

The Effect of Steiner, Montessori, and National Curriculum Education Upon Children's Pretence and Creativity

ABSTRACT

Pretence and creativity are often regarded as ubiquitous characteristics of childhood, yet not all education systems value or promote these attributes to the same extent. Different pedagogies and practices are evident within the UK National Curriculum, Steiner and Montessori schools. In this study, 20 children participated from each of these school systems ($N = 60$, aged 6;10–8;11) completing the test of creative thinking—drawing production (TCT-DP; K. K. Urban, & H. G. Jellen, 1996) and a pretend actions task (W. F. Overton & J. P. Jackson, 1973). Overall, Steiner pupils performed significantly higher on the TCT-DP than both the Montessori and National Curriculum pupils who performed similarly. Steiner pupils also performed significantly better on the pretend actions task than the Montessori pupils, but no other significant differences were found. Overall, there was also a significant positive correlation between pretence and creativity in the current sample, supporting previous research suggesting that these skills are related (e.g., A.S. Kaugars & S. W. Russ, 2009; P. Y. Mullineaux & L. F. Dilalla, 2009).

Keywords: pretence, creativity, education.

A playful, creative mind-set is often considered as characteristic of childhood (Russ, 2003). Both play and creativity are also argued to be important for human development. Play has been linked to benefits in cognitive, social, affective, and physical domains (e.g., Hurwitz, 2002), while creativity has been associated with problem solving, divergent thinking, psychological well-being and employability (e.g., Craft, 2003; Robinson & Tamir, 2009). Commonalities in the characteristics, processes and benefits that playful and creative activities share suggest that they are related and this is supported by research (e.g., Garaigordobil, 2006; Singer & Singer, 2006). Although play takes many forms (including physical activity play and constructive play), it is a pretend play that is argued to be most strongly connected to creativity both concurrently (Russ, 2004) and longitudinally (Kaugars & Russ, 2009; Mullineaux & Dilalla, 2009). Pretend “as if” play (Fein, 1987) involves fantasy, symbolism, and the modulation, and expression of affect which are part of creative ability and insight (Russ, 2004). Thus, pretend play is the central focus of this study.

Children's engagement in pretence has been defined as a relatively universal cross-cultural practice (Lillard, Pinkham, & Smith, 2011). However, cultural learning theorists (e.g., Callaghan et al., 2012; Tomasello, 2008) assert that socio-cultural and ecological factors such as availability of toys and the amount of social support given can influence the frequency and type of pretend play, which has been demonstrated in various studies (Callaghan et al., 2012; Carlson, Taylor, & Levin, 1998; Gauvain & Munroe, 2009). Similarly, lack of consistent correlations between personality measures and creativity suggest that this is a skill rather than an inherited trait, which can therefore be influenced by wider cultural factors (Necka & Hlawacz, 2013). One such factor is access to education and the pedagogy and practices that a particular education system employs. The educational policy and practice of state and maintained schools in England is determined by the National Curriculum, overseen by the Department for Education (DfE). However, alternative educational approaches are also available in the form of private, independently financed schools such as Forest, Reggio Emilia, High Scope, Steiner, and Montessori schools. The latter two approaches are increasing in popularity and prevalence in the United Kingdom (Isaacs, 2012; Sobo, 2014). It is estimated that there are

over 16,000 Montessori Schools worldwide, with approximately 800 based in the United Kingdom (Isaacs, 2012). Steiner education has over 1,200 schools worldwide with 36 that are UK based (Steiner Waldorf Schools Fellowship, n.d.). In contrast to the National Curriculum, both of these systems have developed their own individual pedagogic bases which differ in their attitudes towards pretence and creativity. These differences are worthy of study given the widely cited importance of both creativity and pretence for optimal learning and development (e.g., Russ, 2014; Singer, Golinkoff, & Hirsh-Pasek, 2006). Furthermore, such schools offer a naturally occurring opportunity to assess differential educational effects upon the development of pretence and creativity in a way that is consistent with the hypotheses of a cultural learning approach. This was the central aim of this study.

PRETENCE AND CREATIVITY WITHIN THE NATIONAL CURRICULUM

Panksepp (2007) argues that education should provide children with opportunities for play and creativity as well as convergent thinking and problem solving. Consistent with this idea, early years education in England (from birth to 5 years) currently utilizes a child-centered teaching approach based upon constructivist ideas that children learn best through active learning and exploration (e.g., Piaget, 1952, 1954). Play is regarded as “essential for children’s development” and is described as a key integrating mechanism through which children learn across the different subject areas of the early years foundation stage (EYFS, DfE, 2012). Children’s progress is monitored through ongoing observation and completion of an EYFS checklist, which indicates readiness for more formal, didactic instruction at age five. From this point, the National Curriculum (introduced in 1989) sets out a legal framework for teaching strategies, assessment, and compulsory subjects. In Primary education, there are two key stages: stage 1 (5- to 7-years) and stage 2 (8- to 11-years) with children facing formalized assessment at the end of key stage 2 in English, Maths, and Science. As a result, numeracy and literacy are prioritized, with less time given to more creative, arts-based subjects (Rose, 2009).

The introduction of prescribed content and increased assessment has arguably led to an increased emphasis upon convergent thinking, teaching to test, and formal lessons within primary education (Jenkins, 2000; Turner, 2013). As a consequence, playful learning has been reduced (Kaila, 2005) and creativity has been found to decline in relation to the demands of the didactic approach (Torrance, 1992). In addition, it has been suggested that teachers find creative pupils disruptive (Dawson, D’Andrea, Affinito, & Westby, 2000) and may themselves require extra training to incorporate creative approaches into their work (Manning, Glackin, & Dillon, 2009). In 2009, such suggestions were supported by a 2-year review of primary education (Rose, 2009), which recommended that formal lessons should be delayed until the age of six to allow for more play-based learning, that the amount of standardized tests should be reduced and that the curriculum should be widened. While this led to suggestions for a new “creative curriculum,” such plans were dropped by the Conservative government in 2010 (Blair & Francis, 2011). Key features of this approach can however be found in Steiner and Montessori schools (Pope-Edwards, 2002).

