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Collaborative and Individual Problem Solving in Children's Television Shows

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ABSTRACT

Collaborative and individual problem solving are prominent ways people choose to problem solve. Accurate demonstrations of these types of problem solving can be demonstrated within television shows. Children's television in specific has two major genres: live action and cartoon. While focusing directly on children's television shows, this study looks at how problem solving is demonstrated throughout the two genres by choosing the two most popular live action and cartoon shows and eventually comparing them to see which held more collaborative problem solving. In this study, it is hypothesized that cartoon shows will hold more collaborative problem solving while live action shows will consist of more individual problem solving. Even though the most popular of each genre were chosen, the cartoon shows receive significantly more views than the live action shows. Through the research process it was found that cartoon shows held more collaborative problem solving than live action shows, while live action shows contained more individual problem solving. Contributing to the significance of this study, these findings can help future television producers come upon a conclusion on which type of problem solving would be most beneficial to implement amongst the show.

Introduction

Children today are being exposed to technology at a higher velocity than any other previous time period. Even with the rise in popularity among hand-held electronic devices, television is usually still the first form of technology children are introduced to (Ricci et al, 2023). Many parents and guardians introduce their children to television and media to expose them to the outside world. One of the many skills that is introduced to children throughout television shows is critical thinking skills, better known as problem solving. Problem solving can be described as the act of defining an issue and then reasoning with your options to see which one works best. Problem solving is a major factor of children's television shows and what children are watching on the big screen, can affect them outside the televised world (Ricci et al, 2023). Even the way that a television show addresses a problem can significantly impact a child's perception of what problem solving should look like.

Past researchers including Dr.Wang have identified that collaborative problem solving and individual problem solving offer different approaches to problem solving (Wang, 2023). Collaborative problem solving can be defined as when a group of students work together and help each other understand the problem at hand. Individual problem solving can be identified as addressing and solving an issue in solitude and not reaching out to collaborate with others. (Wang, 2023). The usage of problem solving skills that is being portrayed in television can affect children based on what is being represented. For example, if the show is demonstrating collaborative problem solving, children may be more inclined to unite their ideas to attempt to solve their problem. However, it has never been observed if specific genres of children's television shows have increased amounts of a specific type of problem solving. The two most popular genres that children's television is separated into is live action and cartoon shows (Waisbord 2004). Furthermore, it has never been looked at if cartoon shows have more unity in their problem solving while live action portray more individual problem solving. This holds

significance because if specific types of problem solving is more prominent throughout certain genres of children's television, it can affect what parents choose to show their children. This begs the question: To what extent does collaborative and individual problem solving play a role in children's television shows?

Literature Review

Children and Technology

The world of technology has been on a significant incline in the amount of technology the average person has access to (Alturki et al, 2023). It has been predetermined that children's television shows have an effect on how they solve problems in the outside world. Therefore it is critical to understand how children are introduced and interact with the new world of technology. Without the understanding of how children deal with technology, it may prove difficult to understand problem solving in television (Nguyen el al, 2023). The way that television addresses the problems that occur typically happen in one of two ways. The first being working in a group, and the second correlating toward working individually.

Technology has significantly revolutionized since the beginning of the century leading to the creation of smartphones, smartwatches, and other technological advancements. According to the National Post, technology has been rapidly expanding and learning to keep up is essential to stay current with television show tactics (National Post, 2022). Children are now being faced with technology more than any generation ever before. With childrens new found exposure to television, it can be found that they are exposed to new ways to problem solve. One study conducted by specifically looking at the cognitive, language, physical and social effects of technology on children. It concluded that children are heavily affected by the technology that they are exposed to, where the researchers found both positive and negative consequences alike. Negative consequences included lack of socialization and physical activity while positive factors included more exposure to the outside world (Panjeti-Madan, 2023). Another study conducted by Jessica Andrews-Todd who works in the early development department in Princeton University found that collaborative problem solving is more efficient for children and it is overall more effective compared to individual problem solving (Andrews-todd, 2022). Even though Todd-Andrews found that collaborative problem solving was more beneficial for that specific study, it does not lead to the conclusion that individual problem solving is less then.

