

Fall 2013

## The Effectiveness of Therapy and Fun

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# **The Effectiveness of Therapy and Fun**

*A senior honors project for the Frederik Meijer Honors College and Comprehensive Therapy Center*

Fall Semester, 2013  
Grand Valley State University  
Christa N. Formberg

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## ACKNOWLEDGEMENTS

I would like to thank the following people for their time and expertise. The content of this project would not have been completed without their assistance.

**Professor Jean Silbar** for her field experience and clinical supervision.

**Dr. Jeffrey Chamberlain** for his leadership within the Frederik Meijer Honors College.

**Dr. Sango Otieno and GVSU's Statistical Consulting Center** for their thorough analysis of project data.

## ABSTRACT

This paragraph is to be used as a summary of the senior project. Specifically, the Comprehensive Therapy Center may utilize it for the purpose of informing the general public about the effectiveness of *Therapy and Fun*.

In order to continue the development and successes of *Therapy and Fun*, the Comprehensive Therapy Center enlisted the assistance of a Grand Valley State University speech-language pathology student to conduct a study on the effectiveness of the 30-year program. The study took 14 months to complete. Based on this study and corresponding 2013 data analysis, *Therapy and Fun* is an effective therapy program! Each participant has specific objectives that professionals target throughout the summer. On average, participants met 79.1% of their speech-language pathology objectives and 78.6% of their occupational therapy objectives. In fact, the majority of children enrolled in speech-language services met 100% of their objectives! Children with a range of diagnoses, ages, and ethnicities benefitted from this treatment program. The achieved objectives build upon educational goals. During the summer, it is believed that these goals would otherwise not be targeted, if it were not for this program.

## PRELIMINARY PROJECT INFORMATION

**Rationale.**

Established in 1982, Comprehensive Therapy Center's (CTC) mission is to meet the therapeutic and educational needs of children with disabilities who are at-risk or disadvantaged, through skill building, academic enhancement and social emotional support. The center helps children to walk, talk, learn and play so they can read and write.

For the past 30 years, CTC's *Therapy and Fun* has cared for more than 725 children who have special needs. The community-based Therapy and Fun clinic also offers service learning to teen volunteers and gives families education and respite. Based on verbal accounts from CTC employees and participants' parents, *Therapy and Fun* "works." The participants improve through one or more of the following: speech-language pathology, occupational therapy, oral-motor treatment, physical therapy, sensory integration, handwriting, reading assistance, and thinking skills. However, there has yet to be quantifiable data that tracks the effectiveness of *Therapy and Fun*.

**Focus.**

This study aims to examine the outcomes data to determine if *Therapy and Fun* "works" for the benefit of the participants. Specifically, an in-depth analysis of the types and amounts of objectives the children met in therapy and which types and ages of children benefitted most from the therapy offered in the program. Both occupational therapy and speech-language pathology will be studied.

The primary question is as follows: "How effective is the *Therapy and Fun* program?" Effectiveness is defined as any improvement in the chosen target areas for each individual. More broadly, this project will also track the average effectiveness percentage of a demographic (a given disability, such as children with autism). The secondary question is: "What factors make the therapy effective?" The key factor that will be discussed is the mentorship model utilized by the CTC. Based on the findings, the Comprehensive Therapy Center may modify their model for *Therapy and Fun* for the following year in order to be seeking a higher effectiveness rate, if it is not currently being met.

**Methodology.**

*Therapy and Fun* runs for six to seven weeks from the end of June until the beginning of August. Participants come from 9 am-12 pm, Tuesday through Thursday. Participants will have engaged in therapy from the listed professionals. Therapy programs utilize activities which are within the scope of evidence-based practice. Therapy also includes "fun," indirect therapy from professionals and volunteers. These activities include arts and crafts, drama, and musical tasks. Prior to *Therapy and Fun*, volunteers receive over 20 hours of training in order to make them successful in their respective responsibilities.

The interaction of the participant and his/her family with a professional begins in the spring. There is a 45 minute screening meeting between the participant, caregiver(s), and at least one CTC professional. During and after the program, the "Comprehensive Therapy Center Client Demographics Form" (Appendix A) is completed. Two of the categories that are especially pertinent to this study are functional level and eligibility area. The functional level is a description of the participant's mental and physical handicaps. To be eligible to attend Therapy and Fun, a child must need to receive speech, language, sensory or motor therapy.

As an honors senior project, this design utilizes standard statistical processes. While the honors student is analyzing data, it is raw data. The data will have no identifiers to the participants. A proposal to the International Review Board (IRB) was drafted; in actuality, it was not needed. The director of the speech-language pathology program, chair of the Allied Health Sciences department, and the IRB agreed that because the agency is providing redacted information, the project did not need approval with the IRB. The analysis of the data provided poses no risk to the participants.

The research design centers on the participants' progress as documented by the professionals. There is a data collection sheet for each session. In addition to keeping qualitative daily notes, there is a weekly summary followed by one discharge report for each child.

This design focuses on the participants' progress in speech, language, and motor therapies. The CTC's standard practice for the past 30 years has been daily data collection for each session, weekly summaries, and a discharge report for each child for each activity. There is also a final discharge report summarizing the entirety of the therapy program. Depending on individual needs and incoming skill levels, the children may have goals and objectives for improvement in one or more of the following areas: speech, language, oral motor, movement, sensory integration handwriting, or social skills.

The data provided will include such information as: complete, partial, and no improvement will be assessed. Additional objectives added during the summer will be included, as well. At the end of the program, the participant's progress is shared with his/her parents in two formats: a discharge conference between the parents and professionals and a written discharge report.

The specificities of data management are explained in the Data section. Finally, results of the study of the data will be presented in aggregate form. For the professional and organizational development of *Therapy and Fun*, data is based on gender, ethnicity, diagnoses, and chronological age. The aggregate results will not be associated with any particular individual. Individuals will be assigned an identification sequence (only known to the professionals). The sequence (letter combination) is what will be used to track their progress for this project.

### **Participants.**

The potential benefits for society target parents of special needs children. The conclusions will be posted on the CTC website to encourage parents to register their children for *Therapy and Fun* '14. With expected results, more parents will enroll their children. *Therapy and Fun* helps works on clients' educational goals in the summer, allowing them to improve instead of regress during the summer months.

More importantly, to each participant there are various benefits. His or her speech, fine motor skills, writing, reading, and/or sensory integration may improve. Furthermore, the participants have the opportunity to be in the company of teen volunteers so they can build camaraderie and the "I can do it" mindset. These benefits are the reasons why participants come back year after year, and some have the drive to one day become a volunteer.

The CTC staff will see which populations are successful and which groups of participants may not be successful. It is based on these findings that the CTC can change future therapy models. This final outcome is a benefit for the community agency, the Comprehensive Therapy Center.

### **Consent.**

Let it be made extremely clear that the parents of the individuals can decline the individuals' participation in the analysis study. The individuals will in no way be treated any differently whether they are in the study or not. The alternative therapy to allowing the data to be shared is the **same** therapy offered in *Therapy and Fun*. Therefore, the therapy is the same. Simply, the parents have the option to allow their child's results to be aggregated in the assessment.

At the orientation meeting, the caregiver and participant will be made aware that the outcomes information will be shared – minus any identifying information – with the university student. The Information and Consent form, Appendix B, will be presented to the caregiver. It is at this time that the caregiver can ask any questions and/or present reservations about participating. It will be communicated that in no way will an individual's results be made aware to anyone besides the agency. The caregiver must sign the consent form in order to include the participant's progress in the analysis.

### **Data.**

No information will be collected from publicly available sources. On the forms and releases signed before therapy begins, caregivers will have to have to account for any allergies the participant may have (as a part of his/her medical record). Most importantly, principal investigators will be made aware of the disabilities and/or disorders of individual participants. **This information is collected by the professionals; the senior honors student will only be given the data, not collecting it.** All client files are kept in a locked file within the Comprehensive Therapy Center. Computers are encrypted. Any personal computers have a password lock system. Grand Valley State University's Statistical Consulting Center was utilized for higher-level data analysis. They performed Pearson Chi-Square tests, Fisher's Exact Test, Likelihood Ratios, and contingency tables by crosstabulation. The data was consolidated into box plots, charts, and bar graphs.

### **Appendices.**

The current forms used by the agency that will also be used for analyses are attached: pre- program surveys for caregivers and the new information and consent form. The project analyst designed Appendix B. The CTC annually utilizes Appendix A.