PRETENCE AND CREATIVITY IN STEINER EDUCATION

Steiner schools were established by Austrian Dr Rudolph Steiner (1861–1925) and aim to educate the “whole child” including the “mind, body and spirit” (Edmunds, 2004). Steiner education proceeds according to three major stages in childhood (Nicholson, 2000). During the first stage (until approximately age seven), learning is promoted through imitation, play and physical activity (Clouder & Rawson, 2003). In the second stage, from around 7–14 years, children’s imagination is prioritized, and learning is promoted through feeling and experience (Woods, Ashley, & Woods, 2005). It is only by the final stage of adolescence and young adulthood (from age fourteen onwards) that intellectual thought and a sense of independence become paramount (Nicholson, 2000). Accordingly, formal academic study is de-emphasized until it is felt that the child is cognitively and emotionally ready (Woods et al., 2005).

Steiner schools teach all recognized subjects within the national curriculum, but there is also considerable diversity in subject matter (e.g., knitting and gardening) and the methods through which it is presented (Parker-Rees, 2011). Primary source materials are used instead of textbooks, children are taught in mixed age classrooms and learning is documented through portfolios of children’s work rather than by standardized assessments (Pope-Edwards, 2002). Steiner schools also adopt a multiple symbols approach in which content is presented in a number of forms such as pictures, music, plays, stories, and dance, with verbal expression and visual imagery as widely valued as numeracy and literacy (Nicholson, 2000).

In contrast to the National Curriculum, the entire focus of Steiner education is artistic-imaginative, with the dramatic and creative facets of art incorporated into the teaching of other subjects with the aim of

stimulating the feelings and senses, thereby promoting an intrinsic desire to learn (Easton, 1997; Lim, 2004). Pretend play is also highly valued and practiced, with fantasy and make believe held up as an essential aspect of healthy and normative development (Sobo, 2014). Until the age of seven, much of the school day is devoted to free play and in middle childhood and adolescence pretence is still encouraged in a number of ways (Pope-Edwards, 2002). First, Steiner classrooms lack conventional toys or games and instead encourage children to make their own, or use substitute items in the form of natural or everyday objects (Edmunds, 2004). Second, the oral and narrative tradition that permeates Steiner schooling is reflected in the increased use of socio-dramatic play and recitation play (Edmunds, 2004). Both the organization of the school day and the learning environment are designed to facilitate child initiated free play (Nichol & Taplin, 2012) with teachers trained to encourage and direct pretence by providing models, suggestions and stories (Sobo, 2014). Pretend play is also argued to optimize children's creativity by stimulating a dream-like consciousness, in which experiences are free flowing and experimental (Sobo, 2014). Such pedagogy and practice suggests that creativity and pretence are more highly valued and occur more frequently than within the National Curriculum.

PRETENCE AND CREATIVITY WITHIN MONTESSORI EDUCATION

Montessori schools are based upon a curriculum devised by Italian physician Dr Maria Montessori (1870–1952). Like Steiner education, the Montessori curriculum aims to educate the whole child based upon a broad cultural curriculum encompassing all National Curriculum subjects (Prochazka, 2006). Montessori pedagogy is also led by the concept of stage-like development, with children said to progress through key stages lasting 6 years, beginning with the absorbent mind (aged birth to six), through to childhood (6–12) and finally, adolescence (12–18). Each stage is led by unique characteristics and needs akin to “sensitive periods” for the development of particular skills (Isaacs, 2012). Thus, the content and delivery of teaching at each stage is developmentally tailored, increasing in complexity at each level using a spiral curriculum approach (e.g., Bruner, 1960). For example, during the period of the absorbent mind, children are argued to be particularly sensitive to their environment characterized by a need for movement, order, and exploration of small objects, whereas by the stage of childhood focus shifts to the child's wider social, moral, and cultural development (Isaacs, 2012).

Constructivist ideas are central throughout Montessori education with active approaches and object manipulation at the heart of learning (Lillard, 2013; Pope-Edwards, 2002). Practical activities are used to render abstract concepts concrete and to employ the body in the service of the mind to develop concentration and independence (Lillard, 2007). Children's abilities in different subject areas are assessed through their use of a range of specialist materials that increase in difficulty through a hierarchical sequence (for e.g., colored beads arranged in graduated number units to aid mathematical instruction). Children progress through the use of materials at their own pace and are largely free to choose what activities they want to engage in so as to encourage internal direction, motivation, and self-discipline (Lillard, 2007). Standardized tests are also avoided and children are taught in mixed aged classrooms (Lillard & Else-Quest, 2006).

Studies have shown that grades and rewards can lower motivation and creativity (e.g., Warneken & Tomasello, 2008), therefore, it could be possible that the lack of standardized tests in both Steiner and Montessori schools helps these pupils to remain interested and to be more creative (Csikszentmihalyi, Abuhamdeh, & Nakamura, 2005; Silvia, 2006). However, within Montessori education the traditional view of pretence and creativity is starkly different to that within Steiner education and the National Curriculum. Heuristic play is encouraged during the absorbent mind stage as a form of object exploration and manipulation (Isaacs, 2012; Lillard et al., 2013b). Creativity is then linked with this exploration as children learn to use objects and materials in a variety of different ways in different subject areas (Isaacs, 2012). However, Montessori (1989) conceptualized pretend play as the immature expression of a young mind, and argued that it could be developmentally harmful by distorting children's understanding of the real world. Although she valued the imagination, Montessori (1989) did not advocate this as a part of the curriculum, instead arguing that children have an innate desire to participate in the real adult world. Accordingly, a key feature of Montessori classrooms is a practical life area, where children engage in everyday activities such as cooking using actual adult tools or miniature replicas (Lillard, 2007). Thus, traditional Montessori schools lack access to fantasy-based toys such as dressing up clothes. As every material in a Montessori classroom has a definitive use teachers are reported to intervene if these are used in a way that is inconsistent with the set learning outcomes (Lillard, 2013; Pope-Edwards, 2002). Therefore, Montessori pupils have less opportunity to symbolically manipulate objects in pretence than Steiner and National Curriculum pupils.

