"PAL can Just be Themself"

Children in the US Respond to *Annedroids*' Genderless TV Character

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The innovative Canadian children's program *Annedroids* introduces viewers to "PAL," a human-like android, whom a child scientist named Anne programmed to choose its own gender. Viewers witness PAL's explorations of what girlhood or boyhood would mean, culminating in PAL's series-finale decision to eschew a binary gender identity and "just be me". While some research has examined counter-stereotypical characters' influence on children's thinking, the impact of characters actively constructing gender identities is unknown. To address this gap, we showed twenty-one children (ages 8 to 10) in the US selected *Annedroids* segments highlighting PAL's gender exploration. We identified themes in their reactions to PAL's characterization and tracked their reactions to PAL's decision, measuring the flexibility of their attitudes about gender before and after viewing. We found that children who believed PAL should choose a gender (as opposed to those comfortable with PAL remaining ungendered) showed increased flexibility in thinking about gender after viewing the selected clips.

"You can just be who you are." - Etta, age 10

"You don't really have to be one way or another because other people think you should be that way or because you were born that way." – Elizabeth, age 9

"Everyone has a decision, and everyone is different." - Alexandra, age 8

"If everyone tried to be the same, it would be pretty boring." - Connor, age 9

Nine-year old Camille watches the screen intently as PAL, a genderless, human-like android from a children's television show, declares: "I do not want to be a boy or a girl. I just want to be me."

Camille's eyes narrow. She appears to be concentrating. Breaking the silence, a researcher asks Camille: "What do you think of PAL's decision?" After a moment of contemplation, Camille says, "I like it." She pauses, then adds: "Because he can do girl things *and* boy things."

PAL is a central character from an innovative, multi Emmy-nominated children's program called *Annedroids* (2013-2017), produced in Canada and available in every country around the world (it streams on Amazon Prime in the US). Created by J. J. Johnson of *Sinking Ship Entertainment*, the television series combines live action and CGI (computer-generated imagery) to depict real people – such as 12-year-old child-scientist Anne – interacting with a range of CGI-animated android characters, which are Anne's creations. As Anne explains, her androids differ from robots in that they have artificial intelligence and can make their own decisions.

Anne's most advanced android is the silver-hued, humanoid PAL – the subject of this chapter. PAL is roughly child-sized and has large, friendly eyes in a gentle, expressive face. Upon creation by Anne, PAL has no hair or any attire that would mark PAL as gendered. Furthermore, PAL's childlike voice is digitally processed in such a way that it sounds robotic and of indeterminate gender.

Annedroids initially depicts Anne as being somewhat reclusive due to her upbringing in a closed-off junkyard by her single-parent, socially-anxious father. As a result, Anne keeps her androids' existence secret from everyone except her father, until a boy named Nick moves to her neighborhood. When Nick and another neighborhood child named Shania befriend Anne, she shares her secret inventions and includes them in her experiments – some of which drive the series storyline. In the process, children in the viewing audience learn about science, experimentation, and other pro-social themes, such as friendship and trust.

One of Anne's major experiments involves PAL's programming. Anne programs PAL to be neither a girl or a boy, so that PAL can eventually choose a gender for itself. Therefore, viewers are able to witness PAL's journey of exploring what identifying as either gender would mean. These explorations culminate in PAL's series-finale decision to "just be me," an option not discussed in the series prior to this moment, making it a dramatic surprise.

Annedroids creator J.J. Johnson created this series-long story arc with intentionality. In an interview with this article's authors, Johnson explained: "I don't believe kids are that judgmental. I think that's a trait they unfortunately learn from adults. Our goal with this series has always been to nurture the power of acceptance: acceptance of one's family, one's friends, and ultimately one's self." (March 30, 2017).

As scholars interested in children's media culture and gender, we wondered: How would child viewers react to PAL's decision to remain ungendered, which is unprecedented on children's television?

