# Identifying Indices of Happiness and Unhappiness Among Adults With Autism: Potential Targets for Behavioral Assessment and Intervention

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ABSTRACT

Research is increasingly demonstrating the importance of monitoring indices of happiness as part of behavioral programs for individuals who have severe intellectual disabilities. We evaluated a practitioner-oriented process for identifying and validating individualized indices of this private event among three adults with autism who were nonvocal or minimally vocal. Caregiver surveys were administered to obtain agreement regarding behavior displayed when the individuals were happy and unhappy, as well as situations in which they were likely to experience happiness and unhappiness. Observations corroborated caregiver opinion in that participants displayed more happiness indices in situations reported to be accompanied by happiness, and for the most part, more unhappiness indices in reported unhappiness situations. Subsequent choices by each participant supported the validity of the individualized indices. Results are discussed regarding how identifying happiness indices can be a useful component of behavioral applications, as well as guidelines and cautions regarding use of the indices in routine practice.
*Keywords:* adults with autism, happiness

A pervasive concern in the provision of supports and services for people with severe intellectual disabilities is promoting a desirable quality of life. Although there are many aspects of life quality (Schalock, 1997), one of the most basic is individual enjoyment or happiness (Carr, 2007). Recognition of the importance of happiness is well reflected in the growing number of behavioral investigations addressing happiness among people with severe intellectual disabilities (see Dillon & Carr, 2007, for a review).

A prerequisite for effectively promoting happiness is a valid means of identifying happiness. Because happiness is a construct that represents a private event, verbal reports are typically used to indirectly evaluate happiness among most people (Felce & Perry, 1995). However, individuals with severe intellectual disabilities and significant communication challenges often lack the requisite skills to verbally report the experience of happiness; thus, other indices of happiness must be identified for this population (Green & Reid, 1996).

Investigations on happiness among people with severe intellectual disabilities have focused on indices (other than verbal self-reports) that are very similar to indices among people who do not have such disabilities (Reid & Green, 2006). For example, indices of happiness typically include overt behaviors such as smiling and laughing whereas indices of unhappiness usually include behaviors such as frowning and grimacing. In one sense, using behavioral indices of happiness and unhappiness common among people who do not have disabilities has become a rather traditional means of defining happiness and unhappiness among people who have severe intellectual disabilities (Reid & Green).

Despite advances in assessing happiness with the traditional indices, concern exists regarding the use of such indices. Two independent reviews of the behavioral research on happiness have noted one concern in particular: attention should be directed to the validity of behavioral indices as accurately reflecting the construct of the private event of happiness on an *individual* basis (Dillon & Carr, 2007; Reid & Green, 2006). Although there are commonalities in how people act when they are happy as represented by the traditional happiness indices, people can also act in different ways (e.g., some people may cry when very happy). Consequently, it is recommended that indices of happiness as well as corresponding means of observing such indices be individually tailored for people who cannot readily communicate about their private events (Dillon & Carr).

One population for whom it seems particularly important that indices of happiness be individualized is adults

with autism who are nonvocal or minimally vocal (Reid & Green, 2006). The disability of autism is often associated with difficulties in expressing affect such as happiness in conventional ways (Charlop & Walsh, 1986). Such difficulties are compounded among adults who display more severe indicators of autism (Powers, 2000). These individuals often have long histories of a lack of communication skills, including typical expressions of affect. To date, however, behavioral research on happiness has focused on people with severe intellectual and physical disabilities in contrast to adults with autism (Reid & Green).

Accurately identifying happiness indices among adults with autism who do not verbally describe their private emotional experiences can be important for behavior analysts in a number of ways. First, valid indices are necessary to objectively evaluate the effects of activities designed to promote happiness (Moore, Delaney, & Dixon, 2007; Smith, Bihm, Tavkar, & Sturmey, 2005). Second, it can be helpful to identify unhappiness indices associated with certain events such that those events could be prevented or altered when possible to minimize unhappiness (Green & Reid, 1999). Third, indices of happiness and/or unhappiness can be helpful for evaluating the effects of behavior-reduction interventions on individual affect, as well as to compare the effects of different interventions (Lindauer, DeLeon, & Fisher, 1999; Toole, Bowman, Thomason, Hagopian, & Rush, 2003). The latter evaluations can help determine strategies for treating challenging behavior that potentially optimize life quality while the interventions are in effect. Such evaluations may also help resolve controversies due to caregiver misconceptions about perceived undesirability of certain interventions (Toole et al.). Relatedly, happiness indices can be used to assess the effects of different teaching programs on learner affect (Dunlap & Koegel, 1980; Green, Reid, Rollyson, & Passante, 2005).

The purpose of the current investigation was to evaluate a means of identifying and validating individualized indices of happiness and unhappiness among adults with autism who are nonvocal or minimally vocal. The intent was to demonstrate a systematic, practical process for practitioner use within human-service agencies when concerned about happiness among adults with autism who do not communicate these emotional experiences in conventional ways. The process also was designed to actively involve agency staff in identifying respective indices and ongoing situations in which the indices are likely to be observed.