## POST-THERAPY RESULTS FOR SPEECH-LANGUAGE PATHOLOGY

**Objectives-met Percentage.**

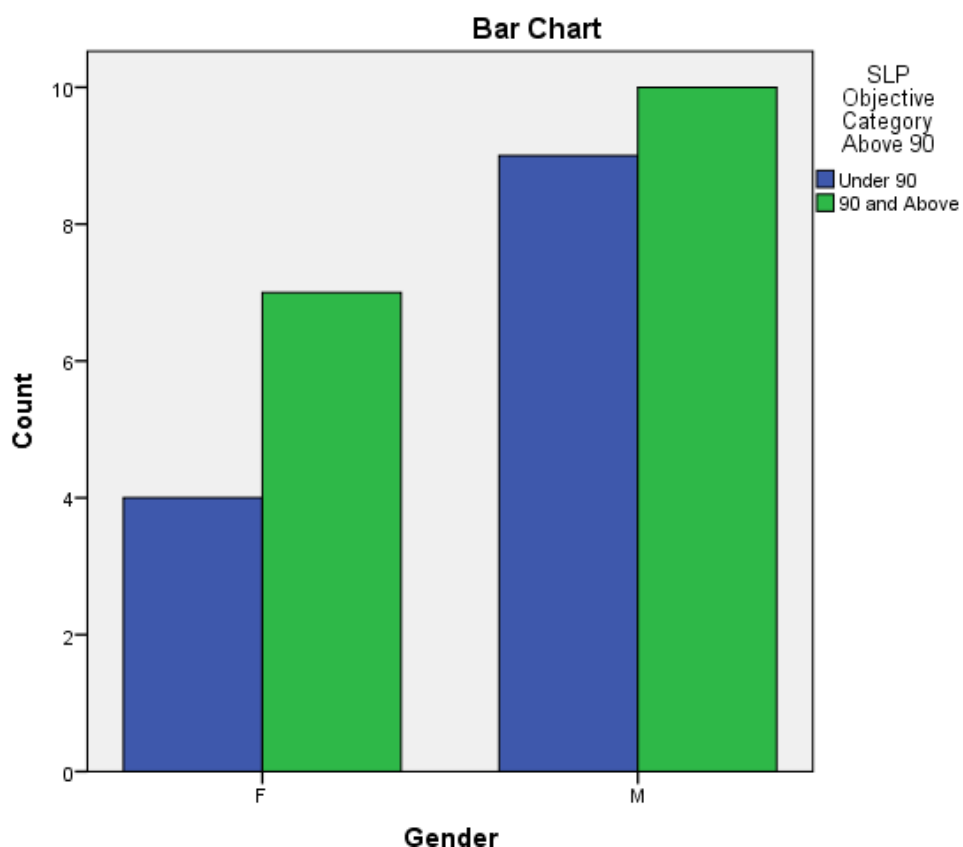
To measure the effectiveness of therapy, each participant's outcomes success was calculated. This calculation is termed as an objectives-met percentage or percentage of objective met. The analyst divided the number of objectives met by the number of objectives attempted. According to the expert opinion of the faculty advisor, an objectives-met percentage of 90% or greater is considered very effective therapy, with "wonderful" results. An objectives-met score of less than 90% should not be considered ineffective therapy. However, the variables were evaluated to the standard of 90% of objectives-met during *Therapy and Fun*.

Many of the variables were found to have no statistical relationship to objectives met. However, statistically significant does not mean that the values and implications are not clinically significant. The description for each variable is noted below the respective data. It is recommended that the Comprehensive Therapy Center assess the results found in the following tables and graphs. Evaluating and learning from these results may improve the effectiveness of *Therapy and Fun*.



**Gender.**

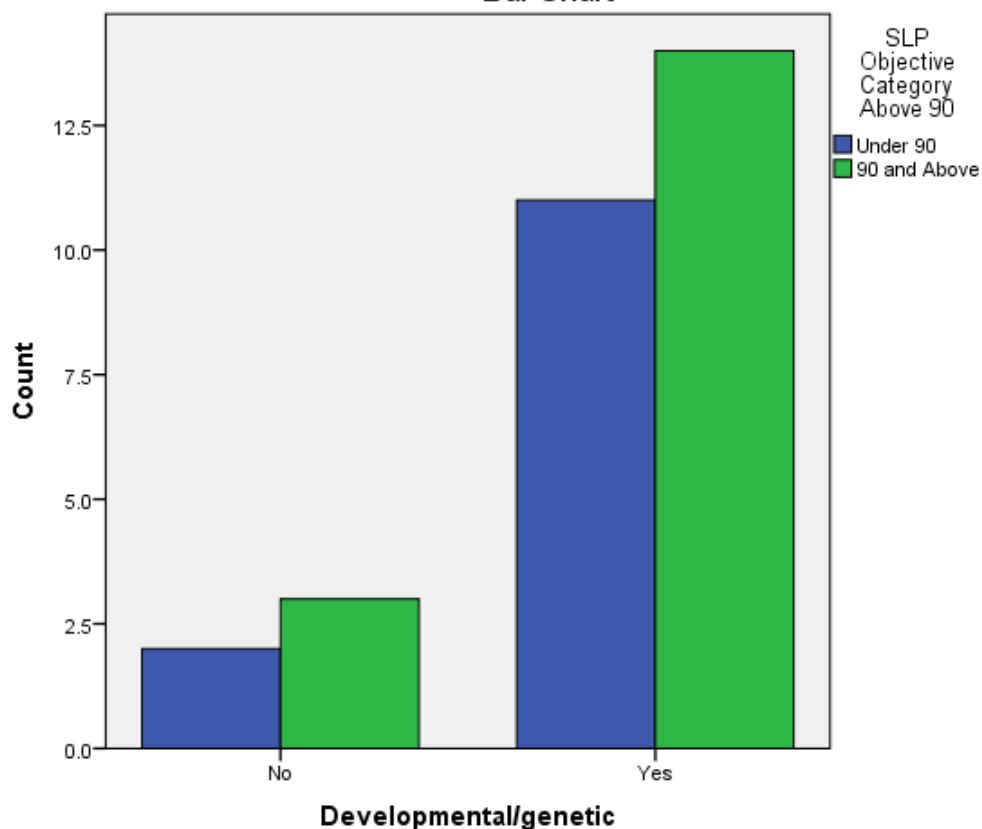
Crosstab					
			SLP Objective Category Above 90		Total
			Under 90	90 and Above	
Gender	F	Count	4	7	11
		% within Gender	36.4%	63.6%	100.0%
	M	Count	9	10	19
		% within Gender	47.4%	52.6%	100.0%
Total	Count		13	17	30
	% within Gender		43.3%	56.7%	100.0%

**Table 1 and Graph 1. Gender and 90% SLP Objectives Met**

63.6% of the female participants achieved 90% or more of their objectives. 52.6% of male participants achieved 90% or more of their objectives. It appears that the females performed better than the males; yet there nearly twice as many males in the participant cohort. Overall, 56.7% of participants achieved 90% or more of their objectives.

**Diagnoses.****Crosstab**

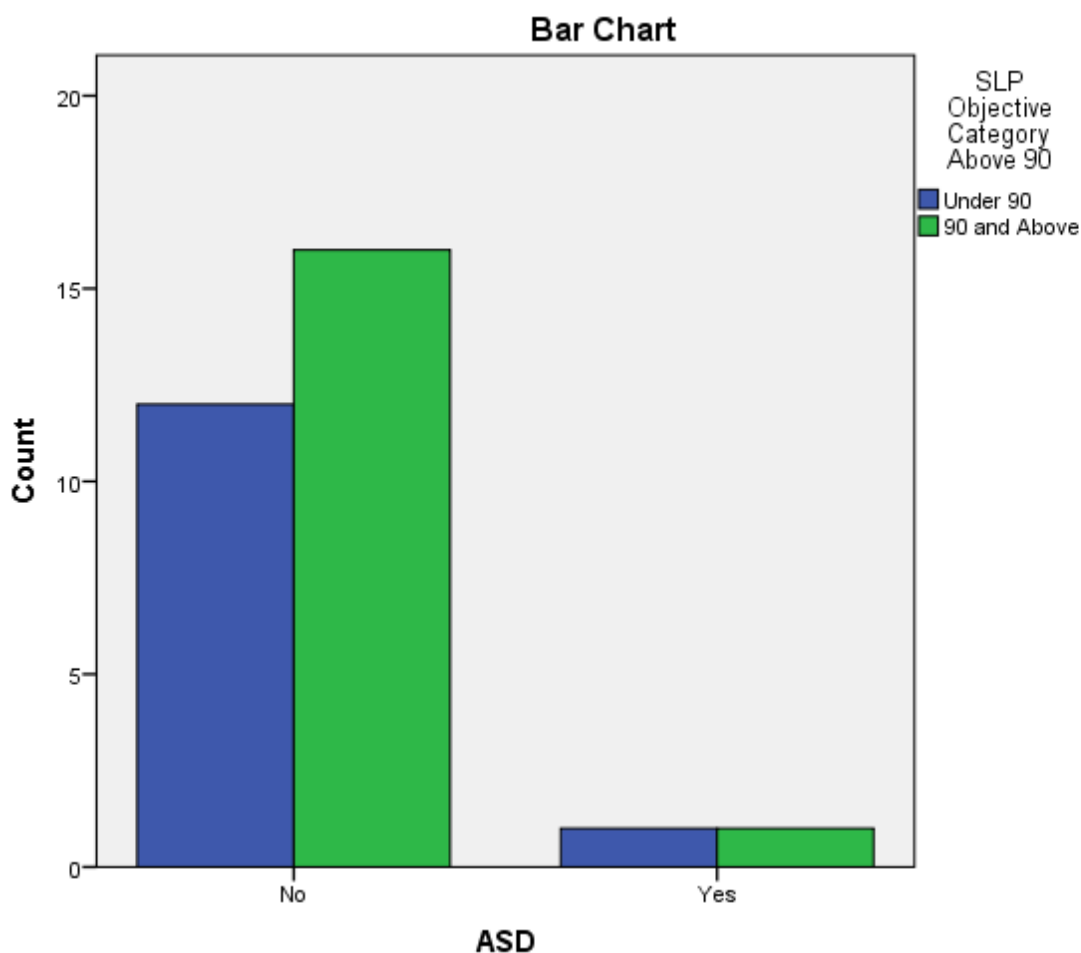
			SLP Objective Category Above 90		Total
			Under 90	90 & above	
Developmental/ genetic	No	Count	2	3	5
		% within Developmental/ genetic	40.0%	60.0%	100.0%
	Yes	Count	11	14	25
		% within Developmental/ genetic	44.0%	56.0%	100.0%
Total		Count	13	17	30
		% within Developmental/ genetic	43.3%	56.7%	100.0%

