“Playing by the Book”: Determinants of Children’s preference for Replicating and Originating Play
Abstract

Play is children’s most important daily behavior and when children play, they do so in multiple ways. With two studies, this paper explores how children perceive a continuum of two play types, namely replicating play (in which models, guidelines and examples are used to reach an intended result) and originating play (in which children create something from the mind, think freely about how they will play, are less restricted by given models etc.). Study 1 \((N = 56, M_{\text{age}} = 9)\) quantitatively shows that both play types occur and tests if children also describe the play types as we define them. Results show that children who play originating (vs. replicating) believe they follow less (vs. more) rules and do their own thing more (vs. less), which verifies the definitions of both types of play. Study 2 includes 16 in-depth semi-structured interviews \((M_{\text{age}} = 10)\) and shows which determinants children identify as triggers for engaging in play that has more replicating or more originating elements.

Keywords

Children; Play Behavior; Creativity; Imitation; Imagination
Introduction

Play is often referred to as the primary occupation in childhood (Stagnitti & Unsworth, 2000). When children play, they choose from a vast range of products, games and play methods. Children can for instance use how-to manuals, instructions and building examples that accompany games, but they can also use their own imagination regardless of any instructions. Children can paint something from the mind on a blank canvas, or they can use a paint-by-numbers kit. Lego for example has building boxes that include detailed plans and descriptions of how children can make a beauty salon, space-ship and adventure tree house, but Lego also has brick boxes that consist of several unsorted bricks, which they call “creative brick boxes, that will encourage open-ended building play, and inspire any imagination … and will offer endless possibilities for creative construction.” Lego (2018).

By doing so, these toys makers emphasize play that is more or less characterized by imitation or by creativity and fantasy. Variants of these types of play behavior are already used a lot in practice, but have less often been explicitly theoretically distinguished and explored in academic literature. This paper therefore explores a continuum of two types of play that explicitly reflect these examples, and labels the end-points of this continuum replicating and originating play. The paper also explores which factors determine children’s choice for these play types.

Both seem to relate to different developmental processes as described in literature, namely replication and reproduction (Jones, 2007; Piaget, 1962; Saito, Hayashi, Takeshita, & Matsuzawa, 2014) and imagination and creativity (Piaget, 1962; Vygotsky, 2004). The first aim of this paper is to explore if versions of these play types can both be observed in children’s play behavior. The second aim is to examine what stimulates children to choose for play types that are more characterized by processes of replication and reproduction.
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(“replicating”) and for play types that are more characterized by processes of imagination and creativity (“originating”).

Importance of Play

Some authors argue that play reflects children’s current cognitive developmental phase (Barnett, 2013). Piaget (1954) for example, reasons that by playing, children are trying to understand the world, which can only happen by employing the cognitive capacities they then have. Others believe that play is more than a reflection of a child’s current development, but a way to develop in the future.

Play has important developmental benefits (Milteer & Ginsburg, 2012; Vygotsky, 1978) and is correlated to several positive elements throughout the lifespan (Eberle, 2014). The examination of play in diverse academic disciplines, such as neuroscience, ethnography, psychology and pediatrics (Lester & Russell, 2008), suggests a connection between play and specific developmental aspects in for example enculturation, learning, brain development, emotion regulation, socialization etc. (Lester & Russell, 2008; Milteer & Ginsburg, 2012).

Replicating and Reproducing versus Imagination and Creativity

One of the ways in which development and play are associated is by gaining knowledge by using imitation, rule following and reproduction. The processes children undertake when learning new kinds of behavior are described in Karmiloff-Smith’s (1992) theory of representational redescription. This theory states that when children encounter a new problem, they have no previously existing knowledge about it and must rely on external information, for example by copying another person, observing behavior, imitating actions or by learning from tools, instructions, models, tutorials, etc. Imitating a model means that children confine themselves to certain boundaries. When children are more familiar with the problem, they can rely on these learned schemas and models and structure new incoming information in what they already learned. When children imitate a model, such as an object or
another person, they can do it to understand how things work, to practice and develop their
skills, to understand other people’s behavior and intentions etc. (Jones, 2007; Meltzoff,
1988). Replicating, reproduction and imitation is therefore an important part of gaining
knowledge and an essential skill developed during childhood, because it provides children
with important socialization abilities, cultural knowledge and skill sets (Jones, 2007; Paulus,
Hunnius, Vissers, & Bekkering, 2011). Playing is one type of behavior in which children can
express this, since play enables children to develop and practice these skills (Vygotsky,
1978).

Another way in which development and play are associated is by the process of
imagination and creativity, which advances early on in a child’s life (Kaufman & Beghetto,
2009; Piaget, 1962; Runco, 2014). Russ, Robins, and Christiano (1999) argued that the
quality of children’s fantasy correlates to divergent thinking, an important skill later in life.
Piaget (1962) reasons that imagination can represent a detachment from reality, and is
beneficial because it can free the child from internal tensions and frustrations.

