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Functional Behavioral Analysis and Social Scripting for the Older Patient with Schizophrenia: A Staff Development Program

Laura Markwick
St. John Fisher College, lmarkwick@sjfc.edu

Charlene Smith
St. John Fisher College, cmsmith@sjfc.edu

Diane J. Mick
Keuka College

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Abstract

Executive functioning is the ability to plan, strategize, organize, and focus on details. Impaired executive functioning plays a significant role in behavior disturbances. Lack of inhibition, impaired abstract reasoning, thought perseverance, rigidity in routine, and lack of insight disrupt social skills and daily life. Autism and schizophrenia present some similar behaviors, including impaired executive functioning, often resulting in pharmacological management as many healthcare professionals receive limited training in executive functioning. Non-pharmacological tools used in autism for behavior management include functional behavioral analysis and social scripting, which help to identify causes of behavior and teach more appropriate behavioral responses. Described here is an educational program for healthcare workers in a long-term care skilled nursing facility, to help them understand the basis for behaviors in individuals with impaired executive function, to use these same tools for behavioral modification techniques, and to help patients learn more appropriate social skills. Program evaluation suggested the educational program was successful in increasing the staff's knowledge and comfort level in addressing the behavioral issues that arise with this population and staff also reported less use of medication as first-line treatment for behavioral issues.

Keywords

fsc2015

Disciplines

Nursing

Comments

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Laura Markwick, DNP, RN, FNP-C[1]

Charlene Smith, DNS, MSEd, WHNP, RN-BC, CNE, ANEF[1]

Diane J. Mick, PhD, RN, CNS, GNP, FNAP[2]

Wegmans School of Nursing[1]

St. John Fisher College

Division of Nursing, Keuka College[2]

Corresponding author: Laura Markwick

3690 East Ave.

Rochester, NY 14618

(585) 385-7229

lmarkwick@sjfc.edu

Abstract

Executive functioning is the ability to plan, strategize, organize and focus on details. Impaired executive functioning plays a significant role in behavior disturbances. Lack of inhibition, impaired abstract reasoning, thought perseverance, rigidity in routine, and lack of insight disrupt social skills and daily life. Autism and schizophrenia present some similar behaviors, including impaired executive functioning, often resulting in pharmacological management as many healthcare professionals receive limited training in executive functioning. Non-pharmacological tools used in autism for behavior management include Functional Behavioral Analysis and social scripting, which help to identify causes of behavior and teach more appropriate behavioral responses. Described is an educational program for healthcare workers in a long term care skilled nursing facility to understand the basis for behaviors in individuals with impaired executive function, use these same tools for behavioral modification techniques, and help patients learn more appropriate social skills. Program evaluation suggested the educational program was successful in increasing the staff's knowledge and comfort level in addressing the behavioral issues that arise with this population. Staff also reported less use of medication as a first line of treatment for behavioral issues.

Introduction

  Observation and discussion with healthcare staff in a long-term care skilled nursing facility revealed that behavioral issues of some people diagnosed with schizophrenia were managed with sedating medications, most often benzodiazepines. Healthcare staff providing care for these individuals verbalized frustration and a lack of understanding of how to effectively manage the behaviors other than the use of these medications. Some of these behaviors were noted to be similar to those of the higher functioning individuals diagnosed with autism, with perseverations and rigidity of routine. From this, an informal hypothesis was generated stating that if people diagnosed with autism or schizophrenia exhibit similar behaviors and symptoms, principles of behavioral intervention that are effective for the people diagnosed with autism may be equally effective when applied to people diagnosed with schizophrenia. These behavior modification techniques would need to be taught to healthcare staff in order to facilitate the use of non-pharmacological management strategies.

Purpose

  The purpose of this project was to determine 1) the effectiveness of an educational program for healthcare staff on executive functioning as well as causes and management of behavior, 2) the utility of behavior management techniques provided in this program for management of older adults diagnosed with schizophrenia, and 3) healthcare staff's perceptions of the effectiveness of using functional behavioral analysis (FBA) and social scripting with older adults diagnosed with schizophrenia.