A following study discussed that the researchers goal was to properly identify the positive and negative aspects of technology's impacts on children. It was concluded that technology had more positives than negatives for children when used responsibly and correctly. One of the main negative impacts stemmed from children spending copious amounts of time on technology while they were in a crucial stage of development, ultimately leading to irritability and mood swings (Fitzpatrick, et al., 2023). According to a study conducted by Ke Xu, who has his PhD in Genetics and Development, when children are spending hours on end being exposed to technology, they tend to become angry and irritated. Researchers hypothesized that children who are internalizing their problems and are not solving them will have more severe issues with internalizing their problems as they grow up (Xu et al, 2022). This research further aligns with Todd-Andrews conclusion that technology can be beneficial when used safely, but when technology is abused at a young age, serious consequences can occur.

Another claim made by fellow researchers found that educational study tools such as educational robotics have been developed to help the children learn and solve problems. The researchers hypothesized that children who work in groups using educational technology will solve the problem more efficiently than children who are not using educational technology. The study concluded the researchers hypothesis was correct by showing that the children who worked in a collaborative setting and used technology had a quicker and easier time solving the problems (Outters et al, 2023).

Television Addressing Problem Solving

Children's television shows address problem solving in a variety of different ways. The two most common forms of problem solving that occur frequently throughout television and in real live scenarios is collaborative and live action problem (Nguyen, 2022). According to Giang Thi Chau Nguyen who studies early childhood development, he and his research assistants hypothesized that the students would not be greatly affected by collaborative and individual problem solving tactics due to children's short attention span. Nyugent found that his hypothesis was correct and that individual and collaborative problem solving do not have a major impact on children, differing from previous claims (Nguyen, et al, 2023).

Taking a different perspective, another source discusses the difference between children problem solving with a parental figure, compared to children learning problem solving from television. The researchers concluded that they did in fact find that while both categories held benefits and disadvantages, children who learned basic problem solving from their parents tended to solve the problems in a more efficient manner (Kesiciolgu, et al, 2015). A concept was made apparent by Enwei Xu and his fellow researchers where they concluded that children who collaborate with their classmates have a deeper understanding of the concept. It was further hypothesized that the students' cognitive problem solving skills would develop rapidly, in a way that allowed children to solve problems with more difficulty. However, the researchers found that individual and collaborative problem solving held no effect on a child's cognitive problem solving skills within the specific scenarios the children were introduced with (Xu, et al, 2023).

Children's Television Show Popularity

There are many different ways in which the media can obtain popularity. Consistent with forms of social media, views, likes, and comments can all correlate towards popularity. Many forms of social media utilize all three of these popularity determining methods including *TikTok* and *Instagram*. For television, the amount of views is the primary determining factor of popularity (Shiri, et al, 2021). The most popular television shows tend to have some of the same characteristics in common, including character interaction. Character interaction can be defined as how charters collaborate and work alongside each other (Waisbord, 2004). Due to the fact that children have short attention spans compared to adults, they are generally more attracted to bright and fluorescent colors. Therefore, children tend to gravitate towards shows that obtain these specific characteristics which is why cartoon shows tend to have more views than live action shows (O'Kane, 2023). The popularity of a television show is a crucial factor because the more popular a television show is, the more children that are going to be viewing it.

According to researcher Ricci, the popularity of a children's television show can be impacted not only by just views, likes, and comments, but also character interaction (Ricci et al, 2023). For example, if many of the characters are portraying positive behaviors, it is more likely that a child will stay interested in the show. However, if the characters are fighting or portraying negative behaviors, children will be less likely to stay engaged in the topic of conversation amongst the characters mainly because they will not understand what is happening (Ricci et al, 2023).

Method

To conduct my research, a content analysis was utilized. A content analysis allowed me to watch and observe the specific characteristics of problem solving that I was looking for. This method further allowed me to identify the patterns throughout the data obtained and to collect qualitative data. By watching the television shows first hand, I was able to analyze the problem solving skills that were occurring throughout the shows.

During my consideration of methods, I considered using a survey to collect information; however this was not the best course of action because I was not looking to see if children were able to identify problem solving traits. After ruling out utilizing a survey for my method I heavily considered utilizing a thematic analysis which analyzes themes and relationships among data. Further looking into a thematic analysis, I decided this was not the best fit method because I was not looking to identify the themes of problem solving. Then, I concluded upon conducting a content analysis because it looked more at the patterns amongst the data which is what I was interested in finding. Along with knowing that I wanted to analyze the patterns within the television, I also pre-determined what I was looking for before I started watching the shows.