## Method

### *Participants and Settings*

Three men with autism participated. These individuals were selected for the investigation because they were adults with autism and communicated vocally infrequently (Mr. Hogan) or not at all (Mr. Greer and Mr. Jones). The diagnosis of autism for each participant was provided by at least two independent evaluations. Each individual also had severe intellectual disabilities based on standard assessments (e.g., Wechsler Adult Intelligence Scale). Mr. Greer (age, 41 years), who had a severe hearing loss, responded to simple gestures and a small number of manual signs. Mr. Hogan (age, 22 years), who had a seizure disorder, responded to simple vocal and written instructions and Mr. Jones (age, 37 years) responded to simple vocal instructions. Expressive communication for Mr. Greer and Mr. Jones primarily involved pointing or leading support persons to desired objects; neither participant communicated with spoken words. Mr. Hogan communicated with idiosyncratic gestures and he occasionally vocalized with single words or short phrases when specifically prompted by caregivers either vocally or with written text (his vocalizations typically involved repeating what was spoken to him). Socially, each participant usually isolated himself away from other people when in group situations. Each participant's initiation of social interactions occurred very infrequently and was limited to caregivers in contrast to peers.

All participants exhibited frequent stereotypic behavior such as rocking, finger gazing, and body rubbing. Each participant also engaged in challenging behavior, including aggression, property destruction, and/or self-injury. One participant, Mr. Greer, received a psychotropic medication (paroxetine) that remained constant during the investigation. All participants resided within group homes of a center-based agency and attended various day-support programs as described below. Staff-to-consumer ratios within the homes generally ranged between one-to-four and one-to-eight.

The setting for Mr. Greer was a supported work site at a small publishing company in which he was employed part time to perform clerical tasks (e.g., collating manual pages, addressing and stamping advertising fliers). The setting for Mr. Hogan was an adult education building in which he attended classes for people with severe intellectual disabilities. The adult education program provided teaching services and supported and contract work. The setting for Mr. Jones was the same as that for Mr. Hogan with the addition of a living room in his group home that consisted of easy chairs and a table.

### *General Experimental Process*

The experimental process involved three components. First, caregivers for each participant identified individualized indices of happiness and unhappiness and identified ongoing situations in which the participants likely experienced happiness and unhappiness. Second, to initially validate the caregiver-nominated indices, participants were observed in the situations reported to be accompanied by happiness and unhappiness. Occurrence of the indices was then compared across the situations. Third, to further validate the indices, participants were provided a choice of situations in which they previously displayed varying frequencies of happiness and unhappiness indices.

### *Observation System and Interobserver Agreement*

Observations of individualized happiness and unhappiness indices were conducted using 10-s, partial-interval

recording. Each observation session consisted of 30, 10-s intervals. Interobserver agreement checks were conducted during 68% of the observations, including multiple times during each experimental condition for each participant. Interobserver agreement was calculated for occurrence, nonoccurrence, and overall agreement on an interval-by-interval basis for each set of indices using the formula of number of agreements divided by agreements plus disagreements, multiplied by 100%. For happiness indices, occurrence agreement for Mr. Greer, Mr. Hogan, and Mr. Jones averaged 100%, 92% (range, 67% to 100%), and 80% (0% to 100%), nonoccurrence averaged 100%, 90% (range, 63% to 100%), and 95% (range, 82% to 100%), and overall agreement averaged 100%, 95% (range, 79% to 100%), and 96% (range, 87% to 100%), respectively. For unhappiness indices for the three participants, agreement averaged 100%, 67% (range, 0% to 100%), and 97% (range, 80% to 100%) for occurrence, 100%, 99% (range, 93% to 100%), and 99% (range, 90% to 100%) for nonoccurrence, and 100%, 99% (range, 93% to 100%), and 99% (range, 93% to 100%) for overall agreement, respectively.

Observations were conducted by the experimenters. Prior to observing as part of the current study, observers had received previous training to a criterion of at least 80% occurrence agreement for two observations of each participant in routinely occurring situations. Each observer practiced observing with the senior experimenter (who had considerable prior experience observing indices of happiness) and receiving feedback from the experimenter following each practice observation. Upon reaching the training criterion, observers then independently observed during the study proper.

### *Identification of Happiness and Unhappiness Behavioral Indices*

The primary target behaviors were *individualized indices of happiness* and *unhappiness*. To identify the indices, the following process was used for each participant. First, at least three support staff (maximum five) who were familiar with the participant were identified. Each staff person had worked with the participant on at least a weekly basis for a minimum of one year. Second, each of these staff (teachers, teacher assistants, a residential direct support staff, a psychologist, and a speech and language pathologist) independently responded to two questions on a survey form (available from the authors). The first question asked the staff member to list specific behaviors the participant emitted when he was deemed to be "happy." The second question asked for the same information when the participant was "unhappy." Next, the behavior(s) reported as potential indices for happiness and unhappiness by at least two staff for each participant were selected as the target indices. This process resulted in the operational definitions for happiness and unhappiness indices presented in Table 1.

One exception with the process just summarized occurred for Mr. Greer. The only behavior that at least two staff agreed Mr. Greer displayed when unhappy was turning over furniture. Though this behavior was included in the definition of unhappiness, the definition was expanded to include additional behaviors that were listed by any individual staff person as representing unhappiness. The latter behaviors were included in the definition of unhappiness because the consensus behavior of turning over furniture was considered (based on discussions with staff) as representing extreme unhappiness relative to

*Table 1. Individualized Definitions of Happiness and Unhappiness Indices*

| Participant | Happiness | Unhappiness |
|---|---|---|
| Mr. Greer | pat person on back, laugh, smile | hit head, cry, press finger on eye, sign "finish" during activity, physically force staff to do something, turn over furniture |
| Mr. Hogan | responding to a playful social interaction (continuing the interaction by reacting with a playful response), smile, laugh | move item for no apparent purpose, property destruction (throwing object or turning over furniture), not responding to a playful social interaction, cry, yell, frown |
| Mr. Jones | running (indoors), patting leg or stomach, laugh, smile | bite hand, cry, yell, frown |

unhappiness in general. Also, this behavior could not be allowed in the job setting in which the experimental observations occurred for Mr. Greer.