Background

  In order to understand the relationship, a basic background in schizophrenia, autism, executive functioning, and the tools presented are discussed. Schizophrenia is a brain disorder

characterized by impaired occupational or social functioning and depicted by both positive and negative symptoms. Symptoms must be present for at least six months, with one month of positive symptoms (American Psychiatric Association, 2013). Positive symptoms are an excess or distortion of normal functions and include varying degrees of hallucinations, delusions, thought disorders, and movement disorders (American Psychiatric Association, 2013; National Institute of Mental Health, 2009). Negative symptoms include alogia (diminished speech output), asociality (lacking of interest in social activities), anhedonia (decreased pleasure from activity), and avolition (decrease in motivated and self-initiated activities) (American Psychiatric Association, 2013). Cognitive symptoms include poor executive functioning, difficulty paying attention, and problems with working memory (National Institute of Mental Health, 2009). Schizophrenia affects an individual's feelings, communication skills, perception, and attention. It also affects a person's thoughts, mood, speech, drive, behavior monitoring, and decision-making abilities (Centers for Disease Control and Prevention, 2009; March, 2008). Childhood schizophrenia is a term that has been used to include autistic traits and early onset schizophrenia, schizophrenia that is identified early in childhood rather than that typically noted in adulthood (Palucka, Bradley, & Lunsky, 2008; Yale Child Study Center, 2009).

Autism spectrum disorder (ASD) is a neurodevelopmental disorder most commonly manifested early in development. The incidence of ASD has been reported at 1 in 88 individuals and is almost five times more often in males than females. (Prevalence of Autism Spectrum Disorders, 2012). Common findings in ASD include deficits in social communication and social interaction, as well as markedly restricted and repetitive patterns of behavior, activity, and interests (American Psychiatric Association, 2013). These symptoms can cause significant impairment in areas of functioning within social and occupational environments. Individuals

with ASD exhibit adaptive skills that are compromised and not indicative of their IQ. Additionally, these individuals tend to have extreme difficulties with executive functioning, which impacts their ability to plan, organize and subsequently cope with any change (American Psychiatric Association, 2013; Hill, 2004). These individuals prefer routine without any interruptions, as if they are interrupted, they must restart their thought process from the beginning. Typically these individuals can be hypersensitive to certain stimuli and can appear peculiar in their behaviors (March, 2009). Schizophrenia and ASD share some similarities in their behavioral characteristics, such as disturbances with communication, affect, and interpersonal relationships as well as abnormal movements, repetitive speech patterns, thought disorder, and executive dysfunctions. However, there are differences in regard to the onset of symptoms, in that ASD is most often detected in childhood, whereas schizophrenia most often appears in adulthood. There is also the absence of delusions with ASD (American Psychiatric Association, 2013).

Researchers have suggested that an individual with Asperger's syndrome, a form of high-functioning autism, may present with signs of paranoia, but, in fact, he or she is experiencing responses to real-life situations such as teasing and bullying (Attwood, 2007). The concrete literal world of those with Asperger's syndrome may also present as the thought disorder of schizophrenia. When an individual with Asperger's is asked if he or she hears voices, they may reply "yes"; in fact they do hear people speak every day through normal person to person speech. The statement is misinterpreted by others as hearing imaginary voices. Thus delusional thoughts may, in reality, be the actual concrete communication patterns of individuals with autism (Kontantereas & Hewitt, 2001).

Executive function describes the ability to plan, strategize, organize, and pay attention to details. It is the ability to initiate and stop actions, monitor and change behavior based on the environment and other's actions, plan future behavior, form concepts, and think abstractly (National Center for Learning Disabilities, Inc., 2005). They respond well to routines due to the inability to cope with change behavior and lack of flexibility. Both individuals diagnosed with ASD and those diagnosed with schizophrenia have evidence of impaired executive function. An example of this is their lack of flexibility in ~~their~~ thinking and the inability ~~for an individual~~ to consider alternative problem-solving strategies. Individuals may be working on a project, thinking they are on the right track, when in fact they are not, resulting in frustration and the incapacity to adapt to changes needed to successfully complete the project. (Attwood, 2007).

Functional behavioral analysis is used with children to help determine the motivating factor of the ineffective behavior in question. Many such behaviors are the result of the need to gain attention or to gain a tangible consequence (Kovach, Noonan, Matovina Schlidt, & Wells, 2005). For example, a child might want a cookie, so he or she would exhibit a behavior that he or she knows would result in a cookie. Other motivating factors for behaviors could be to self-regulate one's own feelings or to escape or avoid undesirable situations. These behaviors also may serve to communicate about a perception or to fill a habitual need (Wallin, 2004).

