Money priming and children's self-evaluations

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Abstract

Previous studies have shown that money priming changes adults' behavior and self-esteem, making them become more congruent with market mode. Money priming has also been seen to change behavior in children who have yet develop a complete understanding of its instrumental functions. Since money's association with markets changes people's behavior even in childhood, it is possible that its links and ties to self-esteem are forged at an early stage in life. The studies presented in this article aimed to verify how money priming affects various types of self-evaluations made by children. Two experimental studies were conducted. A total of 83 children aged 8–10 years took part in the first study, while 103 children aged 4–6 years took part in the second study. The results demonstrate that priming with money may change some, but not all, of children's self-evaluations. Subsequent to money priming, children's self-evaluations became more congruent with market mode: under the influence of money priming, children's self-evaluations increased in domains involving perceived competences (associated with feelings of agency), but did not increase in domains related to social relationships.

Keywords Money priming · Self-evaluations · Self-esteem · Children

Money is an extremely important element of our everyday life. In addition to its important role in facilitating trade it is also significant from psychological and cultural perspectives. Money has become so strongly associated with markets that money priming alone can change human behaviors and preferences. Until now, researchers have proposed various mechanisms to explain the effects of money priming on people's behavior. The most commonly proposed mechanisms stem from Fiske's (1992) relational models theory. This posits four basic types of social relationships: communal sharing, authority ranking, equality matching, and market pricing. Vohs et al. (2008) noted that since "money is the most typical form of market pricing, over time, the mere presence of money should elicit a market-pricing orientation toward the world" (p. 209). Market pricing relationships are based on a model of proportionality in social relationships; people attend to ratios and rates (Fiske 1992). When in market mode, people evaluate the costs and benefits of their actions. Moreover, being in market mode leads to a specific style of thinking where people use informal guidelines and adopt specific roles in their relationships with each other (Fiske, *ibid*). Market mode is

associated with rationality and fair trading, and there is no place for intimacy or emotional relationships.

The above ideas were supplemented by Zaleśkiewicz and Gąsiorowska (2017) who concluded that money affects behavior by changing people's mindset from being communally oriented (based on non-contingent support of others' welfare) to being exchange oriented (a market mode, based on expectations of reciprocity). Being communally oriented requires taking other people's presence into account and considering their needs, emotions, and points of view. An exchange mindset (market mode), on the other hand, is characterized by a focus on one's own interests, rationality and efficiency, while paying less attention to other people (Clark and Mills 1993).

Several studies (e.g., Gąsiorowska et al. 2016; Mogilner 2010; Vohs et al. 2006, 2008) have revealed that monetary value is so highly symbolic in a market that even subtle money priming may sway people's behavior away from a communal orientation towards an exchange orientation. Moreover, studies have shown that, in addition to changing people's behavior, money priming also changes people's way of thinking about themselves and others (e.g., Reutner and Wänke 2013; Gąsiorowska 2014).

Money priming's influence on behavior can also be observed in small children, who do not possess a full understanding of money's instrumental functions (Gąsiorowska et al. 2012; Gąsiorowska et al. 2016; Trzcińska and Sekścińska

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2016). However, previous research on the impact of money priming on children has only considered behavioral changes and has overlooked possible changes in self-perception. Given differences in how adults and children form their self-evaluations, it is important to analyze whether money priming can exert the same impact on children's perceptions and self-evaluations as it does with adults.

Money Priming and Changes in Behavior in Line with Market Mode

One of the best known studies demonstrating how human behavior changes under the influence of money priming is that of Vohs et al. (2006, 2008). These researchers showed that money priming makes people less willing to help others and more agentive. In these studies, relative to those who were not primed, participants who were primed with money devoted more time to their own work and worked independently to tackle complex tasks for longer, even when they were given the option of turning to someone else for assistance. Similar results were obtained by Mogilner (2010) who showed that, compared to people in a control group, money-primed people devoted more time to their work or to reading, and less time to talking to people (both face-to-face and on the telephone). These studies are illustrative of how an emphasis on money leads people to be more focused on their work (an activity typical of relationships based on exchange) at the expense of social behaviors, making people shift from a communal mode to a market mode.