Given the high value that is placed upon play in Western societies (e.g., Fisher, Hirsch-Pasek, Golinkoff, & Gryfe, 2008), it is possible that some educators and parents may view Montessori practices with scepticism. Soundy (2009) suggests that a shift in thinking may be occurring within the Montessori community, with personal observations, anecdotal teacher reports, and Montessori publications suggesting increasing awareness that pretend play may be a useful and important learning tool (e.g., Honig, 2006; Ohlhaber, 2001). This is not an accepted convention, however (Soundy, 2009), and alternative positions are offered. In particular, Lillard (2013) asserts that the child-centered, constructivist approach of Montessori offers “playful learning” in which the proposed benefits of pretence may be fulfilled by other unique aspects of the Montessori curriculum such as freedom of choice and self-direction. However, Bergen (2013) is critical of such a suggestion, arguing that although playful learning without pretence may have some important developmental outcomes, the harm this may have on the important human ability to pretend has not yet been addressed.

PREVIOUS RESEARCH

Although National Curriculum, Montessori, and Steiner schools clearly differ in their pedagogy and practice there is little research that has measured skills across all three of these systems, and such studies are confined to the graphic domain (e.g., Cox & Rowlands, 2000; Rose, Jolley, & Charman, 2012). Preliminary studies have assessed differences in literacy between Steiner and National Curriculum pupils (Cunningham & Carroll, 2011), but the majority of research has focused upon comparisons between Montessori and other education systems (e.g., Bagby, Barnard-Brak, Sulak, Jones, & Walter, 2012; Lopata, Wallace, & Finn, 2005). A similar trend is apparent for pretence and creativity, with a literature search yielding no studies comparing these abilities across all three schools types and no research comparing pretence in Steiner and National Curriculum schools. It may be that researchers have avoided the study of pretence and creativity within Montessori education because of a lack of these features within the curriculum. However, Isaacs (2012) follows Bergen (2013) in arguing that such research is crucial to provide firm empirical evidence of Montessori practices and outcomes, alongside existing anecdotal reports that Montessori school children do participate in spontaneous pretence and do take part in activities that involve creativity and imagination. This is also important given that parents can and do make educational choices for their children based on the prevalence of play within a particular approach (i.e., high in Steiner and low in Montessori, Lillard et al., 2013b).

In relation to creativity, Ogletree (2000) studied the creative abilities of a large sample of 1165 students from six Steiner and State schools in England, Scotland, and Germany using the Torrance Test of creative thinking (TTCT; Torrance, 1966), which assesses divergent thinking and problem solving in both verbal and figural tasks. Cross-culturally (and when analyzed by social class) Steiner pupils scored significantly higher than their state school counterparts on all measures. The generally more developed creative abilities of Steiner pupils are also suggested by Hutchingson and Hutchingson (1993). In this Canadian study, a sample of children from mainstream and Steiner schools were rated as gifted or non-gifted and then compared. Significantly, even the Steiner pupils classified as non-gifted showed the same characteristics as their gifted state school equivalents.

Although Steiner education may be seen to facilitate creative skills, it could be argued that the largely reality-orientated approach of the Montessori curriculum may inhibit creativity. In an American study, Dreyer and Rigler (1969) provided some support for this hypothesis when they compared 14 Montessori and 14 state schooled nursery children on a figural test of creativity developed by Torrance (1962). In the Picture Construction Task (PCT), participants are required to incorporate a red shape of a jellybean into a drawing which is then scored according to criteria such as originality and elaboration (Torrance, 1992). In this study, inter-rater reliability was good for each scoring criteria, both education groups were matched by age, sex, IQ, and social class, and no differences were found in parental attitudes and behavior. Based upon overall scores for the PCT, Dreyer and Rigler reported that state school children scored significantly higher than the Montessori group.

Opposing results have been found however when using a verbal measure of creativity. Lillard and Else-Quest (2006) conducted a study of American state school and Montessori pupils at age 5 and age 12 using a random lottery design and a range of cognitive and social measures. At age 12 Montessori children were rated as producing more creative narratives than their state school peers. At age five, an observation of children during break times also showed that Montessori pupils engaged in more positive shared peer play and less ambiguous rough and tumble play, suggesting more highly developed socio-behavioral skills. However,

pretend play abilities were not measured. In an earlier American study, Krafft and Berk (1998) investigated the relationship between pretend play and self-regulation through private speech in a sample of 59 3- to 5-year-old children educated in Montessori or state schools. Consistent with Montessori’s traditional discouragement of pretence, results showed that Montessori children engaged in significantly less pretend play and produced significantly less self-guiding speech. Although variables such as teacher direction were significant predictors of private speech, engagement in pretence was the strongest predictor, thus supporting the relationship between these two skills.

