

2015

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Recommended Citation

Lasch, Carolyn, "Personality and Creativity Correlates in Adults with Childhood Imaginary Companions" (2015). *Scripps Senior Theses*. Paper 669.
http://scholarship.claremont.edu/scripps_theses/669

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**Personality and Creativity Correlates in Adults
with Childhood Imaginary Companions**

by

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Submitted to Scripps College in partial fulfillment of the degree of Bachelor of Arts

Professor Ma

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April 24, 2015

Abstract

A few studies have demonstrated differences in various personality attributes and creative abilities in children with imaginary companions. This study examined how recalled childhood engagement with an imaginary companion correlates with adult personality and creativity measures. It was hypothesized that creation of childhood imaginary companions would be positively correlated with adult creativity, but that this relationship would be mediated by certain personality attributes such as openness to experiences and extraversion. Other details of the imaginary companion experiences were also investigated. Two hundred and forty-six participants were recruited online to answer questions related to their personality and creativity, as well as any remembered imaginary companion experiences. Results indicated that the presence of a childhood imaginary companion was related to an individual's openness to experience, but that the roles an imaginary companion played for its creator related to adult personality attributes more. These results suggest that further analyses of different roles and types of imaginary companions can help further explore why certain types of imaginary companions are created, and how their presence may impact developmental processes that influence their creators' personality and creativity in adulthood.

Personality and Creativity Correlates in Adults

with Childhood Imaginary Companions

Imaginary friends come in many forms. Some are mirror images of their creators, but smarter, faster, or more mischievous- the perfect scapegoats. Others are more unique, such as 'Laughing Tiger', created by a two-year-old to protect against scary neighborhood dogs (Fraiberg, 1959), or 'Station Pheta', a boy with beady eyes and a big blue head, who hunts for sea anemones and dinosaurs at the beach (Taylor, 1999). Sometimes they are secrets, but often they interact with the friends and families of their creators. Though not all of us may have had them ourselves, they are hallmarks of childhood imagination and fantasy-like play.

While as many as 65% of children create imaginary companions throughout their childhood (Singer & Singer, 1981), it has never been particularly clear how or why these companions come into 'being', how they affect those who create them, and what their presence indicates. Investigation into the 'lives' of these companions and those who create them did not begin until the 1930's, and until the 1990's, few theories had empirical studies to support them. Current research focuses on the relationship between creating an imaginary companion and various attributes in childhood: theory of mind (Taylor & Carlson, 1997), creativity (Bouldin & Pratt, 1999), reality processing (Taylor, Cartwright, & Carlson, 1993), and social skills (Bouldin & Pratt, 2002; Harter & Chao, 1992). However, little of this research has addressed what happens to those children with imaginary companions after the companions fade into fantasy- as they grow up and become adults. How does the presence of an imaginary companion in childhood affect adult creativity and personality?

Definitions of the imaginary companion construct

In order to discuss the effect that imaginary companions have at any age, a clear definition of the term is necessary. Imaginary companion is a term that encompasses both imaginary friends and personified objects. Imaginary friends are beings that have no physical basis, and exist only in the imagination of a child (Svendsen, 1934). Children know they are not real and have no physical basis, but they interact with them as though they are real (Klausen & Passman, 2006). An established imaginary friend often interacts with a child for a minimum of a few months, but can exist for years.

Personified objects are different from imaginary friends in that they have a physical basis, such as a toy or stuffed animal (Harris, 2000, as cited in Klausen & Passman, 2006). One prominent example of a personified object is Calvin and Hobbes. While Calvin sees Hobbes as a real-life tiger that moves and has strength and personality beyond his real physical form, others see him only as a stuffed animal. Some research (Gleason, 2002) has begun to distinguish personified objects from imaginary friends, but they are generally grouped together within the umbrella term 'imaginary companion'. All discussion of 'imaginary companions' in this research applies to both imaginary friends and personified objects.

The behaviors that we understand as part of an 'imaginary companion' experience appear to be somewhat of a cultural interpretation. Cultures similar to the United States (US), such as England, report similar rates of imaginary companions in childhood (Majors, 2013). However, in other societies, the same behaviors that are labeled as imaginary companions (IC) in the US are interpreted differently. In India, for example, many Hindu parents interpret

children's interactions with IC's as contact with past lives (Mills, 2003), and the behavior is accepted.

In the US and similar cultures, where much of the imaginary companion research has been conducted, the most commonly cited reason for the creation of an imaginary companion is to provide a friendly companion or friend-like relationship for the child who created it (Taylor, 1999). Children with imaginary companions perceive relationships with their imaginary friends as fulfilling many of the same social needs, such as mutual nurturance and help, as their relationships with their 'real' friends (Gleason, 2002). Similar to friendships between two real children, a relationship with an imaginary companion involves a child's ability to acknowledge others' perspectives – because the child creates and reacts to the perspective of that being. Although children interact with imaginary companions as if they are real living beings, it is clear that children can discern between the real world and that of their imaginary companions (Taylor, 1999). This is evident in spontaneous comments made by child participants such as “she's not here for real”, or “we're just pretending” while discussing their companions with researchers (Taylor, Cartwright, & Carlson, 1993).

Impacts of imaginary companions

Fantasy and pretend play. While children with imaginary companions are very aware of the lines between reality and fantasy, they are also more willing to engage in fantasy or pretend play in general (Taylor, 1999). Taylor, Cartwright, & Carlson (1993) found that children with IC's were significantly more engaged in the pretense of pretend and imaginary play initiated by a researcher, which suggests that children who create imaginary companions are more willing to openly exit the 'rules of reality' to engage with the pretend world. This

acceptance of new ‘pretend rules’ or imaginary games within the ‘real’ lab context of this study may also indicate that children with IC’s have a certain level of cognitive flexibility that allows them to quickly accept and shift between to the ‘pretend’ world and its interactions, while still maintaining their understanding of what is occurring in the ‘real’ world.

Theory of mind and perspective taking. Beyond cognitive flexibility, the perspective-taking necessary to maintain an imaginary companion may also relate to theory of mind abilities. Theory of mind is the ability to attribute mental states, including knowledge and beliefs, to one’s self and others. A key part of developing theory of mind is the understanding that others can have beliefs or knowledge different from one’s own that inform their perspective (Premack & Woodruff, 1978, as cited in Rogers, Dziobek, Hassenstab, Wolf, & Convit, 2007). Imaginary companions may help children to better understand and interact with others in social contexts. Taylor & Carlson (1997) found that four-year-old children with imaginary companions perform better on theory of mind tasks than those without companions. This indicates strength in perspective taking that could either be a cause or effect of imaginary companion creation.

If this strength exists in children before they create their companions, it could suggest that IC’s are present in more socially engaged or interested children, who have stronger understandings of the perspectives of others. If this stronger understanding of others’ perspectives is an effect of IC’s, it would support the idea that constant ‘practice interactions’ with an imaginary companion help a child better understand the perspectives and opinions of others at an earlier age.

While these differences in perspective taking could be related to influences beyond those of IC’s, they do suggest that children with IC’s have a more advanced ability to

understand others' perspectives at a younger age. This, along with evidence that children with IC's are more comfortable socializing with adults (Gleason, Jarudi, & Cheek, 2003) indicates differences in social interaction styles and abilities based on the presence of an imaginary companion. Based on these differences in interacting with others, personality is a logical area of investigation as well.

Imaginary companions and relationships to personality. Personality is defined as a unique way of perceiving, relating to, and thinking about one's environment and self (American Psychiatric Association, 2013). There are many theories and methods for categorizing and defining different personality attributes, but the most popular contemporary model is likely Costa and McCrae's (1985) 'Five Factor Model'. The model uses five broad factors to describe personality: Openness to experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Each factor contains six 'facet' characteristics and is assessed on a continuum. For example, a person very low in Conscientiousness would be considered more easy-going and careless—the low end of the scale— while a person high in Conscientiousness would be considered more efficient and organized—the high end of the scale.

Though some aspects of adult personality may seem consistent over time, one's personality is also affected by environmental and experiential factors. One such factor could be an imaginary companion in childhood. However, many studies only look at children when they have imaginary companions, not before or after. Few studies have directly studied personality differences as a function of children's imaginary companion experiences. Much of the data available come from observations and comments made by researchers in larger

studies, or more broad observations and reports of behavior by parents of children with IC's. Many studies contradict others over the years, which makes examination of these personality factors and attributes more important for clarifying their relationships with imaginary companions.

Openness to Experience. The least contradictory evidence of personality differences in those with IC's relates to Openness to Experience. Openness to Experience includes facets of active imagination or fantasy, aesthetics, attentiveness to inner feelings, variety, and intellectual curiosity (Costa & McCrae, 1992). Intuitively, it should be clear that a child who independently creates an invisible or personified companion has a certain openness to new and fantastical ideas. The willingness of children with IC's to engage in fantasy-based play within a lab setting (Taylor, Cartwright, & Carlson, 1993) is an example of higher Openness to Experience in childhood studies. Adults with past imaginary companions have also been found to be more absorbed in imaginative life (Kidd, Rogers, & Rogers, 2010).

Extraversion. Extraversion is defined as directing one's interest and satisfaction outward, often onto others (Costa & McCrae, 1992). It includes the facets of warmth, gregariousness, assertiveness, excitement seeking, positive emotion, and activity (Costa & McCrae, 1992). While the stereotypical child with an imaginary companion is often viewed as shy, withdrawn, or introverted enough to create friends rather than make 'real' ones, some studies contradict this image. Mauro (1991, as cited in Taylor, Cartwright, & Carlson, 1993) found that when parents were asked to rate their children on various attributes, children with imaginary companions were rated as less shy than children without imaginary companions. And while introversion and shyness are not identical concepts, it is likely that children who are not shy and seek out interactions with others are more extraverted than those who do not.

College students who reported having imaginary companions in childhood were also found to be less introverted than their peers (Wingfield, 1948). While this study is somewhat dated and used a less specific definition of 'imaginary friend', it still suggests that this attribute may be prevalent in individuals even after the disappearance of their imaginary companions.

Neuroticism. The facets of vulnerability to self-consciousness, stress, depression, anxiety, hostility, and impulsivity make up the factor of Neuroticism (Costa & McCrae, 1992). Related to the image of a shy, withdrawn child is the idea that children who create imaginary companions face some kind of psychological issue, such as anxiety or trauma, that triggers the creation of the companion. Neuroticism is the personality attribute that most closely resembles this characterization of why some children create imaginary companions. Research relating neuroticism to imaginary companions and their creators has very mixed results. In childhood studies, Bouldin & Pratt (2002) found that children with imaginary companions were higher in concentration anxiety and worry-oversensitivity than their peers. These results indicate that children with IC's may be more attuned to and concerned about the details of their interactions with others, possibly leading them to create a less stressful type of interaction—an imaginary one.

In contrast to the popular characterization, an observational study found that children with imaginary companions were less fearful than their peers without imaginary companions (Singer & Singer, 1981). Wingfield's 1948 study of adults with past imaginary friends also found that those who had companions in the past were less neurotic than their peers. These results support psychoanalytic theories of imaginary companions, which interpret the creation of a companion as an important coping device that often *prevents* a larger psychological issue from developing (Nagera, 1969), rather than indicating its presence.