As a two-step process, FBA helps to identify the events prior to and consequences of the behavior. The first step is to describe the behavior, the events before the behavior, and the consequences of the behavior using an ABC method. The "A" is for antecedent, or what happened before the behavior. This could include the events immediately prior to or even a day or two preceding the behavior. The "B" is the actual behavior, and "C" is for the consequences of that behavior. The second step is to analyze the ABC data to determine the motivation behind

the behavior (Wallin, 2004). From this analysis, the root cause of the behavior can be determined, which allows for the design of a plan to teach more effective means of communication for the future.

When the FBA has been completed and the root cause of the behavior has been determined, a social script can be designed in partnership with the individual to enable learning more effective means of communication and more appropriate behaviors surrounding the root cause of the behavior. Social scripts are written conversation tools that assist with effective communication. They will depict text as well as pictures to help the person navigate through a social situation with a more effective approach by providing explanations that support expectations in each situation (Ivey, Heflin, & Paul, 2004, Samuels and Stansfield, 2011).

It is important to acknowledge the problem and the individual's feelings regarding the situation and subsequent behavior. This is important to calm, gain trust, and ensure understanding of the situation. Equally important is asking the individual whether the behavior was appropriate for the situation. The response will help with individual ownership of the behavior and an understanding of the need for change. The next step is to engage the individual in the planning process by asking what could have been done differently. This enables the individual to feel a part of the decision-making process and may improve outcomes, as ownership of the decision is taken on by the individual. Helping the individual to devise a story that describes the situation is the next step. Often, the use of pictures is helpful as visual learning is easier to retain. Including appropriate actions and expressions in the story helps individuals to learn what they are feeling during this situation (Attwood, 2007).

Literature Review

Using the CINAHL database and search terms for autism, schizophrenia, executive functioning, and functional behavioral analysis, a very limited number of articles were identified that addressed ~~the~~ similarities and differences between autism and schizophrenia. No articles were identified that focused on– impaired executive functioning and the use of behavior modification tools as a strategy across both patient populations.

Three studies addressed similarities between autism and schizophrenia; however, these did not attend to similarities in the use of behavior modification as an intervention strategy (Ghazi Uddin, 2005; Kontantereas & Hewitt, 2001; Palucka et al., 2008). Several researchers described the successful use of FBA and social scripting with children; however, these techniques were not applied in the adult mental health population (Attwood, 2007; Myers & Johnson, 2007; Smith, Mozingo, Mruzek, & Zarcone, 2007). Samuels & Stansfield, (2011) discussed the effective use of social stories with adults with autism spectrum disorders in improving social interactions but did not discuss ~~the~~ use with people diagnosed with schizophrenia. In their conceptual review, Yager and Ehmann (2006) reported that social dysfunction in schizophrenia arises from the interaction of a multitude of factors, including deficient social skills. Social skills refer to cognitive, verbal, and nonverbal behaviors that are essential for effective interpersonal interactions. In two other studies, ~~that~~ executive dysfunction was found to have an influence on behaviors of patients diagnosed with schizophrenia (Donohoe & Robertson, 2005; Hobson & Leeds, 2001). In a retrospective study of psychosocial assessments of chronically mentally ill elders (N=570) residing in nursing homes, the majority of whom had diagnoses of schizophrenia, Sherrell, Anderson, and Buckwalter (1998) found patients were appropriately placed but healthcare staff required more training in mental illness.

Several case studies were identified that indicated misdiagnosis of autism and schizophrenia, one for the other. Four cases specifically addressed the misdiagnosis of schizophrenia in the presence of autism (Akande, Xenitidis, Mullender, & Roberston, 2004; Dossetor, 2007; Palucka et al., 2008; Perlman, 2000). A compilation of five case studies examined the missed diagnosis of Asperger's syndrome in the elderly (James, Mukaetova-Ladinska, Reichelt, Briel, & Scully, 2006). Another case study illustrated the use of cognitive rehabilitation strategies with schizophrenia patients (Davalos, Green, & Rial, 1999). Blair (1985) described the use of a behavioral modification program that used a token system to assist in maintaining self-care behaviors of schizophrenic patients. This strategy was successful in modifying behaviors.