Creativity does not exclusively arise in reputed artists or scientists (the so called “Big C
creativity”), but can be found and studied in every individual and can occur in everyday
activities (Sternberg & Lubart, 1999), which Kaufman and Beghetto (2009, p. 4) refer to as
“little-c creativity”. It is for example seen when children come up with a new method and
recombine elements into new configurations (Russ & Dillon, 2011).

Literature on children’s development often links imagination and creativity to play. Russ
and Wallace (2013), for example, state that pretend play facilitates children’s development of
cognitive, affective and interpersonal processes, which are all important for creativity. Play
can offer a way to safely experiment with unexpected, new circumstances and can help
resolving them (Pellegrini, 2007). When children use their imagination while playing, they
are flexible and able to design situations in which the outcome is different from reality
(Vygotsky, 1976). They learn how new situations can be handled by responding with novel instead of narrow thinking (Lester & Russell, 2008).

**How Play Reflects Replicating and Reproducing versus Imagination and Creativity**

Although research has theoretically discussed reproducing, following rules or imitating versus creativity and imagination (Singer, 1994; Vygotsky, 2004), little work has empirically examined play typologies that relate to these aspects of children’s development. This paper proposes that both developmental skills have a counterpart in children’s play behavior. To get a better understanding of how these developmental aspects can be integrated in play literature, we need to have a look at the definition of play.

Apart from the general acknowledgement that -at its most elementary definition- play assures that there is an element of fun, pleasure, intrinsic motivation or enjoyment (Barnett, 2013; Eberle, 2014), different authors define play by a range of different characteristics. Two of these are of interest here, since they relate to processes of reproduction and imagination. First, play is seen as extra-ordinary, special and set apart from more mainstream and “serious” activities (Burghardt, 2005; Johnson, Eberle, Henricks, & Kuschner, 2015). Rubin, Fein, and Vandenberg (1983) call play *nonliteral* in the way that it is detached from reality and incorporates experimentation. Creative processes might be more related to this play characteristic since they rely on using imagination – which might be easier in case of non-realistic, extra-ordinary play. Second, play is also described as repetitive (Burghardt, 2005), since it can often be *repeatedly* performed, and some argue that *rules* are important in play (Huizinga, 1955), as they organize games, give them structure and can be employed to make games fair. Reproductive processes might be more linked to the repetitive component of play, since they rely on reproductive skills and repetition – which might make rules more suitable.

Some studies provide insights in play typologies that reflect imitative and creative processes. One example is the classification into functional play (repetitive movements or
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manipulations of objects), constructive play (creating something by means of construction),
games with rules (toys that incorporate rules and restrictions) (Pellegrini, 2004; Smilansky, 1968), and dramatic play (constructing imaginary situations, trying to understand the environment, for example by role play) (Smilansky, 1968; Smilansky & Shefatya, 1990).

Another similarity is found in the typology of unstructured and structured play. Unstructured play is mostly related to creativity, since it generates more original thinking (Berretta & Privette, 1990; Trevlas, Matsouka, & Zachopoulou, 2003). This typology, however, does not incorporate the existence of imitation or reproduction but specifically focuses on the organization of the play activity.

Few studies simultaneously examine both reproduction and imagination in play. Vygotsky (2004) depicted reproduction or imitation as a counterpart of creative activity and called activities creative when they did not result in the reproduction of previously experienced impressions or actions but in the creation of new ones. Dahl and Moreau (2007) opposed constrained versus non-constrained creative experiences, differing in the extent to which they entail explicit constraints in either the process (e.g., a set of instructions) or the outcome (e.g., a visual representation of the end product).

However, the existing typologies do not explicitly tap into the idea that one type of toy or play activity can be performed in different ways. For games with rules, for example, children might adhere to the rules as intended by the game (cfr. replicating and reproductive processes) or can make up their own rules (cfr. imaginative and creative processes). For construction play, children might play with building sets by reproducing the example from the booklet (reproductive) or they can create their own idea (imagination).

Replicating and Originating Play Typology
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Although several theoretical frameworks mention replicating and reproducing versus imagination and creativity as important aspects of play behavior, our paper specifically develops a typology of two parts of a play continuum stemming from these processes.

We propose that children can use toys (e.g., a Lego construction set) by means of a higher reliance on imagination and less adherence to rules and guidelines (e.g., building self-invented constructions) or by less reliance on imagination and more adherence to rules and guidelines (e.g., rebuilding a given model).

The first type relates to replicating and reproduction, following rules and imitation. When children imitate a model, some of this behavior can be seen as a constricted form of knowledge transfer. By using a model, children confine themselves to a restriction as to how they will perform the behavior. The play type derived from these developmental abilities is labeled replicating play behavior. When children play replicating, they use given models, rules, guidelines and examples to reach an intended result. It arises, for example, when children rebuild a Lego model, use existing stories in role play (e.g., movie scripts), play with iron-on-beads by following a template, sew a doll with a pattern found online etc. Replicating play behavior is therefore defined as play behavior in which the player uses given models, rules, instructions, tutorials and guidelines that s/he did not create from his/her own mind.

