reinforcement and the remaining 14 percent show other explanations. The narrative group had 83% of participants concluding

positive reinforcement as the function of behavior, and the remaining 13% report other explanations to the problematic behavior, and was concluded as non-significant with a  $X^2(1, N = 44) 0.43 p < .05$ . For clip three (Figure 4) significance was not noted with a  $X^2(1, N = 43) 0.70 p < .05$  and data showed 55% of the structured group concluded positive reinforcement as the maintaining contingency, 23% concluded negative reinforcement, 14% reported multiple function (positive and/or negative, and or/automatic reinforcement). The narrative group had 78% of the participants concluding positive reinforcement, 13% report negative reinforcement, 9% multiple functions and 4% other explanations. Results from clip four (figure 5) did not show significant results  $X^2(1, N = 45) 0.53 p < .05$ . The structured group had 18% reporting positive reinforcement, 45% negative reinforcement, 5% automatic/sensory, 5% multiply function and the remaining 27% reporting other explanations. The narrative group had 39% of participants concluding positive reinforcement, 35% negative reinforcement, 9% multiple functions, and the remaining 17% report other explanations. In video five (figure 6), the structured group had 76% positive reinforcement, 5% negative reinforcement, 14% multiple functions, and 5 percent report other explanations. The narrative group had 87% percent report positive reinforcement, 4% negative reinforcement, and the rest 4% reported other explanation.  $X^2(1, N = 43) 1.70 p < .05$

Overall the narrative group reached the correct conclusion an average of 74,4% across video clips, while the structured group reached the correct conclusion 68,8% ( $M=68,8$ ) of the time. This overall comparison also did not appear to be significant  $X^2(1, N=45) 0.79 p < .05$ .

## **Discussion**

## **Discussion**

The purpose of this study was to investigate which ABC form may be more accurate at reaching a hypothesis regarding the functions of problem behavior. It also sought to provide some information about potential benefits of descriptive assessments when experimental analyses are not possible.

The narrative group showed slightly more accurate measures for every video-clip except number four, where the structured ABC group were more accurate. Clip four also had a larger range of different hypothesized functions compared with the other video clips which may be a result of the video clip itself or some other confounding variable. In general the amount of difference between the groups often consisted of one to three individuals concluding with different functions; this showed no statistical significance for any of the video clips, much like the result in the study by Lerman et al (2009). Given the fact that there are more people using the structured ABC form writing ambiguous functions as a conclusion, it may be a product of the experiment group. There may also be an issue with the specific form being confusing to the users. These issues could possibly have been reduced with a larger sample size for both groups, and/or having both groups use both the forms while recording data and finding a possible function. The latter may be difficult considering order-effect and the difficulty of arranging it in this type of experiment.

The overall findings are similar to those of Lerman et al. (2009), where the type of form seem to only create small differences. The data in the current study may not be directly comparable with that of Lerman et al. (2009), given the difference in sample size along with a different design and more importantly, the different level of behavioral training the subjects had received prior to the experiment.

Interestingly there seems to be an increase in the variation of responses from Clip one to Clip five, which may be due to the changing nature of the videos. Clip one 1 and two 2 had actors demonstrating problem behaviors and the environmental variables, while Clip three, four and five were real occurrences. The increased variation may come from an increased amount of irrelevant and ambiguous variables occurring in Clip three through five. This study cannot however demonstrate whether this is coincidental, but this information should be a consideration when conducting future experiments or training in functional assessments using video-clips.

Some notable weaknesses to the current study are the shortness of the video clips, often depicting only one or two occurrences of problem behavior in only one setting. This can give rise to speculation by the observer and may cause him/her to conclude with social reinforcement more frequently. It also questions the implication of this data because the video-clips did not provide a realistic observation period. If further research is done it would be wise to include the same problem behavior across a variety of settings and events to better establish real-life application of the direct observation. Apart from this it may have been favorable to split tangible and attention as function, when scoring positive reinforcement. This proved to be difficult because the video-clips always depicted social reinforcement given along with tangibles. A possible solution may be more occurrences of problem behavior, with and without tangibles delivered simultaneously with social reinforcement.

The data is however important in raising new questions for further investigation. It seems trained professionals are able to use both forms accurately but a narrative form may be a better choice given its potential ability to uncover idiosyncratic variables. It may be less appropriate when there is a high frequency of problem behavior because of time constraints associated with writing down clear depictions of problem behavior. On the other hand, this study has not

provided information regarding the use of ABC forms by individuals who have not received training in functional assessment and behavior analysis.