**Bar Chart**

**Table 2 and Graph 2. Developmental/Genetic Diagnoses and 90% SLP Objectives Met**

Of the 25 participants with developmental and/or genetic diagnoses, 56.0% of them met 90% of their objectives. Of the five participants without developmental and/or genetic diagnoses, three of them met 90% of their objectives.

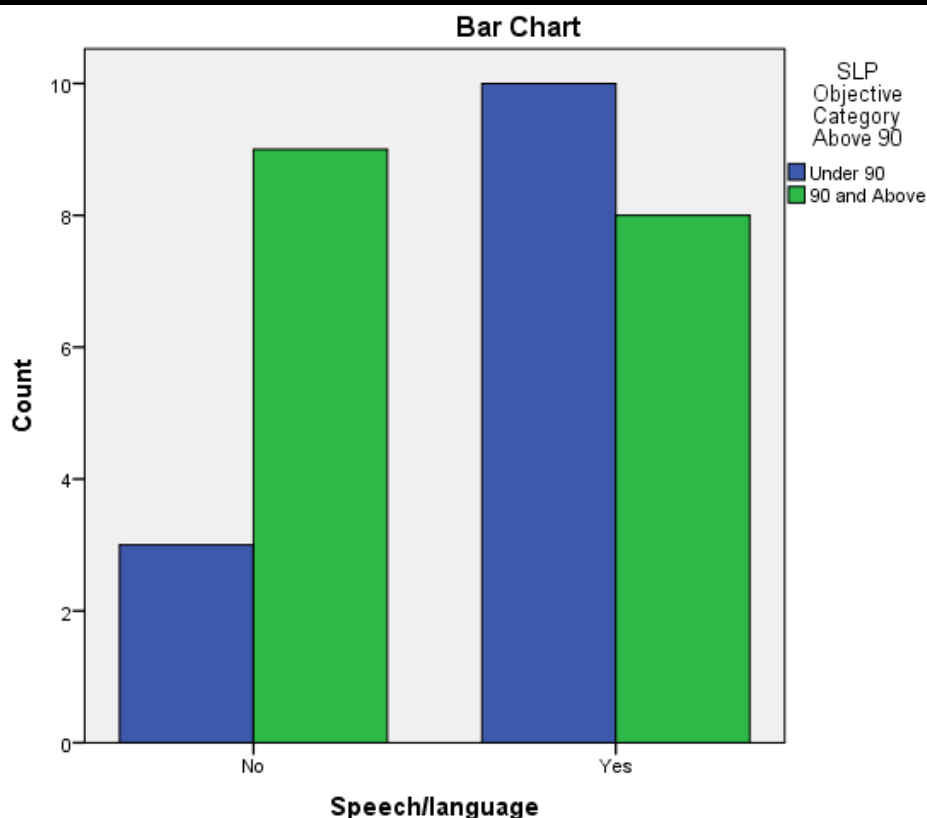
Crosstab					
			SLP Objective Category Above 90		Total
			Under 90	90 and Above	
ASD	No	Count	12	16	28
		% within ASD	42.9%	57.1%	100.0%
	Yes	Count	1	1	2
		% within ASD	50.0%	50.0%	100.0%
Total	Count		13	17	30
	% within ASD		43.3%	56.7%	100.0%



**Table 3 and Graph 3. Autism Spectrum Diagnosis (ASD) and 90% SLP Objectives Met**

There were two individuals with ASD. One participant achieved 90% of objectives and one participant did not accomplish this. With a small sample, it is difficult to claim valid implications. Of those without ASD, 57.1% of participants met 90% of their objectives and 42.9% did not meet their objectives.

			SLP Objective Category		Total
			Above 90		
			Under 90	90 and Above	
Speech/language	No	Count	3	9	12
		% within Speech/language	25.0%	75.0%	100.0%
	Yes	Count	10	8	18
		% within Speech/language	55.6%	44.4%	100.0%
Total		Count	13	17	30
		% within Speech/language	43.3%	56.7%	100.0%

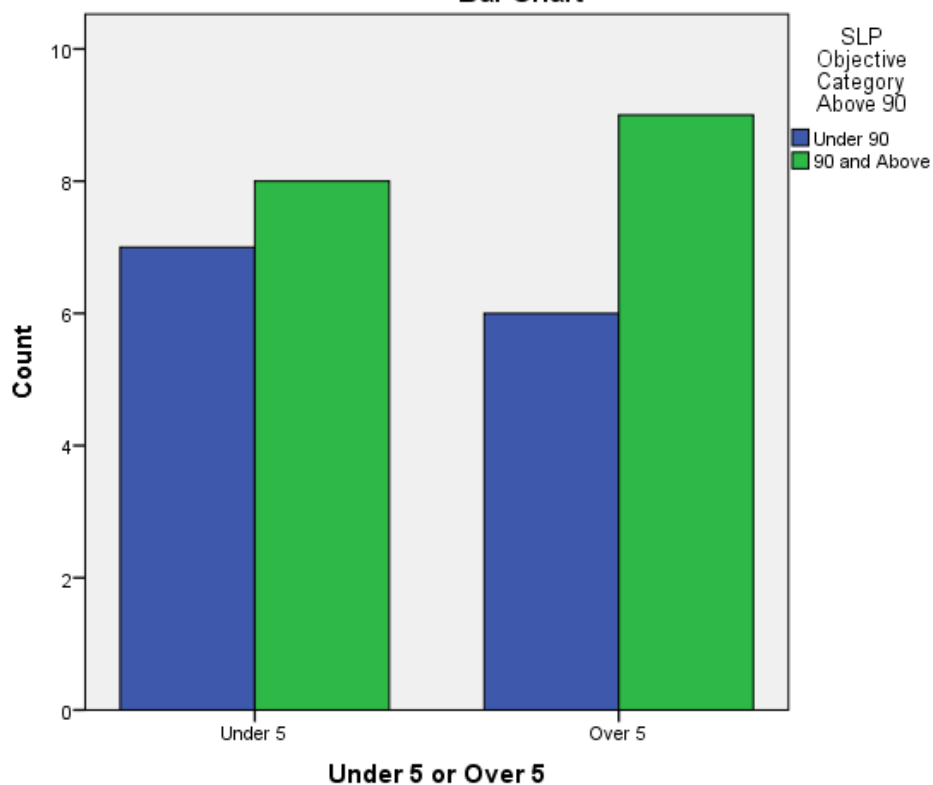


**Table 4 and Graph 4. Speech and/or Language Delays/Disorders and 90% SLP Objectives Met**

The participants in the speech/language columns presented with speech and/or language difficulties. Many of these participants have formal diagnoses of speech or language disorders. Of those participants without the listed diagnoses, 75% of them met 90% of their objectives. Of those participants with speech and/or language difficulties, 44.4% (less than majority) met 90% of their objectives.