### *Identification of Happiness and Unhappiness Situations*

To identify situations in which the participants experienced happiness and unhappiness, a process similar to that used to identify indices of happiness and unhappiness was employed. The same staff completing the two questions on the previously described survey independently responded to two more questions. The latter two questions queried in what situation(s) the participant was likely to be happy and unhappy, respectively. Next, those situations reported by at least two staff for a participant were selected as the respective happiness and unhappiness situations.

### *Experimental Design and Conditions*

The experimental design was an alternating treatments design (Bailey & Burch, 2002). There were two conditions for each participant, representing the previously described happiness and unhappiness situations. Each condition was conducted once per day for each participant, with the order of conditions alternated across days. Although no formal observations of happiness and unhappiness indices were conducted immediately prior to the respective situations, informal observations suggested such indices were not displayed immediately before the situations were initiated. If happiness or unhappiness indices were apparent at such time, it was planned that the initiation of the situations would be delayed until a participant was not exhibiting any of the indices (this never occurred).

For Mr. Greer, the happiness situation involved providing him with his sketch pad at a table and allowing him to draw on the pad (when he was provided with the pad, he consistently drew on the pad without prompting). The unhappiness situation involved instructing him to sit at the table with no materials present and no interaction from staff who were present in the room. Each condition (separated by at least 30 min) was conducted for 5 min at a time during Mr. Greer's regular break period within his supported job at the publishing company. During both situations, a job coach remained within a few feet of Mr. Greer as was the customary routine (due to a history of pica, which was to be blocked by the job coach; this did not occur during the observed situations).

For Mr. Hogan, the happiness situation involved his break routine in the lounge in which he initially approached the counter, pointed to a snack he desired, received the item from the clerk behind the counter, took the item to a table, and then sat and consumed the snack. This was a very familiar routine for Mr. Hogan and he completed the above steps independently. A staff person (experimenter) accompanied Mr. Hogan but rarely interacted with him due to his independence. Other staff were present in the lounge area and periodically spoke to Mr. Hogan in accordance with their usual routine. Observations began when he entered the lounge and continued for 5 min thereafter. The unhappiness situation involved Mr. Hogan being instructed to read a brief passage out loud from a workbook and then answer questions about the passage by circling the correct answer in the workbook. A staff person provided the initial instruction to read the passage and answer the questions in the workbook. The staff person then provided prompts to Mr. Hogan if he began reading too softly for the person to hear or if his pronunciation of words was not clear. The staff person also provided feedback regarding the correctness of his answers by telling him an answer was correct or instructing him to re-read a part of the passage and answer the question again (if the initial answer was incorrect). This process for reading and answering questions represented a common teaching format and had been in place as part of Mr. Hogan's overall instructional plan. Observations occurred throughout the first 5 min of the process.

The happiness condition for Mr. Jones involved him being in a room in the adult education building, provided with a familiar leisure item to hold, and social interaction from a familiar staff person. The item was given to Mr. Jones when he entered the room (he always reached for the item when presented and then held on to it throughout the condition). He was provided no instructions; however, the staff person interacted with him every 30 s in a social manner (e.g., engaging in casual conversation). Mr. Jones typically wandered about the room and occasionally ran for short distances. The unhappiness condition for Mr. Jones occurred in the same manner as the happiness condition with the following differences. First, he was in a room in his residence that was customarily used for leisure purposes. Second, a familiar leisure item was not available for him to hold. Third, the staff person did not interact with Mr. Jones. Observations were conducted throughout the first 5 min of both conditions while Mr. Jones was in the respective rooms.

### *Choice Validation*

To further validate the individualized definitions of happiness and unhappiness indices, a choice comparison was conducted with each participant (Fisher et al., 1992). It was reasoned that if the definitions were valid, then situations in which a participant exhibited more happiness indices should be chosen more frequently than situations showing less (or no) happiness indices. Likewise, situations in which a participant showed more unhappiness indices should be chosen less frequently than situations in which a participant exhibited less indices of unhappiness. Throughout the choice presentations, no contingencies were in place for the choice responses other than immediately accessing the chosen option (e.g., no experimenter approval for making a choice response).

The choice evaluation for Mr. Greer involved escorting him to a room separate from his regular work room at the publishing company during his scheduled break. In the former room, there were two chairs placed at opposite ends of a long table. On the table in front of one of the chairs was the sketch pad that Mr. Greer used during the happiness situation evaluation whereas there were no materials on the table in front of