The second type of play relates to children’s use of imagination and creativity. Previous literature shows that through play, children can express creative thinking and behavior (Singer, 1994; Vygotsky, 2004). Creativity facilitates the production of original content relevant to a particular task (Lillard et al., 2013). The play type derived from these elements of creativity and imagination is labeled originating play behavior. When children perform originating play behavior they create something from the mind, think more freely about how they will play and are less restricted by rules, instructions, tutorials, models, guidelines etc. Originating play arises, for example, when children make a self-invented structure from a
Lego set, create new scripts or characters in role play, play with iron-on-beads without using a template, sew a doll without a pattern etc. Originating play behavior is defined as play behavior in which the player plays without models, rules, instructions, tutorials and guidelines and relies on what s/he can create from his/her own mind.

Study 1

Study 1 examines the existence of replicating and originating play by exploring if both types of play can be observed in actual play behavior and assesses if they can be related to replicating and reproducing versus imagination and creativity.

Method

Participants. Convenience and snowball sampling was used to reach 60 children who lived in Belgium and had the same mother tongue, Dutch. Parents and children were approached via teachers in schools and via the contacts of the interviewers. Four respondents (i.e., 6.67 % of the respondents) were removed from the analyses, because they were seven years old or younger and were unable to understand some questions. Fifty six respondents between 8 and 11 years old were withheld for further analyses ($M_{age} = 9; SD_{age} = 0.69, 52\%$ girls). Children were interviewed either at their own school ($n=20$), at a playground ($n=16$) or at their youth movement ($n=20$) (the place was selected randomly according to the availability of the participants), to obtain a balanced sample. Children and parents were told the study would assess their preferences in play. Participants received some candy after completing the tasks and questions.

Procedure. Written parental consent letters were gathered before a child was allowed to participate. Children were briefed at the beginning of the study, were asked for their willingness to participate, told they could stop at any point in time and were informed that we wanted their true opinions and there were no “right” or “wrong” answers. Children were
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interviewed without the presence of parents and teachers and were unable to see each other’s answers.

Solitary play was used because it progresses early on in a child’s life and is therefore well developed (Piaget, 1962), because it is quite common during free play (Coplan, 2000) and because the inclusion of group play would reduce internal validity as it comprises many facets that could dilute some of the results (e.g., type of play, peer characteristics, relation with peer).

Children were told they were given a free moment in which they could play with a Lego-set. If they played longer than 10 minutes, they were interrupted and asked to proceed to the questionnaire. The length of the play activity was timed, which revealed that children played between 2 and 10 minutes ($M_{time} = 4:73; SD_{time} = 1:58$).

Children played with a Lego set of “The Smurfs”, a popular children’s movie, presented as “a new Lego-set, which was only recently sold in toy stores”. The set contained numerous material and a booklet with detailed step by step descriptions to rebuild two specific models, which differed in level of difficulty. The models were specially composed for the study to rule out possible learning effects and were new to all children. Children played as they preferred and were explicitly told they could either use one of the models or they could build something different.

Measures. Play behavior was observed and coded by an independent interviewer, who read the definitions of replicating (the child followed one of the models completely) and originating play (at no time the child used one of the models) prior to the interviews.

The interviewer completed two questions regarding the process of the play behavior: (1)“How does the child start the play activity?” and (2)“what does the child do next?” and got several options (child looks at manual, child asks questions, child immediately starts building, other (open ended)). Next, the interviewer responded to the question “After the
child played the game, how would you categorize his/her play behavior”, on a 7-point Likert scale: (1)“Absolutely Replicating”, (2)“Mainly Replicating”, (3)“Rather Replicating”, (4)“In Between”, (5)“Rather Originating”, (6)“Mainly Originating” and (7)“Absolutely Originating” (M = 3.98; SD = 2.45). The interviewer was instructed to only code behavior that can be labelled as “play” (e.g., make notes if children indicate they do not want to engage in the behavior, which did not occur). Lastly, the interviewer was given the opportunity to make notes in an open ended question.

After playing, children evaluated two questions (a)“Did you think that you had to follow the rules with this Lego?” (M = 2.68; SD = 1.21) and (b)“Did you think that you could do your own thing with this Lego?” (M = 3.94; SD = 1.11). Children rated both on a five-point scale, ranging from (1)“No, absolutely not” to (5)“Yes, absolutely”.