The implication of these findings is ambiguous: It is still unclear which method of recording is a better choice in different practical settings. It remains a choice of preference for the individual behavior analyst which tool to utilize, especially if compared to the findings of Lerman et al. (2009). The questions that have arisen from literature reviews enlighten some pressing matters regarding research on descriptive assessment tools. They may not be the best choice compared to experimental functional analysis (Beaver et al., 2014), but they do provide a safe and relatively simple alternative for identifying function, and the ease of application should be motivation for further investigation into its efficacy and accuracy under different settings, both dependent on case, client and staff variations.

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**Strukturert FAK analyse**

Klipp nr. 1

Atferd: Løst definert

**Hva er funksjonen?**  
Du kan være uenig og enig med talene  
ta en vurdering og skriv funksjonen

Område/setting hvor atferden oppsto (Kryss av og flere kan foregå samtidig)				
I hjemmet				
Ute				
Transport				
Jobb/skole				
Organisert aktivitet				
Lekeplass				
Annet				

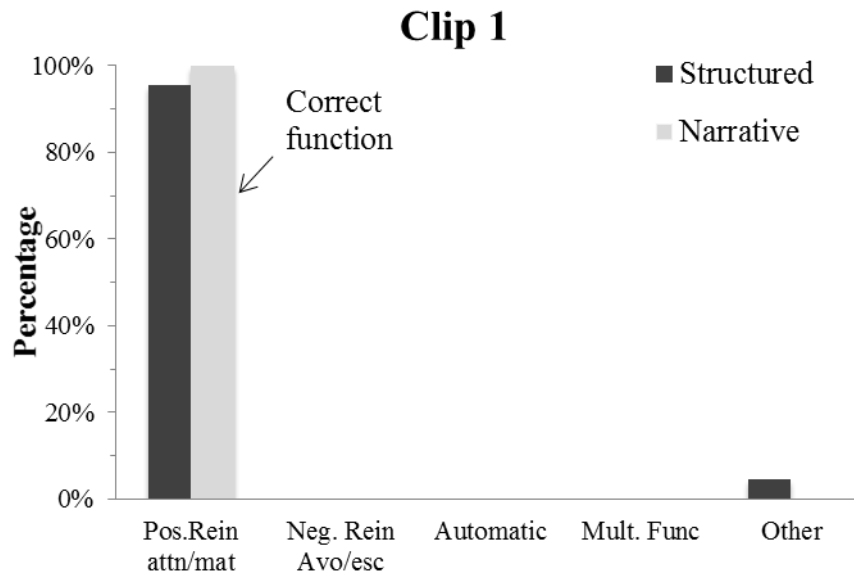
Generell pågående aktivitet (Kryss av og flere kan foregå samtidig)				
Frilek/avslapping (alene)				
Frilek/avslapping (sosial situasjon)				
Lunsj (forberedelser, spising, oppvask)				
Mat/snacks (forberedelser, spising, oppvask)				
Stell av seg selv og/eller andre huslige oppgaver				
Akademisk arbeid eller fysisk trening				
Alene (Sittende, på rom, i sengen etc.)				
Overganger eller endring av aktivitet				

Umiddelbar forutgående hendelse (Kryss av og flere kan foregå samtidig)				
Ignorert av noen/noen beveget seg vekk				
Irettesettelse/tilbakemelding				
Mat/objekt fratatt, nektet, utligning				
Andre ønsker nektet eller fratatt				
Gitt instruksjon eller beskjed om å gjøre en aktivitet				
Plaget eller erfet av andre				
Inngenting (Alene)				