**Chronological Age.****Crosstab**

			SLP Objective Category Above 90		Total
			Under 90	90 & above	
Under 5 or Over 5	Count		7	8	15
	Under 5 % within Under 5 or Over 5		46.7%	53.3%	100.0%
	Count		6	9	15
	Over 5 % within Under 5 or Over 5		40.0%	60.0%	100.0%
Total	Count		13	17	30
	% within Under 5 or Over 5		43.3%	56.7%	100.0%

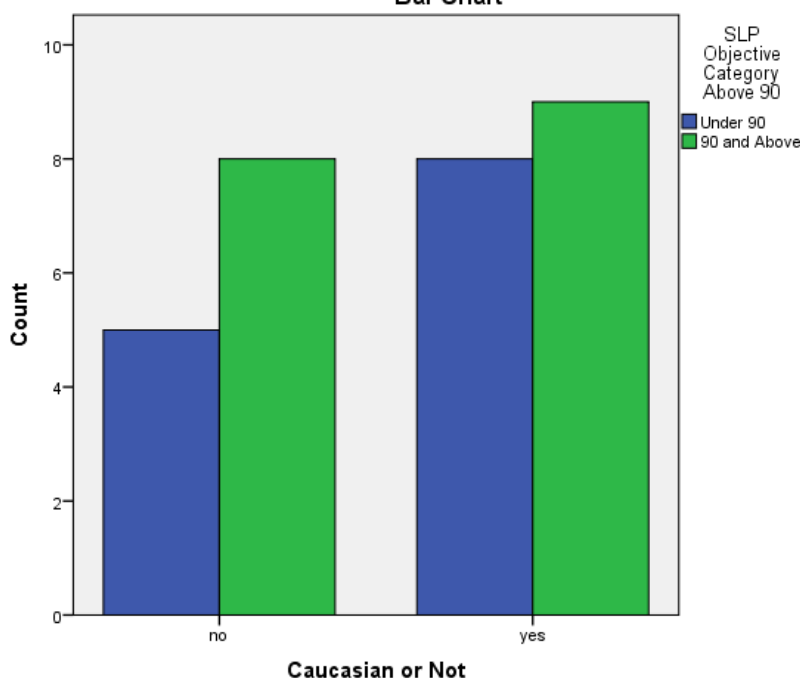
**Bar Chart**

**Table 5 and Graph 5. Chronological Age and 90% SLP Objectives Met**

The participants were divided into two groups: those under 5;0 years and those 5;0 years and older. It is typical for children under five years to be in preschool or possibly kindergarten. Children five years and older (especially six years and older) are included as “school-age.” 53.3% of participants under five years of age met 90% of their objectives. 60.0% of participants five years and older met 90% of their objectives.

**Ethnicity.****Crosstab**

			SLP Objective Category Above 90		Total
			Under 90	90 and Above	
Caucasian or Not	no	Count	5	8	13
		% within Caucasian or Not	38.5%	61.5%	100.0%
	yes	Count	8	9	17
		% within Caucasian or Not	47.1%	52.9%	100.0%
Total	Count		13	17	30
	% within Caucasian or Not		43.3%	56.7%	100.0%

**Bar Chart****Table 6 and Graph 6. Ethnicity and 90% SLP Objectives Met**

For analysis, the participants were divided into two groups: Caucasian and not Caucasian. 61.5% of non-Caucasians met 90% of their objectives. 52.9% of Caucasian participants met 90% of their objectives. There were more Caucasian participants than non-Caucasian participants.



**Summary Charts.**

The following charts possess headings at the base of each chart. “N” stands for number of participants. The mean, standard deviation, median, minimum, and maximum values are in terms of the actual percentage of objectives met (objectives met divided by objectives attempted). The mean and median values are of clinical significance.

**SLP Objectives %**

Gender	N	Mean	Std. Deviation	Median	Minimum	Maximum
F	11	82.7273	31.65151	100.0000	.00	100.00
M	19	79.2632	28.74378	100.0000	.00	100.00
Total	30	80.5333	29.34543	100.0000	.00	100.00

**Chart A. Summary of Objectives Percentages AND Gender****SLP Objectives %**

Developmental/genetic	N	Mean	Std. Deviation	Median	Minimum	Maximum
No	5	81.0000	32.48076	100.0000	25.00	100.00
Yes	25	80.4400	29.40533	100.0000	.00	100.00
Total	30	80.5333	29.34543	100.0000	.00	100.00

**Chart B. Summary of Objectives Percentages AND Developmental/Genetic Diagnoses****SLP Objectives %**

ASD	N	Mean	Std. Deviation	Median	Minimum	Maximum
No	28	81.8214	28.19516	100.0000	.00	100.00
Yes	2	62.5000	53.03301	62.5000	25.00	100.00
Total	30	80.5333	29.34543	100.0000	.00	100.00

**Chart C. Summary of Objectives Percentages AND Autism Spectrum Disorder (ASD)****SLP Objectives %**

Speech/language	N	Mean	Std. Deviation	Median	Minimum	Maximum
No	12	90.0000	22.25881	100.0000	25.00	100.00
Yes	18	74.2222	32.29561	80.0000	.00	100.00
Total	30	80.5333	29.34543	100.0000	.00	100.00

**Chart D. Summary of Objectives Percentages AND Speech/Language Disorders**

## SLP Objectives %

Under 5 or Over 5	N	Mean	Std. Deviation	Median	Minimum	Maximum
Under 5	15	80.9333	24.45832	100.0000	25.00	100.00
Over 5	15	80.1333	34.42770	100.0000	.00	100.00
Total	30	80.5333	29.34543	100.0000	.00	100.00

**Chart E. Summary of Objectives Percentages AND Chronological Age (under and over 5 years)**

## SLP Objectives %

Caucasian or Not	N	Mean	Std. Deviation	Median	Minimum	Maximum
no	13	78.6154	36.70726	100.0000	.00	100.00
yes	17	82.0000	23.34524	100.0000	25.00	100.00
Total	30	80.5333	29.34543	100.0000	.00	100.00

**Chart F. Summary of Objectives Percentages AND Ethnicity (Caucasian and non-Caucasian)**

### Clinical Implications.

The summary tables provide clinically significant values. The mean and median should be especially noted by the Comprehensive Therapy Center (CTC). Although it is of expert opinion that an objectives-met percentage be 90% or higher, many of the means are near this value. Of all special interest groups, the participants with Autism Spectrum Disorder (ASD) had the lowest mean objectives-met percentage, 62.5%; yet, there were only two participants in this category. Out of the twelve categories summarized in the above tables, eight of the groups had mean objectives-met percentages of 80-90%. Although 90% is deemed “wonderful” by this project’s expert, many of the scores were in proximity. This is an encouraging fact for the CTC; their participants are meeting a satisfactory amount of objectives. Furthermore, *Therapy and Fun* occurs during the summer months, the participants are meeting objectives they would otherwise not have the opportunity to meet, without accessibility to the educational system.

The median values for nearly all categories were 100%. This implies that the majority of participants in these categories met 100% of their objectives. This percentage is another encouraging statistic for the CTC. The median for participants with ASD was 62.5%; the median for participants with speech/language disorders was 80%.

It is recommended that a more cohesive treatment plan be implemented for participants with ASD. Although this disorder is considered a spectrum, and the presentation of the disorder is highly variable, clinicians can learn from what works with one patient. An attempt to generalize the effective practices in the patient with 100% objectives met, may benefit other patients with seemingly lower objectives-met percentages. To raise the percentage of objectives-met for the participants with speech/language disorders, both motoric and language-based approaches may need to be expanded. Some of the over-arching goals for this population were improving articulation, receptive language, and expressive language. The “reading” and

