

Behavioral tendencies in youth with intellectual and developmental disabilities during play activities

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Narrative

My high school was supportive of inclusive classrooms where children with disabilities joined the typically developing children for class. Of the children with disabilities that attended the school, only those with less severe disabilities were able to participate in an inclusive classroom program. Inclusive classrooms are an excellent way for children with disabilities to interact with their typically developing peers. Children with intellectual disabilities have extra needs in an inclusive classroom such as notetakers, tutors, or companionship. The notetakers and tutors would be more likely to interact with a child with disabilities as they are assisting the child with their schoolwork. Students that have opted to volunteer in the special education classroom may become companions or friends of the children with disabilities in that classroom. Children with only physical disabilities would have had an easier time interacting with others as they are able to converse easily and relate to other high school students in a way that children with intellectual disabilities cannot. Therefore, I think that outside of the special education classroom, high schools, even those with inclusive classroom policies, are still mainly designed for interactions between typically developing children and children with physical disabilities as opposed to children with intellectual disabilities.

Abstract

Literature suggests that children with disabilities have a tendency to express themselves through non-verbal communication of body language or facial expression as opposed to verbal communication. These subtle communication styles can be a driving factor for negative interactions as their peers may not recognize the signs of communication. Engagement in physical activity may influence the interactions and communications that children have with one another. **Purpose:** The purpose of the study is to identify behavioral tendencies during social interaction of youth with intellectual and physical disabilities while playing during a therapeutic recreation program. **Methods:** The behavioral tendencies of elementary aged children were coded using the Noldus Observer XT system during a single session for each participant (fifteen minutes) each during Therapeutic Recreation in Public Schools (TRiPS) program activities. The Play Observation Scale was used to identify the types of play (cognitive, functional, constructive, games, occupied) and the behaviors (anxious, hovering, curiosity, enjoyment, focused) seen during play. Positive and negative engagement in activity was also recorded. Descriptive statistics were analyzed for all variables. A paired-samples t-test was run to determine differences in types of play and behaviors during positive and negative engagement. **Results:** Although there were no significant findings ($p > 0.05$ for all variables), interesting trends were noted. When children were positively engaging in the activity, enjoyment was the most prevalent behavior. In contrast, with negative engagement, frustration and hovering were the most prevalent behaviors. Children participated mainly in constructive play, occupied play, and games. during the TRiPS program. **Conclusion:** The children portrayed both positive and negative social interactions through their body language and facial expressions. These positive

and negative interactions may influence the type of play the children engage in as well as the behaviors they exhibit.

Introduction

Children with intellectual or physical disabilities may be limited in their ways of expressing friendliness or playfulness (Okimoto, Bundy, Hanzlick, 1999). Inclusive classrooms are important for the children with disabilities to learn to interact with peers and instructors so that they may be able to express what they feel or want more clearly. The number of inclusive classrooms has increased over the past few years in an attempt to provide children with disabilities with a less restrictive environment. Unfortunately, evidence suggests that typically developing children are less likely to interact with their peers that have disabilities (Hestens & Carroll, 2000). Many factors are put into play with regard to peer interactions such as the age of the children or the type of play; these factors can influence whether the typically developing children are welcoming of the children with disabilities.

Children with intellectual disabilities often communicate using subtle signs such as body language, simple vocalizations, or muscle tension (Nijs, Penne, Vlaskamp, & Maes, 2015). This form of communication may go unnoticed by their typically developing peers as their peers or instructors as they may not have been trained to spot these communication forms. For example, children with autism may present as different to their typically developing peers due to their forms of communication and interaction style (Bauminger, Shulman, & Agar, 2003). Some children with disabilities cannot interact as fully as a typically developing child, so their style of interaction is different. The lack of understanding of these interaction styles can lead to more negative interaction outcomes with others. Negative interactions from peers can further decrease

the ability and the desire of a child to attempt communication with others (Guralnick, Connor, Neville, & Hammond, 2006). Some examples of a negative interaction would be a verbal or physical rejection of an invitation to play or ignoring one or more of the children with disabilities. A positive interaction would be accepting an invitation to play, conversing or assisting a child with disabilities, or actively playing together with children with disabilities. While the negative interaction should be kept at a minimum, positive interactions should be presented and encouraged for the children to obtain social interaction abilities.