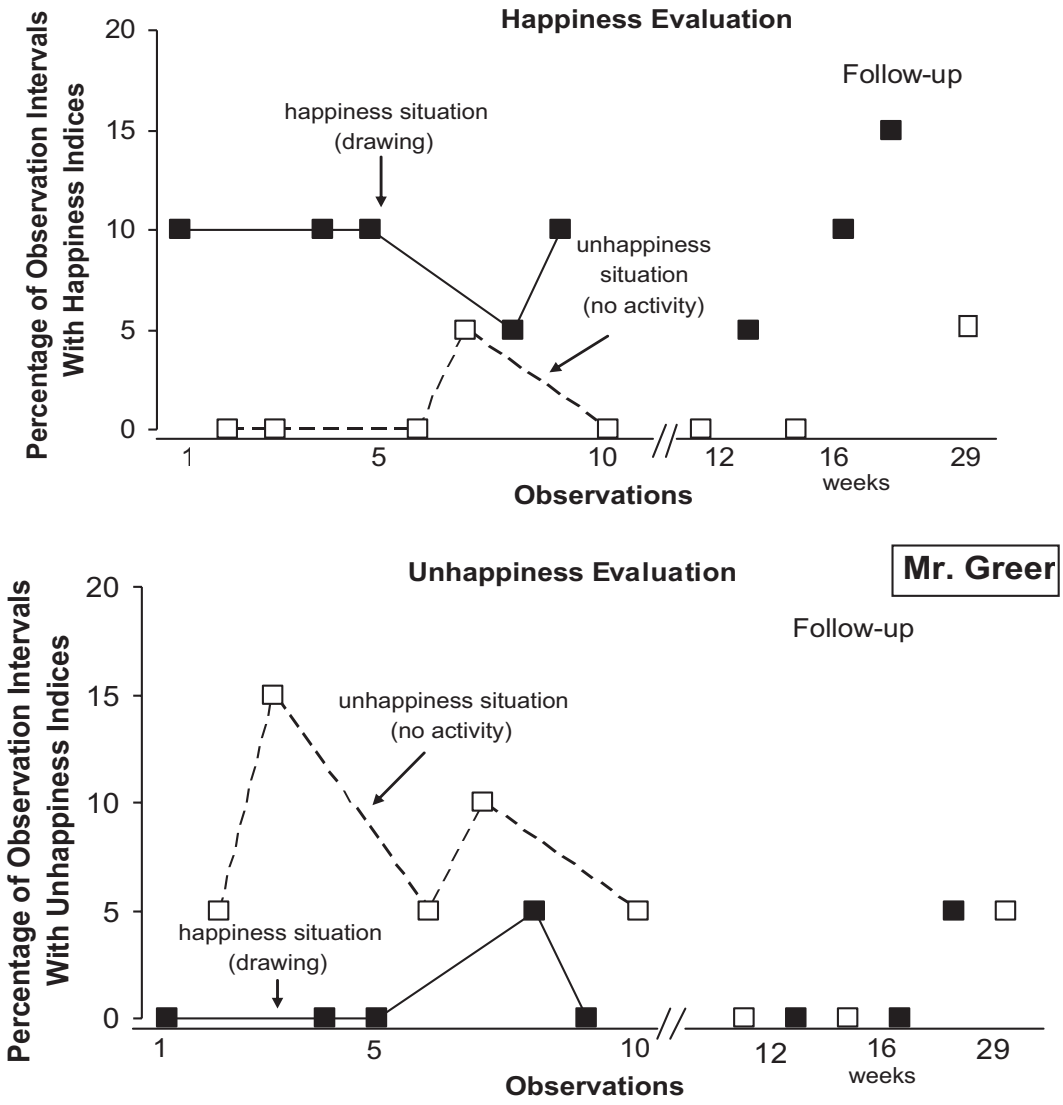


*Figure 1. Percentage of observation intervals with happiness indices during the happiness evaluation (top panel) and unhappiness indices during the unhappiness evaluation (bottom panel) during each observation for Mr. Greer.*

the other chair, which represented the unhappiness situation (i.e., seated with no activity). Standing between the two ends of the table with Mr. Greer, the job coach pointed to each chair at the ends of the table and signed for Mr. Greer to choose one. The order of pointing to each end was counterbalanced across choice presentations (the placement of the materials remained constant). An observer recorded Mr. Greer's choice, defined as sitting in the chair with no materials in front of it (choice of the unhappiness situation) or sitting in the chair with the sketch pad in front and using the sketch pad (choice of the happiness situation). A maximum of two choice presentations were conducted per day, separated by at least 30 min. In total, there were five choice presentations across four days during the study proper, and then three during follow-up.

The choice evaluation for Mr. Hogan involved choosing between going to the lounge for a snack (happiness situation) and to a room to read passages and answer questions (unhappiness situation). The choice presentation format was based on procedures typically used with Mr. Hogan for providing choices and involved the following. Two choice cards were prepared, with one having "canteen (lounge)" written on it and one having "read with (staff person's name)" written on it. The two cards were presented to Mr. Hogan at the entrance to the education building with a vocal instruction to choose what he wanted. A choice response was defined as Mr. Hogan saying what was written on a card and/or pointing to a card (there was never any discrepancy between what he pointed to and what he said). One choice was provided on each of seven days, with the side order of the choice cards alternated across choice presentations.

The choice evaluation for Mr. Jones involved the following. An experimenter escorted him to the entrance of a room. A familiar staff person stood on one side of the room holding a familiar leisure item (the side of the room in which the staff person stood was alternated across choice presentations). The experimenter then instructed Mr. Jones that he could go "over

there" while pointing to one side of the room or "over there" while pointing to the other side of the room (the left side of the room was always pointed to first, as the happiness and unhappiness situations were alternated from side to side as just noted). A choice response was defined as Mr. Jones entering one side of the room. If Mr. Jones entered the side with the staff person, the staff member immediately greeted him and gave him the leisure item and then interacted with him in the same manner as during the happiness situation. If Mr. Jones entered the side without the staff person, the same procedures occurred as in the previously described unhappiness situation. One choice presentation was provided for Mr. Jones on each of five days.