However, not all adult developmental results relating to neuroticism are encouraging. Bonne, Canettie, Bachar, Denour, & Shaley (1999, as cited in Gleason, Jarudi, & Cheek, 2003) found that adolescents who created imaginary companions in childhood had higher levels of psychological distress than their peers. Other research has indicated that those who reported having imaginary companions were found to be more dissociative than those who did not have imaginary companions in childhood (Dierker, Davis, & Sanders, 1995). However, these participants with imaginary companions did not report having more lonely, stressful, or traumatic childhoods than their comparison group. In an adult study in Japan, individuals with past IC's labeled themselves as both worrisome and carefree (Inuzuka, Satoh, & Wada, 1991), demonstrating differing levels of neuroticism within a single sample. These results, nor those from childhood studies, seem to present conclusive results, and further study may clarify the conflicting trends. Results from this study attempted to distinguish what kind of experiences within a child's interaction with an IC were related to higher levels of neuroticism in adulthood.

Conscientiousness and Agreeableness. Conscientiousness includes facets such as orderliness, competence, dutifulness, deliberation, achievement and self-discipline. (Costa & McCrae, 1992). People high in Conscientiousness prefer to do well on tasks, and are very thorough (Costa & McCrae, 1992). Facets of Agreeableness include trust, compliance, altruism, tender-mindedness and modesty (Costa & McCrae, 1992). Neither of these overarching attributes or their facets have been constructs of interest in past imaginary companion studies, and a lack of literature prevented prediction relating to these two personality attributes.

Limitations of the 'Big Five'. There are, of course, many personality attributes that do not fit perfectly into these five factors, or any of respective six facets of each larger characteristic. Certain social characteristics, such as cooperativeness, which fits somewhere between the easy-going nature of someone low in Conscientiousness and the friendliness or compassion of someone high in Agreeableness, cannot easily be assessed with Costa and McCrae's model. This is also true of other characteristics important to social interaction, such as empathy, social confidence, and sociability. Because these may vary in children with imaginary companions (and adults with past companions) but are not easily sorted into a specific Big Five factor, they must be examined separately. The current study did just that.

Theory of mind's impact on empathy. Along with higher monitoring of social cues, theory of mind differences in young children (Taylor & Carlson, 1997) could also be related to social differences, especially through development of empathy. Empathy is the ability to understand another's perspective or mental state, known as cognitive empathy, as well as respond to that state with an appropriate emotional response, known as emotional empathy (Rogers, Dziobek, Hassenstab, Wolf, & Convit, 2007). Theory of mind is often seen as the first step in development of cognitive empathy. Earlier development of theory of mind in children with imaginary companions could indicate increased abilities to empathize in adolescence and adulthood, especially when these behaviors and skills are practiced with imaginary companions throughout childhood. While empathy is similar to facets of Agreeableness, such as altruism, tender-mindedness, and trust, it is not specifically included within that larger attribute. Therefore, assessing it independently would allow for comparison of adult results with those of childhood studies that indicate children with IC's show

differences in theory of mind (Taylor & Carlson, 1997), which as of yet has not been completed.

Social confidence, cooperativeness, and sociality. Children with imaginary companions not only do better in theory of mind tasks, but appear to be more cooperative and sociable in play (Gleason, Jarudi, & Cheek, 2003). It has been theorized that they may come to value harmonious social interaction, related to cooperativeness in adults, and be more socially oriented and accommodating to others (Gleason, Jarudi, & Cheek, 2003). This seems in line with evidence that suggests they may be more attuned to social cues in others (Bouldin & Pratt, 2002). Along with being more socially oriented, it would be expected that these individual would have increased social confidence after ‘practicing’ social interactions with their IC’s in childhood. However, the few studies that have researched social orientation in adults have mixed results. Wingfield (1948) found that college students with past imaginary friends were more sociable than their peers, but more recent studies have not found differences based on the past presence of an imaginary friend (Kidd, Rogers, & Rogers, 2010). Adult studies can examine whether patterns in differences in personality attributes are consistent across both child and adult studies, or if they fade as multiple developmental influences are experienced throughout childhood and adolescence.

A study examining personal journals as a type of imaginary companion to combat everyday stress found that socially competent adolescents with strong coping skills were more likely to create imaginary friends (Seiffge-Krenke, 1997). However, the same study also identified readiness to daydream, a very creative activity, as the most efficient predictor of creating and having an imaginary companion. This suggests that beyond personality and

social orientation, there may be differences in the creative ability of those individuals who create imaginary companions.

Imaginary companions and creativity. Intuitively, it would seem that children with imaginary companions should not be low on measures of creativity. Indeed, the creation of an imaginary companion involves taking new ideas of what a ‘being’ or companion should look and act like, and constructing that companion from almost nothing. This act in itself requires imagination and is a form of pretend play. However, imaginary companions are not the only way children engage in pretend or imagination. Do children who interact with imaginary companions have significantly different levels of creative ability?

Studies suggest that they may. Children with imaginary companions are much more likely and willing to pantomime or manipulate an ‘imaginary’ phone when asked to phone up a friend for pretend (Taylor, Cartwright, & Carlson, 1993). This manipulation of the imaginary phone provides evidence for claims that imaginary companions are indications of highly creative or inventive children. Additional evidence of this can be seen as children with imaginary companions have more daydreams, and their daydreams are more vivid (Bouldin, 2006). Other studies have suggested that children with imaginary companions may have enhanced imagery skills compared to other children, possibly related to their extended practice in generating and manipulating visual and auditory images or experiences with their imaginary companions (Mannering & Taylor, 2008). Others have found children with imaginary companions to be significantly more likely to use magic to explain events and incorporate myth into play (Bouldin & Pratt, 1999). However, many of these effects were small, and in some cases individual differences were stronger than any differences found

between groups based on presence or absence of imaginary companions (Tahiroglu, Mannering, & Taylor, 2011). This suggests that while creativity may be a factor in creating an imaginary companion, or a result of one's presence, there is not enough evidence to reach a conclusion as to how large a difference exists, if one exists at all. The lack of clarity in these results and their interpretations is another area the proposed study aimed to clarify.

Creativity differences in adults with past IC's. Many retrospective studies (Gleason, Jarudi, & Cheek, 2003; Kidd, Rogers, & Rogers, 2010; Myers, 1979) have investigated the correlation between childhood imaginary companions and creativity or imagery use in adults. While frequency of daydreaming specifically was not found to be a significant indication of past imaginary companions in one adult study, the use of day-to-day imagery did differ significantly between women with and without imaginary friends in their childhoods in the study (Gleason, Jarudi, & Cheek, 2003). Other studies have indicated that those with past imaginary companions may be more imaginatively involved and score higher on creativity measures, are generally more creative in adulthood, and tend to seek careers in the creative arts (Kidd, Rogers, & Rogers, 2010; Myers, 1979). What is unclear is if certain types of creativity, such as creative production or creative problem solving, are particularly encouraged by interactions with imaginary companions. This study attempted to distinguish between sub-types of creativity in adults and explored how they are related childhood experiences with different types of imaginary companions.

Measuring creativity. Creativity is broadly defined as the use of original ideas to create something new. While there are many different types of creativity such as artistic production, creative thinking, etc., the proposed study aimed to investigate creativity through three different indicators: divergent thinking, convergent thinking, and creative behavior.

Divergent thinking involves generating many different ideas or solutions from one starting point. Divergent thinking is often discussed in connection with creativity (Acar & Runco, 2014). What is less discussed is convergent thinking, sometimes considered the ‘opposite’ of divergent thinking (Guilford, 1967). Convergent thinking relates more to taking all of the available information and using it to find a solution. It follows a logical process to arrive at one solution or idea. At first glance, this process may not seem very creative, but convergent thinking is necessary to structure and organize ideas or concepts created or found through divergent thinking. It is also important when working with discrete options or resources- the solution must be found within those limited (and possibly discrepant) choices. The two types of thinking work together, and the ability to think in both ways is likely more related to creative achievement and thinking than either type is individually (Munro, 2012).

It is possible to have high creative ability, but not use it more than an individual with average creative ability. A creative behavior measure was used to capture a ‘willingness to be creative’ that was not measured by convergent and divergent thinking measures. And while individuals with IC’s may be significantly better at divergent or convergent thinking, their ability does not assure that they actually participate in more creative behavior than a normal person. For that reason, this factor of creativity was considered as well.

Relationships between personality and creativity

The potential path of development between imaginary companionhood, personality, and creativity has not been explored as thoroughly in past studies. The known relationships between personality attributes and creativity help to better understand how strong the connection between imaginary companionhood and adult creativity may be. Investigating a

possible mediating role of personality begins to clarify the relationships between all three variable groups collectively. This allows for a more comprehensive and holistic understanding of the overarching relationships between personality attributes and different measurements of creativity, as well as their respective relationships with imaginary companion experiences.

The strongest connections between personality attributes and creativity relate to Openness. Most of this is because the definition of Openness is so related to creativity, that a lack of correlation would be counter-intuitive (Acar & Runco, 2014). Openness to experience, as previously stated, includes openness to new ideas and fantasy, both important to ‘traditional’ creative pursuits such as the arts as well as everyday creativity, such as problem solving and divergent thinking. This relationship was also supported by Feist’s (1998) meta-analysis.

Feist (1998) found creativity to be related to low conscientiousness, high hostility, and high impulsivity (the latter two related to neuroticism). These findings stand in contrast to an earlier study (McCrae, 1987), which found no correlation between creativity and any of the ‘Big Five’ personality attributes save Openness to Experience. Various studies also find non-significant results or contradicting results on the relationships between various personality attributes and creativity, such as Helson’s (1985) finding that creative women were higher in conscientiousness, contradicting Feist’s findings. Barron (1969) found creative women to be more open and extraverted, while Katz & Poag (1979) found the opposite 10 years later, with women high in divergent thinking labeling themselves as cold, timid, and cowardly.

This variance in results could be explained by differences in types of creativity, such as divergent and convergent thinking. For example, painters, exemplars of creative production and stereotypical examples of creative minds, were found to be much higher on psychoticism

(Neuroticism), whereas scientists high on a measure of creativity were particularly introverted (McCrae, 1987). It could be that distinct personality attributes relate more strongly to different types of creativity, and not as much to the general 'umbrella' concept of creativity. By testing sub-types of creativity, these relationships can be better explored, helping to explain the relationships not just between personality and creativity, but their respective relationships with childhood imaginary companion experiences as well.

Differences between Personified object and Imaginary friend experiences

It is also possible that the type of imaginary companion an individual creates relates to adult personality attributes and creativity. As mentioned earlier, 'imaginary companion' is an overarching term for two related but distinct experiences. Personified objects are based on a physical object, such as a toy or stuffed animal, whereas imaginary friends have no physical object on which they are based. Few studies have investigated possible differences that may exist between children who have imaginary friends and those who have personified objects, such as the roles either type of imaginary companion plays in a child's socialization, or how they may benefit children differently. Only Gleason (2002) has examined these differences and found that personified objects are more likely to be treated as objects receiving nurturance, suggesting they are viewed as subordinate to the child creating them. Beyond this small difference, little can be said about the differences in how children relate to imaginary friends and personified objects. Without understanding the differences between these two types of companions, how can the field begin to fully understand the overall impacts or relationships between personality attributes in children with either type of imaginary companion?