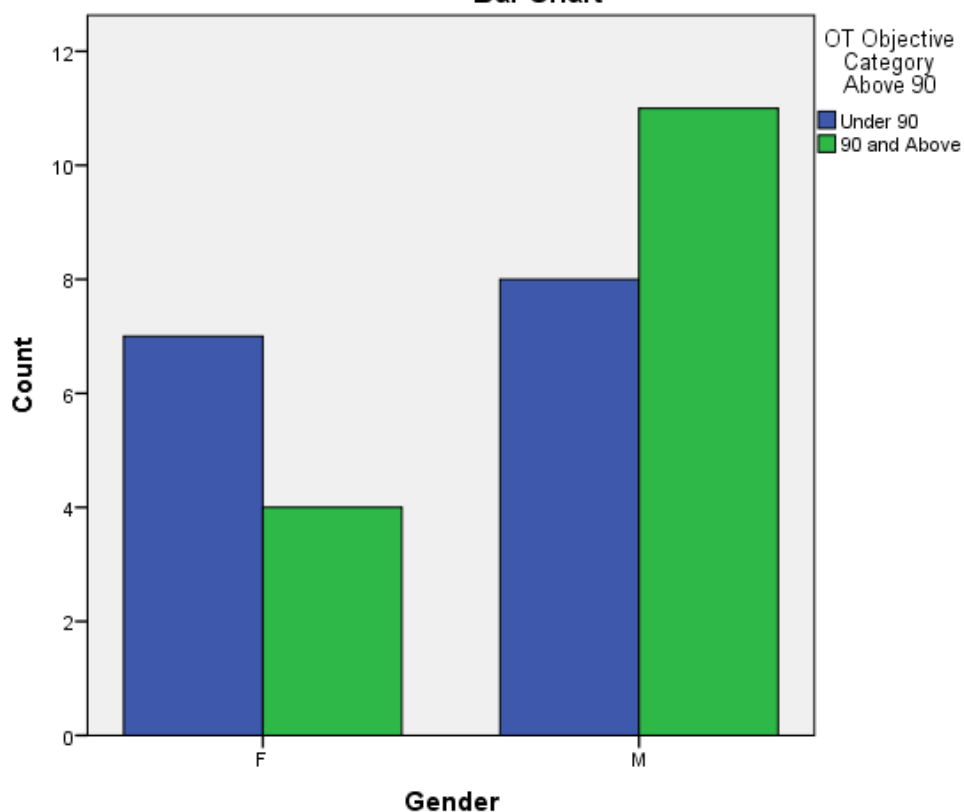
“articulation” rooms within *Therapy and Fun* would be ideal environments to work on these goals. It is important to note that the children with speech and/or language disorders were the group with the most diagnoses for each child. Additional challenges typically occur with comorbid factors. These challenges may have made it difficult for clinicians to administer effective and efficient therapy. With this clinical knowledge and foresight, professionals may choose goals that are feasible based on the number and severity of different diagnoses.

For future improvement of *Therapy and Fun*, the administrative board and clinical professionals may wish to focus on participants with ASD or speech/language disorders. These groups of people did not perform comparably to their peers without ASD or speech/language disorders, respectively. The other groups of participants had more similar objectives-met percentages. Gender, developmental/genetic diagnoses, chronological age, and ethnicity do not appear to affect objectives-met percentages. With small sample sizes, this causal relationship cannot be identified as statistically significant, though.

## POST-THERAPY RESULTS FOR OCCUPATIONAL THERAPY

**Gender.****Crosstab**

			OT Objective Category Above 90		Total
			90		
			Under 90	90 and Above	
Gender	F	Count	7	4	11
		% within Gender	63.6%	36.4%	100.0%
	M	Count	8	11	19
		% within Gender	42.1%	57.9%	100.0%
Total		Count	15	15	30
		% within Gender	50.0%	50.0%	100.0%

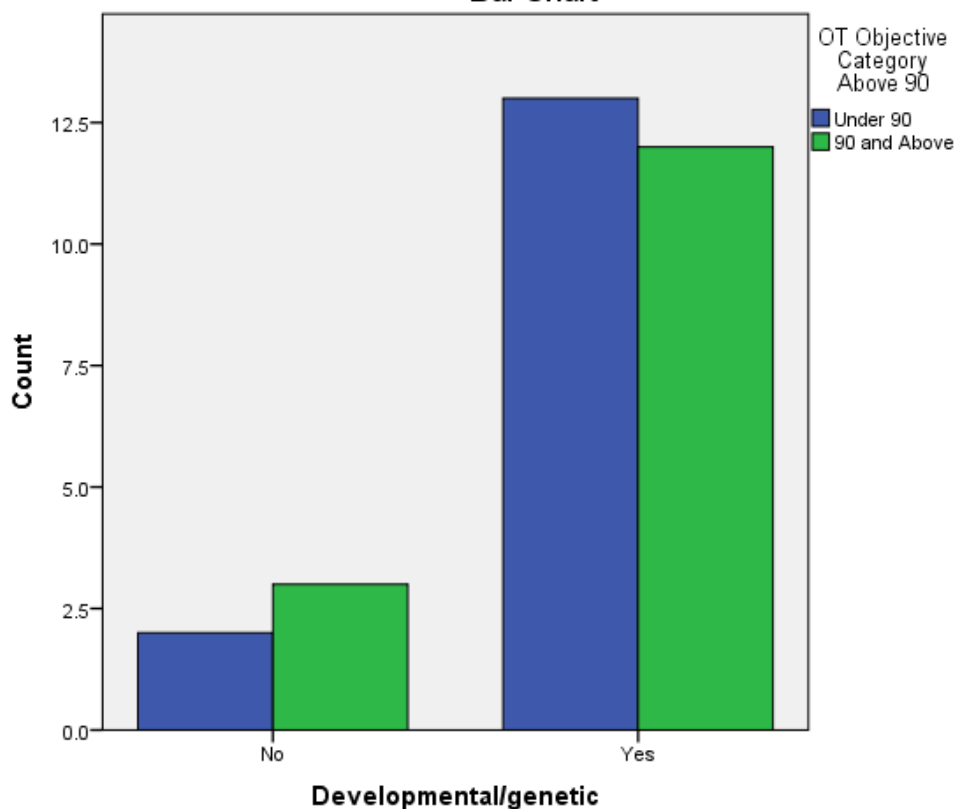
**Bar Chart****Table 7 and Graph 7. Gender and 90% OT Objectives Met**

36.4% of the female participants achieved 90% or more of their objectives. 57.9% of male participants achieved 90% or more of their objectives. It appears that the males performed better than the females; yet there nearly twice as many males in the participant cohort. Overall, half of the participants achieved 90% or more of their objectives.

Crosstab

			OT Objective Category Above 90		Total
			Under 90	90 & above	
Developmental/ genetic	No	Count % within Developmental/ genetic	2 40.0%	3 60.0%	5 100.0%
	Yes	Count % within Developmental/ genetic	13 52.0%	12 48.0%	25 100.0%
Total			15 50.0%	15 50.0%	30 100.0%

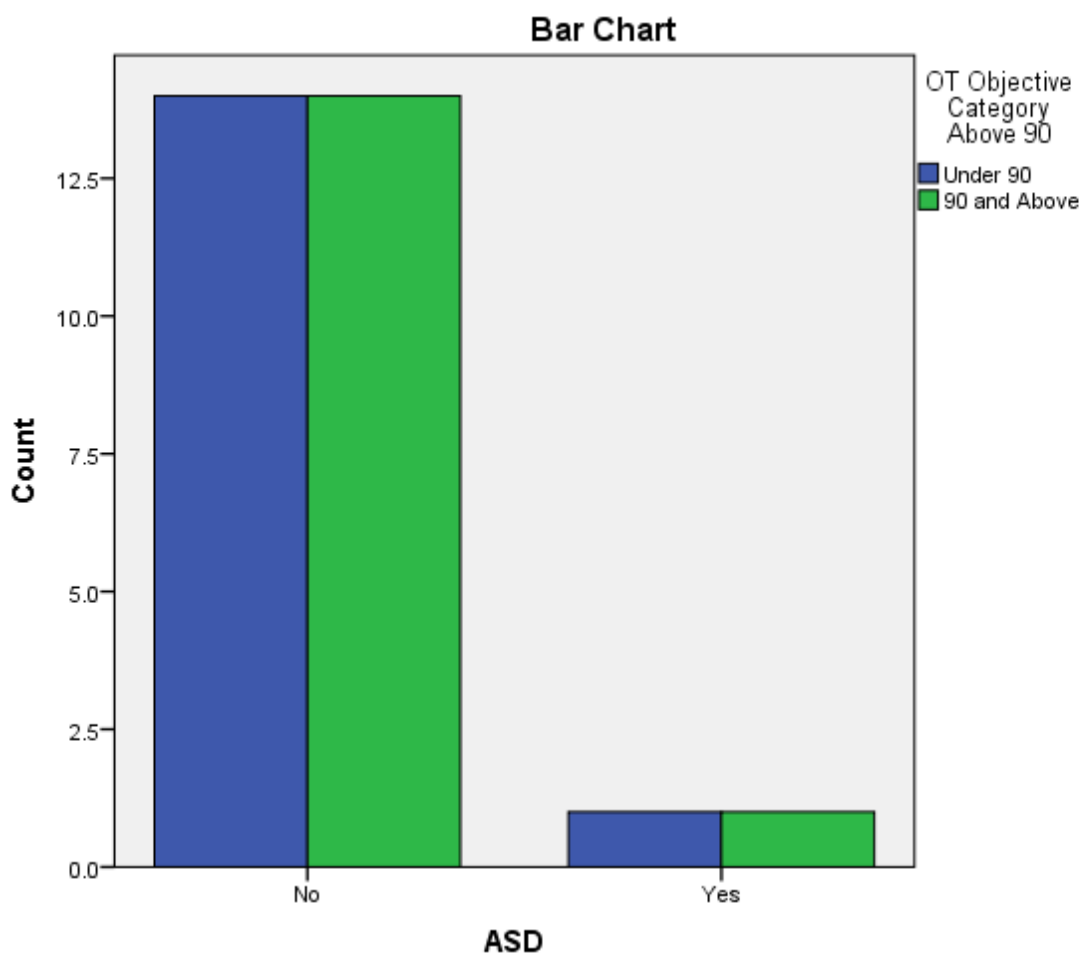
Bar Chart



**Table 8 and Graph 8. Developmental/Genetic Diagnoses and 90% OT Objectives Met**

Of the 25 participants with developmental and/or genetic diagnoses, 48% of them met 90% of their objectives. Of the five participants without developmental and/or genetic diagnoses, three of them met 90% of their objectives.