THE CURRENT STUDY

In light of the lack of research in this area, this study was designed as a preliminary investigation of the influence of Montessori, National Curriculum and Steiner education upon English children’s pretence and creativity during primary education. While theoretically important within both a developmental and a cultural learning approach, such research is also essential for any proposed adaptation of Steiner and Montessori pedagogy to mainstream education, and also to support the increasing calls for government funding for alternative educational approaches (Ross, 2009). The design of the study also allowed a re-examination of the relationship between pretence and creativity, which has been a subject of some debate in recent literature (e.g., Lillard et al., 2013a). Although pretence and creativity are both concepts that have proved notoriously difficult to define (e.g., Ausubel, 1968; Lillard et al., 2013b) this study characterizes pretence as a subcomponent of overall play with six features described by Lillard (1993, 1994) including (a) a pretender, (b) a reality, (c) a mental representation, (d) an action, (e) a projection of the mental representation onto reality, and (f) an awareness of the proceeding features. The essence of this definition is the acting “as if” element of pretence. Creativity is defined in a holistic manner that incorporates not only divergent thinking (in the form of originality, flexibility and fluency, Cropley, 2004) but also more qualitative aspects such as openness, unconventionality, and risk-taking (Urban & Jellen, 1986).

Given the high value of fantasy and the imagination within Steiner schooling, it was predicted that Steiner pupils would perform significantly better in tests of pretence and creativity than both the National Curriculum and Montessori pupils. Traditional Montessori pedagogy suggests that such pupils would score lowest on measures of pretence, with National Curriculum pupils occupying the middle ground. The same patterns of differences were hypothesized for creativity, although previous research has reported inconsistent results (e.g., Dreyer & Rigler, 1969; Lillard & Else-Quest, 2006). Finally, in line with previous research (e.g., Singer & Singer, 2006) it was hypothesized that pretence and creativity would be positively related to each other independent of school type.

METHOD

PARTICIPANTS

Sixty ($N = 60$) participants were tested between the ages of 6;10 to 8;11 years, including 20 children from each school type. All participants had been taught within their current school from the equivalent of reception class in the National Curriculum (around age 4 years). The number of boys and girls within each school type were relatively equal: National Curriculum, 8 males, 12 females; Steiner, 7 males, 13 females; Montessori, 8 females, 12 males. The sample was mixed in race. The mean (and standard deviation) of each groups age, socio-economic status (SES), expressive vocabulary, and non-verbal ability are shown in Table 1. The SES of each group was calculated based upon the mean weekly household income by school postcode. Equivalent household income data were not available for one of the Steiner schools, thus the SES for the Steiner sample was based solely upon income data for the remaining school. Participants’ productive

TABLE 1. Mean Age (Months), SES (Household Income in Pounds per Week), Raven’s CPM (Raw Score) and SDs by School Type

	Steiner	Montessori	National Curriculum
Age	95.35 (8.18)	92.30 (5.46)	96.85 (6.60)
SES	510.00 (0.00)	696.50 (296.10)	540.00 (124.39)
Raven’s CPM	23.80 (8.56)	24.80 (5.49)	29.20 (5.08)
EVT2	105.05 (12.34)	97.25 (9.85)	106.65 (15.20)

vocabularies and word retrieval skills were assessed using the second edition of the Expressive Vocabulary Test (EVT2; Williams, 2007). The children's non-verbal abilities were also measured using Raven's Colored Progressive Matrices (Raven, Raven, & Court, 2004).

Overall, no statistically significant differences were found between the ages of the children within the three groups—Welch's $F(2, 37.05) = 2.94, p = n.s.$ However, there was a significant difference in the SES of the three groups, $F(2, 57) = 5.83, p = .01, \eta^2 = .17.$ Tukey posthoc tests showed that the Montessori sample had a higher SES than both the Steiner ($p = .01$) and National Curriculum samples ($p = .03$), which did not differ. A one-way ANOVA conducted on the EVT scores was also significant, $F(2, 57) = 3.16, p = .05, \eta^2 = .01,$ although none of the posthoc contrasts achieved significance. A one-way ANOVA conducted on the Raven's CPM raw scores was also significant—Welch's $F(2, 36.70) = 4.67, p = .02.$ Posthoc Tukey tests showed that National Curriculum children achieved significantly higher non-verbal scores than Steiner children ($p = .03$), but there was no significant differences between the other groups. Nevertheless, the Steiner children performed within the norm for their age group, while the mainstream participants performed slightly above this norm. Due to these differences, expressive vocabulary and non-verbal ability were included as covariates in all statistical analyses. Results were also interpreted bearing in mind that the Montessori sample was derived from a higher socio-economic background.

THE SCHOOLS

A list of potential participating schools was compiled from databases accessed via the Steiner Waldorf Schools Fellowships website (www.steinerwaldorf.org.uk) and the UK Montessori organization website (www.montessori.org.uk). Head teachers were contacted by the first author to give provisional consent for the study to take place. Four potential schools were contacted for the National Curriculum sample and two agree to participate. Of the three Steiner schools initially contacted, two agreed to take part. In total, 14 Montessori schools were contacted but the majority (seven schools) only provided nursery education and thus did not have children within the target age range. Of the remaining seven schools, 4 agreed to participate and 3 declined. For all school types, the main reason for declining to participate was staff shortage, existing student placements, or events that prevented the research from taking place. Following initial agreement from the head teacher written consent for participation was sought from all children's parents within the relevant age groups. The first twenty consent forms returned within each school type determined which children participated. Verbal assent was also sought from the children themselves and no children declined to take part or subsequently withdrew from the study.

NATIONAL CURRICULUM

National Curriculum pupils were sampled from four classrooms within two mainstream schools. Both schools followed the National Curriculum for all subject areas, and promoted pretence through the provision of areas for socio-dramatic play, such as a "home corner" with a play house for younger children in the EYFS.

