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Abstract

Activity analysis forms are a tool used by a recreational therapist to determine the inherent requirements placed on the participant of an activity physically, cognitively, socially and emotionally. Activity analysis forms provide information about the functional demands placed on the participant in an activity and allows the therapist to determine the best activities to meet the functional needs of the client. Although several professions, in addition to recreation therapy use activity analysis forms, none have been tested for reliability and validity. The present study tested the Activity Assessment on Cognition Scale (AACS) on interrater reliability based on 49 administrations among a sample of direct-care professionals at a local hospital. Findings indicated the percent of agreement over two-point intervals of a five point Likert scale for the 16 subcategories of cognition ranged from 86% to 65%. The results suggest that some subcategories of cognition are better understood by raters than others. Future development of the AACS will include strengthening the descriptors and re-assessing the administrative process.

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INTERRATER RELIABILITY TESTING ACTIVITY ANALYSIS FORMS

By

Alex M. Wehrle

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Interrater Reliability Testing Activity Analysis Forms

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Eastern Michigan University

Honors College Senior Thesis

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Abstract

Activity analysis forms are a tool used by a recreational therapist to determine the inherent requirements placed on the participant of an activity physically, cognitively, socially and emotionally. Activity analysis forms provide information about the functional demands placed on the participant in an activity and allows the therapist to determine the best activities to meet the functional needs of the client. Although several professions, in addition to recreation therapy use activity analysis forms, none have been tested for reliability and validity. The present study tested the Activity Assessment on Cognition Scale (AACS) on interrater reliability based on 49 administrations among a sample of direct-care professionals at a local hospital. Findings indicated the percent of agreement over two-point intervals of a five point Likert scale for the 16 subcategories of cognition ranged from 86% to 65%. The results suggest that some sub-categories of cognition are better understood by raters than others. Future development of the AACS will include strengthening the descriptors and re-assessing the administrative process.

Keywords: Activity Assessment, Activity Analysis, Recreational Therapy

Interrater Reliability Testing Activity Analysis Forms

Literature Review

What is activity? This is a common English word used in everyday language, but understood in many different ways. Activity is traditional recreation and leisure. Activity is content, action or media presented to meet an individualized goal (Stumbo & Peterson, p.139). Activity is a human interaction. Activity can be considered physical, emotional, mental, and or spiritual (Carter & Van Andel, 2011, pg. 26). Activity is a form of therapy. "Activity as defined by the World Health Organization refers to the 'execution of a task or activity by an individual' and participation the involvement in a life situation" (Wales, Clemson, Lannin, & Cameron, 2016). Activity is used by recreational therapist, and many other professionals, but why and how specifically is activity related to recreational therapy? Recreational therapy relates to activity though the use of an activity analysis form and through activity selection. Through the use of an activity analysis form recreational therapist are able to create confident, goal reaching, and successful groups or individualized interventions through activity selection. Prior to completing an activity analysis form, appropriate activity selection is pertinent. Without knowing the group or individual, willingness to attend the group, goals, number of participants, length of a group activity, and location of group activity then an activity analysis cannot exist, because there is no appropriate activity (Mercer, 2003). Extensive research has been explored on activity analysis forms and has shown that there is very little to no research proven. Although there is a small amount of research collected on testing the validity and reliability, some research has shown that activity analysis forms have an important purpose, should be used, are primarily used with recreational therapists, and that the importance of new activity assessment forms are essential.

Development and research of the Activity Assessment on Cognition Scale will in hopes provide reliability and validity to prove these points.

"Activity analysis can be defined as a process that involves the systematic application of selected sets of constructs and variables to break down and examine a given activity to determine the behavioral requirements inherent for successful participation and that may contribute to the achievement of client outcomes" (Stumbo & Peterson, 2009, p.178). Activity analysis forms can be referred to as multiple different forms: activity assessment, activity analysis, activity checklists, and or activity analysis rating forms. Activity analysis forms allow recreational therapist to have a better understand of the activity decision process as well as an understanding how and if their patient is meeting their goals (Stumbo &Peterson, 2009. p. 178). "Failure of a leader to fully understand the attributes of an activity could potentially; inhibit the groups from reaching their goals and objectives" (Mercer, 2003). An activity analysis form is usually in-depth and focuses on one or more domains. These domains are then broken down into more specific categories. Breaking down the activity allows one to know what level of functioning may be needed in order to be able to complete that specific activity (Stumbo &Peterson, 2009. p. 180). According to Stumbo and Peterson, activity analysis forms allow for a greater understanding of outcomes for specific patients, an understanding of the extent of functioning for a specific activity, they provide information about if the activity will actually help the patient increase or maintain their goals (is the patient meeting their goals or no?), it provides an understanding for an activity adaptation if a specific patient may not have extensive level of functioning, it provides non-biases and consistency in activity selection, and most importantly it provides an explanation about why and how activities are therapeutic (2009, p.180). These are prime examples of why recreational therapist should be using activity analysis forms, it provides

purpose and clarification. Prior to completing an activity analysis form it is important to conduct the activity as it would normally be conducted, rate the activity in comparison to others, rate the activity for all populations, and consider the minimal requirements in order to complete the activity (Stumbo & Peterson, 2009, p. 181). But, in order to fully understand how and why activity assessment tools should be used in the profession recreational therapy, it is important to understand the basics of why and what a recreational therapist does.