Because so few studies have sought to differentiate between the two types of imaginary companion, it is difficult to predict significant differences in personality attributes or creativity measure between the two types of imaginary companions. One possibility is that there may be a difference in social characteristics between those who create imaginary friends and those who create personified objects. Empathy and similar social skills are likely easier to practice with an imaginary friend (who is more likely to be a human) than with a personified object, which may be viewed as less capable and human-like. A personified object is therefore less likely to be endowed with the same level of human-like feelings and thoughts that allow a child to engage with a companion and gain social skills with the same ease, or at the same level as a child interacting with an imaginary friend. These differences were investigated further in this study. Differences in the roles played by imaginary friends and personified objects were also explored, along with the different relationships both types of imaginary companions have with personality attributes and creativity.

Differences based on imaginary companion roles

Not every child creates an imaginary companion for the exact same reason. While much of the literature lists the main reason for imaginary companion creation as loneliness or lack of playmates for the creator (Klausen & Passman 2006; Taylor, 1999), there are other roles that imaginary companions fulfill for their creators. How do these roles affect the impact that an IC has on an individual? Ball (2003) introduced seven different theoretical roles that imaginary companions often fulfill for children. Because not every IC fulfills the same role or combinations of roles, they should not be expected to impact their creators in identical ways, or relate to personality attributes and creativity in a uniform matter.

As these roles are not established in the field, there are no previous studies comparing these roles and their relationships with adult personality attributes or creativity. The current study aimed to analyze these very comparisons in order to create a more nuanced view of childhood imaginary companion experiences in relation to adult personality and creativity. For all predictions, it is important to consider what kind of differences are indicated in a child who creates an IC to fulfill each role, but also how an IC in that role could influence or encourage different attributes in its creator. Because of the correlational nature of this study, it is impossible to know which of these views is correct- if IC's create differences or are symptoms of them- and so both were considered.

Company role. Imaginary companions in this role alleviate loneliness felt by their creators (Ball, 2003). Based on studies that show higher rates of IC's in oldest or only children (Nagera, 1969; Taylor, 1999), it was predicted that this role would be more common in oldest or only children. An IC who provides more companionship indicates a child that is seeking more socialization, and is likely to be higher in Sociability and Extraversion. These attributes would likely increase by interaction with an IC in this role as well, and an adult whose past IC fulfilled this role would be expected to be higher in these attributes.

Unconditional regard role. The unconditional regard role includes imaginary companions who provide nurturance, empathy, and support to their creators (Ball, 2003). Individuals whose IC's fulfilled this role were predicted to be higher in Neuroticism, as anxiety or self-consciousness may have kept them from seeking nurturance and empathy in real relationships outside of their IC. They could also have been more introverted (low Extraversion) and therefore more likely to seek nurturance from non-real companions. These

individuals may also have been higher Empathy as adults after receiving more from a positive, nurturing, relationship with their IC in childhood.

Guidance role. An imaginary companion in the guidance role is someone to consult for advice, act as a teacher, and help its creator through any problems (Ball, 2003). These individuals place trust in their IC's, a facet of Agreeableness. The advice provided by a companion in this role is also related to the deliberation facet of Conscientiousness. Those who find their advice and guidance in an IC may have been lacking a real-life figure for these needs. This role could also have existed in the IC's of less confident or shy individuals, who in adulthood would score lower in Social Confidence and Extraversion.

Boss or parent role. Imaginary companions in the boss or parent role provide someone for an individual to teach, parent or boss around (Ball, 2003). As Gleason (2002) found that personified objects are more often treated as subordinate to children who create them, PO's were predicted to be more likely to fill this role. Individuals with an IC in this role were predicted to be higher in Conscientiousness, as their 'bossing' could be related to a need for order or dutifulness, two facets of the Conscientiousness factor. They were also predicted to be higher in Agreeableness and Cooperativeness, as a willingness to teach and nurture could indicate tender-mindedness or greater willingness to help and work with others, two facets of those respective factors. Harter & Chao (1992) found that girls were more likely to create IC's who were less capable than themselves, and nurture or teach them. Therefore, it was predicted that this role would be more common among women.

Alter ego role. Imaginary companions who fulfill the alter ego role are capable of things their creator cannot do, and may act as a scapegoat for the misdeeds of their creator as well (Ball, 2003). An IC in this role may represent that ego ideas of its creator (Nagera, 1969).

Creators of this kind of IC were predicted to be more impulsive individuals, a facet of Neuroticism. Blaming of actions on others (albeit imaginary others) was seen as an indication of a child that is less altruistic or places less value in trust, indicating lower adult scores in Agreeableness. Harter & Chao (1992) found that boys were more likely to have IC's that had abilities beyond their own, and served as ego ideals. Therefore, it was predicted that this role would be more common in men's childhood imaginary companions.

Emotional expression role. Imaginary companions who fulfill this role help their creators express emotions that they otherwise could not (Ball, 2003). Individuals with IC's filling this role were predicted to be higher in Empathy in adulthood, as their companions were important figures: someone who understood their perspectives and were supportive of them. They were also predicted to be slightly higher in Neuroticism as adults, as a lack of other emotional expression outlets could indicate a less supportive environment in childhood that may have had lasting effects, such as anxiety or hostility.

Fantasy role. Imaginary companions in this role provide an outlet of fantasy and pretend play for their creators (Ball, 2003). Creating additional outlets for pretend likely indicates a child with exceptional creative ability, and it was predicted that individuals with IC's in this role would score higher in all creativity measures. Individuals with companions in this role were also predicted to be higher in Openness, as it contains facets of fantasy and new ideas.

Current study

As demonstrated, much of the research on imaginary companions has understandably focused on child participants and various abilities in children with imaginary companions.

This makes sense, because it is ideal to capture reports of imaginary companions and their correlates when the experience is ongoing. However, for all of the concern and research dedicated to how the presence of imaginary companions affect children's creativity, theory of mind, social abilities, and other differences, few studies have investigated whether the differences found in childhood are maintained through adulthood. Do the differences between children with and without imaginary companions persist, or do they disappear when other individual differences and experiences throughout childhood and adolescence are taken into account? Studies with adult participants can help to confirm at the very least whether any negative attributes related to imaginary companions fade by adulthood, and if positive relationships, such as higher creativity, persist over time.

The proposed study aimed to further explore connections between imaginary companions, adult personality, and adult creativity in all of its domains. While many earlier studies focused mainly on imagery use, there are many facets of creativity, such as divergent thinking and artistic production, which could be influenced by childhood imaginary companions and have not been explored thoroughly in past studies. Relationships between the creation of imaginary companions and many personality attributes were explored, including social attributes outside of the commonly used 'Big Five' model. This allowed for a more thorough investigation of how socialization with an invisible or personified being in childhood may indicate or lead to differences in socialization and personality in childhood that carries into adulthood. This study not only examined differences between those with and without past imaginary companions, but also revealed more about differences within the larger experience of imaginary companionhood. Differences in personality and creativity

based on type of imaginary companion were explored, as well as how the role an imaginary companion plays for its creator relates to that individual's personality and creative abilities.

The study was conducted online. Participants answered questions relating to imaginary companions in childhood, and personality and creativity in the present time (adulthood). First, it was hypothesized that there would be a strong positive relationship between imaginary companions in childhood and adult creativity. Second, correlations between childhood IC's and certain personality attributes in adulthood, such as Empathy, Extraversion, and Openness were expected to be positive, as childhood IC's were seen as indications of social children or individuals more eager to engage in pretend play. Third, the mixed results in previous studies examining relationships between childhood IC's and certain personality attributes such as Neuroticism were further examined in this study, though the direction of any significant relationships with these variables was hard to predict because of those previous mixed results. Finally, the relationships between personality attributes and all measures of creativity were examined. The relationships between some personality attributes and creativity measures were harder to predict based on previous research, but that was another reason to conduct this particular study. Various personality attributes were also predicted to play mediating roles in the relationships between imaginary companions and creativity in adulthood. While those who had imaginary companions in childhood may have greater creative abilities, this was expected to be at least in part due to certain personality factors, such as Openness to Experience, which are positively related to imaginary companion experiences, and are also positively related to creativity measures. The overall aim of this study was to provide a more detailed understanding of the different types of childhood imaginary companion experiences, and how they related to both adult personality and creativity, as well as provide a

retrospective adult comparison of those with and without past imaginary companions in measures of personality and creativity.

Method

Participants

Two hundred and forty three individuals were recruited online via the crowd-sourcing Internet marketplace Amazon Mechanical Turk (MTurk). MTurk allows a requester (in this case, the researcher) to request a worker to complete a task for a small wage. Participants self-selected to participate in the study, as it was listed as a ‘HIT’ (job listing) on MTurk, which any individual seeking work on the website could accept. Participants were paid \$0.75 for their participation.

Studies of the population using MTurk indicate that while it is populated by more Caucasians and females than the general US population, it is also more representative of age and education than a typical college-student convenience sample, and is an easily accessible approximation of a representative sample (Ross, Zaldivar, Irani, & Tomlinson, 2010). Of the 214 participants reporting their gender, women were a slight majority, (54.2%). Participants predominantly identified as Caucasian (79.5%, and 6.0% Black, 7.4% Asian, 2.8% American Indian or Alaska Native, 2.3% multi-racial and 1.9% identifying as ‘other’, with 28 not specifying) and non-Hispanic (92.4%, and 7.6% Hispanic, Chicano or Latino; with 33 not specifying). The majority of participants (84.7%) had completed “some college” or higher, with 49.8% having completed a bachelor’s degree or professional/ advanced degree. Consistent with Ipeirotis (2010) and Ross, Irani, Silberman, Six, Zaldivar, & Tomlinson’s (2010) findings, the sample was relatively young, with a mean age of 35.63 ($SD= 12.88$, range: 18-75).

Materials

Recruitment was hosted completely online through MTurk, and the survey itself was hosted by SurveyMonkey, a survey creation and hosting website.

Imaginary companion experience. The Imaginary Companion and Childhood Questionnaire (see Appendix A) is self-designed and included 8 items. All but the preliminary questions (used to ascertain if a participant had an imaginary companion or not) were in free response form. All participants answered the first two questions, which were used to create variables indicating the presence of personified objects, imaginary friends, and the combined ‘imaginary companion experience’. Participants who indicated that they had or have an imaginary friend or personified object proceeded to answer an additional six questions about their experience and interaction with the imaginary companion. These questions explored different aspects of participants’ imaginary companions, including roles of the IC’s (“Which of the following roles do you believe your imaginary companion fulfilled for you?”), age of appearance (“What is your earliest memory with this companion?”) and disappearance (“When is the latest you remember engaging with it? How old were you?”). Some of these questions were used to code other variables (such as the dichotomous variables relating to each of the seven IC roles, or Length of IC interaction).

Personality attributes. There are many theories examining personality traits and attributes. One of the most commonly used currently is the Five Factor model or ‘Big Five’, developed by Costa & McCrae (1992). Because of the cost and time-intensity of the official personality inventory based on this theory, the NEO-PI-R, a public domain inventory developed independently by Goldberg, Johnson, Eber, Hogan, Aston, Cloninger, & Gough

(2006) to have high validity with the original was used in this study. Other personality attributes not measured within the Five Factors were assessed separately.