Sometimes, interference or a different approach is needed to increase the chances of a positive interaction between a child with a disability and a typically developing child. Peer mediated interactions can produce more initial positive responses towards children with disabilities from other children with disabilities or typically developing children. “Peer mediated” is an approach where a typically developing child is trained to facilitate interactions (Hundert & Houghton, 1992). The approach may be easier to initiate with older children and adolescents. Adult guidance to social interactions between children with disabilities and typically developing children may be necessary to bring forth a positive interaction not an exclusion from peer groups (Thiemann- Bourque, 2012). The more positive an interaction, the more likely the child will attempt to interact again. Eventually the child will reach the point that adult guidance is minimalized or not necessary. When interference is not as successful, the child’s ability to draw from these experiences may be a key factor to increasing the chance of a positive interaction. These types of interactions may also be possible among groups of children with disabilities, along with interactions facilitated by a teacher or adult. A child’s capacity for learning is astronomical in that simply observing can lead to an understanding of a subject or a behavior. For children with disabilities and typically developing children alike, observations can

provide hints as to what form of interaction is easiest for people to understand or what is socially acceptable (Garfinkle & Schwartz, 2002). These observations help children to interact with their peers because the children imitate what they have seen and heard.

Children with disabilities are more likely to play with other disabled children than the typically developing children (Chen, Lin, Justice & Sawyer, 2017). Reasons for this may include exclusion from play groups, familiarity with the other disabled children, or a better understanding of their peers' social cues. On the other hand, the more time disabled children spend interacting with their peers, the greater their skill at social interacting becomes (Guralnick, Neville, Hammond, & Connor, 2007). A recent study by Zhao and Chen (2018) demonstrated improved social interactions, cooperation, and communication in youth with autism as a result of a physical activity intervention. Ample interaction opportunities should be given to assist the disabled children with developing interaction skills so that they may have a better quality of life. To conclude, familiarity with a peer can lead to a greater level of interaction (Grenot-Scheyer, 1994). These positive interactions can help children to be more willing to interact with new peers, either disabled or typically developing.

Through observations of body language, it is possible to see the differences in the treatment of the individuals with disabilities. Some people shy away, ignore, or even bully the individuals with disabilities. Observations of peer-to-peer interactions will be the most reasonable way to determine how often such treatment occurs and if the treatment is only presented for the children with disabilities. Rintala, Vālimaa, et al. (2011) mentions that discouragement from play in early childhood can cause avoidance in play or physical activity later in life. Group activities have the potential to counteract the discouragement and improve social interaction among peers. When in school, group activities are often facilitated by the

teachers. Teacher's early facilitation of social experiences for children with group activities are important, so that they can be prepared for interactions later in life. Ideally, these interactions would be explored between children with disabilities and children who are typically functioning. Due to constraints of the program utilized to conduct this study, the current study focused on observations of only youth with disabilities. The purpose of the study is to conduct an observational analysis of the activity behaviors and social interactions of elementary school-aged children with disabilities during the TRiPS Program.

Methods

Program

The study will be conducted through Therapeutic Recreation in Public Schools (TRiPS), a program implemented in public school systems throughout Knoxville and the surrounding areas for children with disabilities. The TRiPS program involves approximately 100 students, with physical and/or intellectual disabilities, from various schools that participate in social activities each week. There were three elementary schools, three middle schools, and three high schools participating in TRiPS program.

Participants

Six elementary-aged children participated in the study. All of the students had a physical or intellectual disability. All of the students were male enrolled in Kindergarten through third grade in a public school. One of children was wheelchair bound. The University of Tennessee, Knoxville and the local school district Institutional Review Boards approved the study. Parents signed consent forms for their child's observation data to be used in this study.

Observations

All observations were taken during the first part of the school year (October through November). The TRiPS program took place once per week for one hour in an inclusive classroom. During the program, the children were instructed to perform various physical activities. Some of the activities were individual, while some of the activities were performed in groups. All activity and behaviors were live coded using the Observer XT System (Noldus, Wageningen, The Netherlands). Each child was coded during a single session for fifteen consecutive minutes. Observations were conducted by the student researcher who was trained using the observational systems described below and practiced observations during physical activity classes attended by college students.