Studies have also shown that, as well as giving rise to a greater focus on one's personal achievements and work, money priming also leads people to be less willing to assist others. The first evidence of such a change in behavior was presented by Vohs et al. (2006, 2008), who showed that money-primed people were less willing (than those in a control condition) to provide assistance to an experimenter or other study participants. This effect was also found in a field experiment by Guéguen and Jacob (2013) which found that, relative to people in a comparison group, people withdrawing cash from cash machines had a lesser propensity to assist an experimenter (by participating in a survey) and other people (e.g., someone dropping a ticket). Further, other studies have revealed that money priming reduces willingness to undertake volunteering activities (Chatterjee et al. 2013; Pfeffer and DeVoe 2009) and leads to a reluctance to help close others (Savani et al. 2016), the latter indicating that money shifts behaviors from being communally-oriented to exchange-oriented even where relationships are communion-based.

Interestingly, money priming's effects can also be observed in small children. In 2012, Gąsiorowska and colleagues published studies showing that children were more selfish in economic games after money priming, revealing lower prosocial

preferences and being less prone to help an experimenter than children from a control group. But, interestingly, later studies by Gąsiorowska et al. (2016) showed that children who handled coins, as opposed to paper discs, spent more time trying to solve a very difficult jigsaw puzzle before giving up and asking for assistance. In these studies (Gąsiorowska et al. 2016), money-primed children aged 3 to 6 years were also more persistent on other difficult tasks and, consequently, achieved better results than non-money-primed children. Similar results concerning increased persistence in difficult tasks after money priming were obtained by Trzcińska and Sekścińska (2016).

The research reviewed above shows that money priming changes the behavior of both adults and children, behavior becoming more consistent with market mode, where people focus more on their self-interests and efficiency and less on interpersonal relationships.

Money Priming and Changes in Self-Perceptions in Line with Market Mode

Studies have also revealed that, in addition to changing people's behavior, money priming also induces changes in the way people think about themselves and others: money priming leads to changes in self-perceptions that are consistent with market mode, and, in particular, people focus more on their self and self-interests. For example, Reutner and Wänke (2013) showed that money priming makes people more self-oriented, shifting their focus from the needs of other people to self-related needs. Similar results were obtained by Gąsiorowska (2014), where money-primed people assessed the advertising of a product that contained self-related arguments as being better than did people in a control group.

A series of studies on the effects of money priming carried out by Gąsiorowska (2014) has shown how money affects people's self-esteem. The main driver of this research was the theory of Zhang (2009) which posits that self-esteem and money can be interchangeable resources. Self-esteem is commonly understood as a relatively stable feature, being a positive attitude towards oneself (Allport 1955). The literature assumes that people are highly motivated to maintain and strengthen their self-esteem, and that this motivation guides many of their behaviors (Baumeister 1998; Crocker and Park 2004; Greenwald 1980). People defend themselves against a decline in self-esteem by using various mechanisms (e.g., attributing successes to themselves and failures to external factors; Tesser et al. 1996), and by acquiring things (e.g., luxury goods and money) or engaging in behaviors (e.g., conspicuous consumption) that are symbolic of high status to strengthen their self-esteem (Gąsiorowska 2014). Zhang's hypothesis was confirmed in Gąsiorowska's (2014) series of experimental studies on adults, which showed that the

exchangeability of money and self-esteem arises not only with respect to specific amounts of money, but also when the mere idea of money is primed. She found that money priming increased explicitly measured self-esteem, narcissism, and implicit self-esteem as measured by an implicit association test. These effects were particularly evident in people with symbolic attitudes towards money, that is, in people who attributed various non-economic functions to money (e.g., those associating money with emotions, power, prestige, independence, etc.).