A qualitative study regarding behavior management with psychotic adults using psychosocial interventions, similar to functional behavioral analysis and social scripting, was completed at a medium secure facility for men with learning disabilities and mental health problems. The healthcare staff was interviewed as to how they would respond to various behavioral issues. The psychosocial interventions used with patients were perceived by the staff to be effective, as they found behavior was able to be managed (Isherwood, Burns, & Rigby, 2006). Results of a systematic review suggested that combining antipsychotics with psychotherapy and psychosocial interventions in elderly patients with schizophrenia may be effective in managing behavior (Karim, Overshott, & Burns, 2005).

Matson, Neal, and Kozlowski, (2012) discussed the management of challenging behaviors in adults with intellectual disabilities. They reported that, in reality, pharmacotherapy is utilized to manage behaviors due to the sedating side effects for the patient when staff believe they have no other viable treatment options. They stated that a cause for the behavior should be

pinpointed through the use of patient and staff interviews, observing the patient, and addressing the patient's history. They stated that challenging behaviors are largely due to environmental factors. Commonly identified causes of behavior include seeking attention, escaping from demands or undesired tasks, self-stimulation, seeking tangible items, and poor social and coping skills. Functional assessments were recommended as a means for identifying these environmental causes. Treatment then may be determined accordingly.

Three reports noted the effective use of FBA in adults with ASD. Behavior management strategies then could be implemented. For more severe behaviors, pharmacologic intervention would be necessary (Matson, Sipes, Fodstad, & Fitzgerald, 2011, Manente, Maraventano, LaRue, Delmolino, & Sloan, 2010). Rosenfarb (2013) discussed the use of FBA with people diagnosed with schizophrenia. He concurred with results of research indicating the relationship of environment to the behavior of people diagnosed with schizophrenia,. He stated that FBA can be helpful to advance clinical treatment of these patients.

Following are composite examples of how behavioral modification may be successfully implemented. In the first scenario, an individual enters the dining room for lunch, only to find someone sitting in the chair that they usually use for meals. This patient then throws her lunch tray and yells. The ABC method helps to determine the cause of the behavior. The antecedent is the unexpected change in seating position for which the person was not prepared. The behavior is demonstrated by the throwing of the lunch tray, and the consequence of the behavior is the individual being removed from the room. The individual has executive dysfunction and lacks the ability to cope with a sudden change in routine. Using this process, the individual involved can be supported in talking through the situation by the care provider and assisted in determining a more appropriate alternative behavior to this situation. Healthcare staff need to understand the

importance of maintaining the individual's routine and to prepare the individual should changes in routine be necessary. Figure 1 is an example of a social script regarding this situation.

In another situation, a patient is having difficulty when someone gets into their personal space, such as when the nurse is trying to administer medications by quickly approaching the patient. Instead of using words to express the discomfort that the patient is experiencing due to poor coping skills, the patient quickly yells and throws their things around the room. By using the FBA, the nursing staff can more readily understand the issue and help the person to work through this situation in a more socially appropriate manner as well as adjust their approach to the patient by providing proper notification that their medications are coming and that they are coming towards the patient.

Educational Program for Using Behavioral Modification Techniques

An innovative educational program was designed to provide instruction to healthcare staff in a long-term care institution that housed a large number of patients with mental illnesses, such as schizophrenia, in addition to a variety of medical illnesses. The educational program content included definitions for schizophrenia, executive functioning, and the use of FBA and social scripting to help modify behavioral issues for patients diagnosed with schizophrenia. The program goal was to help the staff understand why the patients were acting out and exhibiting inappropriate behaviors. It was felt that if the staff's knowledge level and understanding were increased, they would be better equipped to utilize this non-pharmacologic treatment method. Of note, this program only addresses behaviors not associated with psychosis, such as auditory or visual hallucinations, rather behaviors that pertain more to executive dysfunction and poor coping skills. Attendance at the educational program was voluntary and open to all healthcare

staff members. Voluntary participation did not require staff to complete the program evaluation questionnaires or participate in the follow-up questionnaire and interview. Institutional Review Board approval was obtained for the project.