The Play Observation Scale (Rubin, 2001) was then used to classify the forms of physical activity, which can affect the interaction potential among the children and adolescents. Play that is solitary or parallel in nature such as occupied play, functional play, or exploration play would likely have less interaction due to the lack of other participants involved in the play styles. Occupied play is defined as a child who is playing but is not participating in the activity. Functional play is defined as the repetitive movements performed by children such as a warm-up activity. Constructive play is defined as the creation of objects or arts and crafts. Exploratory play is when the child is exploring their surroundings or an object. Dramatic play is when the child is acting out a role or engaging in imaginative play. Games are the group play involving a set of rules. Cognitive play is play that involves higher level functioning such as a math game or Jeopardy. Double coded behaviors are the various emotions that the children could express during the activities listed above. Anxious is when the child shows signs of anxiety or panic,

which may be accompanied feelings of frustration with the activity or other people. Aggression is when the child shows signs of violence emotionally, while rough and tumble is the physical sign of aggression. Enjoyment is defined as the child smiling and laughing. Focused is when the child becomes fixated on the task set before them. Hovering is when the child was not participating in the activity and was instead “sitting on the edge” of the group, which may have been accompanied by signs of curiosity in an object, person, or activity. Interactions of the youth were identified through their engagement in the activity. Positive engagement is when the child is actively participating in the activity, while negative engagement is when the child avoids participating in the activity.

Statistical Analysis

Data were analyzed using SPSS version 25 (IBM, Armonk, NY). Figures were created using Microsoft Excel. Descriptive data analysis included the calculation of means, standard deviations, and frequencies for each of the variables assessed. Play behaviors and double-coded behaviors were also analyzed by positive and negative engagement categories using paired samples t-tests. Significance was set at $p < 0.05$.

Results

Observational data are presented in Figures 1 and 2. Figure 1 demonstrates the frequency of the play behaviors. The participants engaged in a variety of play behaviors during the observational sessions. The frequency of play behaviors was relatively similar amongst all of the play behaviors, with occupied and functional behaviors occurring more frequently. The children did not spend any time in in dramatic play. Figure 2 represents the frequency of double-coded

behaviors of the children during the activity sessions. The children's double-coded behavior was most frequently categorized as enjoyment, focused, and hovering during the activities. The children did not portray any aggression or rough and tumble double-coded behaviors.