Literature review

While engaging with media content, children internalize lessons about identity and socially appropriate behavior (Ter Bogt, Engels, Bogers, & Kloosterman, 2010). For example, prosocial media – featuring voluntary behaviors meant to benefit another person (Mares & Woodard, 2005) – positively affect children's social interactions, while aggressive media content has negative effects (Wilson, 2008).

Viewers are not passive dupes of media messages, however. Various studies of adolescent audiences suggest viewers actively negotiate and make meaning from media (Maltby, Giles, Barber & McCutcheon, 2005), compare themselves to on-screen characters, and consider storylines' values, attitudes, and behaviors (Giles & Maltby, 2004; Larson, 1995). Preadolescent children (Hains, 2012) and adults engage in such behavior as well (North, Sheridan, Maltby, & Gillett, 2007). Unfortunately, prosocial children's content is less common than aggressive content (Wilson, 2008) – but children do remember prosocial programs' lessons, and studies indicate children can articulate these lessons after viewing (Jordan, 2003).

Children and gender

The subject of children, gender construction, and gender conformity has a lengthy history. In the 1970s, Slaby and Frey conducted a now-classic study regarding children's understandings of gender identities. They found that at about age 7 – but usually no earlier – children understand sex is biological and stable, comprehending that people remain male or female despite superficial changes in appearance (Slaby & Frey, 1975). Until then, children tend to regard gender stereotypes as hard-and-fast rules and may fear unwittingly changing genders by deviating from those rules (Halim, Ruble, Tamis-Lemonda, Zosuls, Lurye, & Greulich, 2014).

During this stage, boys and girls typically play only with children of their own sex, reject anything associated with the opposite sex (Paoletti, 2012, p. 13), and pay more attention to items they believe are meant for their own sex (Martin & Ruble, 2009). They do so because they regard their gender identities favorably (Halim et al., 2014), which indicates that by adhering to and reinforcing gender stereotypes in daily life, children may be joyously telling the world: "This is who I am!" (Hains, 2014).

Children's media and gender stereotypes

Children's media, rife with gender stereotypes, reinforce children's gender-rigid tendencies. With few exceptions, children's television characters are clearly gendered. Even animals and anthropomorphized objects have overtly marked gender identities (Birthisel, 2014; Jane, 2015). Common children's media's gender stereotypes include depicting girls as more concerned with physical appearance (Gerding & Signorielli,

2014; Hentges & Case, 2013), more emotional (Thompson & Zerbinos, 1995), more invested in maintaining relationships (Baker and Raney, 2007), and more identified by relationships (Smith et. al, 2010) than boy characters, who are typically portrayed as aggressive or geeky/intelligent.

Gender portrayal seems to vary based on target audience. In genres and channels targeting boys, girls are more likely to be depicted as smarter, less emotional, and more technically savvy (Baker & Raney, 2007; Gerding and & Signorielli, 2014; Thompson & Zerbinos, 1995). Conversely, genres and channels targeting girl viewers depict boys as more emotional and affectionate than do boy-oriented media (Aubrey & Harrison, 2004; Hentges & Case, 2013).

In sum, children's media reinforce gender role binaries and suggest that our culture values strictly delineated gender roles. Not all children accept these delineations, however, or feel like celebrating their assigned gender. As Projansky (2014) has argued, girls are often critical of female characters' depictions, rejecting portrayals of stereotypical femininity and taking pleasure in resisting gender stereotypes (p. 200-204). Moreover, trans activism has changed popular thought regarding gender's constancy or immutability, increasing sensitivity towards children who reject assigned gender identities. According to a 2012 study conducted longitudinally in the United States, one in ten children engages in significant gender nonconforming behavior (Roberts, Rosario, Corliss, Koenen, & Austin, 2012). While some gender nonconforming children may ultimately identify as transgender and/or LGBTQ, not all do. But according to Roberts et al.'s study, gender nonconformity elevates young children's risk of abuse and of later PTSD, regardless of sexual orientation. Gender nonconforming children may feel like outsiders, excluded by peers and children's culture alike (Hains, 2012; Hains, 2014).