An unknown author once said, "Recreation's purpose is not to kill time, but to make life; not to keep a person occupied, but to keep them refreshed; not to offer an escape from life, but to provide a discovery of life." So exactly how do activity analysis forms relate to recreation? And recreational therapy? According to Carter and Van Andel, recreation is one's response to achievement, goal reaching, and positivity, which results in independence, accepting, leisure, and social interactions (2011, p.126). So, as activity relates to recreation and recreation then relates to the profession recreational therapy. Activity assessment forms are a developing tool. Recreational therapy is a developing profession, in which activity analysis forms are becoming more popular and proving to be more essential.

"Recreational therapy is a treatment service designed to restore, remediate and rehabilitate a person's level of functioning and independence in life activities, to promote health and wellness as well as reduce or eliminate the activity limitations and restrictions to participation in life situations caused by an illness or disabling condition" (American Therapeutic Recreation Association, 2015). The goal of recreational therapy is to improve one's well-being, functioning, self-esteem, and internal satisfaction (Beck, 2014). Recreational therapy services are provided to a wide range of individuals in multiple populations which include: geriatric, mental health, addictions, general medicine, physical medicine, rehabilitation, developmental disabilities

and pediatrics (American Therapeutic Recreation Association, 2015). Recreational therapy services offer many benefits to many individuals through the five domains of cognitive, physical emotional, social, and spiritual. Benefits of recreational therapy include; increased independence, regaining skills for daily life, better quality of life, reduce needs for future health care services, increase overall activity level, enhanced memory, increase socialization, and discovery of interest in an enjoyable and meaningful activity (DRM, 2013). The outcomes of recreational therapy are to improve; physical health status, psychosocial status, cognitive status, life, recreation, and community activities (American Therapeutic Recreation Association, 2015). Certified Recreational Therapy Specialists provide multi-functional and diverse skills, which allows for a wide variety of patients (National Council for Therapeutic Recreation Certification, 2004). As stated above, recreational therapy serves a wide range of individuals. CTRS' usually work in the settings of inpatient hospitals, health facilities, residential facilities, community mental health centers, adult day care programs, substance abuse centers, hospice care, community centers and school systems (American Therapeutic Recreation Association, 2015). Recreational therapists have a unique perspective to individualize each patient by their past, present, and future lifestyles (American Therapeutic Recreation Association 2015). These past, present, and future lifestyles may include arts and crafts, social interactions, dance, music, sports, health and wellness, leisure education, and play. Recreational Therapists are able to adapt to meet varies needs of their patients, which allows a vast array of opportunities to be brought to the facility. The use of an activity assessment would become essential when determining which type of past, present, and future lifestyle to use for treatment for a patient. Not only is it important to relate the patients past, present, and future lifestyle activities to their interests, but it is also important to relate these activities to meeting their current treatment goals. After completion of

an initial assessment the Certified Recreational Therapy Specialist determines what the needs

and goals of the patient are. This is then where an activity assessment form would become

essential. The recreational therapist would choose an activity in which they think is appropriate

for the patient and their goals. Then the recreational therapist would use the assessment to

determine if the patient was actually meeting their goals or not. So, how does a therapist actually

know that the activities they are selecting are appropriate activities for their patients?

The literature review was conducted through multiple journals and data bases including:

Sycamore Publishing Journals, Pro-Quest Nursing and Allied Health Source, Pro-Quest

Psychology Journals, Academic One file, and Health Reference Center Academic, and the results

have been extremely limited on the overall breadth of activity analysis forms. Furthermore, the

review revealed a complete absence of any reliability and validity studies on activity analysis

forms. The lack of reliability and validity research underscores the importance of this current

study.

One highly used activity analysis form used in recreation therapy is, The Activity

Analysis Rating Form (Stumbo & Peterson, 2009). This form was produced primarily for

recreational therapists. The purpose of this form is to measure the functional requirements

inherent in an activity for each of the four domains of physical, cognitive, emotion and social.

The tool was intended to be used across all groups and populations. There are 11 questions in the

physical section, which asks questions related to: primary body position, body parts required for

the activity, types of movement required, and primary senses. (This part of the assessment offers

many different answers for the associated questions). Questions 5-11 are on a scale of 1 being

much and 5 being little. For the cognitive portion of the analysis form, questions 1-10 ask about

the activities rules, complexity of the rules, degree of strategy, complexity in scoring, degree of

long term memory, degree of short term memory, degree of verbalization, concentration,

concrete thinking and abstract thinking, all questions are based on a 1 (much)-5(little) scale.

Social aspect section: question 1 asks about the primary social interaction pattern for the activity,

and questions 2-7 infer about the activities number of people required, clothing required,

physical proximity, physical contact, degree of communication, and degree of noise generated

from the activity. The affective section asks two questions on the scale: what degree does the

participant have the opportunity to express joy, guilt, pain, anger, fear, frustration. And in reverse

the second questions asks what degree does the participant need to control these emotions. The

last section of the tool, administrative aspects, and questions about the type of leadership style,

equipment, facility, duration, and number of participants required. The Activity Analysis Rating

Form is an extensive and specific tool that breaks down an activity in order to understand a

patient's level of functioning, needs, and goals (Stumbo & Peterson, 2009, p. 181-185).