FIGURE 1. FREQUENCY OF PLAY BEHAVIORS

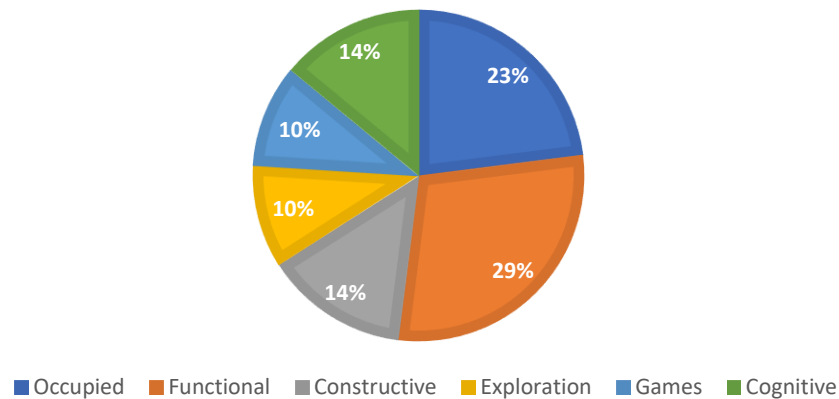


FIGURE 2. FREQUENCY OF DOUBLE-CODED BEHAVIORS

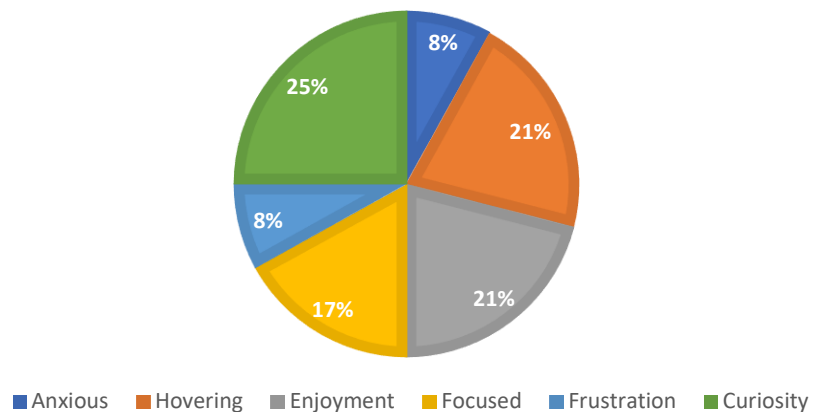
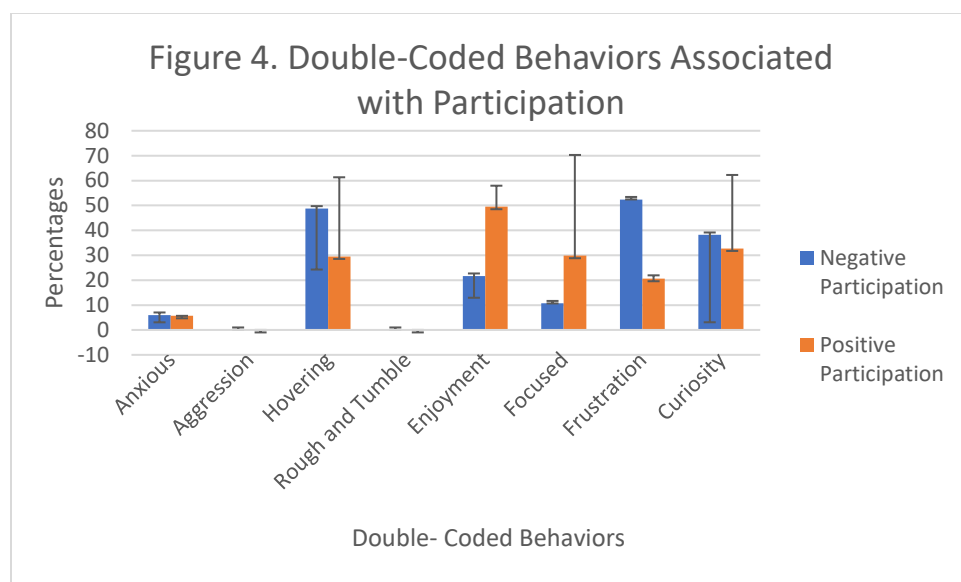
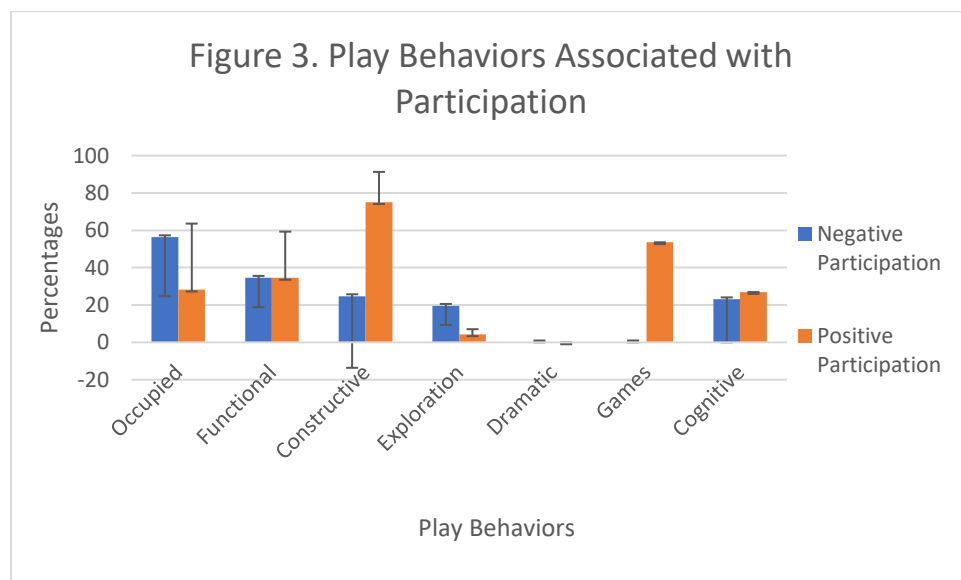


Figure 3 presents how play behaviors differed based on positive and negative participation during the activity session. Although there were no significant differences in play behaviors ($p>0.05$ for all play behaviors) between positive and negative participation, when the children were positively engaged, they spent a higher percentage of time in constructive and

game play. Negative participation resulted in a greater percentage of time spent in occupied behavior. Double-coded behaviors associated with both positive and negative participation is presented in Figure 4. There were also no significant differences among the double-coded behavior between positive and negative participation ($p>0.05$ for all double-coded behaviors). The children's spent a higher percentage of time in the double-coded behavior of enjoyment when participation was positive compared to a higher percentage of time in frustration and hovering when enjoyment was negative.