STEINER

Participants for the Steiner sample were derived from three classrooms within two schools that were members of the Steiner School Fellowship and had received full accreditation. Accreditation ensures that member schools follow and apply quality indicators set out in the Fellowship Code of Practice. Both schools closely followed Steiner's original educational philosophy, with all subjects taught through an arts-based approach that valued pretence and the imagination. For example, all classrooms were decorated with teachers' and children's artwork, and concepts were taught through the telling of fairy and folk tales. Children remained in a nursery play-based learning environment until entry into the middle school at around age 6–7 years. Both schools taught subjects specific to Steiner education including knitting and gardening.

MONTESSORI

Participants for the Montessori sample were sampled from four classrooms within four different schools, which were registered with and accredited by the UK Montessori Schools Association (MSA) with further input from the Montessori St. Nicholas Charity. All schools utilized Montessori's specialist materials in a traditional Montessori classroom environment, where children were of mixed ages and were able to self-select their activities. Consistent with a more modern Montessori approach (e.g., Honig, 2006) teachers at each school reported positive attitudes towards pretence, with one school additionally having some

fantasy-based toys (such as dolls) available. Such practice may differ to schools in Europe or America that have been accredited by the Association Montessori Internationale or the American Montessori Society (Isaacs, 2012).

TASKS

All tasks were administered individually by the first author and took place over 1 week, with their order counter-balanced for each participant.

Pretend Actions Task (Overton & Jackson, 1973)

The pretend actions task is a commonly used and well-established measure which previous research suggests is both reliable and sensitive to detecting differences in the developmental complexity of pretence (e.g., Elder & Pederson, 1978; Nielsen & Dissanayake, 2000; Overton & Jackson, 1973; Taylor & Carlson, 1997; Taylor, Cartwright, & Carlson, 1993). The test assesses the progression from representation based upon a concrete signifier towards abstract and arbitrary symbolization. All participants were asked to perform self- and externally directed pretend actions (six in total). The self-directed actions were: (a) pretend you are combing your hair, (b) pretend you are drinking from a cup, and (c) pretend you are brushing your teeth. For the externally directed part of the task, children were presented with a wooden block and a piece of paper and were requested to: (a) pretend you are hammering this wooden block, (b) pretend you are cutting this wooden block with a knife, and (c) pretend you are cutting this piece of paper with some scissors. This task took place within one testing session, and for each action the experimenter documented whether the child used a body part to perform the action (e.g., using a finger to represent the toothbrush), or whether they used an imaginary object. Scoring was conducted by the experimenter immediately after the action was performed, with a score of one attributed to each use of a symbolic object and 0 points for use of a body part. The maximum score was six points.

Creative Thinking Task

Creativity was assessed using the Test of Creative Thinking—Drawing Production (TCT-DP) (Urban & Jellen, 1996). Research suggests that TCT-DP is gender and culturally fair, and it has been administered across a wide range of abilities, age groups, and educational settings (Blumen-Pardo, 2002; Maker, Jo, & Muammar, 2008). It is also reported to correlate positively with verbal measures of creativity (Urban, 2004). The TCT-DP provides two standardized and incomplete drawings of six figural fragments (a semi-circle, a point, a large right angle, a curved line, a broken line, and a small open square outside a square frame), which participants are asked to complete. Each participant was provided with a pencil. They were given 15 minutes to complete each incomplete drawing. Following the directions described in the test manual, all participants were instructed as follows:

In front of you is an incomplete drawing. The artist who started it was interrupted before he or she actually knew what should become of it. You are asked to continue with this incomplete drawing. You are allowed to draw anything that you wish. You can't draw anything wrong and everything that you put on the paper is correct. When you finish your drawing please give me a sign so that I can take it and give you a second one.

Participants were additionally instructed that they could give their drawing a title or theme if they wished by writing it above their picture. Any questions were clarified by re-stating that participants could complete the drawings in whatever way that they liked. The time taken for participants to complete each individual drawing was also recorded as this was an additional element involved in rating the creativity of the productions.

SCORING OF PARTICIPANTS CREATIVE DRAWINGS

Raters

All drawings in this study were rated by two independent raters who were blind to the age and sex of the participants, as well as what school type they attended.

TCT-DP

Both drawings completed by participants in the TCT-DP were scored by the raters according to a detailed set of 14 criteria of creativity outlined in the test instruction manual. Both raters were given a copy

of these instructions prior to commencement of the study, and were fully briefed by the experimenter as to how to apply them using example drawings. The fourteen criteria are:

- (1) Continuation; (2) Completions; (3) New Elements; (4) Connections by Line; (5) Connections by Theme; (6) Boundary-breaking (fragment-dependent); (7) Boundary-breaking (fragment-independent); (8) Perspective; (9) Humour/Expression; (10) Unconventional Manipulation; (11) Unconventionality: Abstract/fictional; (12) Unconventionality: Symbol-Figure Combinations; (13) Unconventionality: Non-Stereotypical Utilization of Given Fragments; (14) Speed.

The maximum total score for one drawing on the TCT-DP is 72 points (144 for both drawings combined). Cohen's kappa could not be calculated for the TCT-DP, because the values for each rater were in different ranges. However, the intraclass correlation coefficient was high ($ICC(3, k) = .99$). Raters agreed exactly on 68.3% of the scores (82/120 drawings) and were within Urban and Jellen's (1996) recommended limit of four points difference for the remaining 31.7% (38/120). Rater one's scores were used for analytic purposes because this individual had greater experience studying the visual arts.