Stumbo and Peterson encourage recreational therapists to create their own activity

analysis forms and checklists that are specific to the needs and goals of their patients (2009,

p.181). Another activity analysis form found in the literature was, the Wilkins Activity Analysis

Checklist. The goal of the Wilkins Activity Analysis Checklist is to give direction in providing

services by systematically breaking down an activity to provide the overall purpose of

recreational therapy services provided (Mercer, 2003). The Wilkins Activity Analysis checklist

is similar to the Stumbo & Peterson Activity Analysis Rating Form, as the categories assessed

are similar. Categories of the Wilkins Activity Analysis Checklist includes: physical, body parts

required, sense, basic sport/ball skills, basic fundamental movements, perceptual abilities,

physical abilities, skills movement, cognitive, rules, memory retention, communication, symbol

identification, directionality, through processes, academic skills, social, patter, style, physical

contact, spacing, social communication, noise level, affective, expressions, consequences,

defenses, leisure-related knowledge, general, self, and resources (Mercer, 2003). Mercer states

that the reliability and validity of the Wilkin Activity Analysis Checklist has been conducted, but

when researched, could not be found (2003). Wilkins goal was to create a checklist that was all

encompassing and could be used for any type of activity or population. But, in order to be

successful with this a professional statement is needed (Mercer, 2003). Mercer also quoted the

development of an activity analysis checklist created by P. Farrell & H. M. Lundegren, but when

researched, no data was found (2003). Mercer briefly discussed this analysis and did not quote

any discussion or information about it.

<p align="center">Background of the Activity Assessment on Cognition Scale (AACS)</p>

Dr. David Thomas, ED.D. CTRS, professor, and program director for Therapeutic

Recreation at Eastern Michigan University developed the Activity Assessment on Cognition

Scale. The purpose of the assessment is, "To analyze the cognitive requirements for participation

in an activity. The extent of cognitive requirement for participation is assessed for the following

broad categories of cognition: attention, executive function, and memory" (Thomas, 2015). In

order to fully understand the purpose of the assessment tool, an understanding of cognition and

its relation to activities is essential. A recent study was completed to evaluate the relationship of

participation in physical activity and the measures of health and cognition in childhood. Positive

research has been proven to show the relation of aerobic fitness and cognition in preadolescent

children. Multiple studies were conducted with multiple measures and research suggests that

physical activity increases task performance, shorter latency, better response, and better

achievement in math and reading (Hillman, Jamijo & Scrudder, 2011). In another study, research

was conducted on leisure activities, cognition, and dementia. "Accumulated evidences show that

leisure activities have a positive impact on cognitive functions and dementia" (Wang, Xu, & Pei, 2011). Not only does physical activity have beneficial outcomes on health, but research has proven that leisure activities related to cognition and or social interactions also increase positive outcomes on health (Wang, Xu, & Pei, 2011).

The Activity Assessment on Cognition Scale is used to help understand how cognitively demanding an activity may be. This also helps therapists to understand if the activity they have selected is achieving the patient's goals. The assessment measures the broad cognitive categories of attention, executive function, and memory represented by 16 sub-categories of specific cognitive areas. The attention category includes distracted attention, divided attention, attention-switching, discrimination, concentration, and psychomotor speed. The memory category measures short-term verbal, short-term visual, long-term episodic, and long term semantic. The executive functions topics include: concept formation, strategy/planning, deductive reasoning, decision-making, self-regulation, and visual spatial processing. Questions are based on a rating scale of 1-5, with 1 being little or no extent, 2 some extent, 3 moderate extent, 4 great extent and 5 very great extent. In addition to the scale (part 1), the form includes a comprehensive and thorough explanation of each of the 16 categories (part 2). The descriptors are intended to increase understanding among raters to each sub-category term. In an attempt to measure the inter-rater reliability of the AACS the following procedures were implemented by the author.

Method

In order to determine inter-rater reliability the assessment data needed to be collected. The assessment was administered to a group of direct patient care professionals at St. Charles Mercy Hospital at the Behavioral Health Institute in Toledo, Ohio. The Behavioral Health

Institute is an acute inpatient rehabilitation facility for adults with mental health and psychiatric disabilities or disorders. The professionals representing the sample included: certified recreational therapists, registered nurses, and behavioral health technicians. All professionals had completion of at least a bachelor's degree and had an understanding of the purpose of the assessment tool. The study period comprised a two-month duration. The sample size ranged from 7-11 professionals for each of the 5 activities analyzed for a total of 49 assessments. All activities analyzed were familiar to the sample. Activities included: Apples to Apples, Scattegories, Therapeutic Jenga, Yahtzee, and Uno. All activities require some level of cognition, little or small, but all related to the aspects the analysis form which measured attention, memory, and executive functions. A tally system was used to determine the frequency of each criteria on a 5-point Likert scale ranging from "little to no extent" to" very great extent" for each of the 16 cognitive subcategories. The data collected from the study is shown below:

Analysis

To determine the interrater reliability of the AASC, the investigator analyzed the percentage of highest agreement over two adjacent points of the 5-point rating scale. It is suggested that 60% or more consolidation of agreement within a two-point range would demonstrate a reasonable level of agreement or near agreement. Percentage of agreement over a two-point range will be calculated for each of the cognition sub-categories. As the AASC is in the formative stage of development, increasing agreement for future testing would involve improving the descriptors and procedures for administration.