Discussion

Although there were no significant differences in play type and behaviors, there were activities that appeared to be more prevalent than others. The children spent the most amount of time positively engaging in constructive play and games, while negative engagement was most prevalent with occupied play. Occupied play is when the child is not participating in the activity but is still focused on his or her own activity. Constructive play activities and the games were designed by the TRiPS organizers for the children to enjoy and gain new interaction experiences. Enjoyment was a prevalent emotion among the children when showing positive participation in the activity. The activities created through the TRiPS program were designed to be fun, hence why enjoyment is such a prevalent emotion when participating in the activity. Hovering was the body language most seen when the child showed negative participation in the activity. Sometimes the children would watch the activity instead of joining in, therefore, they were “hovering.” Frustration was an emotion seen in high concentrations during negative participation in an activity likely due to the other people in the room or possibly being uncomfortable performing the activity.

The TRiPS program is a physical activity program for children with disabilities. Unfortunately, none of the children participating in TRiPS were typically developing children as the program took place in the school’s special education classroom and involved activities designed specifically for youth with disabilities. Half of the program involved functional play (warm-up) and a physically active game, while the other half of the program consisted mainly of organized constructive play (creation play). Functional play is defined as the repetitive movements performed by children such as a warm-up activity. Constructive play is defined as the creation of objects or arts and crafts. Games are a group activity involving a set of rules.

In order to gauge their emotions or double-coded behaviors, body language and facial expression were assessed. Body language and facial expressions are key to determining the emotions and feelings of children with disabilities. As the children were not communicative, only through observing body language and facial expressions was their like or dislike of an activity or action recognized. Interactions between the children were rare during the physical activity portion of the program, but interactions of positive and negative nature were seen during the constructive play. Negative body language and facial expressions such as anxiety, frustration, or “acting out” were indicators of negative interactions. Such interactions can drive the children to hesitate to interact in the future. Positive interactions were indicated via body language and facial expressions of enjoyment and curiosity and encouraged to help enforce the idea that interacting with others was not a “bad thing.”

The children chose to express themselves through facial expression and body language as opposed to conversation. They did have to be guided by the TRIPs instructors to participate in the activity. Often, the children did not follow directions during the constructive play. Perhaps the need for increased prompts was due to their disabilities, but it is more likely due to the fact that they wished to perform their own activity using the tools from the prepared activity. Less prompts from the TRIPs instructors were needed during the physical activity portion of the program. One key observation was the association between the hovering body language, negative participation, and occupied play. Occupied play was used to identify a child who was not participating in the activity and was essentially “hovering” around the group. Some children, with disabilities or typically developing, are shy and so they hesitate to join the activity. Or the child simply was not interested in participating and preferred to be an observer or do something else.

Since the study took place during the time the children were engaged in the TRiPS Program, it is difficult to determine their typical social interactions with one another. During the TRiPS activities, the children did not socially engage one another very often and interaction with the rest of the group was based on their positive or negative engagement. The activity program implemented during the TRiPS program was originally designed for children to play with their parents as such the activities are geared more toward parallel or solitary play with child playing with the instructor. Even the games did not encourage group play or social interaction. Parallel play is defined as “playing next to one another,” while solitary play is playing alone. The main interactions that were seen were between the facilitators of the program and the children rather than the peer interaction that was anticipated.

Some limitations of the study include the small sample size, the lack of gender equality, the majority of the children having more prevalent mental disabilities, unclear distinction between group and parallel play, and errors in coding during data collection. The class consisted of nine children, one female and eight males. Of the six children who had consent for use of their data, only one child was physically disabled and unable to participate in the physical activity. However, the child was able to participate in the constructive play activities. In the TRiPS program activities, it was hard to differentiate between the group play and parallel play. Often the same activities were performed in a group, but the children were not playing together; yet, the activity was group play because the children were interacting with one another. Due to incorrect data collection, one child had been removed from the data composing Figures 3 and 4. Also, one of the children had an incomplete observation time and one did not have their participation coded in their observations.