Looking more closely at the impact of money priming on self-esteem, Gašiorowska (2014) appealed to Abele and Wojciszke's (2007) agency-communion model. Gašiorowska pointed out that agency is a highly valued and necessary feature in exchange relationships (market mode), while a high level of communion is typical for communal relationships. In her 2014 studies, Gašiorowska found that, compared to those not primed with money, money-primed participants declared that they were more agentive, stronger and slightly more self-sufficient, but expressed level of communion did not differ between the two groups. Similar results were obtained both by Mukherjee et al. (2013), who demonstrated that, compared to a control group, money-primed people expressed higher feelings of self-efficacy, and in studies carried out by Zhou et al. (2009), where money-primed people declared that they felt stronger. These results indicate that after money priming people's self-evaluations become more congruent with a market mode in which people focus on efficiency and agency. Given that self-esteem is dominated by agentic rather than communal considerations (Wojciszke et al. 2011), it is reasonable to suggest that the impact of money priming on global self-esteem (as shown by Gašiorowska 2014) is primarily associated with an increase in agency.

The studies described above indicate that money priming affects the way in which people perceive themselves by making their perceptions more congruent with an exchange orientation (market mode). This is probably attributable to an increased focus on one's self, a sense of strength, and an increase in self-esteem (agency) that makes people capable of changing their behavior to become more self-interested, persistent and efficient, and making them concentrate less on social relationships. However, previous studies on the impact of money priming on self-perceptions have only been conducted on adults. There is no research showing whether such effects can be observed in children, who have less knowledge of, and experience with, money than adults, and who also form their self-perceptions and self-evaluations differently than adults.

Self-Esteem in Children

Self-esteem refers to an individual's sense of their value or worth, or the extent to which they approve of, appreciate, prize, or like themselves (Blascovich and Tomaka 1991). The broadest and most frequently cited definition of self-esteem within psychology is that of Rosenberg (1965), who described it as a favorable or unfavorable attitude toward the self. Self-esteem is generally considered to be the evaluative component of a person's self-concept (Blascovich and Tomaka 1991). To date, two basic main strands of self-esteem research can be identified. The first strand, originating in the 1960s and 1970s (e.g., Coopersmith 1967; Rosenberg 1965) has treated self-esteem as unidimensional, based on the premise that the self is a unitary construct. For example, in his work, Rosenberg (1979) concentrated on global self-esteem and paid no attention to the fact that people evaluate each other differently in various life domains. According to him, an overall assessment of one's worth as a person, in the form of a global judgment of self-esteem, is sufficient in serving as a predictor of other important life outcomes.

With respect to the second, more recent, strand, researchers have drawn attention to the complexity of the self system (see Harter 1999). Presenting his theory of self-esteem, Mruk (2006) reviewed various definitions and propounded a two-dimensional theory wherein competence-based self-esteem and worthiness-based self-esteem were identified. In other words, he claimed that worth and competence are the major elements in defining self-esteem. Studies presenting self-esteem as self-competence and self-liking (Tafarodi and Milne 2002) are in a similar vein. Self-competence is associated with successes and failures in accomplishing one's own goals, whereas self-liking is forged on the basis of appraisals of worth conveyed by others. On the other hand, according to Harter (2005), self-esteem may concern both a general self-evaluation of oneself as a person and self-evaluation in relation to specific areas of functioning. For Harter (ibid.), general evaluations are an indicator of global self-esteem, while detailed evaluations refer to areas that are relevant to an individual at a given stage of their life.

Psychologists have tried to answer the question as to when children begin to formulate their first self-evaluations. Kozielicki (1986) says this takes place between the ages of two and four, when children begin to speak and when the first evaluations of others, usually related to their appearance or behavior, reach them. Harter (2005) also notes that the first self-evaluations can be observed between the ages of two and four. At this age, children usually describe concrete and observable features of the self, which are not integrated into higher-order categories. According to Harter's (2005) study, children aged 4 to 7 may already have generalized self-esteem but are usually unable to verbalize it. Nevertheless, she says that at this stage of their lives they can already express

domain-specific self-evaluations in two independent categories concerning: (1) perceived cognitive and physical competences, and; (2) perceived social acceptance (both peer and maternal). Self-evaluations at this stage of life are based on specific examples of observable physical characteristics, behaviors and abilities, but wishes and fantasies dominate self-evaluations, i.e., children are often inaccurate in judging their abilities and behaviors because they cannot differentiate their real self-image from their ideal self-image. Due to an inability to logically organize single self-evaluations, in early childhood there is little coherence in the description of the self (Harter, *ibid.*).