Results

The results of the indicated the percent of agreement over two-point intervals of a five point Likert scale for the 16 subcategories of cognition ranged from 86% to 65%. The highest

category of agreement was Distracted Attention while the lowest was Psychomotor Processing

Speed (see Table 1):

Table 1: AACS Inter-Rater Reliability

Attention

1) Distracted Attention	% Agree	Agreement Range	# In Range
Jenga (N=7)	86%	1 – 2 – 3 – 4 – 5	6/7
Uno (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Yahtzee (N=11)	82%	1 – 2 – 3 – 4 – 5	9/11
Scattegories (N=9)	100%	1 – 2 – 3 – 4 – 5	9/9
Apples to Apples (N=11)	100%	1 – 2 – 3 – 4 – 5	11/11
Total (N=49)	**42/49 = 86%**		

2) Divided Attention	% Agree	Agreement Range	# In Range
Jenga (N=7)	86%	1 – 2 – 3 – 4 – 5	6/7
Uno (N = 11)	64%	1 – 2 – 3 – 4 – 5	7/11
Yahtzee (N = 11)	91%	1 – 2 – 3 – 4 – 5	10/11
Scattegories (N = 9)	67%	1 – 2 – 3 – 4 – 5	6/9
Apples to Apples (N = 11)	64%	1 – 2 – 3 – 4 – 5	7/11
Total (N=49)	**36/49 = 73%**		

3) Attention-Switching	% Agree	Agreement Range	# In Range
Jenga (N=7)	57%	1 – 2 – 3 – 4 – 5	4/7
Uno (N = 11)	82%	1 – 2 – 3 – 4 – 5	9/11
Yahtzee (N = 11)	64%	1 – 2 – 3 – 4 – 5	7/11
Scattegories (N = 9)	89%	1 – 2 – 3 – 4 – 5	8/9
Apples to Apples (N = 11)	82%	1 – 2 – 3 – 4 – 5	9/11
Total (N=49)	**37/49 = 76%**		

4) Discrimination	% Agree	Agreement Range	# In Range
Jenga (N=7)	86%	1 – 2 – 3 – 4 – 5	6/7
Uno (N = 11)	82%	1 – 2 – 3 – 4 – 5	9/11
Yahtzee (N = 11)	72%	1 – 2 – 3 – 4 – 5	8/11
Scattegories (N = 9)	88%	1 – 2 – 3 – 4 – 5	8/9
Apples to Apples (N = 11)	82%	1 – 2 – 3 – 4 – 5	9/11
Total (N=49)	40/49 = 82%		

5) Concentration	% Agree	Agreement Range	# In Range
Jenga (N=7)	86%	1 – 2 – 3 – 4 - 5	6/7
Uno (N = 11)	54%	1 – 2 – 3 – 4 – 5	6/11
Yahtzee (N = 11)	64%	1 – 2 – 3 – 4 – 5	7/11
Scattegories (N = 9)	88%	1 – 2 – 3 – 4 – 5	8/9
Apples to Apples (N = 11)	54%	1 – 2 – 3 – 4 – 5	6/11
Total (N=49)	33/49 = 67%		

6) Psychomotor Processing Speed	% Agree	Agreement Range	# In Range
Jenga (N=7)	71%	1 – 2 – 3 – 4 – 5	5/7
Uno (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Yahtzee (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Scattegories (N=9)	55%	1 – 2 – 3 – 4 – 5	5/9
Apples to Apples (N=11)	73%	1 – 2 – 3 – 4 – 5	8/11
Total (N=49)	32/49 = 65%		

Memory

7) Short-term Verbal	% Agree	Agreement Range	# In Range
Jenga (N=7)	72%	1 – 2 – 3 – 4 – 5	5/7
Uno (N=11)	82%	1 – 2 – 3 – 4 – 5	9/11
Yahtzee (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Scattegories (N=9)	78%	1 – 2 – 3 – 4 – 5	7/9
Apples to Apples (N=11)	73%	1 – 2 – 3 – 4 – 5	8/11
Total (N=49)	36/49 = 73%		

8) Short-term Visual	% Agree	Agreement Range	# In Range
Jenga (N=7)	86%	1 – 2 – 3 – 4 – 5	6/7
Uno (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Yahtzee (N=11)	82%	1 – 2 – 3 – 4 – 5	9/11
Scattegories (N=9)	67%	1 – 2 – 3 – 4 – 5	6/9
Apples to Apples (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Total (N=49)	35/49 = 71%		

9) Long-term Episodic	% Agree	Agreement Range	# In Range
Jenga (N=7)	57%	1 – 2 – 3 – 4 – 5	4/7
Uno (N=11)	91%	1 – 2 – 3 – 4 – 5	10/11
Yahtzee (N=11)	82%	1 – 2 – 3 – 4 – 5	9/11
Scattegories (N=9)	78%	1 – 2 – 3 – 4 – 5	7/9
Apples to Apples (N=11)	100%	1 – 2 – 3 – 4 – 5	11/11
Total (N=49)	41/49 = 84%		

10) Long-term Semantic	% Agree	Agreement Range	# In Range
Jenga (N=7)	57%	1 – 2 – 3 – 4 – 5	4/7
Uno (N=11)	91%	1 – 2 – 3 – 4 – 5	10/11
Yahtzee (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Scattegories (N=9)	67%	1 – 2 – 3 – 4 – 5	6/9
Apples to Apples (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Total (N=49)	34/49 = 69%		