Through my study, I wanted to see if there was a pattern between the genre of television and the type of problem solving utilized within the shows. It quickly became apparent that the best methodology was a content analysis. A study was conducted by Fitzpatrick and his colleagues, where they looked at problem solving through television where they utilized a content analysis to help analyze their data (Fitzpatrick, et al., 2023). A content analysis is the best choice of method for this study because it is the only way to gather the qualitative data that I need to see if cartoon or live action shows contain more individual or collaborative problem solving. This research method further aligns with the gap in my research which is that a past researcher has never explored the field to see if specific genres of television like live action and cartoon shows, have a higher abundance of a specific type of problem solving like individual or collaborative problem solving.

Watching Children's Television

The television shows that I chose to watch were *Paw Patrol, Bluey, Good Luck Charlie,* and *Fuller house*. I observed these specific shows because they had the most views compared to any other cartoon or live action show (Ricci et al, 2023). Within these shows I began to identify what characteristics of problem solving are being portrayed and which elements are not. Based on Waisbord's study, he concluded that within the first three to four episodes of a television series the main idea and patterns that are being portrayed have occurred (Waisbord, 2004). Utilizing this knowledge, I chose to watch the first ten episodes of each season because this allowed me to comprehend the patterns while obtaining a wide field of information.

Researcher Dr.Cohen conducted a content analysis where he looked to see if individual and collaborative problem solving had any impact on the amount of violence taking place. This brought about one of the limitations of this research because *Paw Patrol* had two problem solving scenarios in one episode. Therefore I obtained double the amount of information for one of the television shows compared to the others. At the beginning of each episode I identified how the characters interacted before the major problem occurred. After making this observation I looked at how the charters addressed the problem at hand. The predetermined categories the identifying factors of the problem could fall into were head on problem solving, plan of action problem solving, and avoidance problem solving. Both head on problem solving and plan of action problem solving correlated to collaborative problem solving because the characters had to work together. Opposing this, avoidance of the problem correlated more towards individual problem solving due to the lack of social interaction. The identification of problem solving served as one of the three subcategories that I used to conduct my statistical analysis.

Following this step, I observed the size of groups that would solve the problem at hand. The three prearranged subcategories for problem solving groups were large group problem solving, small group problem solving, and individual problem solving. Large group and small group problem solving correlated towards collaborative problem solving due to the amount of social interaction, while individual problem solving demonstrated working alone and without collaborating with others.

Finally, the last element of problem solving that I observed was the means of problem solving and how the characters actually solved the problem. The preestablished sub categories for this section were physical problem solving, verbal problem solving, and technological problem solving. In this instance, physically and

verbally problem solving correspond more directly towards collaborative problem solving due to the basis that the characters would have to communicate to physically build something or communicate to de desecalate the problem. Technological problem solving on the other hand can be more closely related to individual problem solving because social interaction and collaboration is not being represented when using computers. This area was the last category of the three categories that I used while conducting my statistical analysis.

The remaining two sections of my content analysis speaks to the actual problem that was occurring during the episode. An example of the actual problem in relation to the three main categories is represented in Appendix A, season one, episode one, part one, of *Paw Patrol* where the actual problem at hand was a fish's fin getting wedged between a rock and was unable to swim. The characters then utilized small group problem solving to help solve the problem while utilizing physical strength and to actually free the fish. The characters also utilized a plan of action problem solving technique where they effectively conference briefly before helping the fish to make sure they collaborated well. The last section of the content analysis that was not discussed was the identification of the normalcy in the characters lives before the problem occurred. For example in the same episode of *Paw Patrol* that was discussed previously, the normalcy in the characters lives was playing at their dog house.

Results

At the conclusion of conducting a content analysis, a Chi square test of independence was performed. Utilizing a Chi square test for independence was the best course of action to pursue because there were multiple variables that needed to be looked at to see if the results were statistically significant. From my content analysis, the three most important sections that held the most compelling pieces of information were utilized. These three sections were discussed throughout the course of the method section. Throughout this statistical analysis, I am hypothesizing that individual problem solving will be more prominent with live action television shows and collaborative problems will be more prominent throughout cartoon television shows. It is crucial to the research process that these aspects of problem solving are being identified because they play a major factor in the overall results and significance of this research.. Without these factors, it would become difficult to determine when collaborative and individual problem solving is being utilized throughout the television shows.