**Results**

Both types of play behavior occur, since the interviewer rating of the play observation scale ranges from 1 to 7 (figure 1). Two regression analysis were performed with the interviewer score of the play behavior as the independent variable and the two characteristics of the play activity, as reported by the children, as the dependent variables (see Table 1 for the descriptive statistics). Results show that children’s play behavior relates to the characteristics children attribute to their play activity. Play that is coded by the interviewer as more originating is negatively related to children’s perception of “following the rules with this Lego” ($R^2 = .20$, $R^2_{Adjusted} = .19$, $F(1,54) = 13.82$, $p < .01$; $b = -.22$, $\beta = -.45$, $SE = .06$, $t(55) = -3.72$, $p < .01$). Play that is coded as more originating by the interviewer is positively related to “doing your own thing with this Lego” ($R^2 = .30$, $R^2_{Adjusted} = .28$, $F(1, 52) = 21.93$; $b = .24$, $\beta = .55$, $SE = .05$, $t(53) = 4.68$, $p < .01$). Age and gender are unrelated to the play characteristics and play behavior, nor do they affect the results when included as covariates in the analyses.
Responses of the interviewer about the process of the play activity show that 53.57% of the children started off by inspecting the booklet, while 33.93% immediately started building. Other actions were doing nothing (3.57%), looking around in the room (3.57%), looking at other materials (3.57%) and asking questions (1.79%).

In the next phase, 54.55% followed the instructions, 36.36% built something without the booklet, played with the material (not building) (3.64%) and took blocks out of the box (5.45%).

The open ended question reveals that for a high number of respondents of which the play behavior was labelled by the interviewer as being “Absolutely replicating (1)” or Absolutely originating (7)”, the interviewer noted that children immediately took the example (replicating) or never even looked at the example (originating). Only six children’s behavior was coded as “in between” replicating and originating, of which two open ended notes reveal that these children started making the model and then switched to originating behavior because children said that the model was too hard.

**Discussion**

This study explored the existence of replicating and originating play and assessed if children relate replicating and originating play to replicating and reproducing versus imagination and creativity. Results show that replicating and originating behavior can be observed in children’s play, as both ends of the continuum of these play types were observed by the interviewer in children’s play behavior. In that way, there is in fact diversity in children’s play activities that reflects elements of replication and origination. Results also show that children who were labelled by the interviewer as playing originating, reported themselves that they believe they followed less rules and did their own thing more in that play activity, while children who were labelled by the interviewer as playing replicating
reported themselves that they believe they did not follow rules and did their own thing to a lesser extent. This means that the interviewer observations are in line with the assessment of the children. The link between playing activities that have more or less elements of replicating and originating and the processes of repetitiveness and imitation versus creativity and imagination is thus established.

We should note that –although we told children they could play with the Lego set- we cannot exclude that some children’s behavior was not in line with the definition of play (i.e. experiencing fun, pleasure, intrinsic motivation or enjoyment) but was rather ‘modeling behavior’. We can also not fully state that children saw the play activity as actual “play” behavior, but rather as a task within the context of the questionnaire. In that case, children could display a kind of behavior that they associate with the task at hand (i.e. filling out the questionnaire or talking part in a study). Performing a task could possibly lack the playfulness or motivational element that is inherent to play (although some tasks can also be experienced as fun, pleasurable, enjoyable or be intrinsically motivating). Therefore, study 2 asked children to talk about examples of behavior they saw as play, hence making sure that ‘play’ was investigated. In that sense, the second study is better at capturing the true play interests of the interviewees.

**Study 2**

Study 2 examines why children prefer replicating or originating play behavior and explores which associations children have with both play types.

**Method**

**Participants.** Sixteen in-depth semi-structured interviews were conducted with children between 8 and 12 years old ($M_{age} = 10$; $SD_{age} = 1.03$, 10 girls (63%)). None of the children in study 1 participated in study 2. Data were collected until a saturation point in the number of new elements in the content of the interviews occurred. Guest, Bunce, and Johnson (2006)
indicate that this saturation point generally arises after 12 interviews, which is comparable to the 16 interviews in our study. All children lived in Belgium, had the same mother tongue, Dutch, and were interviewed at home during summer holidays. Respondents went to a diverse range of school types (6% community schools, 31% subsidized public schools and 63% subsidized free schools). Interviews were tape recorded and ranged in time between 21 and 44 minutes ($M_{time} = 32:19; SD_{time} = 7:47$). Informed consent was obtained from children and written parental informed consent was obtained prior to the study. To assure anonymity, all children’s names that appear as examples in this paper are altered.

Procedure. Parents completed a written parental consent form after receiving information about the study (e.g., that the interview was tape-recorded). Children were briefed and informed that they were able to stop or take a break at any time they wanted. The interviews were adjusted to the language and abilities of the respondents. Several open-ended questions were used, such as free associations and projective techniques (e.g., children were asked to think aloud about leisure moments and play preferences of a child in a cartoon).

Children first discussed their favorite play activities, as an introduction to make sure children were accustomed to the setting and the interview style. Children were then familiarized with the two play types and asked for their preference for and thoughts about each of them. In a third part (not included in this paper), children elaborated on their preference for each of the play types in specific places.