The International Personality Item Pool (IPIP; Goldberg, Johnson, Eber, Hogan, Aston, Cloninger, & Gough, 2006) was developed as a public-domain version of personality inventories and assessments such as the NEO-PI-R. The 50-item version was used to make the length of the overall study more manageable for participants. The inventory had 10 questions for each of the ‘Big Five’ attributes (Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness). Participants responded to each statement-style item (e.g. “I have a vivid imagination”) in the inventory using a 5-point Likert scale, representing their agreement with how much each statement sounded like their personality or behavior. Each 10-statement block of items had five positively keyed questions and five negatively keyed questions. The order of all 50 statements was randomized. Scores for each of the five factors were then calculated by reverse scoring negatively keyed questions and averaging a participant’s responses on the Likert Scale. A higher score reflected a higher level of that personality attribute in the participant. In Goldberg, Johnson, Eber, Hogan, Aston, Cloninger, & Gough (2006), inventories each had good reliability, with Cronbach’s α ranging from 0.77 (Agreeableness) to 0.86 (Extraversion and Neuroticism). Cronbach α ’s for the sub-scales within this study are presented in Table 1 below.

Table 1.

Cronbach’s α of Five IPIP Sub-scales With-in Study Sample.

Sub-scale	α
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Openness	.81
Agreeableness	.82
Extraversion	.86
Conscientiousness	.87
<u>Neuroticism</u>	<u>.91</u>

The Analog to Multiple Broadband Inventories (AMBI; Yarkoni, 2010) is a 181-item measure that can substitute for 8 different inventories, including the NEO-Personality Inventory-Revised (NEO-PI-R) and the California Psychological Inventory (CPI). Participants rated how well various phrases accurately described them or their behavior. Responses were provided using a 5-point Likert scale ranging from “Very Inaccurate” to “Very Accurate”. As seen in Table 2, The sub-inventories used in this study has good Cronbach’s α ’s in Yarkoni’s (2010) measurement study, and good convergent validity with the various inventories it is meant to combine or replace in testing, including the sub-scales of those larger inventories (Yarkoni, 2010). The AMBI was used to measure personality attributes outside of the Big Five: Social Confidence, Sociability, Empathy, and Cooperativeness. The items necessary for these sub-scales were selected from the larger measure, and totaled 19 questions. Within the study sample, Cronbach’s α ’s for these scales ranged from .62 (Empathy) to .84 (Social Confidence, Cooperativeness, and Sociability).

Table 2.

Cronbach’s α of AMBI sub-scales in Yarkoni (2010).

<u>Sub-scale</u>	<u>α</u>
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Empathy	.76
Cooperativeness	.79
Sociability	.82
<u>Social Confidence</u>	<u>.87</u>

Creativity. While ‘creativity’ is a concept that can include many types of production and thought, most assessments focus exclusively on different modes of thinking, as creative thought logically precedes creative production. The measures used in this study assessed divergent and convergent thinking, as well as the level of creative achievement and behavior in an individual’s life.

Divergent Thinking. The Divergent Uses Task is a self-designed measure that is modeled after the Alternative Uses Test (Guilford, 1967). The original test assesses originality, fluency, flexibility, and elaboration in thought, and is one of the most commonly used creativity assessments. In both the original test as well as the self-designed version (see Appendix B), participants were given an everyday item (e.g., a brick) and asked to provide up to six alternative uses for it (e.g., a funeral pyre for a doll, thrown to break a window, etc.). The limit of six potential alternative uses was meant to prevent participants from dwelling on one item for too long, and to keep the time required to complete the task to a minimum. The task was scored based on number and originality of provided answers. Originality was determined based on how often a response appeared within the answers of other participants. Higher scores signify higher level of divergent thinking ability. Cronbach’s α for the number of answers was high, .90. Spearman’s correlation between number of scores and originality of scores was also high, .89, $p < .001$.

Convergent Thinking. The Remote Associates Test (RAT, Mednick, 1962) was designed to test creativity, and is an assessment of convergent thinking. Each question consisted of three words that appear to be unrelated, and the participant provided a word that connects the three words. For example, 'falling', 'actor' and 'dust' would be provided and a correct response would be 'star'. The task has been shown to be adequately reliable, with Spearman's coefficients with other creativity measures between .91 and .92 (Mednick, 1968). In the past, it has been positively correlated with other ratings of creativity (Datta, 1964). In this particular study, RAT scores were found to have a Spearman's coefficient of .48 with total Divergent Uses Task scores, $p < .001$. A list was kept of all acceptable alternative answers to each set of words. The total number of correct answers out of the 25 questions was equal to a participant's score. Higher scores signify higher ability or skill in convergent thinking.

Creative Behavior. The Creative Behavior Inventory (Hocevar, 1980) was developed to examine individuals' creative accomplishments in the fields of art, math and science, performing arts, and miscellaneous other 'creative' pursuits. The full inventory had good internal consistency reliability values, ranging from .63 to .89 (Hocevar, 1980). The inventory consists of a list of items detailing different accomplishments in areas such as writing, math, and music. Participants rated how often in the past year they achieved or completed each one. There were 47 items in the modified and shortened version used in this study, shortened from the original 77. In this study, the overall Cronbach's α for the 48-item inventory was .95. A participant's score was calculated by averaging their score across all 47 items. A higher score reflected a higher rate of creative behavior.

Procedure

After indicating their consent and verifying that their age was 18 or over, participants completed the Imaginary Companion and Childhood Questionnaire. They then completed the personality inventory questions and the creativity tasks and inventory. Questions within each of these sections were randomized to prevent any order effects. Participants then answered a brief demographics survey (see Appendix C), and were debriefed, thanked for their participation, and paid through MTurk.

Ethics

The proposed study had few ethical concerns to address. It did not involve a protected population, nor did it involve deception. The current study did not exceed minimal risk as all of the items in this study included risk or harm no greater than the everyday activities of the average individual. The questions asked were not probing or excessively personal or sensitive, and all data were kept confidential.

The only area of any concern was the small chance that questions about a person's childhood imaginary companion could have reminded the participant of painful or difficult experiences in their childhood (Myers, 1979; Nagera, 1969). There are some theories about imaginary companions, which posit that they are created when children have an especially lonely or difficult childhood, or experience negative events such as abuse or neglect (Klausen & Passman, 2006; Nagera, 1969). There are not exact numbers or percentages pertaining to how many people with imaginary companions have this kind of experience because asking people about this would likely lead to trauma, which would outweigh the knowledge that would be gained by such a study. Therefore, one could not know exactly how likely it was that a participant would have memories of negative experiences such as abuse (or emotions

related to those memories) ‘triggered’ by the questions asked about imaginary companions. However, both this study and everyday life occurrences presented similarly small chances of triggering such negative emotions or memories of childhood. To avoid any such triggering, the consent form included the fact that the survey addressed experiences of childhood, if a potential participant wanted to avoid triggering questions. Links and sources that provided access to therapy or psychological aid were also provided in the consent and debriefing forms.

Other questions were below minimal risk. All data were stored only on SurveyMonkey and a minimal number of computers for cleaning data and performing statistical analysis. All data were also kept in password-protected files and accessible only through password-protected accounts. Data were kept confidential by never requesting more personally identifying information such as the person’s name from participants.

While participants’ privacy was protected, participation in this study was also voluntary. Pay for participants recruited through MTurk was kept relatively low, \$0.75 per participant, so as not to coerce individuals’ participation. As MTurk offers a wide variety of ‘job listings’ or HITs, individuals on the website had many other opportunities to earn the same amount of money or more with their time. Participants were also able to exit the survey at any time and still receive compensation. If individuals did choose to participate in the proposed study, the benefits to them were small. Beyond the monetary reward, they could have found the opportunity to reflect on their childhood and personality attributes insightful or positive.

Beyond personal benefits to participants, the field of study and society at large stood to gain more from this study. If the results were significant, they would shed light on how our experiences with creativity and imagination in childhood may impact or influence our

personalities and creative thinking in adulthood. The results of this study can also help to assuage the concern of parents who are unsure of whether their child's imaginary companion is a blessing or a blight, by offering insight into whether the effects and correlations of these 'friends' remain constant over time, or simply fade into individual personality differences over development and adulthood. Thus, the small risks mentioned above did not outweigh these benefits.

Results

Summary

Demographics variables' (gender, age, race, ethnicity, level of education, major area, and profession) relationships with to imaginary companionhood were explored. Imaginary companionhood's relationships with personality attributes of the 'Big Five', four additional personality attributes, and three creativity measures were also examined. Variables relating to imaginary companion experiences (Number of imaginary friends, Number of personified objects, and Length of IC interaction) were examined in relation to personality and creativity variables as well. Seven theorized imaginary companion roles (originally theorized by Ball, 2003) were examined in relation to personality and creativity variables, as well as to each other. The significant relationships from these tests were then incorporated into a hypothesized Structural Equation Model, which aimed to provide a complete image of the relationships between all the previously mentioned variables.

Overall, few significant differences existed between those with and without imaginary companions, except in the personality variable of Openness to Experience. Most of the dichotomously coded IC roles showed significant differences in various personality variables.

Differences in imaginary companion experiences had significant relationships with some creativity measures, as did two IC roles. In some cases, significant differences arose based on demographics of participants, but these were likely due to low representation of Chicano, Latino, or Hispanic and non-white participants in the sample.

Demographics and imaginary companionship

While the prevalence of participants with IC's was of interest, this particular study also sought to investigate possible differences between those who had different *types* of imaginary companions, as this was little studied in past research. A descriptive analysis was conducted to determine distributions of different types of imaginary companions that participants have or had. It was shown that 37.0% of the total sample reported having no IC in childhood or presently, 9.5% had only an imaginary friend, 23.9% had only a personified object, and 29.6% had at least one imaginary friend and at least one personified object. The average length of an IC interaction was 5 years and 4 months ($SD=2$ years and 10 months, range: 21 years and 8 months). For those reporting imaginary friends, the average number of imaginary friends was 1.33 ($SD=2.73$, range: 23). For those reporting personified objects, the average number of personified objects was 2.35 ($SD=5.38$, range: 50). The median number of companions of either type was one, suggesting that while the range for number of either type of companion is wide, it was most common to have a single companion of either type.

In order to create a more specific understanding of those who have or had IC's, Chi-Square tests of independence were conducted to determine if gender, ethnicity, race,¹ level of education, major field of study, or area of employment helped predict what kind of imaginary

¹ Race was measured as a binary to allow for larger cell sizes. Race was coded as either white or non-white.

companion a participant reported having, or if they reported not having one at all. All of the predictors were insignificant, all χ^2 s < 9.04, $p > 0.143$.

In order to further examine participant variables' effects, an independent samples t-test was performed to determine if the presence of an IC in childhood was related to a participant's age. The test was significant, $t[213]=2.89$, $p=.050$, partial $\eta^2 =.018$. Those reporting IC's ($M=34.29$, $SD=11.72$) were significantly younger at the time of participation than those who did not report IC's ($M=37.84$, $SD=14.39$).

Imaginary companions and personality

A major area of investigation in this study was the effect of childhood IC's on adult personality. One-way Analyses of Variance (ANOVA) were performed to determine if there were significant differences between those with personified objects, imaginary friends, both imaginary friends and personified objects, and those without any imaginary companions.² The NEO 'Big Five' attributes of Extraversion, Openness, Agreeableness, Neuroticism, and Conscientiousness served as dependent variables. Descriptive statistics of each of the dependent variables is presented in Table 3 below. Reliability was also good for these variables, all α 's > .81.