Interobserver agreement checks regarding a participant's choice were conducted during at least 29% of each participant's choices, with no disagreements regarding the occurrence of the choice response for either the happiness or unhappiness situation. Additionally, to assist in determining if the choice response represented a valid choice, observations occurred following each choice response regarding whether the participant actually participated in the chosen activity (Sigafoos & Dempsey, 1992). For Mr. Greer, participation was defined as seated at the table and drawing on the sketch pad when choosing the happiness situation and sitting in the designated chair without any item manipulation (the sketch pad was not present) when choosing the unhappiness situation. Participation was observed on a 15-s, partial interval basis throughout the first 3 min of the chosen condition. For Mr. Hogan, participation was defined as walking to the area of the adult education building that corresponded to his choice with the choice card (i.e., either walking and entering the lounge or the designated room in which his reading customarily occurred). For Mr. Jones, participation was defined for the choice of the happiness situation as taking and holding the leisure item from the staff person on the designated side of the room. For the unhappiness situation, participation was defined simply as walking to the other side of the room.

## Results

The results for Mr. Greer are depicted in Figure 1. Overall, Mr. Greer showed relatively infrequent indices of happiness and unhappiness (note the range of the vertical axes on Figure 1). However, Mr. Greer exhibited more indices of happiness (top panel) during his happiness situation relative to his unhappiness situation. Conversely, as indicated on the bottom panel of Figure 1, Mr. Greer displayed more indices of unhappiness during the unhappiness situation relative to the happiness situation. Follow-up observations conducted from 12 to 29 weeks indicated the findings regarding happiness indices maintained in that there were always more happiness indices in the happiness situation relative to the unhappiness situation. Follow-up results for unhappiness indices, however, were not supportive of the initial findings in that there were no differences in the occurrence of unhappiness indices across the situations.

As indicated on the top panel of Figure 2, Mr. Hogan consistently displayed happiness indices in the happiness situation and never displayed any unhappiness indices in that situation. In contrast, during the unhappiness situation, he consistently displayed unhappiness indices and never displayed happiness indices in the unhappiness situation.

Results for Mr. Jones (Figure 3) were less consistent in that he displayed happiness and unhappiness indices in both situations. However, overall there were slightly more happiness indices in the happiness situation relative to the unhappiness situation. Results for unhappiness indices (bottom panel) were similar across both situations.

### *Choice Validation*

As indicated in Figure 4, Mr. Greer chose his happiness situation (versus the unhappiness situation) on all choice presentations during the study proper and during follow-up. Mr. Hogan also chose his happiness situation on all choice presentations, and Mr. Jones chose his happiness situation on 80% of the choice presentations. He chose the unhappiness situation on the first choice presentation and then chose the happiness situation on each of the next four presentations.

The consistency of the choice responses for all participants suggested the participants discriminated between the happiness and unhappiness situations that were presented. Further support for the validity of the choice responses stems from the participation observations conducted following the choice responses. Specifically, Mr. Greer drew on his sketch pad during an average of 97% of observation intervals following his choices for the happiness situation, Mr. Hogan always walked to the lounge area following his choices for the happiness situation, and Mr. Jones always held the leisure item once presented following his choices for the happiness situation. It should also be noted though that prior to the choice presentations, participants were not presented with a forced exposure to the choice opportunities. Future research may include such a process to help further establish the validity of the choice process.

## Discussion and Guidelines for Practice

Results appear to support the process for identifying individualized indices of happiness and unhappiness for adults with autism who are nonvocal or minimally vocal. All three participants displayed more happiness indices in the happiness situation relative to the unhappiness situation, although the difference was marginal for Mr. Jones. Two of the three participants also displayed more unhappiness indices in the unhappiness situation than the happiness situation. Perhaps most important was that all participants consistently chose the situation in which they previously displayed more happiness indices relative to the situation in which they showed less happiness indices when provided a choice of the two situations. Follow-up observations conducted with one participant (Mr. Greer) indicated that happiness indices remained durable whereas the follow-up observations of unhappiness indices showed no differences across happiness versus unhappiness