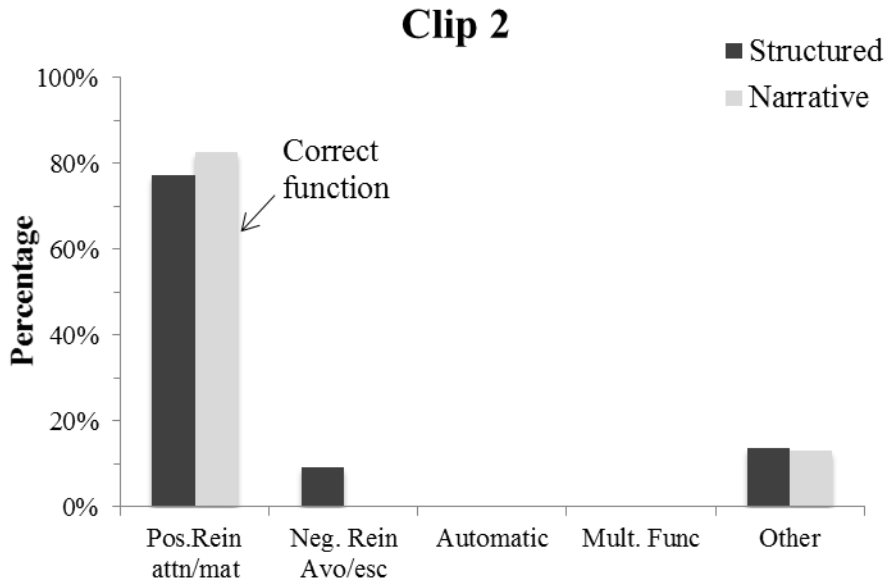
Umiddelbar konsekvens (Kryss av og flere kan foregå samtidig)				
Oppmerksomhet, blokkering, beskjed om å stoppe				
Irettesettelse og beskjed om gjennopta oppgave				
Bortvist til annet område/aktivitet				
Mat eller objekt gitt				
Oppgave/krav opphører, avsluttes, pauses				
Sosial situasjon opphører eller unngås				
Alene				

Pos forstrik (oppmerksomhet)
Pos forstrik (materieill)
Neg forstrik (unngåelse)
Automatisk (sensorisk)

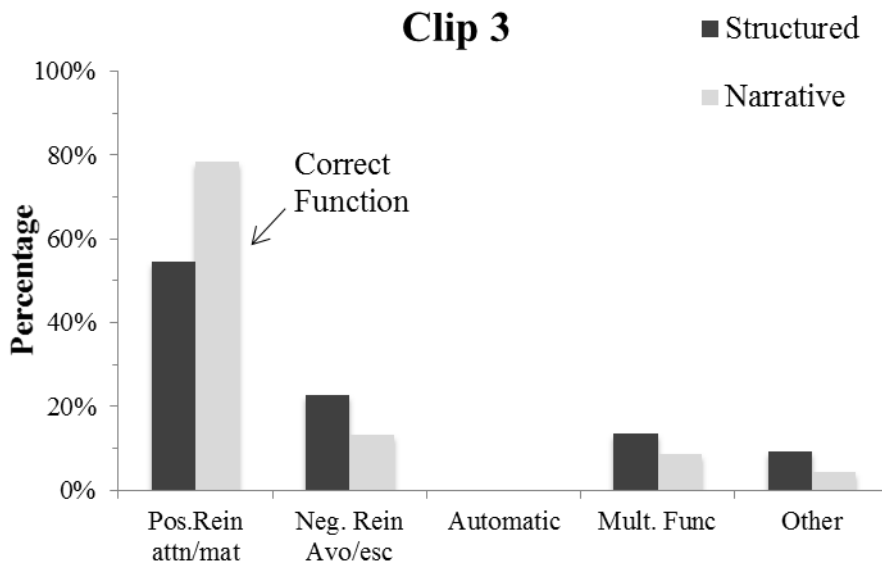
**Figure 1.** shows the structured ABC form used in the experiment. The participant would create a mark for each occurrence of behavior and categorize it under the different contingencies. This would then be summarized and the hypothesis gained, written in the large box in the upper right corner.



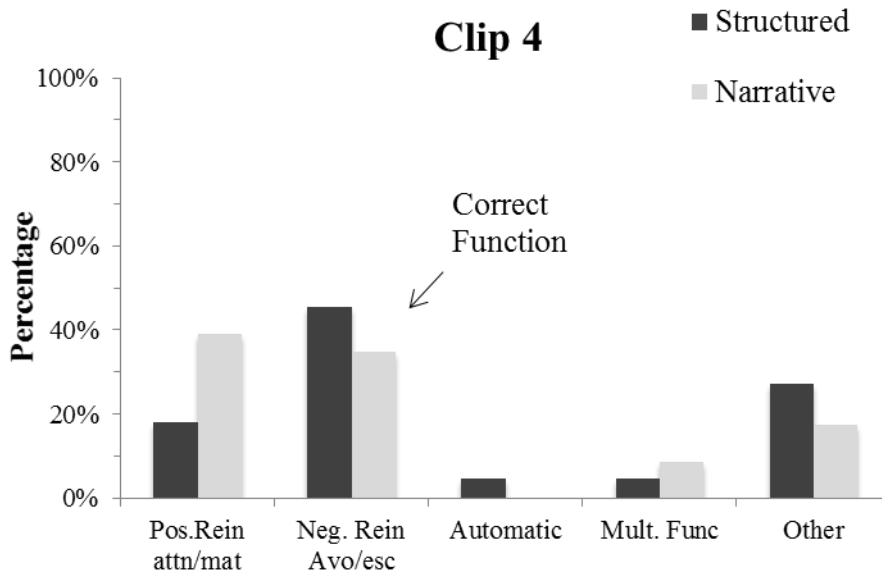
**Figure 2.** Represents answers given to video 1. The correct function related to the clip is marked. Y-axis shows percentage of answers within each function. The function is identified in the X-axis