Children's media culture has the potential to foster greater inclusivity. Children become attached to media characters early on, and their attachments can persist through adolescence (Wilson, 2008). As Bandura's social learning theory suggests, children identify with and learn from characters they perceive as attractive and like themselves (Linder & Lyle, 2010). If children see appealing, gender nonconforming characters on screen, and if other appealing characters model open-minded inclusivity, such storylines could encourage children's inclusion of gender nonconforming peers off screen, as well.

Given this background, we wondered: Do *Annedroids*' prosocial, progressive messages about gender construction influence the flexibility of children's thinking about gender?

Method

We piloted a multi-method study featuring individual interviews with a convenience sample of 21 eight- to ten-year-old children – 15 girls and six boys. Participants were predominantly Caucasian. Three researchers (all female) co-viewed excerpts of *Annedroids* on a laptop with each child; the excerpts (totaling 3 minutes, 20 seconds in

length) focused upon PAL's gender explorations. We also gave children pre- and post-test measures related to their flexibility when thinking about gender.

We conducted 21 interviews between July 2016 and March 2017 in the southeastern United States. Settings included a lab space, children's homes, and after-school care settings, per the interviewees' parents' preferences. An IRB approved this study, all parents provided consent, and all children gave assent. Each meeting lasted 15 to 25 minutes, and the researcher interspersed questions throughout the screening – a form of dialogic questioning. (This method has been shown to increase comprehension and engagement with televised subject matter; Strouse, O'Doherty, & Troseth, 2013). Conversations were videotaped, and the first author and research assistants transcribed all interviews.

Procedure

We began by administering a Pre-test measure (activity subscale) of the Children's Occupation, Activity, and Trait-Attitude Measure (COAT-AM; Bigler, Liben, & Yekel, 1991). Next, we screened a short clip from the pilot episode (38 seconds), in which Anne powers up PAL for the first time and explains: "PAL stands for 'personal android light-bot.' I designed PAL to assist with dangerous experiments. PAL's my most advanced android. Or PAL will be once I power PAL up." The clip ends with PAL's eyes opening.

Next, children watched a curated series of clips (1 minute, 45 seconds) showing PAL's gender identity exploration, including clips in which PAL acts in both stereotypically female and male ways. Examples include PAL choosing to try on cargo pants *and* a dress while shopping with a female friend, and PAL asking friends how to approach a school dance where girls and boys stand on opposite sides of the gym. Throughout, Anne reiterates that she did not program PAL with a gender, so it is up to PAL to choose.

After viewing, we asked each child participant whether PAL should choose to be a boy or a girl, and why.

We then screened a final clip (58 seconds) in which PAL declares, "I do not want to be a boy or a girl. I just want to be me," in response to which Anne tells PAL she thinks it's a good decision. We then asked our participants what PAL had decided, to ensure they understood, and solicited their opinions.

Finally, we asked three questions:

- "Do you think humans like me and you can also decide whether or not they want to be a girl or a boy?"
- "Have you ever wanted to do something that you didn't think you should because you are a boy/girl?"
- "Do you think PAL has to worry about that?"

We concluded by administering two subscales of the COAT-AM (activity and occupation)².

Results and discussion

Reactions to PAL's decision

We anticipated a range of responses when we asked, "What did you think about PAL's decision?" Instead, all but one participant (20/21) thought PAL's decision was good. Many, like Camille, pointed out a freedom in being untethered to a gender identity. In addition to the quotes from this chapters' epigraph, children remarked:

"It's a good choice to be yourself." Jingyi, Age 9

"It was a smart [decision] ... because then he could just do whatever he wants... or whatever it wants."- Rose, age 10

"We should be able to choose what we wanna do, so why should they [PAL] not be able to choose what they wanna do?" – Joseph, age 10