The ability to use abstract self-descriptive categories emerges in middle and late childhood. Studies on children's self-evaluations have indicated that at the ages of 8 and 9 they are able to create and verbalize global self-esteem, but their self-esteem has a multidimensional structure. According to Harter (1986), between the ages of 8 and 12, children formulate self-evaluations in the following domains: 1) scholastic competence; 2) social competence; 3) athletic competence; 4) physical appearance; 5) behavioral conduct, and; 6) global self-worth. At this stage of life, self-evaluations are logically organized and integrated within domains. Children use social comparisons to form their self-evaluations and are more accurate than preschool children in appraising the self (Harter 2005). Nevertheless, they still do not use abstract concepts and generalizations in making references to the self.

The studies on the self-esteem of children described above have shown that in children as young as 4 to 7 years of age, (depending on the specific domain) self-evaluations can already be based on a child's own competences (physical and cognitive) as perceived by themselves, and on appraisals of worth conveyed by others (perceived peer and maternal acceptance). Also, in children aged 8 to 12 years, some domain-specific self-evaluations may be more reliant on self-perceptions of competences related to agency (scholastic competence, athletic competence), and others on self-perceptions of "attractiveness" in interpersonal relationships concerning communal relationships (social competence, physical appearance, and behavioral conduct). Therefore, there is a similarity with various theories of self-esteem in adults, which propound two-dimensions: competence-based self-esteem and worthiness-based self-esteem (Mruk 2006; Tafarodi and Milne 2002). However, it should be emphasized that children form their self-evaluations in a different way from adults: they do not use abstract concepts and generalizations, but, rather, base their self-evaluations on specific observable behaviors (preschool children) or social comparisons of behavior (primary school children).

The Current Research Problem

The studies of Gašiorowska et al. (2012), and subsequent research (Gašiorowska et al. 2016; Trzcińska and Sekścińska 2016), revealed that children of an age where they do not yet fully understand the instrumental functions of money, react to money priming in a similar way to adults. For example, they exhibit weaker pro-social preferences and greater persistence in carrying out difficult tasks on their own than children not primed with money. In their 2012 paper, such observations led Gašiorowska et al. to posit that even young children have some understanding of the symbolic nature of money.

Thus, for small children, coins and banknotes already seem to be significant symbols of markets that stand out from other objects. So, since money can be a symbol that changes the behavior of children, it is reasonable to ask whether money is involved in shaping children's self-esteem.

However, it should be noted that children form their self-esteem in a different way than adults. They lack the ability to use abstract concepts and generalizations, and when describing themselves they rely primarily on specific and observed behaviors or direct comparisons with other children. Here, then, it is important to note that money priming procedures do not involve social comparisons with other children, and that the specific behaviors observed in the procedure (e.g., the counting of items) are the same for money-primed and control group participants (the only difference between the groups being the object of manipulation). Therefore, one may wonder whether the subtle monetary cues in money priming, being unrelated to specific behaviors or social comparisons, can change how children perceive themselves.

The aim of the studies presented in this article was to test whether money priming can affect various types of self-evaluations made by children. Considering the results of the above mentioned studies, it seems that if money priming does affect children's self-evaluations its effects will depend upon the specific areas in which self-evaluations are being made. Money priming induces adults to become exchange oriented, this being associated with a focus on the self and feelings of greater agency (Gašiorowska 2014), but it does not influence levels of communion. According to Abele and Wojciszke (2007), agency involves qualities such as ambition, dominance, competence, and efficiency in attaining goals, while communion involves a focus on others, cooperation, and emotional expression. In the light of Gašiorowska's (2014) results, money priming would be expected to change children's self-evaluations mainly in domains which are based on perceived competences (and associated with agency), but not in domains related to social relationships (and associated with communion).

Experiment 1

Given that no previous studies have been published concerning whether, and how, money priming influences children's self-evaluations (i.e., their self-esteem), children of primary school age took part in the first study. Studies conducted by Kupisiewicz (2004) indicate that children older than 8 years of age have quite a good understanding of money and its functions. Moreover, they have usually had some experience with money. At this age, children understand the main function of money, can recognize notes and coins of different denominations, and are able to calculate prices correctly. In these respects, the monetary knowledge of children over 8 years old seems similar to that of adults, although they have less experience with money and the money available to them usually comes from gifts and allowances rather than them earning it.