Data analysis. Interviews were tape-recorded, transcribed and coded with Nvivo10. Data analysis followed a grounded theory approach where several coding mechanisms were used as described by Corbin and Strauss (2008). First, open coding was used to divide each interview in the parts described above, which were later on structured into categories that were similar in content. These categories were analyzed in order to find patterns in the data and were next aggregated into broader concepts and theories. Coding was performed by one
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coder. All categories, key examples and difficult to categorize examples were discussed with a second coder. Several elements were agreed upon in advance to assure a maximum level of coding rigor. For example, play behavior that was not voluntarily executed by children (such as in the arts and crafts class at school) was not coded unless children expressed that they would have chosen the same play type. We also excluded references to activities that have repetitive or original elements, but that are not necessarily seen as play activities (such as chores, classes etc.).

The analyses yielded several categories of determinants for replicating and originating play. Table 2 gives an overview of these categories.

Results

Following section lists the main categories (mentioned by more than one child) that can be perceived as determinants for choosing originating (Table 2, part A) and replicating play (Table 2, part B).

Use of imagination and inspiration. The use of imagination is a typical determinant for originating play (seven children, nine examples), “Lily: I like originating because I can use my imagination”, or because they get inspired by something “Marie: I like inventing something… when all of the sudden a nice idea pops to mind. Or ... I think of something my mom would like and then I draw her something”. A lack of imagination triggers replicating play (six children, 10 examples): “Hannah: When I am crafting, I usually create something myself, but from time to time, I look for examples in a booklet when I have no inspiration”.

Presence of others. The influence and presence of others facilitates both originating (five respondents, five examples) and replicating (six respondents, seven examples), but through different mechanisms. Replicating is chosen when children want to learn from others (four respondents, four examples), while one child plays originating to teach others something (one example). Other people stimulate originating play when children want to adapt their play
style to the preferences of others. This was mentioned by three children for originating (three examples) and only once for replicating (one example). “Louis: It depends on which children I play with. If they are fun and also have a lot of imagination, we would make our own rules and if it were children with less fantasy, we would just follow the rules ... I think.”. One category emerged for both originating and replicating (each time one child gave one example): children said the play type distinguished them from others or showed others what they can do (e.g., being creative, being able to replicate a model).

**Negative perception replicating.** Another reason to prefer originating is the negative perception of replicating (three respondents, four examples). Replicating has a “boring” or “dull” perception and is perceived as “copy-cattering”. Some children bring this up as an expression of their own opinion, while others mention that other people’s negative perception would prevent them from replicating. “Lauren: Replicating is something like...a painting, that is copied a lot. For example a painting of a girl. In my class they do it a lot, for example Phara imitates a lot. There was a friend of mine and she showed me her idea and Phara was also there and then Phara went to her desk and when I went by ... what a coincidence ... she had the same thing my friend had ... arhhhh.”

**Resources (Lacking/Available).** Three children (three examples) play originating when there is a lack of materials and resources, for example if the examples or models are unattractive or not present. Models and resources facilitate replicating behavior and if they are absent or unattractive, children resort to originating play. “Lucas: When you use your imagination ... you can make all the things that you like ... whereas if you, for example, cannot find the piece you want in a plan, you cannot make that plan.”

**Previous experience with models.** Two children (three examples) mentioned they played originating because they used models in the past and are reluctant to use them again, for example because they already know the steps or because they made the model and it broke
“Fabian: What I usually do when I am coloring... is..., I take a comic book, where they say how you should draw it [he refers to a step-by-step instruction book] and then I only draw the end-result, because those steps ... they are superfluous for me.” Originating therefore seems to occur once a certain basic level of skills has been achieved. The necessity of a basic skill level is also illustrated by three children (four examples) who play replicating because they have no experience, for example Julie: “Usually, I look at the instruction sheet, for the purpose, because I sometimes do not understand it, for example ... if you have to do something – like painting on plates-, then I don’t understand how I have to begin ... and then they say that on the paper.” Contrary to this, one child also said that he specifically played replicating because he knew the models and rules, so following them was easy.

**Better end result.** Eight children prefer replicating because the end result is nicer, stronger and more durable (15 examples). “Tobias: I don’t want to invent something myself. The examples you can find on the internet are much nicer.”

**Other categories.** Some categories could not account for differences between replicating or originating, but reflected why children preferred either type of play, for example the **difficulty level** of a play activity. Some children prefer originating because it is more challenging, others because it is easier (and vice versa for replicating behavior).

Likewise, children are sometimes scared something goes wrong, because the model cannot be perfectly made or because a construction doesn’t work, because children don’t have an example or didn’t choose the right components. They therefore perform the kind of play that they believe to be less uncertain. This category is more prominent for replicating behavior however, indicating that children see originating as being more risky.