Table 3.

Descriptive statistics of the NEO-PI-R personality attributes within the sample.

Attribute	Mean	SD	Range
Openness	3.74	3.80	3.30 (1.70-5)

² Multiple tests were carried out with personality attributes, such as the 'Big Five' as dependent variables. Scores in these attributes are related, but significance α values were not adjusted for each test to take this into account.

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Conscientiousness	3.67	0.73	3.30 (1.70-5)
Agreeableness	3.69	0.64	2.80 (2.20-5)
Extraversion	3.04	0.78	4.00 (1.00-5)
<u>Neuroticism</u>	<u>2.58</u>	<u>0.88</u>	<u>3.80 (1.00-4.80)</u>

Significant differences were only found for Openness to Experience, $F(3,237)=3.07$, $p=0.029$, partial $\eta^2=.04$. Post-hoc tests revealed that those with personified objects ($M=3.95$, $SD=0.60$) were significantly higher in Openness to Experience than those with no previous imaginary companions ($M=3.63$, $SD=0.74$), $t[144]=-2.70$, $p=.008$. Those with only imaginary friends has a mean score of 3.90 ($SD=0.68$) and those with both IF's and PO's had an average score of 3.67 ($SD=.71$).

Much of the research surrounding childhood IC's investigates their impact on children's social abilities. Because of this major focus in research, personality attributes relating to social attributes that are harder to 'pick out' of the facets of the 'Big Five' were also investigated using one-way ANOVA's. None of these tests yielded significant differences between groups. The means of these tests are presented in Table 4 below. Reliability was acceptable for these variables, all α 's > .62.

Table 4.

Descriptive statistics of additional personality attributes within the sample.

<u>Attribute</u>	<u>Mean</u>	<u>SD</u>	<u>range</u>
Social Confidence	3.04	1.00	4.00 (1.00-5)

Cooperativeness	2.79	0.79	3.80 (1.00-4.80)
Sociability	3.09	0.92	4.00 (1.00-5)
Empathy	3.39	0.77	3.80 (1.20-5)

Imaginary companion experiences and personality

Further tests were conducted in order to investigate differences in IC experiences and how they affected all of the previously mentioned personality attributes. Bivariate correlations were run between each of the NEO ‘Big Five’ attributes and the variables of Number of POs, Number of IFs, and Length of IC interaction. There were no significant relationships between any of the ‘Big Five’ attributes and any three of the variables relating to IC experience.

Personality attributes outside of the “Big Five” were also analyzed for their relationships to the same predictor variables relating to IC experiences. None of the personality variables were significantly correlated with the variables relating to IC experience: Number of PO’s, Number of IF’s, or Length of IC Interaction.

Participants reporting past and/or current IC’s answered questions relating to what roles their IC’s fulfilled. Seven theorized roles of imaginary companions (originally proposed by Ball, 2003) were given as options, with participants instructed to select as many of the roles as they felt applied to their IC experience. Of those who selected at least one role, the mean number of roles was 2.16 (range=6, $SD=1.17$). Independent samples t-tests were conducted using the dichotomously coded variables corresponding to the seven roles as predictors.³ The seven roles were each examined in their relationship with the nine personality

³ While the imbalanced number of participants in each comparison group for some of these roles was concerning, all of the tests had appropriate values for Levene’s Test of Equality of Error Variances.

attributes mentioned above: Openness, Agreeableness, Conscientiousness, Neuroticism, Extraversion, Empathy, Sociability, Cooperativeness, and Social Confidence.

Fantasy. Fifty-six percent of participants said their IC provided a vehicle of escape or fantasy. Individuals whose companions filled these roles ($M=3.92$, $SD=0.67$) were higher in Openness than those with companions not filling this role ($M=3.66$, $SD=0.66$), $t[139]=5.40$, $p=.022$, partial $\eta^2=.037$. All other personality attributes were not significantly different for those with ‘fantasy’ role companions, all t 's <0.60 , *n.s.*

Emotional Expression. Almost a quarter of participants (24.1%) said their IC allowed them to express emotions they otherwise could not have. Those whose IC's fulfilled this role did not differ significantly from those without IC's in these roles in measurements of any of the personality attributes, all t 's <2.02 , *n.s.*

Alter Ego. Imaginary companions in the ‘alter ego’ role have more skills than their creators or act as a scapegoat. This role existed in 7.1% of participants' IC's. Contrary to research hypotheses, participants who had IC's fulfilling an Alter Ego role ($M=2.70$, $SD=1.01$) were lower in Extraversion than individuals without IC's fulfilling this role ($M=3.19$, $SD=.74$) at a rate that was significant, $t[139]=3.90$, $p=.050$, partial $\eta^2=.027$. These participants also scored significantly lower in Sociability ($M=2.55$, $SD=1.04$) than those without IC's in alter ego roles ($M=3.17$, $SD=.90$), $t[140]=4.29$, $p=.040$, partial $\eta^2=.030$. All other personality attributes were not significantly different for those with or without ‘alter ego’ role companions, all t 's <1.64 , *n.s.*

Unconditional Regard. Twenty-seven percent of participants said their IC provided unconditional love, nurturance or empathy. Significant differences between those with and without this role in their ICs are reported in Table 5 below. All other personality attributes

were not significantly different for those with ‘unconditional regard’ role companions, all t 's < 2.77, *n.s.*

Table 5.

Significant differences between those with and without ICs in Unconditional Regard role.

Personality attribute	w/UR role M (SD)	w/out UR role M (SD)	t [139]	η^2
Openness	4.04 ($SD=.70$)	3.72 ($SD=.65$)	6.97**	.048
Neuroticism	2.88, ($SD=.94$)	2.48 ($SD=.78$)	6.39*	.044
Empathy	3.73 ($SD=.75$)	3.38 ($SD=.75$)	6.37*	.044

*= p <.05, **= p <.01

Boss or Parent. Imaginary companions in the boss/ parent role provide someone to boss, teach, or control. This role was recognized in only 2.1% of participants' IC's. Significant differences between those with and without the Boss/Parent roles in their ICs are presented in Table 6 below. All other personality attributes were not significantly different for those with ‘boss/parent’ role companions, all t 's < 3.50, *n.s.*

Table 6.

Significant differences between those with and without Boss/Parent role in their ICs.

Personality attribute	w/UR role M (SD)	w/out UR role M (SD)	t [139]	η^2
Openness	4.60 ($SD=2.65$)	3.79 ($SD=.67$)	4.35**	.030
Extraversion	4.60 ($SD=.20$)	3.12 ($SD=.74$)	11.84**	.078

Social Confidence	4.87 (<i>SD</i> =.23)	3.11 (<i>SD</i> =.99)	9.40**	.063
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*= $p < .05$, **= $p < .01$

Company. Imaginary companions in the ‘company’ role alleviate loneliness or are a playmate for their creators. This role was filled in 83.7% of participants. Individuals with IC’s in this role ($M=3.71$, $SD=.75$) were found to be higher in Conscientiousness than those with IC’s not fulfilling this role ($M=3.35$, $SD=.65$), $t[139]=4.51$, $p=.035$, partial $\eta^2=.031$.

Participants with identifying this role in their IC’s ($M=3.74$, $SD=.66$) also scored significantly higher in measures of Agreeableness than those without this role fulfilled by their IC’s ($M=3.38$, $SD=.55$), $t[139]=6.10$, $p=.015$, partial $\eta^2=.042$. All other personality attributes were not significantly different for those with ‘company’ role companions, all t ’s < 2.23 , *n.s.*

Because the company role aligns very closely with the reasoning behind why many oldest or only children create IC’s, a Chi-square test of independence test was conducted to see if oldest or only children were more likely to have IC’s in the ‘company’ role. The results were insignificant, $\chi^2(1, N=125)=.04$, $p=.848$.

Guidance. Imaginary companions who provide advice, protection, or help working through problems are fulfilling the ‘guidance’ role. IC’s fulfilled this role in 17.0% of participants. Contrary to research hypotheses, these individuals were lower in Agreeableness ($M=3.43$, $SD=.61$) than those who did not identify the role of Guidance in their IC’s ($M=3.73$, $SD=.66$), $t[139]=4.30$, $p=.040$, partial $\eta^2=.030$. All other personality attributes were not significantly different for those with ‘guidance’ role companions, all t ’s < 3.01 , *n.s.*

Relationships between IC roles. Chi-square tests of independence were performed between all seven IC roles proposed by Ball (2003) to determine if a relationship existed between any of the roles. Three relationships were significant. The role of ‘guidance’ was

significantly related the role of ‘unconditional regard’, $\chi^2(1, N=142)=7.36, p=.007$, partial $\eta^2=.228$, as well as with the role of ‘alter ego’, $\chi^2(1, N=142)=8.39, p=.004$, partial $\eta^2=.243$. The roles of ‘fantasy’ and ‘emotional expression’ were also significantly related to each other, $\chi^2(1, N=142)=4.70, p=.0300$, partial $\eta^2=.182$.

Effect of gender on IC roles

Chi-Square tests of independence were performed for each of the roles to determine if gender was a significant predictor of imaginary companion roles. None of these tests yielded significant results. Chi-Square tests of independence also determined that all seven IC roles were distributed equally amongst those with IF’s, PO’s or both types of imaginary companion.

Imaginary companions and creativity

Three creativity measures were used: Divergent Thinking, (DT), Convergent Thinking (CT) and Creative Behavior (CB). Descriptive statistics for each of the creativity measures is presented in Table 7 below. Reliability was also good for these measures, Cronbach’s α .90-.95.

Table 7.

Descriptive statistics of three creativity measures within the sample.

<u>Measure</u>	<u>Mean</u>	<u>SD</u>	<u>range</u>
Divergent Thinking (DUT)	5.16	3.84	20.09 (0-20.09)
Convergent Thinking (RAT)	6.61	6.17	24 (0-24)

Creative Behavior (CBI)	1.98	0.79	4.40 (1.00-5)
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Calculation of Divergent Thinking scores. The Divergent Uses Task (DUT) was scored for number of valid answers as well as originality of each of those answers. For each answer that was not a traditional or intended use of the listed item (such as ‘reading’ for a book), one point was awarded. The average amount of points awarded for this portion of the score was 1.96 ($SD=1.96$, range: 0-5.60).

For the originality score, each type of divergent use within an item was given a number (e.g., ‘burning’ or ‘kindling’ was use #1 for book, ‘doorstop’ was use #2 for book). These numbers did not correspond to how common that use was, but were just used to sort the uses and assign similar/identical answers to the same use (‘kindling’ and ‘burning’ are two unique answers, but touch on the same idea or use). The total number of times a use was listed across all answers from all participants was recorded as the frequency for that use. These frequencies were run in a descriptive analysis, and the mean value/frequency from this analysis was awarded a value of 3. Frequencies one standard deviation above the mean were given 2 points, two standard deviations were given 1 point, and anything three standard deviations above the mean frequency was awarded zero points for originality (this would have been an excessively common answer). Because of the positive skew (many less common/more original uses for an item), it was not possible to use this rule of standard deviations to discern the distinctions between 4, 5, and 6 points. Answers with frequencies of 1 (unusual uses that no one else thought of, such as ‘breaking cashews’ for a book), were all awarded 6 points. Answers with frequencies of 2 were awarded 5 points and then the median between 2

and the mean was used as the cutoff for what answers were given 4 points. Over the five items, the mean score for the Originality sub-score was 3.18 ($SD= 2.63$, range: 0-14.49).