Crosstab					
			OT Objective Category Above 90		Total
			Under 90	90 and Above	
ASD	No	Count	14	14	28
		% within ASD	50.0%	50.0%	100.0%
	Yes	Count	1	1	2
		% within ASD	50.0%	50.0%	100.0%
Total	Count		15	15	30
	% within ASD		50.0%	50.0%	100.0%



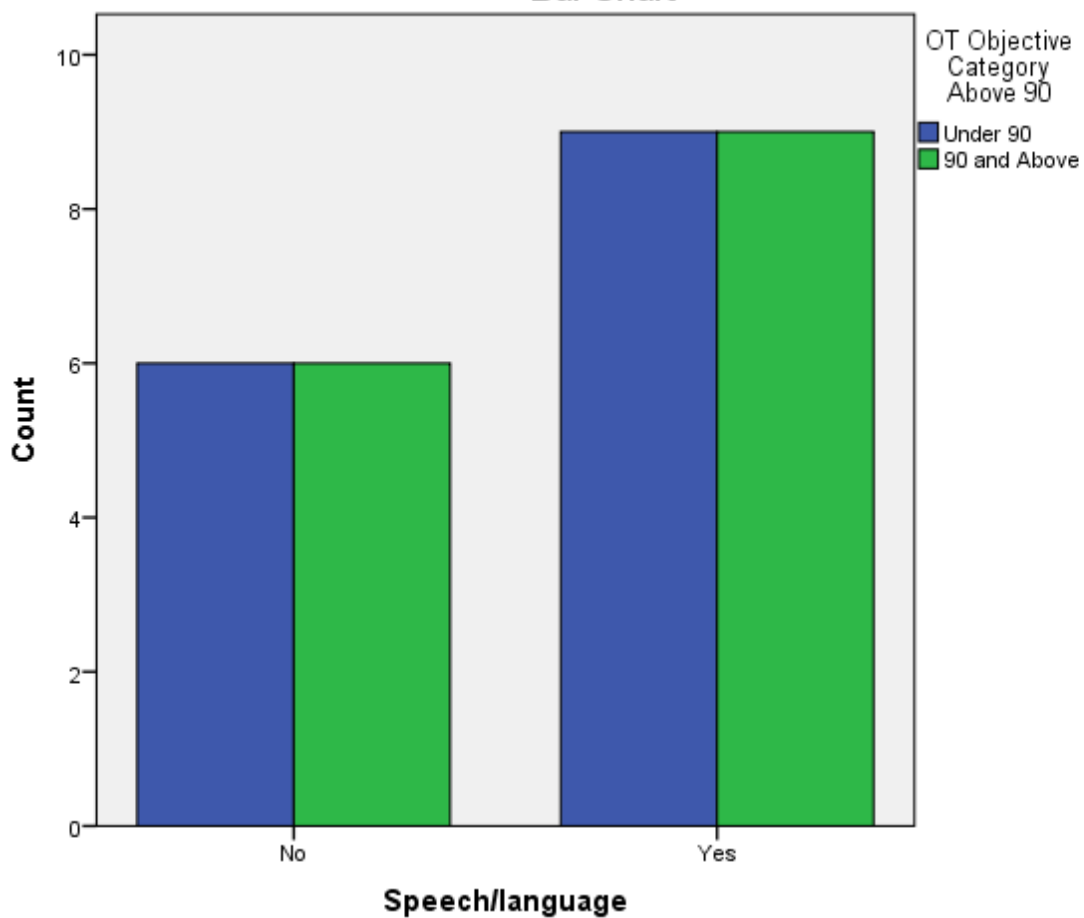
**Table 9 and Graph 9. Autism Spectrum Diagnosis (ASD) and 90% OT Objectives Met**

There were two individuals with ASD. One participant achieved 90% of objectives and one participant did not accomplish this. With a small sample, it is difficult to claim valid implications. Of those without ASD, 50% of participants met 90% of their objectives and 50% did not meet their objectives.

Crosstab

			OT Objective Category Above 90		Total
			Under 90	90 and Above	
Speech/language	No	Count	6	6	12
		% within Speech/language	50.0%	50.0%	100.0%
	Yes	Count	9	9	18
		% within Speech/language	50.0%	50.0%	100.0%
Total	Count		15	15	30
	% within Speech/language		50.0%	50.0%	100.0%

Bar Chart



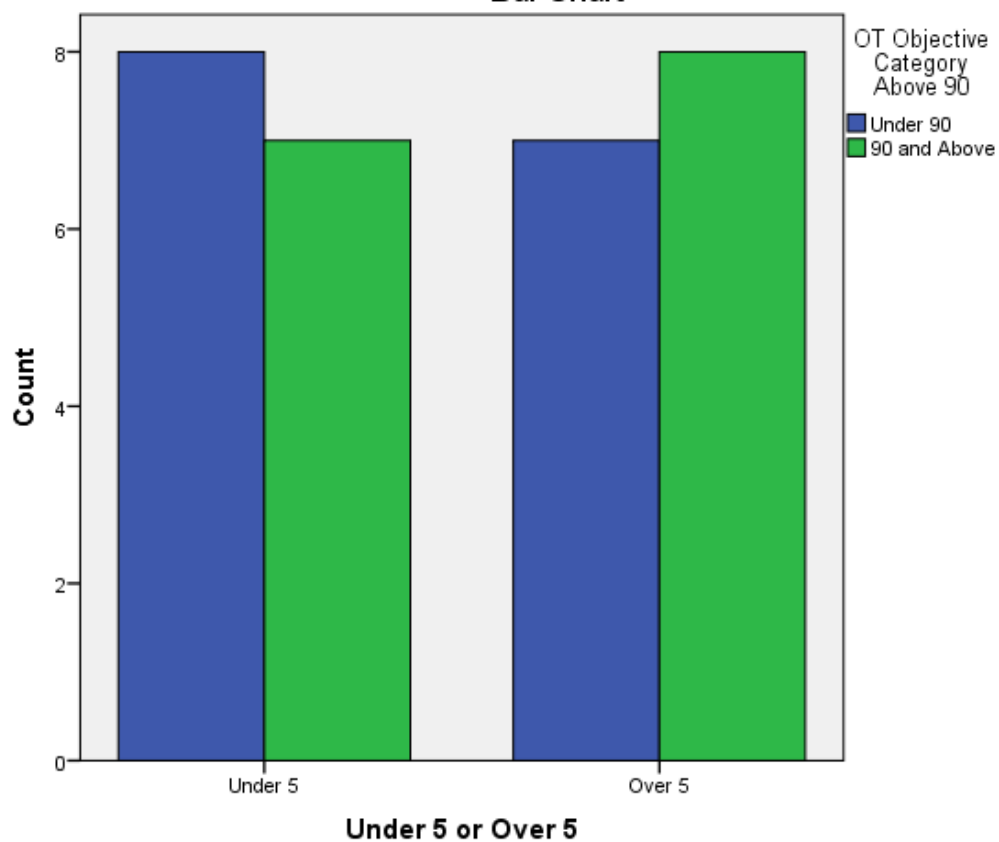


**Table 10 and Graph 10. Speech and/or Language Delays/Disorders and 90% OT Objectives Met**

The participants in the speech/language columns presented with speech and/or language difficulties. Many of these participants have formal diagnoses of speech or language disorders. Of those participants without the listed diagnoses, 50% of them met 90% of their objectives. Of those participants with speech and/or language difficulties, 50% met 90% of their objectives.