*Insert Table 2 here*

**Discussion**
The goal of the second study was to examine why children prefer replicating or originating and which associations children have with playing both. Results showed that there were six main categories that can be perceived as determinants for choosing originating and replicating play, namely the use of imagination and inspiration (related to originating play), presence of others, negative perception of replicating (which hinders replicating), availability of resources (related to replicating play) and lack of resources (related to originating play), previous experience with models (which reflects a sequence between originating and replicating) and the chance to get a better end result (related to replicating play). Additional categories reflected why children preferred either type of play, for example the difficulty level of a play activity or the fear of doing something wrong.

General Discussion

Discussion of Results

Few previous studies contrasted typologies of play behavior that relate to the processes of replicating and reproducing and imagination and creativity. This paper proposed replicating behavior, deferred from the developmental processes of imitation and replication, as play in which children follow rules, guidelines, instructions and models. Originating behavior was deferred from developmental processes of imagination and creativity and defined as play in which children use their imagination and fantasy without using predefined models and instructions. We verified these definitions and showed that children who play replicating believe they follow more rules and do their own thing less than children who play originating. We also find that one of the reasons children give for choosing between replicating or originating play, is their level of inspiration and creativity. Children prefer replicating when they lack inspiration and creativity and prefer originating when they have a plentitude of imagination.
Originating behavior is also preferred when children have a lack of resources, while replicating occurred in situations where resources were available. Previous literature found that restrictions in input material can increase creative output (Moreau & Dahl, 2005; Sellier & Dahl, 2011). When people are restricted in resources, they have to be creative in finding a solution, whereas they resort to solutions they know when they encounter less restrictions.

Others have an impact on the preferred play behavior. Originating is preferred by children who believe replicating had a “boring” or “dull” perception. Literature shows some insights in the reason why originating would be a socially desired behavior. Adolescents who are perceived as creative, have a better peer status and are perceived as better social leaders (Lau, Li, & Chu, 2004; Lau & Li, 1996). This makes creativity socially desirable, and could also explain why children prefer originating when they see others doing it.

In the social determinants for choosing between replicating and originating also lies a duality between learning from others or teaching others and showing your skills to others. Replicating is more often chosen to learn from others. Replicating behavior indeed seems to be a play form in which instructions and imitation are especially relevant, so other people might also fulfill this instructional role.

The fact that replicating is chosen when children want to learn from others might also suggest that replicating is chosen when learning a new behavior. Saito et al. (2014) found that others might play an important role in learning representational drawing (i.e., drawing a realistic representation of a certain stimulus). Replicating might be seen as a way to imitate and reproduce what others did. In line with this, results show that replicating is more often chosen because it can lead to a better outcome (children believe the end result is better, stronger and more durable).

Replicating might also be more suitable when children have less experience, because it can facilitate the learning of a new kind of behavior. Originating behavior might occur when
Children’s Replicating and Originating Play

Children have more mastery in the domain. This finding can for example be related to the theory of mini-c, as proposed by Beghetto and Kaufman (2007, p. 1), defined as “the novel and personally meaningful interpretation of experiences, actions, and events” and indicates creativity inherent to the personal learning process and reflects people’s creation of personally meaningful knowledge (Kaufman & Beghetto, 2009). In that sense, the novelty of the experience is not in se original to others, but it is for the person in question (Beghetto & Kaufman, 2007). The focus of mini-c is thus on establishing initial creative processes that make it possible to create creative output. In that sense, replicating play might be efficient to achieve this. For a child with no Lego experience, recreating a model might be an expression of mini-c creativity, as it advances the child’s personal learning in that domain and reflects a creative path the child has not followed before. In this paper, however, few children would probably still be in this mini-c phase when it comes to these types of play activities. In that sense, we believe that, given a certain level of learning experience with an activity or domain (e.g., Lego), one might have more or less experience with a particular model. Experience with that particular model is what makes children opt for originating play. The representational redescription model of Karmiloff-Smith (1992), reflects this, as this theory argues that when children first play with a new kind of toy that requires a certain technique, they have no previously existing knowledge or schema’s. They can then start retrieving external information from the environment (e.g., using instructions, tutorials etc.) and by doing so, they gather knowledge and experience. In a next phase, children will be more reliant on these learned schemas and will focus on their own internal representations. When children have some experience with the toy or model, for example if they made it in the past, they play originating. This indicates that there might be a sequence between both types of play, where replicating is a first step into learning a new kind of behavior and originating occurs once a basic set of skills is acquired (either in the general domain (e.g., Lego, which
would make it an expression of mini-c creativity) or with the specific model (e.g., that particular Lego model was already made in the past).

The fear of doing something wrong was mentioned for both types of play behavior, but more often as a reason to avoid originating behavior, because children see originating as a play activity where more can go wrong. Previous research shows that creativity entails a willingness to take risk (Dewett, 2006), so children might perceive originating as risky (e.g., the end-result is not predefined, the game process is unsure). The level of risk might be smaller for replicating behavior, because these activities rely on rules, which provide children with a more secure feeling about the process and end-result of the activity.