Sample

A convenience sample of healthcare staff providing direct care in a long-term care facility was utilized. Participants included staff from nursing, physical and occupational therapy, nutrition, social work, and the activities departments. In total, 83 staff members attended the educational program over the course of five presentations. Of the 83 staff members, 10 participants did not complete the pre-test by personal choice. Twelve participants completed the 3-month follow-up questionnaire, and of these 12, 10 participants completed the 3-month follow-up interview. Because the 3-month follow up study interview was qualitative in nature, and typical long-term care staff turnover took place, the follow up sample size of 12 was considered sufficient for analysis.

Setting

The setting for this educational program was a long-term care facility in upstate New York with approximately 220 licensed beds. Residents' ages ranged from 45 years to 100 years. Many residents had a documented psychiatric co-morbidity, including schizophrenia. These residents were unable to independently reside in the community, but did not require the level of care provided at a psychiatric facility as they were not demonstrating psychotic episodes and were deemed mentally stable.

Methods

A sequential transformative strategy design with 3 phases was implemented to assess immediate learning and application of the knowledge to practice. The program evaluation used both quantitative pre- and post-tests and qualitative interview methods.

In the first phase, a needs assessment of the staff was completed to confirm that an educational program was necessary and to determine specific content to target in the educational design. The educational program was designed and delivered by the investigator, and the presentation was placed on DVD format to ensure consistency in content between sessions. The second step included a pretest/posttest questionnaire to determine whether participants gained new knowledge following attendance at the educational program. Finally, an impact evaluation was completed after three months to determine whether the program information had been retained and utilized by the staff in their practice setting with the patient population. This evaluation was done via the use of a questionnaire using a 5-point Likert scale. One-to-one interviews were carried out to gain qualitative data regarding the participants' perceptions of the techniques and whether their practices changed when working with the patients diagnosed with schizophrenia.

Theoretical frameworks

The educational intervention was designed on the basis of several different models and theories. The ADDIE model was used for the overall design of the educational program. This includes analysis, design, development, implementation, and evaluation (Learning Theories Knowledgebase, 2010). The analysis was done through an education needs assessment in the facility. The program then was designed, developed, implemented, and evaluated for learning outcomes.

The Needs Driven Behavior Model focuses on the assumption that behavior is driven by a need. These needs could include hunger, thirst, pain, or attention seeking (Algase et al., 1996). A framework based on this model demonstrates how some inappropriate behaviors may occur due to the inability to effectively communicate a need (Kovach et al., 2005).

The Theory of Operant Conditioning was used as a framework for both participants learning from the educational program as well as patients learning from the use of behavior modification techniques. This theory is based on an assumption that learning is a result of a change in behavior and a person's response to their environment (Kearsley, 2008).

Bandura's Social Learning Theory was used to address individuals' learning via the use of social scripts. This theory is based on three principles: forming models into words, labels, or images results in better retention of the information; individuals are more likely to change behavior if it coincides with a valued outcome; and they are more likely to adopt the behavior if it has functional value (Learning Theories Knowledgebase, 2008).

Findings

How effective is an educational program on executive functioning and schizophrenia in teaching healthcare staff about causes and management of behavior?

Descriptive analysis of the pre- and post-tests demonstrated a significant improvement in all items, suggesting that the educational program did influence the staff's knowledge of schizophrenia, FBA, and social scripting. Some of the items were answered in a yes/no format and others used a 5-point Likert scale, with values assigned: 1 = "none", 2 = "a little", 3 = "some", 4 = "very much", and 5 = "extremely". Tables 1 and 2 depict the questionnaire items and the percentage or mean results for both the pretest and the posttest with all results

statistically significant (p≤.001). A few participants did not respond to all items on the questionnaires. There was a difference noted in the sample size between pre-test and post-test surveys as some participants arrived late and did not have the opportunity to complete the initial survey.

What is the utility of tools provided in this program for management of older adults diagnosed with schizophrenia?

An impact evaluation was completed three months after the program to determine whether the learned material was retained and implemented in practice. This evaluation consisted of both interviews and a questionnaire using the same 5-point Likert scale. Twelve staff members, consisting of both licensed and non-licensed personnel, from the nursing department participated. Ten participants agreed to an interview. Descriptive data from 12 people who completed the follow-up questionnaire at three months is depicted in Table 3. When comparing mean scores related to their level of comfort in using FBA, it was noted that for the post-test, the mean score was 3.49, with an increase to 4.15 at the three month follow-up. The mean score related to comfort level in using social scripting was 3.44 for the post-test, and increased to 4.15 at the three month follow-up. This suggests that the nursing staff felt more comfortable using the FBA and the social scripting more so three months after the program. Although only 12 staff participated in the 3-month follow-up, it appears they were able to use the tools presented in the educational program, enabling them to help schizophrenic patients learn effective means of communication and appropriate behaviors when faced with a change in routine.