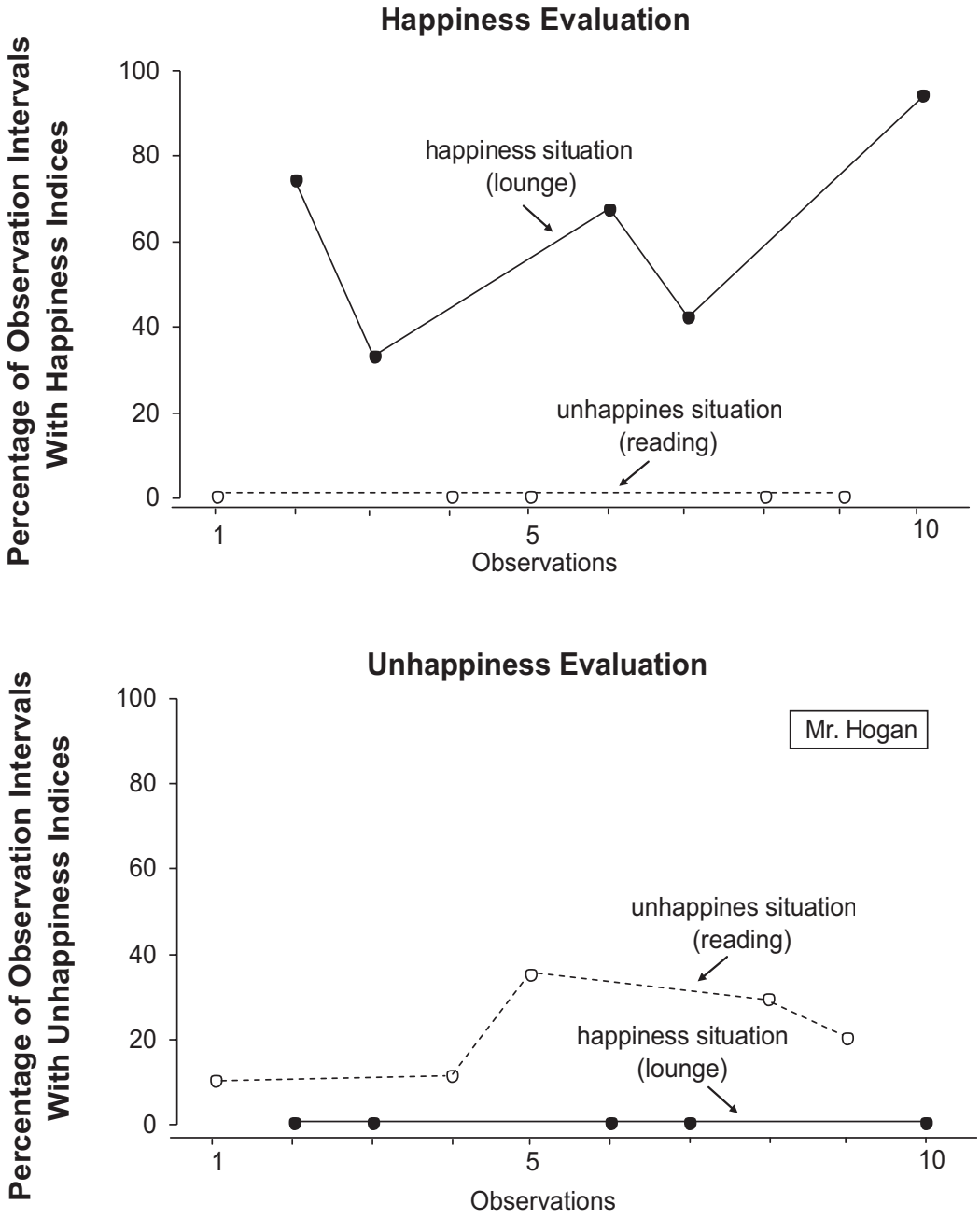


*Figure 2. Percentage of observation intervals with happiness indices during the happiness evaluation (top panel) and unhappiness indices during the unhappiness evaluation (bottom panel) during each observation for Mr. Hogan.*

situations. Considering some inconsistency in the latter results for Mr. Greer and the unavailability of follow-up data for the other participants, more research is needed before forming conclusions regarding the durability of identified indices.

In light of results just summarized, the process described in this investigation appears to offer a useful approach for behavior analysts interested in addressing happiness among adults with autism who do not vocally describe this presumed private event. Such steps involve: (1) questioning agency staff familiar with an individual what behavior the person exhibits when happy and unhappy and identifying those behavioral indices reported by at least two staff, (2) questioning familiar staff about ongoing situations in which the individual is most likely to display indices of happiness and unhappiness and identifying those situations agreed upon by at least two staff, (3) observing the identified indices while an individual is participating in the two situations and determining if there are differences in frequency of the respective indices and, (4) if the observations tend to corroborate differences in happiness/unhappiness indices across happiness and unhappiness situations, offering repeated choices of the two situations to further corroborate the validity of the indices.

The process just described was designed for direct application within human service agencies in which adults with autism often spend a majority of their time. Addressing indices of happiness within ongoing situations can reduce concerns of generalization that might arise when happiness indices are addressed in more analogue or simulated situations (i.e., those which are different from the day-to-day activities of individuals). The current process also was designed with concerns for time efficiency and practicality as a means of facilitating its use by practitioners. The four-question survey required only a brief amount of time for staff to complete (less than 10 min). The happiness and unhappiness situations identified were already ongoing in the routine of the participants, each situation was observed for only 5 min at a time, and the choices required only a few minutes followed by 3 min of observation of individual participation in the chosen activity. Hence, the amount of time to identify and obtain some validation for the happiness and unhappiness indices would not appear to be cumbersome for most practitioners. However, the process does require some sound analytic skills; particularly an ability to conduct systematic observations of the indices using a partial-interval recording method and obtaining interobserver agreement on those observations. Because of such skills, the process would seem applicable for use only by practitioners with a reasonable background and training in behavior analysis.

It should also be noted that the apparent accuracy of the staff-nominated indices and happiness/unhappiness situations appears discrepant from some previous research. Several investigations have indicated that caregiver opinion is not very accurate for determining preferred activities among people with severe disabilities (see Ivancic, 2000; Reid & Green, 2006). However, results supporting the accuracy of caregiver opinion, and particularly in regard to identifying *most* and *least* preferred activities, have also been reported (Dillon & Carr, 2007; Ivancic; Reid & Green). Until future research identifies variables that are more specifically associated with the accuracy of caregiver opinion, relying on agreement among at least two staff seems a reasonable approach to using staff nomination of preferred/nonpreferred activities. Some support exists for relying on agreement of two familiar caregivers versus individual staff report for improving caregiver identification of preferences (Reid et al., 2007). Given reports of difficulties in relying exclusively on staff identification of preferences though, it is recommended to include validation of such reports when identifying indices and situations related to happiness and unhappiness as occurred in this investigation with the observations and choice assessments. In situations where there is no agreement among staff regarding identified indices or staff are unable to identify any indices, systematic preference assessments could be conducted (Dillon & Carr) to identify preferred and nonpreferred activities likely to be accompanied by happiness and unhappiness indices, respectively, with subsequent observation and choice validation. However, conducting systematic preference assessments requires additional skills among practitioners relative to administering a brief survey and is likely to encompass somewhat more time relative to using the surveys.