Replicating can also provide output (e.g., drawings, paintings) that is more durable, steady etc. Previous studies showed that imitation strategies were strongly related to the production of higher quality, more original, and provided more creative output (Mecca & Mumford, 2014), so it might be interesting for future studies to explore how the output of the play types we examined actually look like.

Both play types can thus be essential in learning a skill and both should be stimulated if children feel the desire to perform them. Imitative experiences (such as replicating play) have an important role in children’s development and should not necessarily be discouraged in children’s upbringing. Even though replicating play might be perceived as less creative, it enables children to develop important skills that might later on contribute to the development of more original behavior.

Limitations and Future Research

Some limitations are important to recognize. First, to keep the examples and experiments consistent, we focused on solitary play behavior. This has a number of deliberately envisioned advantages, for example, because solitary play is the type of play that all children
are accustomed to because it develops early on in childhood (Coplan, 2000). Future research might examine group play as well, however, since it could generate different results.

A lot of effort was put in recruiting participants, but social class, ethnicity and culture can still be of influence for our results. Due to the extensive length of the questionnaires, but also due to anonymity reasons, we could not fully register or exclude this.

Despite the fact that study 1 also included children’s assessment of their play behavior, the study relies on the assessment of children’s play behavior by one interviewer. Also in study 2, one coder analyzed the interviews and only verbally compared categories with a second coder. Therefore, no inter-coder reliability measures are available. Future research is needed to confirm the categories presented.

Our definition of replicating and originating behavior is used as a broad category, in which different play forms can still be distinguished and categorized. For example, it would have led us to far to distinguish between restrictions imposed by following instructions and restrictions imposed by giving a target outcome, like the studies of Dahl and Moreau (2007), although this would be interesting for future studies.

This paper took into consideration that some types of toys or games may be better suited for replicating (e.g., board games), while others might be better for originating (e.g., dressing up) by explicitly not looking at the quality or prescribed rules of the toy/game, but by looking at the actual play behavior a child performs while playing with that toy/game. For example, board games are meant to be played by following the rules. However, children who would create their own type of game with the components of the board game would be labelled as having played “originating” in our typology. Children could also create games that are replicating other games. For example, they create their own game with the components of a board game keeping in mind another board game (and hence imitating this other game). Merely observing behavior would result in a label of “originating play”, while interviews
with the children could uncover the fact that they are replicating other games. Future studies should explore whether this type of behavior should be seen as originating or replicating. It could be seen as originating since children do not use the models at this specific moment and rely on what they can create from their own mind. It could also be seen as replicating, as children employ models and examples that they used in the past. Several theories suggest that when people perform a novel behavior, this might be based on earlier learnt behavior (Karmiloff-Smith, 1992). The conformity effect for example states that creative ideas can be constrained by previous examples and tasks that sneak into the idea generation (Ward & Kennedy, 2017).

Future research might examine if replicating behavior is a play form that is chosen for what several theorists call “games with rules” (Pellegrini, 2004; Smilansky, 1968). These games are distinguished from others because “games with rules” have very explicit, formal rules that are set a priori and are rarely altered during the game (e.g., card games). Future research should examine if replicating play behavior shows consistencies with and can even be seen as the overarching play behavior used in “games with rules”.

We cannot exclude that children did not see the play activity in the first study as a task within the questionnaire. In that sense, the second study was better at capturing the true play interests of the interviewees, as children were specifically instructed to only mention activities matching our definition of play.

Future research should take the time sequence and interchangeability between the play types into account. To optimize uniformity of the results, children played once in study 1 and we coded the behavior on a continuum ranging from replicating to originating. This choice is backed up by study 2, where some children indicated that they performed a play style that was “in between” replicating and originating. Future research should dig deeper into this, because it could mean that children use a mixture of play types (e.g., follow the model up to a
certain point but add some elements from their own), but it could also mean that children switch back and forth between play types (e.g., start by following the model, then add something of their own, but go back to the model if this doesn’t work out). An additional analysis of an open-ended question of the interviewer in the first study does in fact reveal that two of the children that were categorized by the interviewer as having an “in-between” play style started playing replicating, but then switched to originating behavior.

Conclusion

This paper showed that children can perform two play types, replicating and originating play behavior. Distinguishing between these two types of play behavior and its determinants provided insights in how and why children play each of them.