Despite the similarities in adults' and children's levels of knowledge about money, it is important to analyze how money primes affect children's self-evaluations because, as described above, children of this age form their self-esteem differently than adults. In our study, money priming was expected to have various effects on children's self-evaluations, these effects depending on the type of self-evaluation involved. Thus, it was expected that money priming would enhance children's self-evaluations, but only in those areas most highly linked to an exchange orientation (market mode): those concerning agency. Thus, the first study tested the following hypothesis:

H1: In children of primary school age, money priming increases self-evaluations in competence domains (perceived scholastic competence and athletic competence) but does not affect self-evaluations in domains related to social relationships (perceived social acceptance, physical appearance, and behavioral conduct).

Method

Participants

In previous studies on money priming's influence on children's behaviors, effect sizes (Cohen's d) ranged from 0.64 to 2.97 (Gašiorowska et al. 2012; Gašiorowska et al. 2016; Trzeńska and Sekścińska 2016). Also, in Gašiorowska's (2014) study of money priming's impact on agency and self-esteem in adults, values of Cohen's d were .61 and .67 respectively. Therefore, in our study we thought it reasonable to expect at least a medium effect size, i.e., a Cohen's d of .60. An a priori power analysis using G*Power (Faul et al. 2007) indicated that 72 participants were needed to attain 80%

power for detecting an effect of $d = .60$ when employing a .05 criterion for statistical significance. But the final sample size was higher than we initially assumed because all children with parents agreeing that their children could participate did actually take part in the study.

The study was conducted in two primary schools in Warsaw, Poland. Parents of children aged from 8 to 10 years old attending these schools were asked to agree to their children's participation, and parents of 83 children provided written informed consent. Thus, 83 children were invited to participate. The children were also asked for their oral consent to take part in the study (all children consented), so 83 children (42 girls) aged 8–10 years ($M = 9.32$, $SD = 0.56$) participated. The study was carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. No data were excluded.

Procedure

Children were randomly assigned to either an experimental group ($n = 43$) or a control group ($n = 40$). In a first part of the experiment, children in the experimental group were primed with money and those in the control group were given an equivalent non-monetary treatment, while in a second part of the study all participants completed the Self-Perception Profile for Children (SPPC; Harter 1985; Gacek et al. 2014). The experimental manipulation was conducted in groups of 10 to 15 children and based on the procedure used in the studies of Gašiorowska et al. (2012). The researcher conducting the experiment displayed a PowerPoint screen presenting various coins and notes (to the experimental group) or pictures of flowers and trees (to the control group). Children were asked to carefully observe the screen. Then, an experimenter asked the children some questions, for example: how many coins are there (for the experimental group) or how many flowers are there (for the control group)? After 3 min, the children were asked to draw something that was connected to the topics of the presentation they saw. Analysis of the pictures prepared by the children showed that all those in the experimental group drew something related to money (e.g., coins, banknotes, ATMs), and all those in the control group drew flowers or trees.

After drawing the pictures, the children completed the SPPC, which was originally developed by Harter (1985) in the United States and has become one of the most popular and widely recognized instruments to assess self-evaluations made by children aged 8 and older. The Polish version of the SPPC was developed by Gacek et al. (2014). The instrument consists of five domain-specific subscales and a global self-worth subscale (Harter 1985). Domain-specific evaluations allow measurement of a child's self-perceptions in the areas of 1) scholastic competence, 2) social competence, 3) athletic