These two sub-scores were added together to create the total and final DUT score to measure Divergent Thinking. This composite score included measurement of a participant's ability to produce many divergent answers, and a measurement of how original those answers were within the sample. The mean score is presented in Table 7 above. The measure was positively skewed ($+ .98$, $SE=.157$), likely due to the previously mentioned positive skew of the Originality sub-score, which is partially due to the high number of completely original answers given by participants in this sample.

Participant demographics and creativity. To investigate how creativity varied with participant demographic variables, a set of multiple regressions was run with race, ethnicity, level of education and gender as independent variables and each of the three types of creativity as dependent variables. The model was not significant for Creative Behavior, and none of the coefficients added significantly to the model. For Divergent Thinking, the overall model was not significant $F(4,204)=1.78$, $p=.134$, $R^2=.034$. However, race (coded as a white/non-white binary variable) added significantly to the model, $t[204]=2.02$, $p=.045$, $\beta=1.39$. For Convergent Thinking, the overall model was significant, $F(4,204) =4.50$, $p=.002$, $R^2=.081$. Ethnicity was a significant predictor, $t[204]=2.30$, $p=.023$, $\beta=.874$. However, this result was likely influenced by the small portion (7.6%) of the sample identifying as Latino, Chicano or Hispanic, and would likely not be significant in a sample with a more representative or balanced sample. Even when compressing the one participant with the lowest level of education (grammar school) into the next lowest level (high school) creating a

'high school or less' group, Level of education was still a significant predictor for Convergent Thinking, $t[204]=2.13$, $p=.034$, $\beta=.832$.

Imaginary companion experiences and creativity. In order to explore the effects of imaginary companions on creativity, one-way ANOVA tests were performed to determine the effect of type of IC on Divergent Thinking and Convergent Thinking. The results were not significant for either, $F(3, 237)=0.88$, $p=0.455$ and $F(3, 239)=1.48$, $p=0.220$, respectively. However, the one-way ANOVA performed to determine the effect of type of IC on Creative Behavior was significant, $F(3, 212)=6.68$, $p < .001$, partial $\eta^2=.086$. Post-hoc tests determined that those with both IF's and PO's ($M=2.28$, $SD=1.02$) reported significantly more creative behaviors or endeavors than those who reported no IC's at all ($M=1.71$, $SD=0.59$). Participants with only PO's had an average score of 2.02 ($SD=0.66$) and those with only IF's had an average score of 1.97 ($SD=0.63$).

In order to further investigate the differences in IC experiences in childhood, bivariate correlations were run with each of the creativity types (DT, CT, and CB) to assess their relationships with the variables of number of PO's, number of IF's, and length of IC interaction. Length of IC interaction was not *significantly* correlated to any of the three creativity measures, but had a negative direction of correlation with DT and CT, and a positive direction of correlation with CB. Number of IF's was also negatively correlated with DT and CT, but positively correlated with CB, with statistics presented in Table 8 below. Number of PO's was only significantly correlated with Creative Behavior, $r(126)=0.21$, $p=.021$, such that for every additional personified object a person reported, their Creative Behavior score would be expected to increase by 0.032 points.

Table 8.

Correlation statistics for Number of imaginary friends and three creativity measures.

Measure	<i>r</i>	β
Divergent Thinking	-.203*	-.350
Convergent Thinking	-.195*	-.570
Creative Behavior	.193*	.035

Note: *= $p < .05$

Imaginary companion roles and creativity. In order to further investigate the effect of different roles that imaginary companions can play for individuals, one-way ANOVA's were performed on each of the seven previously discussed IC roles and each of the three types of creativity. None of the results were significant for Divergent Thinking. For Convergent Thinking, the Boss/ Parent role was a significant independent variable, $F(1, 141)=5.58$, $p=.020$, partial $\eta^2=.038$, such that those who identified their IC's as fulfilling the boss role ($M=14.33$, $SD=4.16$) scored significantly higher in Convergent Thinking than those who did not identify this role in their IC's ($M = 6.04$, $SD= 6.03$). The Company role was also a significant predictor of Creative Behavior, $F(1, 124)=7.58$, $p=.007$, partial $\eta^2=.058$, such that those with IC's fulfilling the company role ($M=2.06$, $SD=.75$) scored significantly lower than those who did not have IC's fulfilling the company role ($M=2.63$, $SD=1.24$).

A full model of imaginary companionship, personality, and creativity

Before constructing a full model of the relationships between imaginary companions, personality attributes and creativity, tests were run to confirm that significant correlations existed between each of the Creativity variables and each of the personality attributes

discussed previously. The correlations from those analyses are present below in Table 9. The correlations between personality attributes and creativity measures that were significant were incorporated into the hypothesized model.

Table 9.

Bivariate Correlations of Creativity and Personality Attributes.

Attribute	1	2	3	4	5	6	7	8	9	10	11	12
1. Social Confidence												
2. Cooperativeness	-.44**											
3. Sociability	.62**	-.14*										
4. Empathy	.24**	.09	.57**									
5. Agreeableness	.32**	-.14*	.40**	.28**								
6. Conscientiousness	.34**	-.22**	.22**	.15*	.43**							
7. Extraversion	.85**	-.39**	.67**	.33**	.36**	.31**						
8. Openness	.24**	-.13*	.20**	.28**	.45**	.28**	.32**					
9. Neuroticism	-.50**	.50**	-.40**	-.07	-.61**	-.57**	-.49**	-.30**				
10. Divergent Thinking	-.07	-.09	-.07	-.01	.15*	.05	-.08	.22**	.07			
11. Convergent Thinking	-.02	-.05	-.05	.02	.16*	.10	-.03	.25**	-.10	.43**		
12. Creative Behavior	.11	-.02	-.05	.01	-.06	-.11	.12	.11	.07	-.11	-.04	

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Based on the results already shown, a structural equation model was constructed to fully represent the significant relationships between types of imaginary companions, personality attributes, and creativity. The significant results found already were used as a

hypothesized model (see Figure 1). While previous tests could only determine correlations—not causations of effects—causal pathways were used in the model. The causal nature of these relationships is theoretical, and could be confirmed through longitudinal studies. The original fit of the model was very poor, $\chi^2(85) = 642.35, p < .001, CFI = .513, RMSEA = .165, p_{close} < .001$.

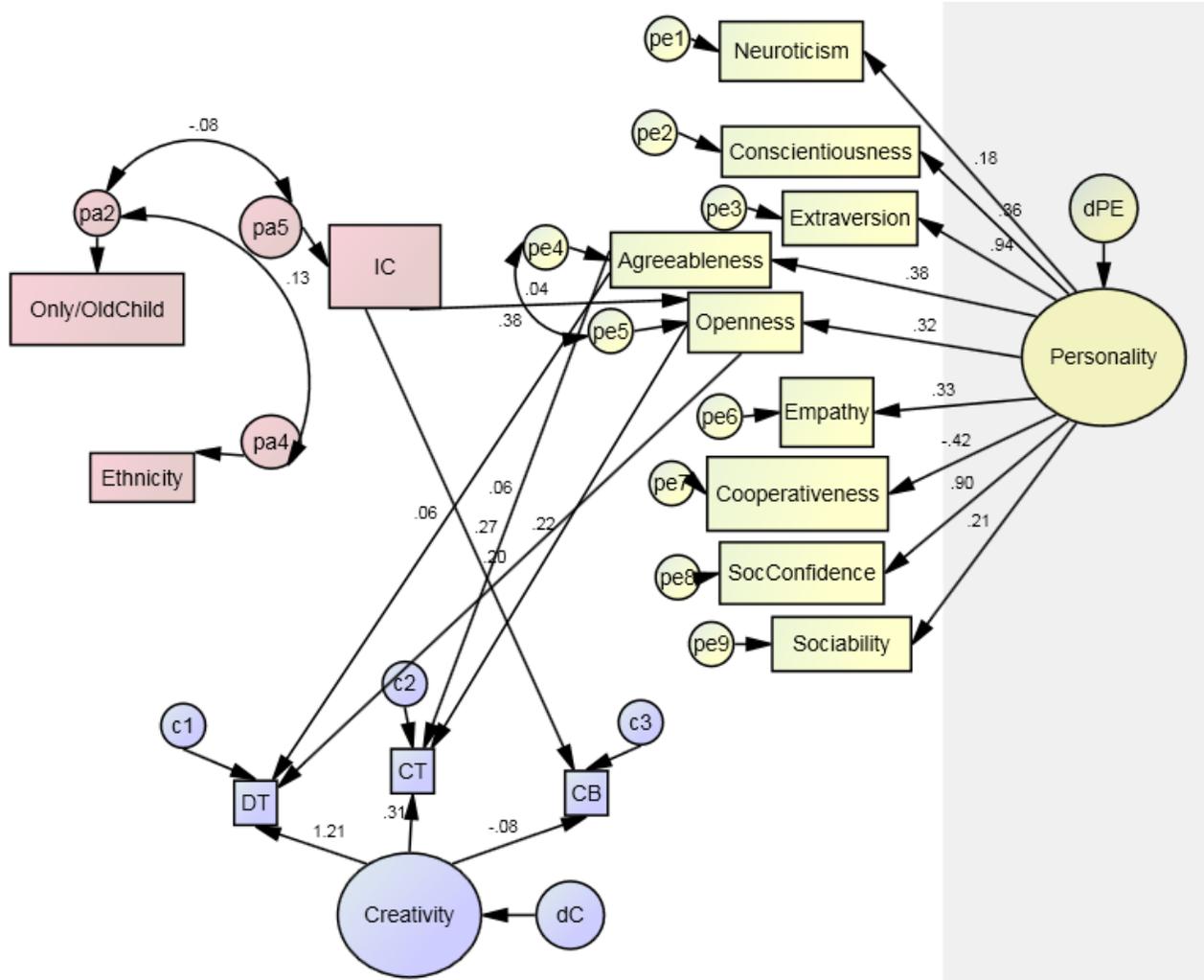


Figure 1. Hypothesized structural model illustrating the theoretical relationships between imaginary companion interaction and various personality attributes and creativity measures.

All insignificant pathways were removed from the model, improving the model, but leaving it a poor fit nonetheless, $\chi^2(55) = 582.76, p < .001, CFI = .487, RMSEA = .199$,

$p_{close} < .001$. This included the deletion of both the ‘Personality’ and ‘Creativity’ latent variables, as some measured factors loaded negatively onto them, and loading values were uneven amongst the variables (including an illegal loading value of 1.21 between Divergent Thinking and Creativity). All theoretically sound relationships suggested by Modification Indices were added to the model. These were all correlations between various personality attributes in the model. The model of the fit (see Figure 2) was improved but was still not a good fit, $\chi^2(53) = 308.11, p < .001, CFI = .752, RMSEA = .141, p_{close} < .001$.