Executive Functions

11) Concept Formation	% Agree	Agreement Range	# In Range
Jenga (N=7)	86%	1 – 2 – 3 – 4 – 5	6/7
Uno (N=11)	91%	1 – 2 – 3 – 4 – 5	10/11
Yahtzee (N=11)	73%	1 – 2 – 3 – 4 – 5	8/11
Scattegories (N=9)	78%	1 – 2 – 3 – 4 – 5	7/9
Apples to Apples (N=11)	73%	1 – 2 – 3 – 4 – 5	8/11
Total (N=49)	39/49 = 69%		

12) Strategy/Planning	% Agree	Agreement Range	# In Range
Jenga (N=7)	72%	1 – 2 – 3 – 4 – 5	5/7
Uno (N=11)	73%	1 – 2 – 3 – 4 – 5	8/11
Yahtzee (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Scattegories (N=9)	78%	1 – 2 – 3 – 4 – 5	7/9
Apples to Apples (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Total (N=49)	35/49 = 71%		

13) Deductive Reasoning	% Agree	Agreement Range	# In Range
Jenga (N=7)	72%	1 – 2 – 3 – 4 – 5	5/7
Uno (N=11)	91%	1 – 2 – 3 – 4 – 5	10/11
Yahtzee (N=11)	54%	1 – 2 – 3 – 4 – 5	6/11
Scattegories (N=9)	66%	1 – 2 – 3 – 4 – 5	6/9
Apples to Apples (N=11)	91%	1 – 2 – 3 – 4 - 5	10/11
Total (N=49)	**37/49 = 76%**		

14) Decision Making	% Agree	Agreement Range	# In Range
Jenga (N=7)	86%	1 – 2 – 3 – 4 – 5	6/7
Uno (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Yahtzee (N=11)	91%	1 – 2 – 3 – 4 – 5	10/11
Scattegories (N=9)	66%	1 – 2 – 3 – 4 – 5	6/9
Apples to Apples (N=11)	91%	1 – 2 – 3 – 4 – 5	10/11
Total (N=49)	**39/49 = 80%**		

15) Self-Regulation	% Agree	Agreement Range	# In Range
Jenga (N=7)	86%	1 – 2 – 3 – 4 - 5	6/7
Uno (N=11)	54%	1 – 2 – 3 – 4 – 5	6/11
Yahtzee (N=11)	54%	1 – 2 – 3 – 4 – 5	6/11
Scattegories (N=9)	55%	1 – 2 – 3 – 4 – 5	5/9
Apples to Apples (N=11)	100%	1 – 2 – 3 – 4 – 5	11/11
Total (N=49)	**34/49 = 69%**		

16) Visual Spatial Processing	% Agree	Agreement Range	# In Range
Jenga (N=7)	100%	1 – 2 – 3 – 4 – 5	7/7
Uno (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Yahtzee (N=11)	64%	1 – 2 – 3 – 4 – 5	7/11
Scattegories (N=9)	77%	1 – 2 – 3 – 4 – 5	7/9
Apples to Apples (N=11)	64%	1 – 2 – 3 – 4 - 5	7/11
Total (N=49)	**35/49 = 71%**		

Discussion

What can be concluded from these results? The results imply that the Activity Assessment on Cognition Scale suggests that there is a least a 65% agreement over a two-point interval on a Likert five-point scale. For individual activities the results ranged from 54%- 100%. This suggests that more than half of the sample demonstrated agreement for all 16 categories. The lowest agreement (54%) was in the activities, Apples to Apples and Uno in the cognitive area of concentration, Yahtzee in deductive reasoning, and Uno and Yahtzee for self-regulation, agreement was only 54%, whereas, other categories and activities were rated at 100% agreement. These results suggest that some raters better understood the tool than others. Activities with 100% agreement included: Scattegories and Apples to Apples for distracted attention, Apples to Apples in long term episodic, and Apples to Apples in self-regulation. Apples to Apples received 100% agreement for more than one category, while others did not have 100% agreement. Did the sample have a better understanding of the activity Apples to Apples compared to the remaining activities? Would choosing different activities change these results? Certainly one's understanding of an activity helps in the evaluation. It is imperative that recreation therapists performing an activity analysis be well acquainted with the activity they are assessing. The activities selected for this study were assumed to be widely understood, but even among commonly understood activities degree of familiarity may still play a role in scoring variations. Having non-therapeutic recreation disciplines in the sample could be viewed as a limitation of the study. Due to the AASC being in the formative stage of development, increasing sample size, and improving the descriptors and procedures for administration may produce greater results.

A follow-up qualitative survey was presented to the sample to solicit feedback about the assessment tool. The survey asked the professionals if there was anything they liked about the

survey, things they didn't like about the survey, and any other feedback or suggestions. Results of the feedback survey concluded: all professionals found the assessment to be not of use in their field of work and found the assessment to be an extremely subjective tool. Since this analysis only measured cognition, it was understandable that the sample may not see its practical implications to their work environment. Professionals also concluded that the wordage of the assessment had a high difficulty level causing the assessment to be confusing. Professionals admitted to losing focus and having to read the questions multiple times in order to interpret what the questions were really asking. Reading level tests were conducted on both the assessment and description pieces of the tool. The scale (part 1) was rated as: Gunning Fog (text scale) 17.8 (difficult to read), Flesch-Kincaid Grade Level 21.4 (college graduate and above), The SMOG index 15.8 (college graduate), and the Automated Readability Index 20.5 (college graduate) (Reliability formulas). The description piece of the tool (part 2) is rated as: Gunning Fog (text scale) 12.5 (hard to read), Flesch- Kincaid Grade Level 12.5 (college), The SMOG index 11.4 (Eleventh Grade), and Automated Readability 12.6 (18-19 years old, college entry level) (Readability formulas). The primary user group for the AACS would be certified recreation therapists who would at minimum have a bachelor's degree and have passed the national certification exam.