RESULTS

To assess whether type of education had a significant influence upon participant's pretence and creativity the mean scores in each of these domains was compared for each school type using two-one-way ANCOVAs with a bonferonni correction to control for inflated type 1 error. Raven's CPM and EVT2 were entered as covariates to statistically control for the differences in expressive vocabulary and non-verbal ability that existed between the school samples.¹

PRETENCE TASKS

The mean scores (and *SDs*) for National Curriculum, Steiner and Montessori pupils on the pretend actions task are shown in Table 2 below. A one-way ANCOVA revealed that non-verbal ability was significantly related to performance of participants in the pretend actions task, $F(1, 55) = 4.55, p = .04, \eta^2 = .08$, however, expressive vocabulary was not. There was also a significant effect of school type on this task after controlling for non-verbal ability, $F(2, 55) = 4.05, p = .02, \eta^2 = .13$. Posthoc contrasts showed that the Steiner children produced significantly more complex pretend acts than the Montessori pupils ($p = .03$), but not the National Curriculum pupils. There were no significant differences between the scores of the National Curriculum and Montessori participants.

CREATIVE THINKING

The mean scores (and *SDs*) for each school type on the TCT-DP are also presented in Table 2. The ANCOVA revealed that neither expressive vocabulary nor non-verbal ability had a significant effect upon performance in the TCT-DP. However, type of schooling did have a significant influence upon TCT-DP scores, $F(2, 55) = 5.78, p = .01, \eta^2 = .17$. Posthoc contrasts revealed that Steiner pupils obtained significantly higher scores than both Montessori ($p = .01$) and National Curriculum participants ($p = .02$), who did not differ significantly from each other.

Figure 1 show examples from the TCT-DP for each school system. The gender and age of each child artist, any title for the picture and the score received are indicated below the relevant drawing.

THE RELATIONSHIP BETWEEN PRETENCE AND CREATIVITY (INDEPENDENT OF SCHOOL TYPE)

To ascertain the relationship between pretence and creativity in the whole sample, a partial correlation (one tailed) was conducted between scores on the TCT-DP and pretend actions task while controlling for

TABLE 2. Mean Overall Score (and *SD*) for Pretend Actions Task and TCT-DP by School Type

	Steiner	Montessori	National Curriculum
Pretend acts	3.75 (1.48)	2.85 (1.18)	3.85 (0.93)
TCT-DP	32.65 (12.63)	21.50 (7.87)	24.15 (12.09)

¹ SES data were not available for all participants, thus it could not be entered as a covariate.

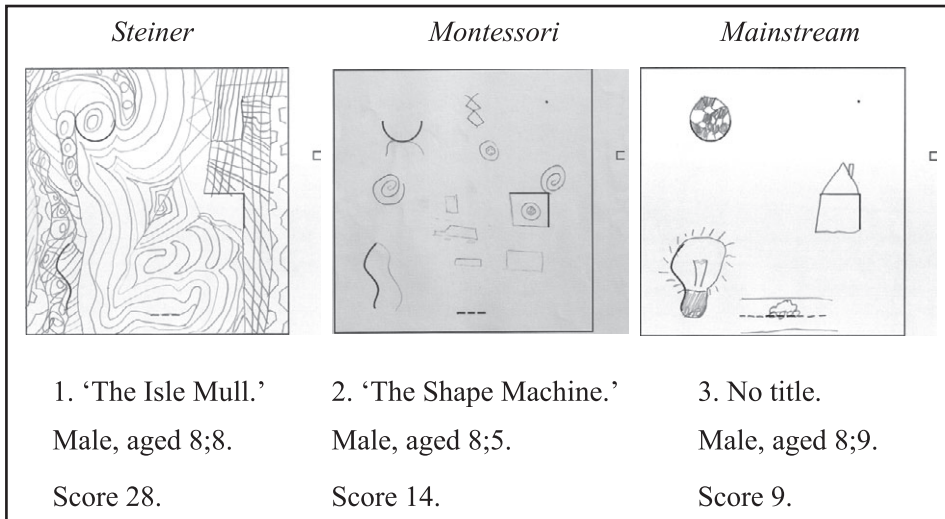


FIGURE 1. Examples of children's graphic production in the TCT-DP by school type.

TABLE 3. Partial Correlation between the Pretend Actions Task and the TCT-DP with the Variance Associated with School Type, Non-Verbal Ability, and Expressive Vocabulary Removed

	Pretend Actions Task
TCT-DP	.30 ($p = .02$)

school type, non-verbal ability and expressive vocabulary. Results from these analyzes are shown in Table 3. A significant small positive correlation was found between performance on TCT-DP and the pretend actions task ($r = .30, p = .02$).

DISCUSSION

The cultural learning approach (e.g., Callaghan et al., 2012) asserts that children's development can be particularly influenced by their environment. While pretence and creativity have been reported to vary across different cultures (e.g., Gauvain & Munroe, 2009), there has been little investigation of the influence of different education systems upon these abilities. Such an investigation is important within both a European and International context: children in industrialized countries typically spend a majority of their waking hours in formal education. Understanding how different educational philosophies affect domains of development is a key to understand developmental processes in middle childhood, and to developing truly effective evidence-based educational systems. This study sought to study the effects of Steiner, National Curriculum and Montessori education upon British Primary school children's pretence and creativity, as well as considering the relationships between these skills. Overall, some significant differences were found between the school types for the creativity and pretend actions tasks. There was also a significant positive relationship between these tasks in the whole sample. Each of these results will now be discussed in turn.

In the domain of creativity, the results suggest that children educated in Steiner schools produced drawings that were rated significantly more highly than either Montessori or National Curriculum pupils. The better performance of Steiner pupils supports the findings of the few previous studies in this area (Hutchingson & Hutchingson, 1993; Ogletree, 2000) and suggests that educational environment can have an important influence upon the development of creativity. Such performance is noteworthy given that creative thinking may be viewed as an index of cognitive flexibility, involving skills that are essential to success in modern society, such as originality, motivation, and problem solving (Runco, Nemiro, & Wahlberg, 1998).