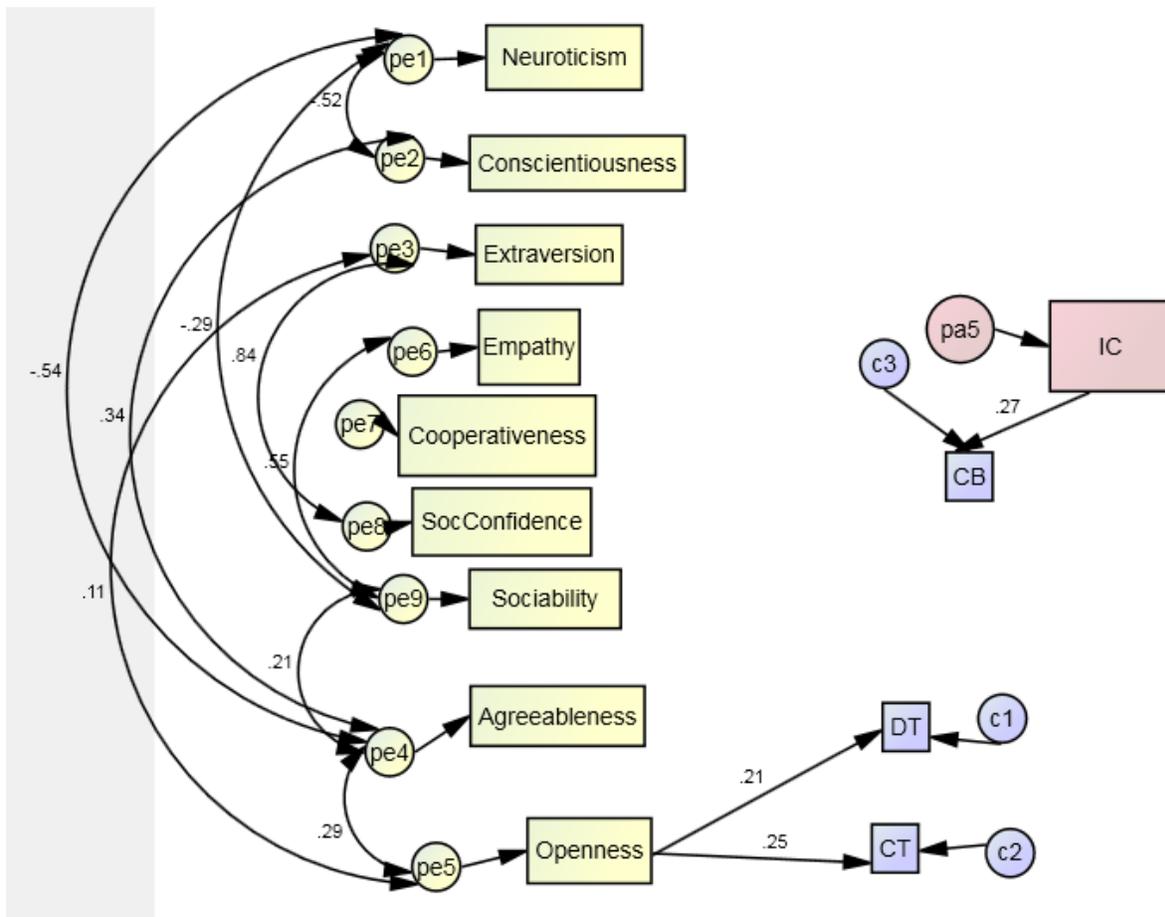


Figure 2. Improved structural model demonstrating the relationships between imaginary companion interaction and various personality attributes and creativity.

Contrary to research hypotheses that all three sub-measures of creativity are influenced by imaginary companionship in similar ways, the type of IC a participant had (none, IF, PO, or both PO and IF) only related to active demonstration of and participation in creative behaviors, but not creative thought or ability. Many of the significant relationships in this model are correlations between various personality attributes, with only Openness to Experience directly relating to Convergent and Divergent Thinking. None of the personality attributes had significant relationships with the variables relating to imaginary companions.

Discussion

Participant demographics and differences

Overall, very few significant differences in this study were driven by participant demographics. Different types of imaginary companions were no more or less likely amongst different genders, ages, or areas of study or employment. Significant differences arose when comparing types of IC's across different races, but this significance was likely due more to the low representation of some racial groups (American Indian/ Alaska Native, multi-racial, and 'other' groups were especially low) in this particular sample. Similar significant differences between ethnicities in Convergent Thinking are likely related to lower representation of Hispanic, Chicano, and Latino individuals within this sample as well. Future studies should make an effort to recruit a more racially and ethnically diverse sample to assure that differences found between these groups are related to the actual experiences and differences, and not simply a statistical consequence of poor representation. Level of education was a significant predictor of convergent thinking. There is no previous literature that helps to explain this result, but it is possible that the format of RAT, the convergent

thinking measure, was more familiar to those with more years of education, or some other aspect of formal education unrelated to creativity was also affecting (covarying) scores on the RAT.

Those who reported having some kind of imaginary companion were significantly younger than those without imaginary companions. This difference could be attributed to the fact that those who are younger must look back a shorter distance in their memory to the average age that they would have an IC interaction. A younger individual who interacted with an IC is more likely to remember that interaction (and do so accurately) than an older individual. Younger individuals' stronger and more recent memories of any ICs may have also made them more likely to self-select into an MTurk job that was specifically about imaginary companions.

Personality differences

The only difference in personality attributes was found for openness. Those with only personified objects scored higher than those with no imaginary companions of any kind. Curiously, those with both types of imaginary companions had the second-lowest scores. This result contradicts common sense that having more or a variety of imaginary companions should relate to more or higher Openness.

In general it is possible that creating a personified object requires a higher level of openness and fantasy, as a child is creating a personality, thoughts, and actions for a completely inanimate object. This is a vary fantastical construct compared to interactions with an invisible person, as the way in which people behave and interact is more or less already well known to young children. Interactions with imaginary friends may have a certain aspect

of reality to them that personified objects do not have, and are more limited to the realities of what humans are known to be capable of. It is much more realistic (less fantastical) to be friends with an invisible person than a personified tiger stuffed animal or superhero toy. This theory can only extend so far though, as even imaginary friends can be beings besides humans. Clearly, this relationship requires more investigation. It would be useful to examine which facets of Openness to Experience vary significantly across all four types of imaginary friend experiences (none, IF, PO and PO+IF).

Creativity

Number of personified objects was positively correlated to creative behavior, indicating that more creation and interaction with personified objects in childhood relates to how often in adulthood one takes part in creative activities and endeavors. As previously seen, the presence of childhood PO's is related to having an active imagination and fantasy, as well as valuing aesthetic, variety, and intellectual curiosity (facets of Openness) in adulthood. Number of imaginary friends was also positively correlated with creative behavior, suggesting that both types of imaginary companions relate to higher levels of adult creative behavior, similar to Kidd, Roger, & Roger's (2010) finding that adults with past IC's are more involved in an imaginative life. However, number of imaginary friends was also negatively correlated with both measures of creative thinking. This could indicate that imaginary friends require less creativity to create and interact with, but at the very least it suggests that those who create imaginary companions are not more creative in adulthood than individuals who did not have imaginary companions in childhood. Type of imaginary companion experience had a significant relationship to creative behavior score (those with both types of IC's had the

highest scores, followed by those with personified objects only, then those with imaginary friends only), demonstrating that imaginary companions are better predictors of creative activity in adulthood, but not of actual creative *ability* in adulthood.

Differences between imaginary companion roles

Interpretation of the significant results associated with each imaginary companion role is complicated by one detail. While it is possible to see how many participants identified each role within their own IC experience, and how many roles the average person identified in that IC experience, it is very difficult to analyze the differences that arise in each combination of roles as so many possible combinations exist, and so few participants would fall in most of those combinations. However, comparing differences found between those who did and did not identify each of the roles within their IC experience still provides ample results to discuss.

Fantasy and Emotional Expression. Those with imaginary companions that served as vehicles of escape or fueled imagination scored higher in Openness. This is not surprising, as “active imagination or fantasy” is one of the facets of the larger Openness attribute. The Fantasy role was also positively correlated with the Emotional Expression role- IC’s that allow their creators to express emotions they would not otherwise. Those with IC’s fulfilling the latter role did not differ significantly on any personality or creativity measures from those with IC’s not fulfilling the role.

Boss or parent role. A very small percentage of participants reported this role in their imaginary companions. Those who did scored higher in in openness, extraversion, social confidence, as well as convergent thinking. Imaginary companions in this role provide someone for the individual to teach or control. This may explain higher scores in extraversion

and social confidence: an imaginary companion that serves as a student or less competent being may allow a child more opportunities to build confidence in social situations, and eventually lead them to become more outgoing and extraverted in adulthood. Without assessing specific facets of openness and extraversion, it is hard to know exactly which aspects of each larger personality attribute were significantly higher in these particular individuals.

These individuals also scored higher in convergent thinking. Perhaps a relationship between child and IC that emphasizes nurturing and teaches allows a child to better organize concepts and ideas and present them to a less knowledgeable being – the imaginary companion. However, this relation is theoretical, and like the reasons behind personality differences, is hard to confidently explain with any one theory of imaginary companionship. These creativity and personality differences would be important focuses for any future studies investigating roles of imaginary companions. If possible, it would be beneficial to also recruit more individuals who identify this role within their IC experience, and verify whether these results are consistent in a larger and more equally split sample.

Company role. The role of alleviating loneliness is very central to many understandings of how and why imaginary companions are created by children, so it is not surprising that this role was the most common one reported by participants. This explanation is especially common in literature discussing why imaginary companions are more common amongst oldest children or only children (Ames & Learned, 1946; Manosevitz et.al, 1973, as cited by Seiffge- Krenke, 1997; Svendsen, 1935). However, this role was not significantly more common in only or oldest children who reported having IC's. This contradicts the interpretation that IC's mostly come about to counteract the loneliness or lack of playmates

that is more common in only and oldest children (Nagera, 1969). Individuals with imaginary companions in this role scored higher in Conscientiousness, Agreeableness, and Creative Behavior. Higher scores in Creative Behavior, but not in Divergent or Convergent Thinking, may indicate that the action of creating an IC does not indicate a greater ability to think creativity, but propensity to engage in more creative behaviors in adulthood, similar to the creative solution of loneliness that an IC represents.

The combination of higher Agreeableness and Conscientious scores suggests that those who identified this role in their past IC's are dutiful, self-disciplined, and altruistic in adulthood. These attributes have logical relations to a child who may have grown up either without many real companions, or desired more. An individual without much company would become self-disciplined from structuring much of their own play, and act in pro-social ways when given opportunities to engage with others.

Alter ego role. An imaginary companion who has skills or abilities beyond those of its creator fills the Alter Ego role. Participants who identified this role in their IC's scored lower in Extraversion and Sociability, two related concepts. Lower Extraversion in adulthood suggests a less assertive child who may have created an imaginary companion with greater skills as well as a way to socialize less with others but still gain confidence or competence by interacting with said IC. An individual with an IC in this role may have created it in childhood because they were more withdrawn and less likely to find socialization or friends through physical interactions, and sought them instead in the fantasy and pretend. These differences would have carried over into adulthood, uninhibited or unresolved by interaction with an imaginary companion.