Other suggestions to the assessment included changing the rating scale so that a not applicable section would be available, or creating a yes, no, or doesn't fit scale. Conversely, having a more generalized rating criterion may not allow enough sensitivity to discern differences in scoring. Regardless, exploring different rating methods that may increase clarity could be an approach used in future development. It was recommended that additional reliability methodology be employed including measuring stability through a test re-test process. The

sample suggested future research only collect data from certified recreational therapists and recreational therapy students to avoid subjects that may not fully appreciate the dynamics of an activity. The last suggestion included a greater in-depth explanation of what activity analysis forms are and how they can and will be beneficial. Designing a more standardized and thorough approach to the AACS directions could add to the reliability of the instrument.

In conclusion, without confidence in the consistency in administration of the activity analysis, the recreational therapist may not have data useful for improving client outcomes. It is imperative that the profession continue to strengthen the tools they use by demonstrating both reliability and validity. "Improper selection of an activity of the failure of a facilitator to identify the hidden attributes of an activity can potentially lead to harm, within the group or the individuals in the group. It is only when leaders conduct a thorough analysis on each activity before they present it to the group, can they select the most appropriate activity that they will achieve the greatest good" (Mercer, 2003). The current study demonstrated that the AACS overall can purport some degree of interrater reliability. Sixty-five to eighty-six percent agreement on two adjacent items on a 5-point scale offers encouragement on the future development of the instrument. More testing is needed to support the finding of this study. So, are you ready to take that next step? Let's discover. As Gandhi once said, "Be the change that you want to see in the world."

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Appendix

Activity Assessment on Cognition Scale – AACS (Thomas, 2015)

Purpose: To analyze the requirements of an activity. The extent of cognitive requirement for participation in an activity is assessed for the following broad categories of cognition:

- **Attention**
- **Executive functions**
- **Memory**

Understanding the cognitive demands of an activity helps both the therapist and activity facilitator select activities most appropriate for the individual with a cognitive impairment. From a therapist perspective, knowing the inherent cognitive requirements of an activity would allow activity selection that specifically targets areas for cognitive improvement. From an activity participation perspective, knowing the inherent requirements would allow the facilitator to choose activities most compatible with the participant's cognition abilities.

Procedure: The evaluator participates or observes the participation of others in a selected activity and provides the best estimate of the cognitive requirements demanded in the activity using the 5-point scale for each category listed. Adequate time should be allotted to allow for an accurate determination of each cognitive requirement. Descriptors are provided at the end of the scale to help the evaluator make the best estimate.

Directions: For each cognitive category, <u>circle</u> the number that best represents the extent of cognition required to participate in the activity using the following scale.

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

PART 1 (Scale Only)

Attention

<u>Distracted Attention:</u> To what extent does the activity require the participant to ignore stimuli that are irrelevant to the task at hand?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

<u>Divided Attention:</u> To what extent does the activity require the participant to attend to more than one stimulus at the same time?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

<u>Attention-Switching:</u> To what extent does the activity require the participant to move the focus of attention from one stimulus to another?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

<u>Discrimination:</u> To what extent does the activity require the ability to discern similarities and differences among stimuli?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Attention (continued)

<u>Concentration:</u> To what extent is sustained cognitive effort required to participate in the activity?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

<u>Psychomotor Processing Speed:</u> To what extent does the activity require the participant to react quickly with motor movements to stimuli presented?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Memory

<u>Short-Term Verbal:</u> To what extent does the activity require the participant to immediately recall verbal information (within seconds/minutes)?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Short-Term Visual: To what extent does the activity require the participant to immediately recall visual information (within seconds/minutes)?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Memory (continued)

Long-Term Episodic: To what extent does the activity require the participant to recall events personally experienced (hours, days, or years ago)?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Long-Term Semantic: To what extent does the activity requires the participant to recall facts and previously learned knowledge (hours, days or years ago)?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Executive Functions

Concept Formation: To what extent does the activity require the participant to organize information to form thoughts and ideas?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Strategy/Planning: To what extent does the activity require the participant to conceptualize and adapt how outcomes will be achieved?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Executive Functions (continued)

Deductive Reasoning: To what extent does the activity require the participant to infer information from general to specific?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Decision-Making: To what extent does the activity require the participant to consider choices and select a preference?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Self-Regulation: To what extent does the activity require the participant to resist impulsive actions to achieve optimal outcomes?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

Visual Spatial Processing: To what extent does the activity require the participant to understand the spatial relationship between objects, such as distance, shape, direction, and laterality?

1	2	3	4	5
Little or No Extent	Some Extent	Moderate Extent	Great Extent	Very Great Extent

PART 2 (Descriptors & Examples)

I. Attention

Distracted Attention

Some activities include the presence of irrelevant stimuli that may interfere with a person's ability to maintain attention to a task. Think of a team sport like Basketball, where the presence of crowd noise, movement, bright lights, player chatter, etc. may distract from the focus of dribbling, passing, following play routes and shooting accurately. The game of Basketball would probably rate as a 5 (very-great extent) on the scale. Whereas another game, such as chess, would entail little or no distraction. For therapy purposes, distractions can be created for almost any activity using background music, TV sounds and images, or even smells. Think of playing chess in a busy recreation center vs a quiet and private area.