competence, 4) physical appearance, and 5) behavioral conduct. The *Scholastic Competence* subscale taps the child's self-perceptions of their cognitive abilities in the context of school. The items refer to performance in schoolwork and the perception of oneself as smart. *Social Competence* taps the degree to which a child perceives themselves as popular and liked by peers. *Athletic Competence* assesses a child's perceptions of their competence in sports and outdoor games. The *Physical Appearance* subscale taps the degree to which a child is happy with their looks and physical characteristics such as their height, weight, hair, and face. The *Behavioral Conduct* subscale allows assessment of the degree to which children like the way they behave, and whether they feel that they act the way they are supposed to and avoid getting into trouble. Finally, the *Global Self-Worth* subscale refers to the child's general acceptance of themselves as a person. The items in this subscale tap the extent to which children like themselves and whether they are happy with their own lives. It is important to note that the SPPC does not treat global self-worth as the sum of different self-evaluations but assesses it using a separate set of statements. The SPPC consists of 36 items (6 items for each subscale), which are formulated as paired opposite statements. A child is asked to decide which statement describes them better and whether this statement is only sort of true or really true for them. Answers are scored on a 1 to 4 scale where 1 represents low perceived competence or adequacy and 4 represents high perceived competence or adequacy. The final score for each dimension is the arithmetic mean of the scores for the relevant six items. The Polish version of the SPPC has good psychometric properties, Gacek et al. (2014) reporting Cronbach's alpha coefficients as varying from .70 for social competence to .84 for physical appearance. In the current study Cronbach's alpha varied from .66 for athletic competence to .85 for physical appearance.

Results

Independent samples *t*-tests showed that money priming of children significantly increased their perceptions of their scholastic competence, $t(81) = -2.18, p < .05$, Cohen's $d = .49$, and physical competence, $t(81) = -3.19, p < .01$, Cohen's $d = .71$. No other *t*-test results were significant. Taking into account the fact that our hypothesis assumed null effects in the domains related to social relationships (perceived social acceptance, physical appearance, and behavioral conduct), in addition to traditional null hypothesis significance testing (NHST), Bayes factors were calculated for each domain of self-evaluation. Bayesian analyses provide information about evidence relating to both null and alternative hypotheses (whereas traditional NHST only allows conclusions to be drawn about a null hypothesis). Bayes factors (BF_{01}) were greater than 3 for the domains of physical appearance, behavioral conduct and

global self-worth, this constituting substantial evidence against the influence of money priming (Raftery 1995). However, there was only anecdotal evidence ($1 < BF_{01} < 3$) against the influence of money priming on self-evaluations of social competence. For the competence domains, Bayes factors indicated only anecdotal evidence for a money priming effect on perceptions of scholastic competence (the data were only 1.47 times more likely under the alternative hypothesis than under the null hypothesis) but strong evidence for a money priming effect on perceptions of athletic competence (the data were 14.29 times more likely under the alternative hypothesis than under the null hypothesis). All results are presented in Table 1.

The above results mostly supported H1, which stated that money priming increases school age children's self-evaluations only in domains involving perceived competence and not those involving social relationships, but the results were strong only for the domain of athletic competence.

Experiment 2

Our second study investigated whether the results observed in the first study would occur for younger children of an age where they would be expected to have had very little contact with money and little knowledge of its instrumental function. Children aged 3 to 5 years know that money is different from other objects and is related to purchasing, but until around the age of 7 they cannot identify denominations or money's functions (Webley 2005; Gąsiorowska et al. 2016). Preschool children also differ from primary school children in the way they formulate their self-evaluations. At this age, children's self-evaluations are based on specific examples of observable physical characteristics, behaviors and abilities, but their judgments of their abilities and behaviors are often inaccurate.

Given the findings of the first experiment, the following hypothesis was forwarded:

H2: In children of pre-school age, money priming increases self-evaluations in competence domains (perceived cognitive and physical competence) but does not affect self-evaluations in domains related to social relationships (perceived social and maternal acceptance).