The following table will demonstrate which sections were used from the shows, and it will specifically reference *Fuller House*. All of the protocol that is being used in the following example is used throughout all of the four shows and can be found in table one.

Table 1.

Fuller House	Head on problem solving, avoidance of the problem, or plan of action (category 1)	Solved problem in large groups, small groups, or individually (category 2)	Method of problem solving physically, verbally, or technological (category 3)
Episode 1	Head on problem solving	Large group	Verbal
Episode 2	Plan of action problem solving	Small group	Verbal
Episode 3	Head on problem solving	Small group	Verbal

Using the information from table one, a Chi square test for independence was conducted. When using this test, it was necessary to tally up the amount of times each of the methods of problem solving were being identified. For instance, within each of the episodes the specific amount of times head on problem solving was used was taken into account for all of the shows analyzed. Each time head on problem solving was used amongst the characters, it would correspond as the value of one. Table one for example, is utilized to see how many times avoidance of conflict, plan of action, and head on problem solving were used within the first ten episodes of each show. For grouping purposes, each of the sub-sections corresponds with a following category number to make the graphs more comprehensible.

Each of the categories corresponds to either individual or collaborative problem solving. Avoidance can be seen as a common characteristic in individual problem solving, so if that trait is abundantly prominente, then individual problem solving was the main cognitive problem solving skill used within that specific series. In the example below in table two, it is represented based on the statistics of *Fuller House*. Once this step has taken place then the same process would repeat for each of the categories. For example, this category corresponded to the size of problem solving groups. In my study the group size was either large group, small ground, or individual problem solving. After observing the amount of times each problem solving group was utilized, it would correspond with a number. For example, large group problem solving would have its own category and would be represented within the television three times, small groups would be represented five times and individual ones once.

Each of these factors also correspond to either collaborative or individual problem solving. For example, both small and large group problem solving can be seen as collaborative problem solving due to the communication and team building activities that are taking place while individual problem solving can be represented by one person groups or alone. The same protocol will also happen for the final category, which is a means of solving the problem which is represented physically, verbally, or technologically. This can be seen in table 2.

Table 2.

Fuller House Category 1	Head on problem solving	Plan of action	Avoidance of conflict problem solving
	5	4	1`
Category 2	Large group	Small group	Individual
	3	5	2
Category 3	Physically	Verbally	Technologically
	1	9	0

After this step was completed for the live action show, *Fuller House,* the same process would happen for the other live action show, *Good Luck Charlie*. Once that has been conducted, the process would repeat again for both of the cartoon shows *Bluey* and *Paw Patrol.*

Once that step had been completed, the Chi square test for independence could move onto the second phase. The live action scores would then be combined in each category. For example if *Fuller House* had four instances of head on problem solving and in *Good Luck Charlie* it had six instances of head on problem solving then that category for live action shows would total to ten in the head on problem solving category. The same

procedure would happen for the cartoon shows. This can be seen in table three, where both cartoon and live action shows will be compared using category one, represented by table three, seen below.

Table 3.

Category 1	Head on Problem solving	Plan of action problem solving	Avoidance of conflict problem solving
Cartoon	13	17	1
Live Action	2	8	14

As see in the cartoon shows row the limitation becomes abundant that there is more data for the cartoon shows than the live action shows due to *Paw Patrol* having more than one problem solving scenario in each episode. Once this step has been completed for category one, then you will repeat this process for category two and category three. Once this procedure has been completed for all three of the categories then the results will be imputed into a formula in the calculator. Once this formula is completed you will get a probability value for each of the categories. The significance of each category can be represented in table four.

Table 4.

Category 1	Head on problem solving	Plan of action problem solving	Avoidance of conflict problem solving
Cartoon and live action		Probability value: 0.002	

The probability value represented in category one of 0.002 is statistically significant, proving my hypothesis correct. The type of problem solving utilized within the cartoon shows held more collaborative problem solving aspects which are correlated with head on and plan of action problem solving. The opposite is also true, meaning that live action shows held more individual problem solving characteristics which is correlated with avoiding the conflict. Category 2 and the statistical calculation results can be found on table 5.

Table 5.

Category 2	Large group problem solving	Small group problem solving	Individual problem solving
Cartoon and live action		Probability value: 0.04	

With this data, it shows that in category two, all of the data is statistically significant. The probability value of this data is 0.04. This means that collaborative problem solving is more prominent in cartoon shows, supporting the hypothesis of this research which was that collaborative problem solving will be predominantly represented in cartoon shows while individual problem solving will be represented more frequently in live

action shows. Once this has been completed for category one, this process will be repeated for both category two and category three. The calculations and probability value for category three can be seen in table 6.