Divided Attention

Some activities require the participant to pay attention to two or more stimuli simultaneously. We often refer to this process as multi-tasking. Playing a Guitar while Singing would be an example and would probably rate as a 5 (very-great extent) on the scale since continuously and simultaneously performing both behaviors requires much cognitive effort. As with distracted attention, the therapist could create a situation that requires the participant to maintain attention to two stimuli simultaneously.

Attention-Switching

Some activities demand that the participant re-focus attention from one stimulus to another. Their attentiveness would be fully dedicated to one stimulus at a time. Attention switching is also referred to as "mental flexibility". The challenge for the participant is the ability to shift attention often picking up where s/he left off, perhaps applying different rules to a different situation. The game of Bingo requires attention switching. The player must first concentrate on the number being called before shifting attention to the game board to locate the number before refocusing again on the caller. This activity would probably fall somewhere around a 3 on the scale (moderate extent) since switching is continuously required but with a small amount of information to retain and incorporate into the game. A therapist could easily create an attention switching experience for the participant.

Discrimination

Discrimination is a type of attention that requires the participant to detect differences among stimuli. Many activities require discrimination abilities. The extent of discrimination is usually based on the number of stimuli that need to be recognized, the speed in which determining differences occur, and the degree each stimulus relates to the success of the activity. Reading music while playing an instrument requires a large degree of discrimination ability as the player needs to discern differences between many notes at a rapid pace. This activity would most likely rank as a 5 (very-great extent) on the scale. In contrast, the game of checkers requires discrimination that is relatively basic (black/red) and can be played at a slow pace. For checkers a rating of 2 (some extent) on the scale would probably be appropriate. Many activities are created by therapists that involve discrimination using multiple senses (smell, sounds, touch, taste, sight).

Concentration

Some activities require the participant to exert much cognitive effort in the activity to achieve successful outcomes. Chess, math problems, puzzles, and reading (especially when retention of information is later tested) are examples. Considerations in determining the extent of concentration include the level of absorption and the consequences of decreasing focus during play. For example, during a game of electronic Simon, a player needs to continually concentrate on colors, sounds and sequencing of patterns presented. To lose focus, even for a second, can result in an error when trying to replicate the previous pattern. The game of electronic Simon, due to the intensity of focus required, would rate as a 5 (very-great extent) on the scale.

Psycho-Motor Processing Speed

Some activities require quick reactions demanding that the player rapidly processes incoming information and respond through the motor pathway, sometimes in a fraction of a second. Think of some TV game shows where the first player to ring the bell and give the correct answers wins. Or, consider the importance of speed when playing electronic Simon, Pin-Ball, and many sport activities, like batting in Baseball, Ping-pong, etc. Determining a rating on the scale would depend on the rate of speed, constancy of speed and frequency of speed- responses required. All these examples would most likely rate as a 5 (very-great extent) on the scale. A counter example would be participation in a crossword puzzle. Processing speed would not be a requirement since the participant could play at his/her own pace and would merit a rating of 1 (little or no extent).

II. Memory

Short-term verbal

Many activities require short-term retention of verbal information. "Short-term" is typically measured in seconds. Some researchers suggest that retaining up to 7 digits or symbols is the average capacity that most people can recall on a short-term basis. To remember these 7 digits or symbols beyond a few seconds requires mental rehearsal (for storage into long-term memory) before fading occurs. Any activity where the participant is given verbal information which s/he must immediately act upon, is requiring short-term verbal memory ability. In the game of Simon-Says the participants are required to listen to the verbal instructions of the leader and immediately respond with a body movement. Short-term verbal memory is critical in this activity and would rate high on the scale. Considerations in scoring would include how critical the verbal information is to a successful outcome. Some activities may have visual along with the verbal information thus lowering the importance of retaining verbal information only. Electronic Simon would be an example, where the beep sound accompanies the colored light. On the other hand, Simon-Says, which also has visual information, uses the visual information to confuse rather than support the verbal information.

Short-term visual

Many activities require short-term retention of visual information. "Short-term" is typically measured in seconds. Some researchers suggest that retaining up to 7 digits or symbols is the average capacity that most people can recall on a short-term basis. To remember these 7 digits or symbols beyond a few seconds requires mental rehearsal (for storage into long-term memory) before fading occurs. Any activity where the participant is given visual information which s/he must immediately act upon, is requiring short-term visual memory ability. The game of Concentration and similar "memory" games would be a prime example of demanding short-term visual memory ability and would rate as a S (very-great extent) on the scale. With memory games, the participant must try to recall the hidden match

which was previously exposed over the last few seconds. Considerations when rating the extent of short-term visual memory required in an activity would include how critical the visual information is to a successful outcome and the availability or absence of cues that would help trigger the memory. For example, the card game UNO would require short-term visual memory to identify and recall the number or color to match. However, the visual memory demand would be much lower than Concentration since the number or color to match is visible to the player thus triggering the short-term visual memory.

Long-Term Episodic

Some activities require the participant to recall events that happened hours, days, months and years ago. Events are images in the mind of a past experience. The activity of Reminiscence, where one recalls past experiences that leads to discussion would rate as a 5 (very-great extent) on the scale since the entire focus of the activity is to recall episodic memories. Other activities may require episodic memories but only as a part of the overall cognitive requirement of the activity. The game Trivial Pursuit which asks questions about a variety of subjects sometimes requires the participant to recall an event that may relate to an episodic memory (ex. 1970s gasoline shortage), yet many of the questions draw on another type of long-term memory called semantic memory which is retaining information and facts. In this example, Trivial Pursuit would probably rate as a 3 (moderate extent) on the scale since episodic memory is only a partial requirement within the activity.