As Ogletree (2000) suggests, the Steiner system may be particularly facilitative of children's creativity because of its broad multi-subject curriculum that provides equal emphasis for both arts-based and more traditional academic subjects. By de-emphasizing academic achievement and instead focusing upon the imagination, the Steiner curriculum may act to stimulate some of the key areas of the creative process, such as originality of ideas and the ability to approach problem solving in a unique manner (Sharp, 2001). Direct promotion of creativity with Steiner education is also evident during middle childhood, when the curriculum focuses upon the qualities of enthusiasm, spontaneity, and playfulness, all of which are crucial to the creative process (Edmunds, 2004).

A further key aspect of creativity that the Steiner curriculum may influence is children's motivation to learn or according to Steiner, the "willing" mode of engagement (Sobo, 2014). Specifically, while the English National Curriculum may influence children's motivation through the provision of grades, the Steiner curriculum encourages a more internal motivation through a holistic educational approach. Accordingly, Steiner pupils may have more experience and confidence tackling problems that involve divergent open response-type thinking. While Montessori education also eschews standardized tests and promotes intrinsic motivation for learning (Lillard, 2007), it differs in that imagination and creativity are traditionally not directly promoted (Montessori, 1989). However, in our sample it is possible that these two factors equalized each other, as in contrast to our predictions, Montessori pupils did not perform less well on the TCT-DP than their National Curriculum counterparts. This contrasts with Dreyer and Rigler's (1969) findings that Montessori pupils scored lower on measures of creativity than their state school peers. It is possible that this result could reflect a comparative softening of Montessori attitudes towards imagination and creativity over time, a suggestion that Jolley (2009) asserts is evident within Montessori art teaching. However, such a suggestion requires empirical verification via a large-scale survey of accredited Montessori practitioners (Isaacs, 2012). A further explanation of the similar performance of these participants may be that although National Curriculum pupils experience a creative, imaginative play-based environment until age 5 years, with the end of the EYFS this decreases as the amount of formal instruction increases. Research concurs with the suggestion that formal schooling acts to decrease creativity (Warneken & Tomasello, 2008), however, future (preferably longitudinal) studies are needed to assess creativity at different time points throughout primary education, comparing these with equivalent stages in Steiner and Montessori schools. This would reveal whether the EYFS confers National Curriculum pupils an early advantage in creativity that disappears over time.

Creativity is a highly contested concept and is not easy to define (Sharp, 2001). The TCT-DP was selected to measure creativity in this study because of its wide use in educational research, its ease of administration (e.g., Jellen & Urban, 1986) and its appropriate psychometric properties such as acceptable concurrent validity with quantitative divergent thinking tests (e.g., Kirsch, 1988). Production tasks like the TCT-DP have been proposed as the most suitable single measure of creativity as they have excellent ecological validity (Lubart, Pacteau, Jacquet, & Caroff, 2010). Nevertheless, as creativity is a complex multidimensional concept, it can be assessed through various alternative methods such as verbal or divergent thinking tasks. This presents the possibility that while Steiner education may be particularly facilitative of components of creativity associated with the arts (for e.g., originality), Montessori schooling could potentially nurture different elements of creativity (e.g., usefulness) associated with the sciences and engineering (Feist, 1998). The current study is open to the related criticism that Steiner children performed better on the TCT-DP simply because their expressive drawing skills are more advanced (see Cox & Rowlands, 2000; Rose et al., 2012). While the TCT-DP arguably assesses creativity much more holistically than an expressive drawing task (e.g., assessing unconventionality in terms of participant's breaking of a set boundary on the drawing page), previous research has suggested differences in verbal creativity between Montessori and National Curriculum pupils (Lillard & Else-Quest, 2006). Thus, in future research, a verbal creativity task may be particularly useful to further differentiate differences in creativity between these school systems, particularly as their approaches to the teaching of language and literacy also vary (e.g., Bagby et al., 2012; Cunningham & Carroll, 2011).

Montessori, Steiner, and National Curriculum schools also hold very different attitudes and practices towards pretence and the imagination. In spite of this, there have been no previous studies investigating pretence across all of these systems, and only a few studies comparing pretend play in Montessori and state schools (e.g., Krafft & Berk, 1998; Lillard & Else-Quest, 2006). Such research is crucial to ascertain the effects of low versus high pretend play curricula upon the developmentally important skill of pretence itself (Bergen, 2013) and also upon any associated abilities including creativity (Lillard et al., 2013a). In contrast

to our predictions, few differences were found between the performances of pretend actions by children within the three school samples. Montessori and National curriculum pupils did not differ significantly on this task, nor did the National curriculum and Steiner pupils. However, the Steiner children did perform significantly better than their Montessori counterparts. Such results do not concur completely with a cultural learning approach which stresses the importance of social learning upon pretence abilities (e.g., Tomasello, 2008). Recent large-scale cross-cultural research by Callaghan et al. (2012) found similar developmental trajectories for foundational, non-interactive social-cognitive skills such as attention but differences in the comprehension and production of both graphic and pretence symbols, which they argue are dependent upon specific kinds of social experience. In light of these findings, a possible explanation for the similarities evident in this study is that despite the prevailing view of the education system within which they are schooled, children still have free choice over the content, and structure of their play that takes place at other times (e.g., during break times, and, dependent upon parental attitudes, at home). Thus, as Lillard (2007) observes, although traditionally discouraging of pretence during school hours, Montessori pupils still have the opportunity to engage in fantasy play during their free time. Similarly, while Steiner education promotes imaginative play, this does not preclude children from engaging in reality-based play if they wish.