In considering the use of the process evaluated in this investigation for identifying happiness and unhappiness indices, a reasonable question that arises is why one would not rely solely on the more traditional indices described earlier. Using established indices would negate the amount of time and effort, albeit seemingly not an excessive amount, to identify indices individually. In this regard, there was overlap between the target indices in this investigation and the traditional indices (e.g., smiling and laughing were identified as happiness indices for each participant). The focus of the current investigation was not on comparing the validity of individualized versus traditional indices. However, pilot work has suggested that the traditional indices appear valid for some adults with autism but not others (Lattimore, Parsons, & Reid, 2007), though such research is too incomplete to allow definitive conclusions. Additional research seems necessary to better specify the conditions under which the traditional indices are most likely to be valid indicators of the private event of happiness. Until more research is reported, it would appear wise to validate indices on an individual basis for people who have significant difficulties expressing affect in conventional ways such as with the population addressed here (cf. Dillon & Carr, 2007). Relatedly, results regarding the identification and validation process should not be generalized to populations of people with other types of disabilities or other age groups (e.g., young children with autism).

Another qualification with the results pertains to the observations of happiness and unhappiness indices. Although the observers were trained to a pre-established criterion of agreement prior to observing as part of the study proper, and observed independently during the interobserver agreement checks, they were not blind to the experimental conditions (i.e., happiness vs. unhappiness conditions). A more cautious approach, and one that is recommended for future research, would be to keep observers uninformed of the ongoing conditions while observing happiness indices if possible.

The importance of practitioner attention to happiness and targeting valid indicators of happiness was noted in the introductory comments of this paper. In brief, tracking happiness indices can be important for potentially enhancing quality of life by assessing the effectiveness of activities specifically intended to increase happiness, identifying routine activities accompanied by indices of unhappiness to remove or alter the activities where possible to make them less unpleasant, and assessing effects of interventions to increase or decrease other important behaviors with the intent of selecting effective interventions that have the best impact on life quality while the interventions are ongoing. Systematically monitoring happiness indices may also resolve concerns that various behavioral interventions would not be well received among consumers by demonstrating the interventions are accompanied by happiness, or at least no reduction in happiness (cf. Toole et al., 2003). Although these procedures were not evaluated in the current investigation to actually affect indices of happiness or unhappiness, reports of their use have been described elsewhere

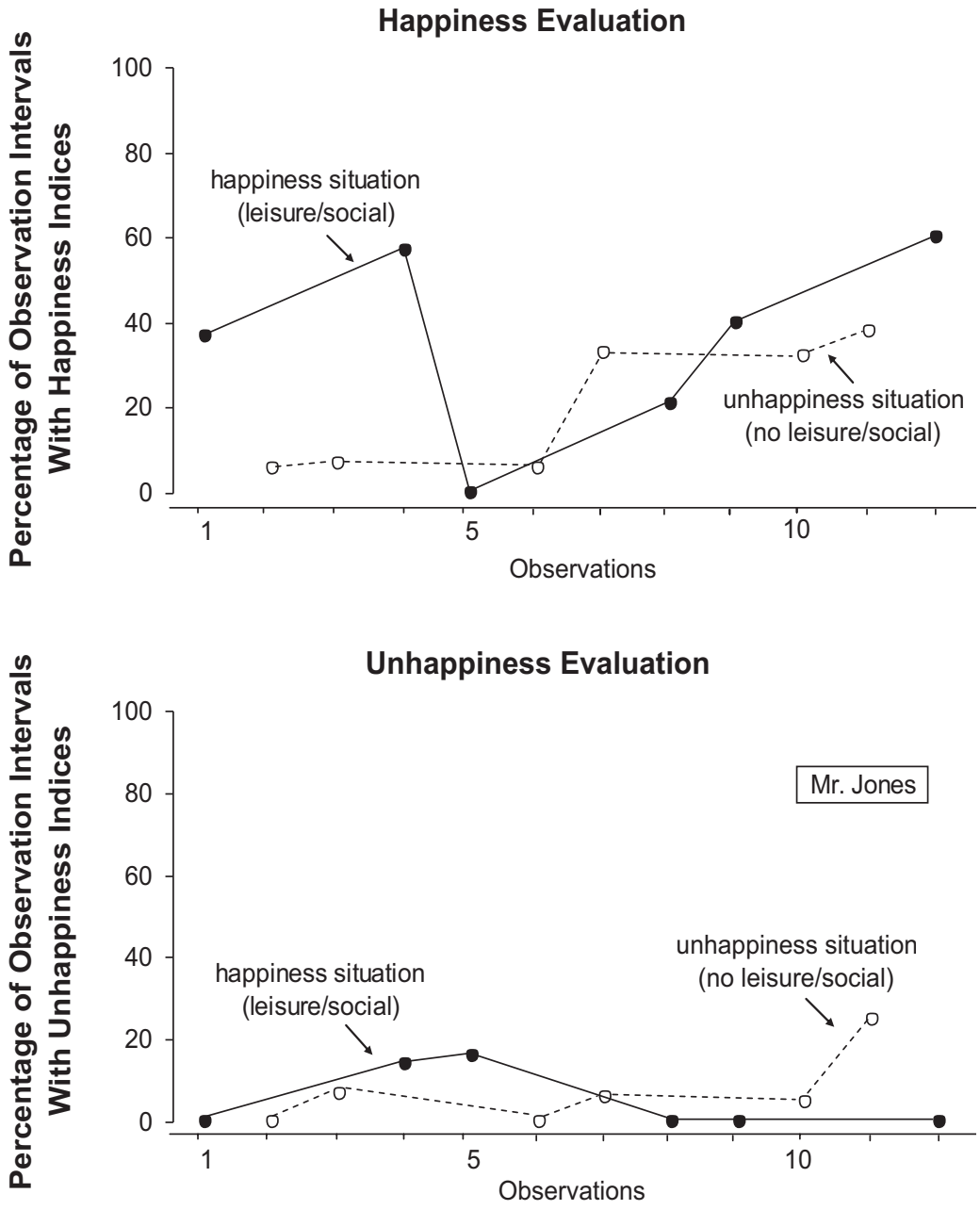


*Figure 3. Percentage of observation intervals with happiness indices during the happiness evaluation (top panel) and unhappiness indices during the unhappiness evaluation (bottom panel) during each observation for Mr. Jones.*

following initial identification of respective indices (Dillon & Carr, 2007; Reid & Green, 2006).