Method

Participants

The sample size for this study was determined in the same way as for the first study. Thus, again we aimed to examine a minimum of 72 children. The study was realized in three

Table 1 Differences between mean domain-specific self-evaluations and global self-worth for primary school children in the money priming and control groups

	Control condition		Money priming		<i>t</i>	<i>p</i>	<i>df</i>	<i>BF₀₁</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Scholastic competence	2.80	.57	3.09	.61	−2.18*	.031	81	.68
Social competence	3.11	.56	3.29	.59	−1.38	.167	81	2.46
Athletic competence	2.88	.53	3.24	.49	−3.19**	.002	81	.07
Physical appearance	3.21	.76	3.35	.60	−.95	.343	81	3.92
Behavioral conduct	3.03	.57	3.05	.68	−.21	.838	81	5.84
Global self-worth	3.28	.53	3.36	.58	−.68	.499	81	4.81

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

preschools in Warsaw, Poland. The parents of children (aged 4 to 6 years) attending these preschools were asked to agree to their children's participation in the study and parents of 109 children provided written informed consent. These 109 children were invited to participate but 6 of them declined. The final group therefore consisted of 103 participants aged 4 to 6 years ($M = 4.88$, $SD = 0.74$; 55 girls). Again, the study was carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans.

Procedure

The first part of the study consisted of a money priming and equivalent control procedure based on the procedure used by Gąsiorowska et al. (2016). Children participated in a sorting game in which they sat at a table with 30 objects and were asked by a researcher to sort the objects. Children in the money priming condition ($n = 50$) were given 1-, 2-, and 5-PLN coins (10 each). Children in the control condition ($n = 53$) were given similarly sized buttons in three colors (10 of each color). Next, the children moved to another room where they met another researcher who was blind to a child's experimental condition and the study's hypothesis. With this researcher each child individually completed the Polish version of the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (PSPCSA; Harter and Pike 1984; Trzcińska in review). This scale assumes that children can make reliable judgments about their competence and social acceptance if the judgments they are asked to make are couched in terms of concrete observable behaviors and if pictorial stimuli depicting concrete manifestations of the relevant behaviors are presented (Harter 1983). The scale consists of four subscales, each composed of six items. The subscales are: (a) cognitive competence (e.g., "This girl is pretty good at puzzles" vs. "This girl isn't very good at puzzles"); (b) physical competence (e.g., "This girl is pretty good at climbing" vs. "This girl isn't very

good at climbing"); (c) peer acceptance (e.g., "This girl has lots of friends to play with" vs. "This girl doesn't have very many friends to play with"), and; (d) maternal acceptance (e.g., "This girl's mom takes her to many places she likes to go" vs. "This girl's mom doesn't take her to a lot of places she likes to go"). Questions are presented in a structured alternative format in which each child is presented with descriptions and pictures of two different "kinds of children": typically, a child who is very good at the task(s) depicted and a child who is not very good at the task(s). There are different picture plates for each gender. The child is read two brief statements, one positive and one negative, for each of the pictures. The child is then asked to choose which of the children in the two statements is most like them: the child depicted in the positive statement or the child depicted in the negative statement. After the respondent identifies with one of the children, the interviewer asks the child whether they are a lot like this child or a little like this child (Harter and Pike 1984). Answers are scored on a 1 to 4 scale where 1 represents low perceived competence or acceptance and 4 represents high perceived competence or acceptance. The final score for each dimension is the arithmetic mean of the scores for the relevant six items. The psychometric properties of the Polish version of the PSPCSA were verified in a previous study (Trzcińska in review) which found that the Polish version had similar properties to the original US instrument and versions in other languages. In the current study Cronbach's alpha coefficients were between .60 (for cognitive competence) and .72 (for peer acceptance).

Results

An independent samples *t*-test showed that money priming preschool children significantly increased their perceived physical competence, $t(101) = -2.32$, $p < .05$, Cohen's $d = .47$. No other *t*-test results were significant. Further

Table 2 Differences between mean domain-specific self-evaluations of preschool children in the money priming and control groups

	Control condition		Money priming		<i>t</i>	<i>p</i>	<i>df</i>	<i>BF₀₁</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Cognitive competence	3.21	.43	3.29	.44	−.96	.339	101	4.27
Peer acceptance	2.84	.59	2.73	.68	.87	.386	101	4.62
Physical competence	2.99	.46	3.21	.47	−2.32*	.023	101	.56
Maternal acceptance	2.94	.59	2.99	.51	−.49	.626	101	5.89

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

analyses with Bayesian *t*-tests were consistent with the results of the traditional null hypothesis significance tests. A Bayes factor showed anecdotal evidence (Raftery 1995) of a money priming effect on physical competence perceptions (the data were 1.78 times more likely under the alternative hypothesis than under the null hypothesis). For other domains of self-evaluation Bayes factors were greater than 3, indicating substantial evidence (Raftery 1995) against the influence of money priming on cognitive competence, peer acceptance and maternal acceptance perceptions. All results are presented in Table 2.