Ethical Approval

The studies were conducted in accordance with the ethical standards of ##blinded for review## research ethics committee (e.g., informed consent from all participants, parents, teachers and schools, participation to the studies was anonymous and voluntary, participants were informed they could stop when they wanted, questions were adapted to the age of respondents, data was anonymized, etc.).
References


Figures

![Bar chart showing frequencies of play behavior]

**Figure 1. Frequency distribution of play observation scale**

Tables

<table>
<thead>
<tr>
<th>Scale</th>
<th>$N$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Play behavior as observed by the interviewer</td>
<td>56</td>
<td>3.98</td>
<td>2.45</td>
</tr>
<tr>
<td>Children’s evaluation of play behavior - “Did you think that you</td>
<td>56</td>
<td>2.68</td>
<td>1.21</td>
</tr>
<tr>
<td>had to follow the rules with this Lego?”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children’s evaluation of play behavior - “Did you think that you</td>
<td>54</td>
<td>3.94</td>
<td>1.11</td>
</tr>
<tr>
<td>could do your own thing with this Lego?”</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 1. Descriptive statistics of scales used in study 1*
<table>
<thead>
<tr>
<th>Part A. Reasons to originate</th>
<th>Part B. Reasons to replicate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main categories and</strong></td>
<td><strong>Main categories and</strong></td>
</tr>
<tr>
<td><strong>Subcategories</strong></td>
<td><strong>Subcategories</strong></td>
</tr>
<tr>
<td><strong>Respondents</strong></td>
<td><strong>Respondents</strong></td>
</tr>
<tr>
<td>(%)</td>
<td>(%)</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td><strong>Examples</strong></td>
</tr>
<tr>
<td><strong>Use of imagination,</strong></td>
<td><strong>Lack of imagination,</strong></td>
</tr>
<tr>
<td>inspiration</td>
<td>inspiration</td>
</tr>
<tr>
<td>7 (44%)</td>
<td>6 (38%)</td>
</tr>
<tr>
<td>Presence of others</td>
<td>Presence of others</td>
</tr>
<tr>
<td>5 (31%)</td>
<td>6 (38%)</td>
</tr>
<tr>
<td><strong>Adapt play style to others</strong></td>
<td><strong>Learn from others</strong></td>
</tr>
<tr>
<td>3 (19%)</td>
<td>4 (25%)</td>
</tr>
<tr>
<td><strong>Teach others</strong></td>
<td><strong>Adapt to others</strong></td>
</tr>
<tr>
<td>1 (6%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td><strong>Show others I am creative</strong></td>
<td><strong>Scared of opinion others</strong></td>
</tr>
<tr>
<td>1 (6%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td><strong>Negative perception</strong></td>
<td><strong>Show others I can do</strong></td>
</tr>
<tr>
<td><strong>replicating</strong></td>
<td><strong>this</strong></td>
</tr>
<tr>
<td>3 (19%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td><strong>Resources (lacking)</strong></td>
<td><strong>Resources (available)</strong></td>
</tr>
<tr>
<td>3 (19%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td><strong>Previous experience with</strong></td>
<td><strong>Previous experience</strong></td>
</tr>
<tr>
<td><strong>models</strong></td>
<td><strong>models</strong></td>
</tr>
<tr>
<td>2 (13%)</td>
<td>3 (19%)</td>
</tr>
<tr>
<td><strong>Know the steps-rules</strong></td>
<td><strong>No experience</strong></td>
</tr>
<tr>
<td>2 (13%)</td>
<td>3 (19%)</td>
</tr>
<tr>
<td><strong>Made model, broke down</strong></td>
<td><strong>Know the model/rules</strong></td>
</tr>
<tr>
<td>1 (6%)</td>
<td>1 (6%)</td>
</tr>
<tr>
<td><strong>End result is better</strong></td>
<td><strong>End result is better</strong></td>
</tr>
<tr>
<td>1 (6%)</td>
<td>8 (50%)</td>
</tr>
<tr>
<td><strong>Can be played with</strong></td>
<td><strong>End result is better</strong></td>
</tr>
<tr>
<td>afterwards</td>
<td>8 (50%)</td>
</tr>
<tr>
<td><strong>Difficulty</strong></td>
<td><strong>Difficulty</strong></td>
</tr>
<tr>
<td>9 (56%)</td>
<td>9 (56%)</td>
</tr>
<tr>
<td><strong>Replicating is too difficult</strong></td>
<td><strong>Originating is too difficult</strong></td>
</tr>
<tr>
<td>7 (44%)</td>
<td>7 (44%)</td>
</tr>
<tr>
<td><strong>Replicating is too easy</strong></td>
<td><strong>Originating is too easy</strong></td>
</tr>
<tr>
<td>4 (25%)</td>
<td>4 (25%)</td>
</tr>
<tr>
<td><strong>Scared something goes</strong></td>
<td><strong>Scared something goes</strong></td>
</tr>
<tr>
<td><strong>wrong</strong></td>
<td><strong>wrong</strong></td>
</tr>
<tr>
<td>2 (13%)</td>
<td>8 (50%)</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>
Table 2. General determinants for replicating and originating play

Respondents: number of interviews in which a particular category occurred

Examples: the number of references found for that category

Note: The number of examples have to be analyzed with precaution, since some of the text fragments are coded in multiple categories.