In considering the reasons for addressing happiness, several general guidelines are relevant for practitioners. These have been discussed by others (again see Dillon & Carr, 2007; Reid & Green, 2006, for reviews) but nevertheless warrant reiteration given their significance. In particular, it must be emphasized that happiness is a construct that likely represents a private event and can only be addressed and measured indirectly. Hence, the focus on *indices* of happiness. Such indices, whether traditionally or individually defined, are behaviors and are likely influenced by environmental variables just like any other behaviors. The various reasons for attending to happiness indices pertain to the indices as a reflection of the emotional experience of happiness and not as targets for assessment and intervention independent of that experience (i.e., in contrast to applying contingencies, for example, to increase certain behaviors such as smiling without concern for the private event of happiness that the indices are intended to reflect).

Another critical issue warranting practitioner attention is that happiness indices should be considered in conjunction with other important behaviors and corresponding interventions. Some interventions, such as certain behavior-reduction or teaching strategies, may have a negative impact on happiness

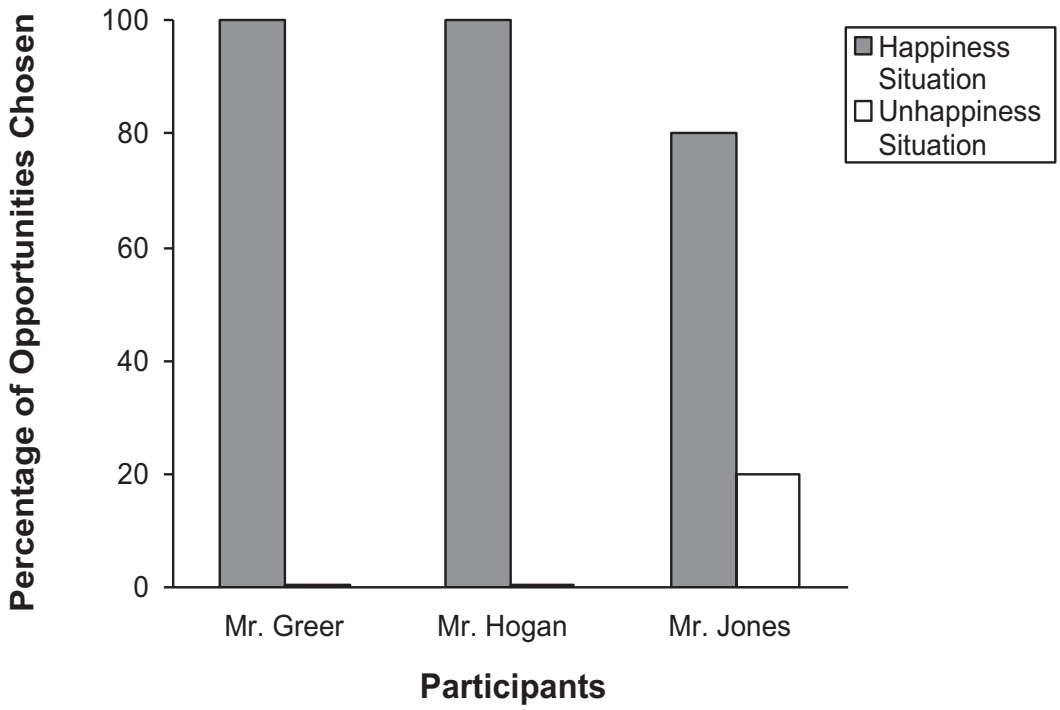


*Figure 4. Percentage of choice opportunities for which the happiness situation (solid bar) and unhappiness situation (open bar) was chosen by each participant.*

indices while the interventions are in effect yet be needed for the overall benefit of an individual. In other cases, respective individuals may display happiness indices while engaging in behavior that may be detrimental to the individual (e.g., excessive stereotypy) or others (e.g., socially embarrassing interactions). Careful consideration must be given by behavior analysts, as well as other practitioners, to the relative role of happiness indices along with other behaviors in an individual's repertoire prior to developing interventions designed to impact happiness based on observable indices.

Despite the cautions and considerations just noted, happiness and its corresponding indices represent a potential target for assessment and intervention by behavior analysts of considerable significance. Happiness is a primary concern among family members whose adult sons and daughters with disabilities receive supports and services within human service agencies (McTernan & Ward, 2005). Agencies providing supports and services for adults with autism also usually stress promoting a desirable quality of life for the agencies' consumers, and happiness is an integral part of life quality. Although the behavioral research for addressing happiness is not complete, behavior analytic approaches resulting from the research that has been conducted can help equip behavior analysts to focus on happiness in a systematic manner. In essence, if happiness is valued within a service agency, then it seems relevant to identify valid indices of happiness and target those indices as one important outcome of the agency's services. Behavior analysts, employing evidence-based strategies to address happiness to the degree that the strategies exist, could represent a valuable asset in such an endeavor.

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