Children's responses indicated they understood that gender identification determines what is socially acceptable to do. Past research has shown that even children whose parents minimize gender-typing have a nuanced awareness of gender stereotypes and demonstrate persistence in gender-typed toy and activity selection (Weisner & Wilson-Mitchell, 1990). When we asked whether PAL would have to worry about being held back by gender, participants' responses consistently reflected this understanding. Comments included:

"[PAL doesn't have to worry about that] because he's *neither* a boy or a girl, and he is *both* a boy and a girl." – R.J., age 10

"PAL can just be themself." - Elizabeth, age 9

"People don't know [PAL's gender]... so they just classify him as a person." - Lucy, age 9

Over half of the children (11/21) stated they were open to people also deciding whether to be a boy or girl. Of the nine who did *not* think humans could decide this for themselves, the reasons offered were generally biological, reflecting the common conflation of sex (biological) and gender (choice). Answers along these lines included:

"We are born to be a boy or a girl...someone tells you, 'you are a girl, and you have to stay a girl. A doctor didn't from the start say [to PAL] you have a set gender – [PAL] got to choose and he chose to be non-gender. – Lucy, age 9

"It's either an X or a Y. It's XY it'll be a boy, it's XX, it'll be a girl. We can't decide which one it is." – Joseph, age 10

However, while other children acknowledged the biological aspect, they were still open to other options:

"We're born into it, we don't really get to pick... well you *can* change your gender, for like a million dollars. Like you can change your birth certificate." – Etta, age 10

"They have plastic surgery and stuff...also, if you're a girl....you can choose to act like a boy." – Sophie, age 10

"We don't really get to decide our gender as babies, but we get to decide what we want to act like." – Elizabeth, age 9

Indeed, focusing on appearance or actions was a common theme among participants. For example, two children remarked:

"You can change your appearance so you can be a boy or a girl." – Rose, age 10

"Boys can like what girls like, and girls can like what boys like." - Alexandra, age 8

Stated beliefs about what PAL should choose: Classifiers and non-classifiers

After children viewed clips related to PAL's gender exploration, we asked if they thought PAL should choose to be a boy or a girl. Half (11 of 21) said PAL should not specify a gender. Interestingly, this pattern emerged even though we did not offer "neither" as an option, and the series of clips did not present the idea of "neither" as a choice. Children's comments included:

"I think PAL will choose to not be a he or a she but to just be PAL. It doesn't seem like PAL wants to be one way or another." – Elizabeth, age 9

"I think he should choose to stay non-gender... Nobody would, like, judge him." – Lucy age 9

"I don't think he should have to choose...he should stand in the middle because he's kind of both."- Joseph, age 10

Among those who did specify a gender, watching clips of PAL doing both female- and male-gendered activities resulted in a balanced gender choice split: 5 said PAL should choose to be a girl, and 5 said PAL should choose to be a boy. We found no effects of age or gender on whether or not participants thought PAL should choose a gender.

In considering these patterns, we wondered if children's responses meaningfully captured two distinct groups of children. For the purpose of the analysis related to our measures of the flexibility of children's attitudes toward gender, we considered those children who thought PAL should choose a binary gender (boy or girl) as "classifiers", and those who thought PAL should choose to be neither or both as "non-classifiers."

Flexibility of Children's Thinking about Gender

We were interested in whether children's classification status (classifier/non-classifier) was associated with higher or lower scores on the COAT-AM.³ (Notably, participants' gender was not related to classification status; of the six males who participated in the study, three were classifiers and three were non-classifiers.) Non-classifiers were willing to think outside the binary gender spectrum in considering what PAL should choose as an identity, and we wondered if they would also be more likely to score "at ceiling" on the COAT-AM, in which higher scores indicate more flexible thinking about stereotypically gendered activities and occupations. Our analysis indicated this was the case: Non-classifier children (who thought PAL should choose both boy and girl or neither) were significantly more likely to be at ceiling on all three COAT-AM subscales as compared to classifier children (who indicated PAL should choose to be a boy *or* a girl).⁴ In other words, non-classifiers demonstrated flexible thinking about PAL's gender choices, and that pattern was mirrored in their pre- and post-test COAT-AM scores.