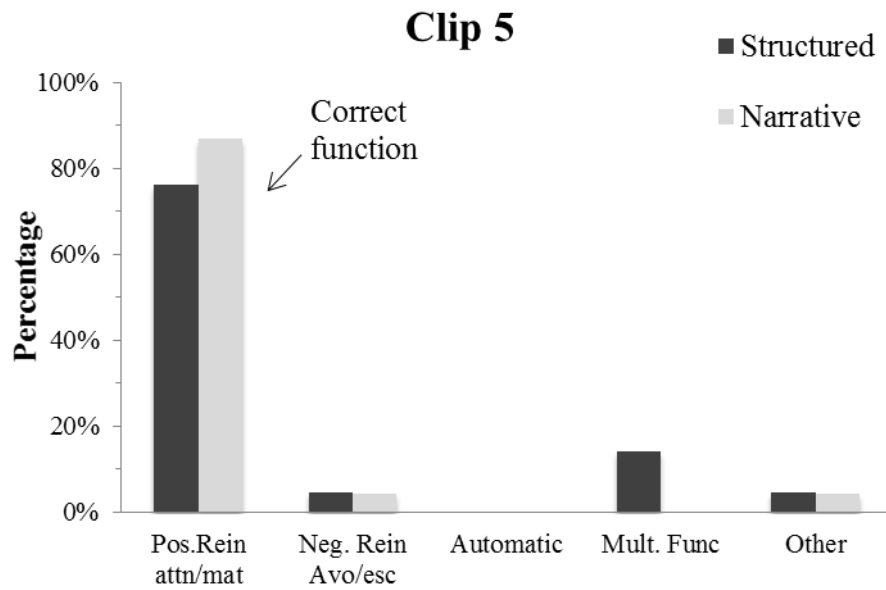
**Figure 3.** Represents answers given to video 2. The correct function related to the clip is marked, Y-axis shows percentage of answers within each function. X-axis shows the functions of behavior.



**Figure 4.** Represents answers given to video 3. The correct function related to the clip is marked, Y-axis shows percentage of answers within each function. X-axis shows the functions of behavior.



**Figure 5.** Represents answers given to video 4. The correct function related to the clip is marked, Y-axis shows percentage of answers within each function. X-axis shows the functions of behavior



**Figure 6.** Represents answers given to video 5. The correct function related to the clip is marked, Y-axis shows percentage of answers within each function. X-axis shows the functions of behavior.

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Vår ref: 40752 / 3 / 55A

Deres dato:

Deres ref:

#### TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 14.11.2014. Meldingen gjelder prosjektet:

40752	<i>Sammenlikning av ulike deskriptive analyser for problematferd</i>
<i>Behandlingsansvarlig</i>	<i>I Høgskolen i Oslo og Akershus, ved institusjonens øverste leder</i>
<i>Daglig ansvarlig</i>	<i>Svein Eikeseth</i>
<i>Student</i>	<i>Knut-Aleksander Brath</i>

Etter gjennomgang av opplysninger gitt i meldeskjemaet og øvrig dokumentasjon, finner vi at prosjektet ikke medfører meldeplikt eller konsesjonsplikt etter personopplysningslovens §§ 31 og 33.

Dersom prosjektopplegget endres i forhold til de opplysninger som ligger til grunn for vår vurdering, skal prosjektet meldes på nytt. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>.

Vedlagt følger vår begrunnelse for hvorfor prosjektet ikke er meldepliktig.

Vennlig hilsen

Katrine Utaaker Segadal

Sondre S. Arnesen

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*Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.*

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**Appendix 1.** Shows the electronic receipt of the evaluation of the project by the Norwegian social science data services.