What are health care staff's perceptions of the effectiveness of using FBA and social scripting with older adults diagnosed with schizophrenia?

Ten interviews of licensed and unlicensed staff were completed at the 3-month follow-up in order to ascertain whether what they learned from the educational program was implemented in practice and how effective the training program was perceived. Overall, participants reported the tools they learned about were effective in helping with behavior management for older adults diagnosed with schizophrenia for whom they provided care in the long-term setting. Participant comments related to the learned techniques for management of schizophrenic older adults' behaviors included "I always thought that my perception was the same as the patient's perception" and "I approach patients slower". Additionally participants shared, "I understand why they behave as they do. I now look for reasons for the behavior, the need, and then help the patient to calm themselves" and "I don't reach for the medication so quickly because I have a better understanding now".

Limitations

There were several limitations to this program evaluation. Participation in the 3-month follow-up evaluation was difficult due to staff attrition as well as scheduling and availability of staff members. History may have been an issue with staff having had other learning experiences during the three month time period of the evaluation. There was potential bias due to the researcher being employed at the facility at the time of the evaluation as a contract nurse practitioner. There was also the potential for fear of job loss, embarrassment, or retribution if answers were negative or indicative of lack of knowledge. However, this limitation was ameliorated via the use of anonymity during the completion and collection of questionnaires. Since no identifiers were used on the questionnaires, it was impossible to match the questionnaires to a participant and compare pre-test, post-test, and three month follow up data for analysis.

Outcome analysis was limited for this educational program evaluation. Patient outcome was unable to be directly assessed due to the inability to obtain IRB approval for chart review in this vulnerable population. The assessment of potential decrease in medication use for behavior management was limited to anecdotal staff reports. Thus, only qualitative data regarding this outcome was obtained. Quantitative data regarding the decreased use of sedatives for behavior management was unavailable for this program evaluation.

Recommendations

There is minimal existing research related to the use of FBA and behavior management for older adults diagnosed with schizophrenia. While this program shows great promise as a strategy to educate healthcare staff to improve their effectiveness when working with this population, replication with a more rigorous research design and a larger sample size in varied geographic locations is warranted to allow generalizability of findings. Matching of pretest and posttest data via numeric identification would allow for parametric analysis.

Conclusion

Impaired executive functioning is evident in both ASD and schizophrenia. Because many healthcare professionals receive limited training related to the concept of executive functioning, pharmacological management may be the first choice option for managing disruptive behaviors among patients with either diagnosis. Non-pharmacological tools used for behavior management among persons with autism include FBA and social scripting to identify causes of behavior and teach appropriate behavioral responses. The educational program was developed to help healthcare workers who care for older adult residents diagnosed with schizophrenia in a long-term care facility understand the basis for the residents' behaviors, use behavioral modification techniques, and help residents learn appropriate social skills.

The program evaluation suggested that the educational program on executive functioning and schizophrenia was effective in teaching staff in a long-term care facility about causes and management of patient behaviors among older adults diagnosed with schizophrenia. This was evidenced by the improvement in scores related to participants' responses from the pretest/posttest questionnaires. Also, a sample of the staff at three months post-education reported an increased understanding of the causes of behaviors of their patients. Application of tools that have been validated for use with the autistic population were taught to program participants. Findings indicated that the participants were able to apply these tools with their older adult patients diagnosed with schizophrenia. Staff also found these tools to be effective in regards to avoiding pharmacological management of behaviors exhibited by these patients. Staff reported feeling more comfortable and confident employing behavior management via the use of these non-pharmacologic methods. Therefore, potential exists for a decrease in the use of pharmacologic interventions and an increase in the staff's comfort level. Results of this project suggest that education of healthcare staff on the use of FBA and social scripting holds potential as a viable non-pharmacologic alternative for management of problematic behaviors among older adults diagnosed with schizophrenia.

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