**Chronological Age.****Crosstab**

			OT Objective Category Above 90		Total
			Under 90	90 and Above	
Under 5 or Over 5	Under 5	Count	8	7	15
		% within Under 5 or Over 5	53.3%	46.7%	100.0%
	Over 5	Count	7	8	15
		% within Under 5 or Over 5	46.7%	53.3%	100.0%
Total	Count		15	15	30
	% within Under 5 or Over 5		50.0%	50.0%	100.0%

**Bar Chart**

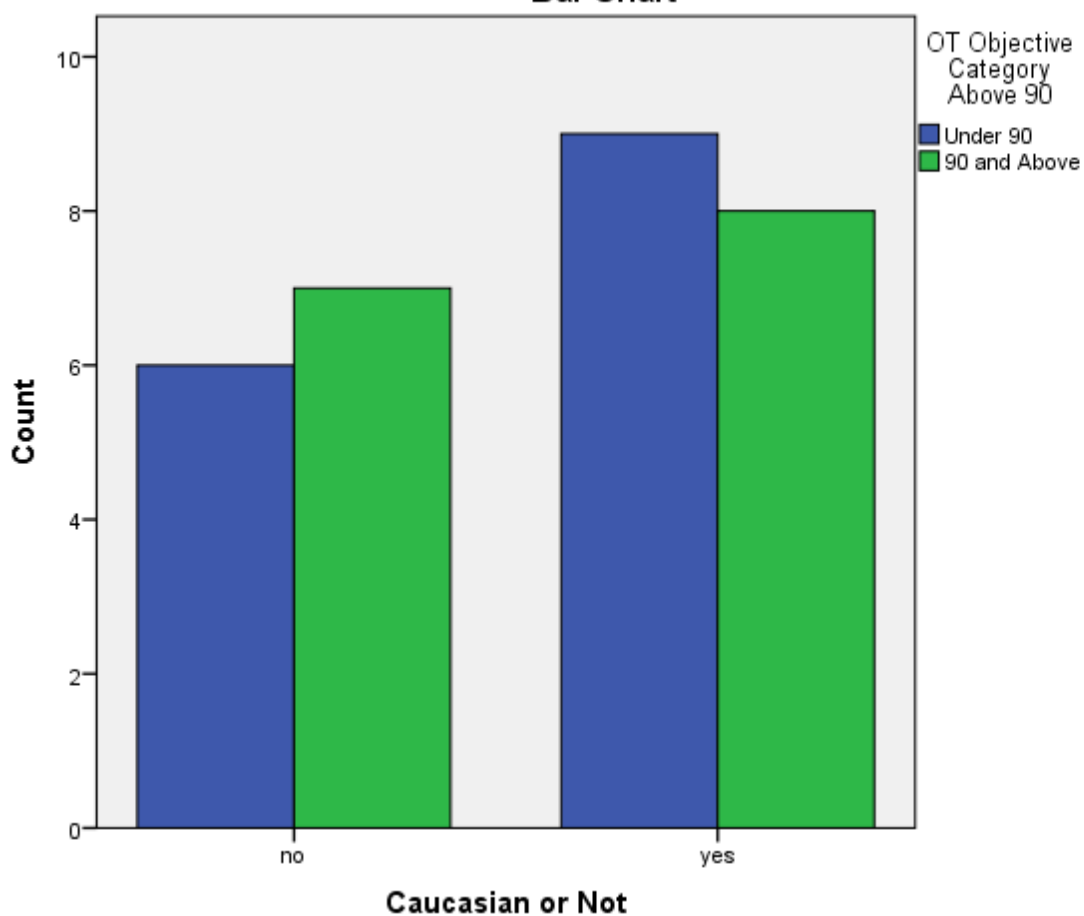
**Table 11 and Graph 11. Chronological Age and 90% OT Objectives Met**

The participants were divided into two groups: those under 5;0 years and those 5;0 years and older. It is typical for children under five years to be in preschool or possibly kindergarten. Children five years and older (especially six years and older) are included as “school-age.” 46.7% of participants under five years of age met 90% of their objectives (slightly less than majority). 53.3% of participants five years and older met 90% of their objectives (slightly above majority).

Crosstab

			OT Objective Category Above 90		Total
			Under 90	90 and Above	
Caucasian or Not	no	Count	6	7	13
		% within Caucasian or Not	46.2%	53.8%	100.0%
	yes	Count	9	8	17
		% within Caucasian or Not	52.9%	47.1%	100.0%
Total	Count		15	15	30
	% within Caucasian or Not		50.0%	50.0%	100.0%

Bar Chart



**Table 12 and Graph 12. Ethnicity and 90% OT Objectives-Met**

For analysis, the participants were divided into two groups: Caucasian and not Caucasian. 53.8% of non-Caucasians met 90% of their objectives. 47.1% of Caucasian participants met 90% of their objectives. There were more Caucasian participants than non-Caucasian participants.

**Summary Charts.**

The following charts possess headings at the base of each chart. “N” stands for number of participants. The mean, standard deviation, median, minimum, and maximum values are in terms of the actual percentage of objectives met (objectives met divided by objectives attempted). The mean and median values are of clinical significance.

## OT Objectives %

Gender	N	Mean	Std. Deviation	Median	Minimum	Maximum
F	11	68.27	36.666	75.00	0	100
M	19	81.37	27.839	100.00	0	100
Total	30	76.57	31.398	93.00	0	100

**Chart G. Summary of Objectives Percentages AND Gender**

## OT Objectives %

Developmental/genetic	N	Mean	Std. Deviation	Median	Minimum	Maximum
No	5	70.00	44.721	100.00	0	100
Yes	25	77.88	29.105	86.00	0	100
Total	30	76.57	31.398	93.00	0	100

**Chart H. Summary of Objectives Percentages AND Developmental/Genetic Diagnoses**

## OT Objectives %

ASD	N	Mean	Std. Deviation	Median	Minimum	Maximum
No	28	76.68	31.818	93.00	0	100
Yes	2	75.00	35.355	75.00	50	100
Total	30	76.57	31.398	93.00	0	100

**Chart I. Summary of Objectives Percentages AND Autism Spectrum Disorder (ASD)**

## OT Objectives %

Speech/language	N	Mean	Std. Deviation	Median	Minimum	Maximum
No	12	69.58	38.285	87.50	0	100
Yes	18	81.22	25.999	93.00	0	100
Total	30	76.57	31.398	93.00	0	100

**Chart J. Summary of Objectives Percentages AND Speech/Language Disorders**

## OT Objectives %

Under 5 or Over 5	N	Mean	Std. Deviation	Median	Minimum	Maximum
Under 5	15	77.53	28.740	86.00	0	100
Over 5	15	75.60	34.844	100.00	0	100
Total	30	76.57	31.398	93.00	0	100

**Chart K. Summary of Objectives Percentages AND Chronological Age (under and over 5 years)**

## OT Objectives %

Caucasian or Not	N	Mean	Std. Deviation	Median	Minimum	Maximum
no	13	75.00	36.799	100.00	0	100
yes	17	77.76	27.707	86.00	0	100
Total	30	76.57	31.398	93.00	0	100

**Chart L. Summary of Objectives Percentages AND Ethnicity (Caucasian and non-Caucasian)****Clinical Implications.**

The summary tables provide clinically significant values. The mean and median should be especially noted by the Comprehensive Therapy Center (CTC). Although it is of expert opinion that an objectives-met percentage be 90% or higher, many of the means are near this value. Of all special interest groups, females had the lowest objectives-met percentage, 68.27%. Out of the twelve categories summarized in the above tables, two of the groups had mean objectives-met percentages of 80-90%. The “wonderful” percentage deemed by this project’s expert is 90%, only two of the scores were close in proximity. Half of the groups had mean values of 70-80%. For the CTC, their participants in OT are meeting an adequate amount of objectives. There is room for improvement; an increase of 20% objectives met may be a goal for the occupational therapists of the Comprehensive Therapy Center. Yet, *Therapy and Fun* occurs during the summer months, the participants are still meeting objectives they would otherwise not have the opportunity to meet, without accessibility to the educational system.

There is a range for typical median values for objectives-met percentages. Four groups had median values of 100%, two groups had median values of 90%, four groups had median values of 80%, and two groups had median values of 70%. Therefore, half of the groups had “wonderful” median values, while the others fell below 90%. Females and participants with ASD

had median values within 70-80%. At this time, there is no statistically significant causal relationship that would cause lower median values.

Children with Autism Spectrum Disorder typically present with aversions to sensory stimulation. These may include smells, bright patterns, temperature, water, touch, and movement. Sensory stimulation is one focus of occupational therapy. This reinforces why occupational therapy is performed with children with ASD. Yet, these challenges associated with ASD may have made it difficult for clinicians to administer effective and efficient therapy. Occupational therapists work on stimulation with sensory information in which the participant may have a complete aversion.