The study was able to accomplish the identification of behavioral tendencies in youth with disabilities during play. The activities were designed using games and constructive play that any child could participate in and enjoy. Sometimes, the child showed more negative emotions such as frustration, aggression, or anxiety. Unfortunately, the study was not able to look at the interaction between youth with disabilities or children with disabilities and typically developing children due to the set-up of the activities. One thought that was not addressed prior to the study is the purpose of the TRiPS program. Perhaps the goal of the TRiPS program was to assist the disabled youth with their motor skills. While physical activity through functional play and games helped improve their gross motor skills, the constructive play improved their fine motor skills. For future research, investigators should consider performing video observations over live observations. Also, a larger class size would provide more data and, hopefully, a greater diversity in play behaviors, participation levels, and double-coded behaviors. Implementing the use of several schools for data collection would be another option to compare the differences between the children's responses.

References

- Bauminger, Shulman, & Agam. (2003). Peer interaction and loneliness in high-functioning children with autism. *J Autism Dev Disord.* 2003 Oct;33(5):489-507.
- Chen, Lin, Justice, & Sawyer. (2017). The Social Networks of Children with and without disabilities in early childhood special education Classroom. [J Autism Dev Disord.](#) 2017 Sep 1. doi: 10.1007/s10803-017-3272-4.

- Garfinkle, Ann., & Schwartz, Irene. (2002) Peer imitation: increasing social interaction in children with autism and other developmental disabilities in inclusive classrooms. *Topics in Early Childhood Special Education*, 22(1): 26-38.
- Grenot- Scheyer, Marquita. (1994). The nature of interactions between students with severe disabilities and their friends and acquaintances without disabilities. *The associations of persons with severe handicaps*, 19(4): 253-262.
- Guralnick, Connor, Neville, & Hammond. (2006). Promoting with Peer- related Social Development of Young Children with mild developmental Delays: effectiveness of a comprehensive intervention. [*Am J Ment Retard.*](#) 2006; 111(5):336-56
- Guralnick, Neville, Hammond, & Connor. (2007). The friendships of young children with developmental delays: a longitudinal analysis. *Journal of Applied Developmental Psychology*.
- Hestens, Linda & Carroll, Deborah. (2000). Play interactions of Young children with and without disabilities: individual and environmental influences. *Early childhood research Quarterly*. 15(2):229-246.
- Hundert, Joel., & Houghton, Anne. (1992). Promoting Social Interaction of children with disabilities in integrated preschools: a failure to generalize. *Exceptional Children*, 58(4):311-320.
- Nijs, Penne, Vlaskamp, & Maes. (2015). Peer Interactions among children with profound intellectual and multiple disabilities during group activities. [*J Appl Res Intellect Disabil.*](#) 2016 Jul;29(4):366-77. doi: 10.1111/jar.12185.
- Okimoto, Bundy, & Hanzlik. (1999). Playfulness in children with and without disability: measurement and Intervention. *Am J Occupational Therapy*. 53:73-82

Rintala, Vālimaa, et al. (2011). Physical activity of Children with and without long term illness or disability. [J Phys Act Health](#). 8(8):1066-73.

Rubin, K. (2001). Play Observation Scale. *Center for Children, Relationships, and Culture*.
University of Maryland.

Thiemann- Bourque, Kathy. (2012). Peer- mediated AAC instruction for Young children with autism and other developmental delays. [Perspect Augment altern commun](#). 21(4). doi: 10.1044/aac21.4.159.

Zhao, M. and S. Chen. (2018) The Effects of Structured Physical Activity Program on Social Interaction and Communication for Children with Autism. *BioMed Research International*. 2018. doi.10.1155/2018/1825046

Appendix A

Paired Samples t-Test Output Table

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	NEG-Occupied - POS-Occupied	38.21	34.55	17.27	-16.76	93.19	2.212	3	0.114
Pair 2	NEG-Functional - POS-Functional	-28.02	6.51	4.60	-86.50	30.46	-6.089	1	0.104
Pair 3	NEG-Constructive - POS-Constructive	-50.36	48.02	27.72	-169.65	68.92	-1.817	2	0.211
Pair 4	NEG-Exploration - POS-Exploration	20.64	3.27	2.31	-8.76	50.04	8.920	1	0.071
Pair 5	NEG-Hovering - POS-Hovering	20.23	42.24	21.12	-46.98	87.44	0.958	3	0.409
Pair 6	NEG-Enjoyment - POS-Enjoyment	-28.86	24.04	17.00	-244.81	187.10	-1.698	1	0.339
Pair 9	NEG-Curiosity - POS-Curiosity	1.44	50.17	22.44	-60.85	63.73	0.064	4	0.952