Long-Term Semantic

Some activities require the participant to recall information and facts that were learned hours, days, months and years ago. Trivia games, crossword puzzles, scrabble are common activity examples. Semantic memory could also relate to recalling the rules of the game itself making it a requirement in almost any activity experience. Consideration for evaluation would be determining the importance of semantic memory ability to the success of the activity and whether semantic memory is an inherent requirement of the activity. For example, UNO requires minimal semantic memory beyond remembering the general rules of the game of matching colors and numbers. These requirements could be reinforced by the facilitator before or during play which would still allow for participation. The primary demands of visual short-term memory, discrimination, and concentration, however, would be more primary to the game of UNO. On the other hand, to perform a crossword puzzle the participant would not only need to know the general rules of how crossword puzzles work, but more importantly would need to recall the factual (semantic) information being asked which is the basic inherent characteristic of the activity.

III. Executive Functions

Concept Formation

Activities that require the participant to form novel thoughts, ideas or categories based on prior knowledge and information learned in the activity would relate to the term concept formation. Concept

formation is also related to creativity where ideas emerge based upon the contextual factors available. The video game of Minecraft requires the participant to create images based on the material available. From a conceptual formation perspective, Minecraft would rate relatively high on the scale. Many artistic activities would also rate high on concept formation as the participant needs to internally create concepts that are then expressed in some physical manner. A counter example would be the previously described activity of electronic Simon which requires much short-term memory, discrimination, concentration and processing speed, but minimal concept formation.

Strategy/Planning

This requirement places an emphasis on internally processing the pros/cons of different options and developing a plan of action. Many activities require strategy and planning. The complexity can be different depending on the amount of variables that need to be considered. For example the game of Chess and Monopoly both require strategy and planning. However, Chess involves consideration of a multitude of possible moves and adjustments that will bring the participant nearer the goal of capturing the opponent's King. Monopoly also requires strategy and planning but requires fewer options to be processed than Chess (i.e. which property to buy, when to add houses and to what extent, etc.), and is also dependent on luck (role of dice) that partially dictates strategy. Whereas Chess would most likely rate as a 5 (very-great extent) on the scale, Monopoly would probably rank closer to a 3 (moderate extent).

Deductive Reasoning

Some activities require the ability to deduce information from general (many unorganized and often unrelated pieces of information) to arrive at a specific finding. Deductive reasoning also speaks to logic, the ability to make inferences based on prior knowledge. A classic example would be the board game of Clue which requires that the participant identify 3 cards, each representing a category (person, room, weapon) that have not been revealed during the game. Through a process of elimination the winning player identifies the 3 cards in the pile. Deductive reasoning is a primary inherent requirement of the game and would rate as a 5 (very-great extent) on the scale. In contrast, the card game of Old Maid requires a low extent of deductive ability. A player either possesses the Old Maid or does not. Inferring who has the Old Maid is not possible since cards are not shown among the players. Old Maid would rate as a 1 (little or no extent) on the scale.

Decision Making

Decision making as a cognitive skill relates to strategy, but is not exactly the same. With strategy, decisions are made through the course of the activity that progressively build-on and lead to the end result. Each decision point is directly tied to a previous decision in that one decision affects the next. The previous example of Chess illustrates how decisions are made in adjustment to a predetermined strategy based on the reaction of the opponent. The game of Concentration which requires the participant to match the overturned card based on recall would also require decision making but would

not be related to any strategy or planning. Chess would rate much higher than Concentration on strategy but rank more closely to Concentration on decision making. Both examples require the participant to evaluate the pros/cons before committing to the decision which strongly effects the game's outcome and would rate as a 5 (very-great extent) on the scale.

Self-Regulation

Almost all activities requiring decisions that lead to consequences have a self-regulation requirement. Most activities require the participant to resist impulsive actions to successfully participate. For example, the game of Basketball requires teamwork and cooperation to win the game. A player who continuously takes shots, instead of passing to another player who is better positioned to score, would exhibit difficulty with self-regulation. Competitive/elimination games, by nature, require self-regulation to control emotions and demonstrate appropriate social etiquette. For example, the player who is required to return to start during Backgammon or return to a previous space during Chutes and Ladders, needs to demonstrate self-regulation. The challenge for the evaluator would be to determine the extent of self-regulation needed for a successful outcome, whether it's the give-and-take of cooperating or the extent of emotional stability required to adapt to game consequences.

Visual-Spatial Processing

Many activities require the ability to judge the spatial relationship of the activity components and objects to one another. Spatial relationship refers to the variables of distance, shapes, physical proximity and position in relation to other objects, rate of speed, and direction. Many sport activities, especially with multiple players, demand that the participant constantly evaluate the position of the ball and players (up, down, laterally, far, close) in relation to self. The combination of continuous movement, constant changing of directions, speed and orientation of players/ball to one another would require much visual-spatial processing ability and rate high on the scale. Even sedentary activities such as Connect Four, Battleship, and Jig-Saw puzzles have a visual-spatial component although with fewer variables, and dimensions (2-D vs. 3-D), and would rate lower on the scale than the sport example.