The current research did find that Montessori pupils performed less well on the pretend actions task than their Steiner peers, although they performed equivalently to National Curriculum pupils. Lower scores achieved by the Montessori participants indicate that they were more likely to use the less developmentally advanced strategy of representing an object with a body part, rather than making reference to an absent object (Taylor et al., 1993). Such a finding is perhaps explainable by the Montessori focus upon the development of cognition through movement and action. In particular, Montessori education is based around the use of sensorial materials which children touch and move, and which aim to bring concrete embodiment to abstract concepts (Lillard, 2007). Although such an approach has been argued to benefit communication through the gestural modality (Lillard, 2007), it is possible that the type of gestures which are promoted are those which have a concrete rather than imagistic basis. Thus, in the pretend actions task, Montessori pupils may have favored use of a body part to represent an action, because such a representation is more iconic (i.e., the movement of a finger representing a toothbrush) rather than symbolic in a more arbitrary sense (i.e., pretending to hold an imaginary toothbrush). In contrast, while Steiner education also promotes the use of play to facilitate fine motor skills during early childhood, there is more of a focus upon play as a “whole body experience” (Sobo, 2014), particularly through the teaching of eurythmy (the art of movement through dance).

The results of the pretend actions task suggest a need to study pretence in greater detail in all three education systems using standardized measures of pretence (such as the Affect in Play Scale; Russ, 2004) or in depth well-funded observational designs (see Bergen, 2013; Lillard et al., 2013b). Schools using alternative educational approaches are reportedly reluctant to become involved in external research (Isaacs, 2012; Pope-Edwards, 2002). As such, to improve recruitment prospects this study avoided the use of lengthy observational techniques that may have required video recording of children. Such methods are of particular value however because they assess pretence that is self-assessed or intrinsically motivated, arguably a defining feature of play (Krasnor & Pepler, 1980). The pretend actions task in this study was advantageous in its ease of administration and scoring, but as a result sacrificed a degree of ecological validity. The challenges of an external researcher gaining access to both Steiner and Montessori schools also resulted in one researcher (the lead author) administering all play and creativity tasks. This minimized disruption to the children and their school routine but opens the possibility of unconscious experimenter bias which Lillard et al. (2013a) identified as a common limitation of much play research. Although the TCT-DP was independently scored and achieved high reliability, scoring of the pretend actions task was dependent upon the observation and judgement of the first author, thus future research would therefore benefit from the use of standardized measures of pretence carried out by an independent research assistant.

The lack of differences found between the National Curriculum and Steiner pupils in this study was also unexpected given the higher emphasis that Steiner education places upon pretence compared to after the end of the EYFS within the National Curriculum. As previously stated, sampling a wider age range of pupils would be useful to address this issue. As pretence is often afforded high status in Western societies (Roopnarine, 2011), it is also possible that parental attitudes towards pretence and encouragement of play at home are very similar in Steiner and National Curriculum households. A large-scale survey of attitudes and practices towards play at home and school would help to clarify this issue, particularly as parental involvement and attitudes towards play are also likely to change with age (Russ & Wallace, 2013). Although all children

in this research had been educated within their school for over 2 years (since the age of 4) parental survey of children's early experiences of pretence would also have strengthened this study by ensuring that such experiences were congruent with the ethos of their current educational curricula. Sampling the first twenty children whose parents responded to the research recruitment process was desirable to facilitate data collection and to include families who approved of the aims of the study. However, it is possible that this method may have biased the characteristics of the current sample. Surveying parents of pupils who both do and do not agree to their children's participation would allow examination of any systematic differences in these groups (such as how strongly they rate the importance of the schools play provision).

The final aim of this study was to investigate the relationship between pretence and creativity skills. Although a causal relationship between these abilities has been questioned (Lillard et al., 2013a), various studies suggest that they are positively related, and thus mutually beneficial to each other (e.g., Russ, 2003; Singer & Singer, 2006). This was confirmed in the current research, where (independent of school type) a small but significant positive correlation were found between the TCT-DP and the pretend actions task, suggesting that participants who were more highly creative were also more developmentally advanced pretenders. Such results suggest the mutual value of both pretend play and creative teaching approaches, although it does not suggest that play is the only route to creativity, or vice versa (see Power, 2011 for a more detailed discussion). Furthermore, it is possible that different subcomponents of pretence may have differing relationships with creativity, being either more or less facilitative of this ability. Lillard et al. (2013b) support such a suggestion, providing the example that role play is more likely to facilitate gains in theory of mind ability than object substitution play. Future research could test this suggestion by assessing the different processes evident in pretence within these schools systems, such as organization, imagination, and type of frequency of affect (e.g., see Hoffman & Russ, 2012).

Overall, the current research presents some support for the cultural learning approach in the domains of pretence and creativity. In accordance with the prioritization of children's imagination, feelings and experiences throughout the Steiner curriculum, creativity was found to be highest within this approach. However, the influence of educational curricula upon children's pretend actions was less evident, with significant differences only found between the Steiner and Montessori pupils. Such results are provisional, and due to the relatively small sample size require further verification from larger scale longitudinal research, ideally with Steiner and Montessori samples which are matched with individual controls in the mainstream sample. The samples in this current study were balanced as far as possible, with the mean age of each school group similar and the influence of differences in non-verbal ability and expressive language controlled in the final results. The SES of the Montessori group was higher than the other samples, however, we suggest that this is unlikely to have affected the results to any significant degree, since SES generally has a facilitative effect on achievement, and in no instances did we observe that the Montessori children were developmentally advanced in comparison to their National Curriculum and Steiner peers.

In conclusion, this preliminary study has found some important differences between Steiner, National Curriculum and Montessori schools in the United Kingdom. While we hope this will encourage a more public discourse about alternative forms of schooling, further large-scale study is needed to further explore these differences and to provide a firm empirical research base from which such schools can justify applications for funding from the public sector (Woods et al., 2005). This supports Russ and Wallace's (2013) recent calls for more large-scale multisite studies in the area of pretend play and creativity as a whole.

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AUTHOR NOTE

The authors sincerely thank the children and schools that kindly participated in this research.