Guidance role. Those who identified the 'Guidance' role in their imaginary companions were also more likely to have experienced IC's who also acted as alter-egos as well. This suggests an IC who may have knowledge or abilities beyond those of the child who created it, and who uses these abilities to provide counsel to the child. Individuals with IC's fulfilling this role in the past scored lower in Agreeableness, which is made up of the facets of Trust, Compliance, Altruism, Straightforwardness, Modesty, and Tender-mindedness. It is not immediately clear what facet or facets of the larger attribute of Agreeableness may be driving this significant difference, and that may be an area for future investigation in a study that allows for more thorough investigation of personality differences amongst individuals whose imaginary companions fulfilled different roles.

Unconditional Regard role. The Unconditional Regard role was positively correlated with Guidance. This indicates that those who find nurturance in their IC's are more likely to also have companions who protect or provide counsel as well. This suggests a unique relationship between child and IC in which the IC provides more leadership or counsel to the child than the child would to an IC in the Boss/Parent role or similar dynamic. These participants scored higher in Neuroticism, which may indicate that the issues that lead a child to need guidance and nurturance from an IC in childhood do not completely resolve themselves in adulthood, and lead to more neurotic tendencies. Higher scores in Empathy suggest that those who seek empathy within their IC's in childhood were either more empathetic individuals in childhood, and maintained that heightened attribute, or that some interaction with their IC lead to an increased ability or willingness to identify and empathize with others in adulthood. Higher scores in Openness could relate to stronger experiencing of emotions (one of the facets of Openness), or suggest that the dynamic created between

children and their IC's that fill this role is related to a more active fantasy or imagination into adulthood.

Overall, different IC roles were correlated with different combinations of creativity measures and personality attributes. These results indicate that there is much more to explore about why children create IC's, what benefits those IC's in specific roles may have for children, and how these interactions may impact personality and creativity. Larger samples of individuals with past IC's in some of the less common roles in the future would allow for confirmation of the results found in this study.

SEM model

The structural equation model created to depict the overall relationships between imaginary companions, personality, and creativity was not significant. While the relationship between imaginary companionship and creative behavior was maintained in the final model, the majority of significant relationships were simply correlations between different personality attributes, with two connections to creative thinking variables. This model's weaknesses demonstrate that there is much more to the development of adult personality and creativity than simply whether an individual had an imaginary companion or not. Importantly, it also illustrates the many results that collectively suggest that imaginary companionship likely does not have an effect on how creative a person is, but may have a great deal to do with how much an individual chooses to engage in creative behaviors and activities throughout his or her life.

Limitations

Despite the significant results that were found, this study does have its limitations. This study involves retrospective reports of childhood memories, which are not collectively as accurate as children's reports of their current imaginary companions (Taylor, 1999). While adults are generally more willing and able to sustain their attention through full interviews or questionnaires, they are basing any answers about imaginary companions on recollections from 10 years ago, at a minimum. Previous research has demonstrated that adults' retrospective reports are not as detailed as those of children currently maintaining imaginary companions (Ball, 2003). The difference in rates of children with imaginary companions in childhood studies and adults who report having childhood imaginary companions in retrospective studies suggests that, generally, a portion of adults who had imaginary companions do not remember them, and existing memories may not be entirely accurate. It is possible that there is an important difference in how adults who remember their imaginary companions were affected by them, and so this study and any examining retrospective accounts of imaginary companions may not capture the full experience of people with childhood imaginary companions, but rather a particular subset of individuals.

This study was also conducted online, using questionnaire about imaginary companions experiences where an in-person interview would likely be utilized in childhood studies. These in-person interviews allow a researcher the opportunity to clarify odd answers given by participants, and verify details of imaginary companions with parents and guardians also present at the time. With adult on-line data, the process of confirming the veracity of participants' reports or claims would be time-intensive and a possible violation of confidentiality. Difficulty verifying and validating information in retrospective reports leaves

a certain degree of uncertainty in the answers participants provided about their imaginary companion experiences.

Using an online format also prevented clarification of task directions or formats. Especially in creativity measures, some participants' answer patterns suggested that directions given were unclear or misinterpreted. Had the study been run in person, clarification or additional example questions could have been provided, ensuring that the measures were assessing a participant's creative thinking skills, not just a participant's understanding of the task.

Impact and future directions

In spite of these concerns, the proposed study adds to the limited body of research on adults with childhood imaginary companion experiences. So much of the research on imaginary companions focuses on the differences and deficits present in childhood, but so few of these effects are examined past the disappearance of the imaginary companion. Obviously, research on childhood effects provides important information about how those children with IC's may differ from their peers, allowing us a better understanding of the mechanism of imaginary companionship. But childhood is also an important period that can impact an individual's development significantly. If we are going to be concerned with how children with IC's differ from their peers in childhood, we must also keep in mind how these differences persist or dissipate in adulthood. Few of these differences found in childhood were present in this adult sample. Overall, those with past IC's were not higher in neuroticism, or any other concerning personality attributes. In fact, they were not higher in any, save openness. Positive differences, such as better theory of mind in childhood (Taylor & Carlson,

1997), did not relate to higher empathy in adults in this study. Over time, those with past IC's do not benefit from 'extra practice' or a 'head start' in developing into empathetic adults. Most of these significant differences in adulthood are only present when examining specific roles that IC's fulfilled in childhood, highlighting the importance of investing these roles further in future studies.

The results of this study offer a more detailed picture of adulthood for those with past imaginary companions, and how the differences demonstrated in childhood imaginary companion literature do and do not continue after a child's interaction with their companion ends. This study examined if childhood experiences such as imaginary companions truly make a difference in an individual's personality and creative ability. For parents who may worry about just what their child's invisible companion really means, or how it will affect their 'normalcy' in the future, this study and its results offer reassurance that generally, there are no significant and general relationships between imaginary companions and less desirable adult attributes, such as high neuroticism or low social confidence. Of course, these results are still based on less reliable retrospective reports.

The most accurate, but least realistic method for gathering adult developmental data would be to interview children about the presence of imaginary companions and measure the abilities in question, then simply follow these individuals to adulthood and see if the differences in whatever ability had been maintained or grown. Being able to assess personality and other abilities such as creativity both while a child was still interacting with their companion, as well as in the years after, would create a more accurate model of how personality and creativity are impacted by imaginary companions both in childhood, as well as if those changes dissipate or persist after an imaginary companion has left a child's life.

Unfortunately, almost no researcher has the 10 to 20 years necessary to wait for a participant to grow up.

A more reasonable alternative is using children already studied in previous IC research - children whose experiences with their imaginary companions have been well-documented in past interviews and lab visits, and whose abilities in certain areas have already been tested. Finding these children - now adults- and comparing their performance on tasks measuring the same skills or concepts but in adulthood also would contribute to answering questions about how these differences found in children with IC's change over time. This removes the 10-20 years of waiting time required if a completely new cohort of individuals with ICs was recruited for a longitudinal study.

While this study was not longitudinal, the results expose many differences in what was previously considered a very uniform 'imaginary companion experience'. Differences in scores of both personality and creativity measures across all but one of the seven theorized imaginary companion roles in this study suggests that the experience of having an imaginary companion is far less uniform in its relation to personality and creativity as previously thought. Far from it, almost every imaginary companion role is associated with unique combinations of differences in personality. This suggests that the reasons for creating an imaginary companion vary greatly. These motivations for creation relate to individual differences more than the simple act of creation. These differences in personality, whether pre-existing in individuals or dependent on these individuals' creation of imaginary companions, do exist in adulthood. Future studies must do more to differentiate amongst these roles, as well as to understand how different combinations of roles may influence the outcome of individuals who possess imaginary companions in these roles.

While differences in personality attributes were found between individuals based on the types of roles their imaginary companion played in the past, very few significant differences were found between those who did and did not have imaginary companions in childhood. Those who did have past imaginary companions were also more active in creative activities or hobbies. While sometimes viewed as the mark of a lonely or socially struggling child, children with imaginary companions on average grow up and become non-neurotic, creatively involved adults with social awareness and the ability to connect and empathize with others. Far from having deficits, those with past imaginary companions seem to benefit slightly from them – they are more open to new ideas and experiences, and participate in a greater amount of creative activities in adulthood.

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Appendix A

Imaginary Companion and Childhood Questionnaire

A consent page preceded these questions for all participants.

Page 1:

1. An imaginary friend is a companion or being that does not have a physical basis and is invented by an individual. Often this individual will interact with the imaginary friend. Did you ever have an imaginary friend?

- Yes, earlier in my life
- Yes, and I still do
- No, I do not remember anything like this

2. A personified object is an item, often a toy that is given a personality or characteristics beyond those of the physical object on which the personification is based. A good example of a personified object would be Hobbes the tiger in *Calvin and Hobbes*, though not all personified objects are based on toys. Did you ever have a personified object?

- Yes, earlier in my life
- Yes, and I still do
- No, I do not remember anything like this

* Regardless of your responses to these questions, please note that you are still eligible for this study.

Page 2:

* Please skip to the next page if you responded 'no' to both questions on the last page *

“Imaginary companion” is a term used in the questions below, and includes both imaginary friends and personified objects. Therefore, these questions apply to people who had/have either an imaginary friends or a personified object, or both!

1. When did your imaginary companion first appear? Please give your best estimate of your age in years and months.

2. What is your earliest memory with this companion?

3. How often did you interact with your imaginary companion?

4. Which of the following roles do you believe your imaginary companion fulfilled for you? (check all that apply)

- a. Company- as companion, playmate, alleviates loneliness
- b. Unconditional Regard- provides unconditional love, nurturance empathy

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- c. Guidance- provides advice, works through problems, protects
- d. Boss/ Parent- provides someone to boss, parent, teach, control
- e. Alter Ego- is or does things you couldn't, acts as scapegoat
- f. Fantasy- serves as a vehicle for escape or fantasy, fuels imagination
- g. Emotional Expression- allowed you to express emotions you otherwise can't, or expressed them for you

5. If you do not still have your imaginary companion, when is the latest you remember engaging with it? How old were you?

6. How many total imaginary companions did you have?

Imaginary friend: (fill # in box)

personified object: (fill # in box)

Appendix B
Divergent Uses Task

Instructions: In each of the following questions, you will be provided with an everyday item. List as many as six possible uses for each item. Please only spend 1 minute on each item, and do not go back to previous items once you have finished listing uses. It is NOT necessary to list six uses, so please do not linger on an item if you are having trouble thinking of uses.

(all questions are free response with six slots)

1. pencil
2. paper clip
3. chair
4. book
5. cotton ball

Appendix C
Demographics Survey

1. With what gender do you identify?
(fill in box)

2. Are you...

- an only child or the oldest child
- a middle child or the youngest child

3. What is the highest level of education that you have attained?

- grammar school
- high school or equivalent
- vocational/ technical school
- some college
- bachelor's degree
- master's, professional, doctoral, or related degree (PhD, MD, JD, etc.)

4. If you do have a higher education degree, what major/field(s) did you study? If you do not have at least a bachelor degree, please write "does not apply" (free response)

5. If you are currently working full or part-time, in what field are you currently working? (free response)

6. what is your age? (free response)

7. Please select the ethnicity with which you identify:

- Hispanic, Chicano or Latino
- Not Hispanic, Chicano or Latino

8. Please select the race with which you identify:

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- Multi racial
- Other (please specify in provided box):

9. Any comments or feedback about the study?
(free response box)