For future improvement of *Therapy and Fun*, the administrative board and clinical professionals may wish to focus on females and participants with ASD. These groups of people did not perform comparably to their peers without ASD or males, respectively. In assessing mean values, chronological age, ethnicity, and ASD did not appear to affect objectives-met percentage. However, because of small sample sizes, this causal relationship cannot be identified as statistically significant. This is especially true in the population with ASD. This group was a point of concern when reviewing its median values, but not with the mean values when compared to their peers without ASD.

## FURTHER NOTES

**Comparison of SLP and OT.**

Although speech-language pathologists and occupational therapists are trained in different fields, it may be clinically significant to compare the outcomes of each type of intervention. Overall, higher objectives-met percentages were recorded for speech-language pathology. The majority of participants enrolled in speech-language therapy achieved 100% of their objectives, 17 participants. 15 participants enrolled in occupational therapy met 100% of their objectives, half of the total participants. This difference of two participants drastically alters the outcome data because of the small sample size. The median of objectives-met percentage for speech-language pathology is greater due to 17 out of 30 participants meeting 100% of their objectives. Yet, the mean SLP objectives-met percentage was 79.1% and the mean for OT was 78.6%. Overall, participants had higher goals-met percentages (measure of over-arching success) in speech-language intervention.

**Session Attendance.**

Although this could not be proven statistically, it is the researcher's suggestion that session attendance should be enforced for participant success. Consistent intervention and follow-up foster an efficient and effective learning environment. It is true that some participants did not attend a majority of sessions but still met 100% of their objectives. It is also true that some participants who attended all of their sessions did not meet 100% of their objectives. Yet, due to undergraduate coursework, it is believed that consistency and dedication to therapy provides an advantageous prognosis for the participant.

**Adjunct Study.**

The Comprehensive Therapy Center (CTC) is also partaking in a study about its mentorship model. The CTC believes a multi-tiered mentoring model is effective. Professionals not only provide therapy for the children with disabilities, but they also mentor the college and high school workers. College students mentor middle and high school volunteers who are an "immediate best friend" for children who receive therapy. The professionals drive the therapeutic process as well as mentor the rest of the staff.

All staff, including the middle and high school students, attends a one-hour daily in-service. When not in direct therapy, the children attend reinforcement sessions coordinated by the college students (all of whom are former volunteers). The consistent personnel are the volunteers who attend and assist in all therapy sessions and reinforcement classes. Teen volunteers attend 15 to 20 hours of pre-service training to learn techniques for teaching reading, disability awareness, leadership, and empathy. In addition, the agency's best practices including CPR, safety, confidentiality, and data collection are taught to the volunteers and workers. This is followed with an hour of daily training for the duration of the program. In 2012, 35 volunteers contributed 2,459 hours. The described mentorship model is believed to play a role in the successes of *Therapy and Fun*.



## APPENDIX A

**Comprehensive Therapy Center  
Client Demographics Form****Year:** \_\_\_\_\_**Client's Initials:****Date of Birth:**  
(Month/Day/Year)**Gender:** \_\_\_ Female \_\_\_ Male**Ethnicity:** (check one)

- \_\_\_ Asian
- \_\_\_ African-American/Black
- \_\_\_ Hispanic or Latino
- \_\_\_ Native (American or Alaskan)
- \_\_\_ Native Hawaiian/Pacific Islander
- \_\_\_ White
- \_\_\_ Other:

**Other Demographics:** (check all that apply)

- \_\_\_ Person with acquired/traumatic brain injury
- \_\_\_ Person with substance abuse/addictions
- \_\_\_ Person with abuse/neglect
- \_\_\_ Person with dementia
- \_\_\_ Person with down syndrome
- \_\_\_ Person with autism
- \_\_\_ Person with multiple sclerosis
- \_\_\_ Person with physical disabilities
- \_\_\_ Person with developmental disabilities
- \_\_\_ Person hard of hearing/deaf
- \_\_\_ Person with visual impairments/blind
- \_\_\_ Other:

**Objectives:**

Total number of Speech objectives: \_\_\_\_\_

Total number of OT objectives: \_\_\_\_\_

Total number of Speech obj. met:

Total number of OT obj. met:

Total number of obj. revised:

Total number of obj. discontinued:

**Functioning Level:**

- \_\_\_ High
- \_\_\_ Moderate
- \_\_\_ Mild
- \_\_\_ Low

APPENDIX B  
**Information and Consent Form**  
*Consent from the Caregiver of a Study Participant*

- TITLE:** **The Effectiveness of *Therapy and Fun*: Comprehensive Therapy Center of West Michigan**
- PERSONNEL:** **Jean Silbar** MA, CCC-SLP (Certificate of Clinical Competence, Speech-Language Pathology) professor at GVSU and Comprehensive Therapy Center Executive Director.  
**Christa Formberg**, undergraduate student of GVSU's Department of Allied Health Sciences, Speech-Language Pathology, Frederik Meijer Honors College.  
**Kristen Leep**, undergraduate student of GVSU's Department of Allied Health Sciences, Speech-Language Pathology.
- PURPOSE:** The Comprehensive Therapy Center's (CTC) *Therapy and Fun* "works." But just how well does it "work?" This study's purpose is to determine the effectiveness of the summer therapy. Throughout *Therapy and Fun*, participants improve through one or more of the following: speech-language pathology, occupational therapy, oral motor, physical therapy, sensory integration, handwriting, reading assistance, and thinking skills. However, there has yet to be data that tracks the effectiveness of *Therapy and Fun*.
- PROTOCOL:** There will be little to no added responsibilities beyond what is expected at *Therapy and Fun* for study participants. They will engage in therapy, but their progress will be tracked by researchers. Each participant will have specific goals he/she will work on throughout the summer. The personnel will look at the participant's intake report and his or her discharge/progress report. The study will specifically look at the progress of participants with the same disabilities. This study is affiliated with the Comprehensive Therapy Center and Grand Valley State University (GVSU).
- RISKS AND BENEFITS:** Professionals will find areas of difficulty in the participant's education based on low marks on the Individualized Educational Plan (IEP). The professionals will follow standard CTC protocol by taking an intake report prior to the start of therapy. This will be the preliminary data. The personnel are studying the effectiveness of therapy techniques already in place at the Comprehensive Therapy Center. All identifiers for participants will be removed. The statistical analyzer will have minimal face-to-face contact with participants; her main responsibility will be to analyze unidentifiable data. The above actions are in place to minimize any risk to the participant.
- Participants will improve in one or more of the following ways: speech language, oral motor skills, physical movement, sensory integration, handwriting, reading, social skills and cognitive skills. The ideal is that in

seven weeks, participants and caregivers will see improvement before the start of the new school year.

*Let it be made extremely clear that the caregivers of the individuals can decline the individuals' participation in the research study. The individuals will in no way be treated any differently whether they are in the study or not.*

**COMPENSATION:** Please note, participants will not receive any compensation.

**CONFIDENTIALITY:** Researchers will utilize technology for study. Computers are encrypted. Any personal computers have a password lock system. ID (identification) numbers will be assigned to each participant. These are the numbers that will be used for data acquisition. Names or other personal identifiable information will never appear in the data analysis. The analysis will be presented in a summarized "aggregate" form.

**RIGHT TO  
WITHDRAW:**

You are not obligated to participate in this study. You may withdraw consent for your child at any time. There are no consequences for withdrawing from the study. *Most importantly, your child's therapy will not be affected whether you give consent or not.*

**SUMMARY OF  
RESULTS:**

A summary of your participant's results will be provided to you within two weeks after therapy is completed. This is standard protocol for *Therapy and Fun*, regardless of the child's participation (or lack of) in the study.

**VOLUNTARY  
CONSENT:**

I have read the above statements, and I understand what is requested of me as the caregiver to my child. More importantly, I understand what is requested of my child as a participant in the research study. I also understand that participation is voluntary, and that I can withdraw my child from the study at any time. It has been made clear to me that withdrawal from the study will not affect my child's participation and therapy in *Therapy and Fun*. It is on these terms that I am willing to give consent for my child's participation in the research study.

I understand that if I have any further questions about my participation in the study, I may call Christa Formberg at 248-703-4041, Jean Silbar at 616-331-5599, or Kristen Leep at 269-615-3904.

*Please continue to the next page for names and signatures.*

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**Participant's Printed Name**

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**Caregiver's Printed Name**

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**Caregiver's Signature**

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Date

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**Analyzer's Signature**

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Date

**CERTIFICATION  
OF INFORMED  
CONSENT:**

I certify that I have explained the nature and purpose of this study to the above-named individual. I have discussed the potential benefits and possible risks of study participation. Any questions the individual has about this study have been answered, and I (along with the other researchers) will always be available to address future questions as they arise.

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Printed Name of Person Obtaining Consent

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Role in Study

---

Signature of Person Obtaining Consent

---

Date

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