But what about the classifiers, who *did* readily provide a gender suggestion for PAL? We wondered whether the two groups might show statistically different patterns of change on the COAT-AM after viewing the selected clips from Annedroids and having a conversation about PAL with an interested adult (the researcher). Specifically, we hypothesized that classifiers might show more change in their thinking about gender stereotypes than non-classifiers since they initially showed less flexible thinking about gender. We conducted a Welch's t-test on the pre/post difference scores and found a statistically significant difference between the two groups. 5 Classifiers (10 children) showed a significantly larger change in flexibility of gender attitudes from before to after the co-viewing experience than non-classifiers (11 children), demonstrating more flexibility in their thinking after viewing. From this small sample, we saw promising indicators that co-viewing progressive children's media might effect changes in children's gender attitudes. For children inclined to think binarily about gender, spending as little as 10 to 20 minutes co-viewing and discussing a show featuring a gender nonconforming character may encourage more flexible thinking. Compared to classifiers, whose average difference score was .113 (indicating an 11.3% increase in flexible thinking about gender), those who chose to conceptualize PAL's gender in less binary terms showed a slight decrease of .018, or 1.8%. Because 9 out of 11 of the non-classifiers scored above 90% on all three quantitative scales, however, more nuanced measures are likely needed to detect potential pre/post changes in that group.

Limitations

We wish to call attention to limitations of our pilot study, some of which suggest future research directions. First, although we decided to show children curated clips focusing on PAL's gender exploration, PAL's storyline unfolds gradually over four seasons, cul-

minating in PAL's series-finale decision to "just be me." A more naturalistic follow-up would be modelled on children's actual viewing behavior, including repeated viewing of some episodes and/or "binge" watching entire seasons. Children's reactions to PAL could differ under these conditions; less concentrated exposure to PAL's storyline could result in greater identification with PAL as a character and potentially more reflection on gender *or* less attention paid to PAL's gender exploration and less subsequent reflection on gender.

Additionally, *Annedroids* has been lauded as groundbreaking for its depiction of Anne as a female scientist. Recent research has shown that children who viewed two episodes of *Annedroids* reported significantly greater interest in technology after viewing. They were also significantly more likely to disagree with the statement, "girls and robots don't really go together" (Götz, Mendel, Pritscher, & Rodriguez, 2016). Another recent study on *Annedroids* showed a decrease in children's STEM (Science, Technology, Engineering, and Math) gender stereotypes after watching just two episodes (International Central Institute for Youth and Educational Television, 2016). In our study, we minimized the number of clips portraying Anne in a scientific role and asked no questions about her, to avoid calling attention to her; however, it is possible that the brief counter-stereotypical scene with Anne influenced our participants. Therefore, for the purpose of interpreting the current study, we acknowledge that *Annedroids* breaks with gender stereotypes in multiple potentially significant ways.

The current study's small sample size and recruitment method was another limitation. For our IRB-approved recruitment efforts, we mentioned that the clips would depict a genderless character. This is an unusual enough concept that it may have drawn disproportionate interest from families that have already discussed gender issues with their children. Conversely, some families we invited to participated may have declined due to discomfort with the idea of exposing their children to a genderless character, resulting in a less-than-representative sample. In the future, it would help to obtain measures of parental attitudes toward gender, to directly examine the potentially mediating influence of parental attitudes on children's evaluation of PAL. Additionally, although gender was equally distributed across the between-subjects variable (classification status), substantially more girls than boys participated in the study, which could have played a role in our findings.