Table 6.

Category 3	Physical	Verbal	Technological
Cartoon and live action		Probability value: 0.001	

When observing the means of problem solving, or what action the characters took to actually solve the problems at hand, it became apparent that collaborative problem solving was more abundant in cartoon shows due to the probability value of 0.001. This further exemplifies that my hypothesis was proved correct in stating that collaborative problem solving is more abundant in childrens cartoon shows while individual problem solving is more correlated towards live action television shows.

Conclusion

Throughout past research studies, collaborative and individual problem solving has been explored throughout television but never specifically within children's television. Furthermore, collaborative and individual problem solving have never been looked at through *Fuller House, Good Luck Charlie, Bluey,* and *Paw Patrol* and these shows have never been compared in any capacity. never been used in a content analysis to identify characteristics among children's television shows. With the new findings of my research, the field of knowledge begins to expand. My research has concluded that collaborative problem solving is predominantly used within cartoon shows while individual problem solving is mainly used within live action shows.

Limitations

Throughout the research process, some limitations arose in certain aspects of the research process. One limitation that surfaced during my research process is the access to specific streaming services. Both *Bluey* and *Paw Patrol* can be found on live television however, *Good Luck Charlie* and *Fuller House* can only be found on streaming services. Even though Netflix and Hulu are the most popular television streaming services that offer shows *Luck Charlie* and *Fuller House* on, not everyone has access to these specific streaming services, meaning not all children have access to them.

Another limitation that was briefly mentioned within the method section, is that one of the cartoon shows that I analyzed had two problem solving examples for each episode. For example, *Paw Patrol* had two problem solving scenarios within the course of one episode. The first half of the episode would consist of a problem the characters would have to solve and the last half would consist of another problem the characters would have to solve. This created double the amount of problem solving data for *Paw Patrol* making the cartoon category have more data in general, which may have impacted my statistical analysis and my findings.

Implications

With the results that have been found in this research it has been stated that collaborative problem solving is more prominent in childrens' cartoon shows whereas individual problem solving is more abundant in live action

shows. Analyzed prior in the research process, researcher Dr.Cohen, who conducted a content analysis on violence in television shows and how collaborative and individual problem solving affects the likelihood of a crime being committed. Within the result of Dr.Cohen's paper, he found that the more that collaborative problem solving was used, there was seen to be a significantly reduced rate of violence in that episode (Cohen, 2023). My research adds to the field of knowledge with this because I have concluded that collaborative problem solving is more prominently found in cartoon shows while live action shows contain more individual problem solving.

A following study by Kaya who researched religions representation in television shows has also been discussed earlier in this research, found that individual problem solving was more beneficial for children because it helped them process notations and learning of the various religious practices then compared to collaborative problem solving (Kaya, 2022). With my findings, collaborative problem solving is more abundant in cartoon shows while individual problem solving is more prominent throughout live action shows. This research by Kaya disagrees with the results obtained from my study because she found that individual problem solving was more beneficial for the specific characteristic she was looking for.

Future Directions

When another researcher decides to look into researching collaborative and individual problem solving, there are many different possible avenues the research could take to get a new understanding. If another researcher looked at something similar it may be beneficial to pick shows that all have the same number of problems to solve in each episode. For example, within my research *Paw Patrol* had 2 problem solving conflicts with one episode, leaving more data for the cartoon shows. By choosing shows with the same number of problem solving scenarios, it can help limit that limitation so the researcher's data isn't impacted.

Another aspect that future researchers could observe is to only use shows that were found on live television and completely eliminate streaming services as a whole. If this were to be done, the research may reach a larger audience because of the fact that most people have access to live television and streaming services are utilized by s smaller group of people.

Finally, they could look at more shows as a whole. Instead of watching only two television shows from both live action and cartoon shows, the future researcher could watch five to ten live action and cartoon shows. This will lead to the collection of more data where the research can determine if both the findings of my research and further research align or not. A future researcher could also watch more episodes than just the first ten of the first season, instead they could watch the first twenty episodes, so that the future researcher can gather more information to see if the same patterns that were found within my study are still prominent and statistically significant.

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