General discussion

Our findings suggest that media content could positively influence children's gender norms. To recap, we introduced children to a genderless character, PAL, through a concentrated, curated series of clips and invited participants to reflect on PAL's gender explorations and their own experiences of gender with an attentive adult. Our results suggest that this type of experience may have the potential to encourage more flexible

thinking in children who hold rigid gender stereotypes. Though this finding is preliminary, it is culturally important. Today's children frequently negotiate gender identity and confront problematic gender stereotypes, neither of which is a pleasant or easy task. In our pilot study, more than a third of participants (8/21, all girls) reported having felt held back from an activity of choice because of their gender. Examples the girls provided included watching Marvel movies, playing arcade games and Minecraft, playing soccer and basketball, canoeing, getting a short haircut, rocket science, and aspiring to be a car engineer. Given the prevalence of such experiences, if progressive children's media content can help normalize counter-stereotypical behavior related to gender and encourage more flexible thinking about what boys and girls "should" do, we would argue that the children's media industry has a moral obligation to do so.

As this is the first study to explore children's reactions to a televised character who chooses to remain ungendered, the work of Bigler & Liben (1990, 1992) is relevant in interpreting our results: In a series of classroom experiments, Bigler & Liben were able to reduce children's gender-schematic thinking about occupations. They used one of two cognitive interventions aimed at calling children's attention to counter-stereotypical examples and helped them formulate new, differentiated schemas of the occupations in question.

In a similar manner, when children watch *Annedroids* and witness PAL's counter-stereotypical gender explorations, they may be nudged into thinking along two dimensions of classification – gender appearance and gender-typed behavior – and recognizing that an individual can be classified differently along these two dimensions. Our study suggests that for a subset of children who held rigid gender stereotypes, PAL's portrayal may have provided a salient counter-example to the dominant gender-typed schema, helping them make gender-related classifications on more than one dimension and revise their rule-based thinking on gender.

While additional research is needed to replicate and explore this result, children's almost unanimously positive appraisal of PAL's decision to "just be me" is informative. Our findings suggest that eight- to ten-year-old children may have a more sophisticated awareness of the societal constraints accompanying binary gender identity, and be more open to non-binary gender identities, than is generally assumed.

As 10-year-old Rose observed, "It would be cool if he could be neither....he can just be free and be who he wants to be. He can do everything."

Notes

- In the COAT-AM scale, children are asked whether "only boys", "only girls", or "both boys and girls" should do certain activities (e.g. iron clothes, go to the beach, fix bicycles) and whether "only men", "only women", or "both men and women" should do particular jobs (e.g. librarian, artist, police of-ficer).
- 2. We used a combined post-test measure consisting of two COAT-AM subscales for two reasons: the scales are highly correlated in our sample (r=.916) and in other studies (Bigler, personal communication).

- tion, June 14, 2016), and piloting showed children's tendency to note the repetition of the individual items of the activity subscale if given alone before and after viewing the brief set of clips.
- COAT-AM scores are computed by subtracting gender-neutral items and generating a proportion of "both" responses for stereotypically male and female items; numbers closer to 1 indicate greater flexibility of thinking about gender.
- 4. We determined that 10 of the children were "at ceiling" on all three subscales given, as defined by scores greater than or equal to .9. We then conducted a chi–square test for association between classification status and being at ceiling on all pre- and post-test quantitative scales. The analysis revealed a statistically significant association such that non-classifiers were significantly more likely to be at ceiling on measures of flexibility of their attitudes about gender than classifiers $-\chi^2(1)=10.831$, p=.001.
- Results of a Welch's two independent sample t-test on the pre/post difference scores of classifiers and non-classifiers indicated a statistically significant difference in a one-tailed test, t(12)=2.108, p=.028.
 The mean change in pre/post COAT-AM scores among classifiers was .132 higher than among non-classifiers.
- A single sample *t*-test showed that the mean difference score for the non-classifiers (.018) did not differ significantly from zero, *t*(10)=.726, *p*=.484. The mean difference score for the classifiers (.113) did differ significantly from zero in a one-tailed test, *t*(9)=1.983, *p*=.0393.

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