These results partially confirmed H2. Money priming affected self-evaluations related to one type of perceived competence (physical competence) but neither of the two types of social acceptance. However, no significant differences between the experimental group and the control group were found with respect to children's perceptions of their cognitive competence. Moreover, the results for physical competence were not robust and provided only anecdotal evidence for a money priming effect.

The results of the second experiment were weaker than expected, indicating only anecdotal evidence for an effect of money priming on children's self-evaluations of their physical competence. One reason for this result might have been the fact that the children in Experiment 2 were significantly younger than in Experiment 1. Therefore, it was decided to test whether the experimental manipulation in Experiment 2 had a differential impact according to children's ages by examining age as a potential moderator of money priming's influence on the children's self-evaluations. To this end, four hierarchical regression analyses were performed (one for each domain), where, in a first step, children's age was entered as a variable in addition to the experimental group (control vs. money priming) variable, and in a second step an experimental group $\times$ age interaction term was added. The results of the analyses did not show that money priming had a greater effect for older pre-school children than for younger children: for all four domain-specific self-evaluations, the experimental group by age interactions were nonsignificant (see Table 3). Interestingly, it was observed that older children's self-evaluations were lower for the social acceptance (peer and

maternal acceptance) domains but not for the other two domains. This result is in line with previous observations indicating that preschool children are characterized by over-optimistic self-evaluations and that, although with age they can become increasingly realistic (Harter 1999), any such decreases in the positivity of self-evaluations may be domain-dependent (Marsh et al. 1991).

Discussion

Changes in behaviors which occur under the influence of money priming (greater effort put into personal work and greater tenacity in pursuing personal goals) can be argued to be closely linked to changes in self-evaluations which also take place under such priming: greater persistence and the putting of greater effort into personal work are likely to result from the conviction that one has the capacity to accomplish tasks. Such a conviction should, therefore, be connected with feelings of strength and perceptions of one's competence as relatively high. To date, studies have demonstrated that this is indeed the case in adults, where money priming not only changes people's behavior but also their self-perceptions: they become more self-focused, have greater feelings of self-efficacy, feel more agentive and stronger, and have greater self-esteem compared to people not subjected to money priming.

This article has presented two studies involving money priming children and then measuring their self-evaluations in various areas. The first study involved children of an age where they would have had some knowledge and experience of money (8 to 10 year olds) and the second study involved preschool age children who would have had very limited knowledge and experience of money. However, it should be noted that both preschool and primary school children differ from adults in how they form self-evaluations. The present results showing that at least some areas of children's self-evaluations may change under the influence of money priming suggest that their self-evaluations are not based solely on specific and observed behaviors and comparisons with other children, but may also depend on very subtle stimuli, and that

Table 3 Results of hierarchical regression analyses for preschool children's domain-specific self-evaluations

Explained variable	Predictor	Step 1				Step 2			
		B (SE)	β	R^2	F	B (SE)	β	ΔR^2	ΔF
Cognitive competence				.017	.884			.023	2.422
	Experimental group	-.043(.043)	-.100			-.044(.043)	-.101		
	Age	-.053(.058)	-.091			-.055(.058)	-.094		
Peer acceptance	Experimental group x age					.090(.058)	.153		
				.085	4.657*			.000	.038
	Experimental group	.046(.061)	.073			.046(.061)	.073		
Physical competence	Age	-.239(.082)	-.279**			-.239(.082)	-.280**		
	Experimental group x age					.016(.082)	.019		
				.052	2.737			.000	.000
Maternal acceptance	Experimental group	-.107(.046)	-.226*			-.107(.046)	-.226*		
	Age	-.025(.062)	-.039			-.025(.063)	-.038		
	Experimental group x age					.000(.063)	.000		
				.066	3.542*			.009	.947
	Experimental group	-.033(.053)	-.061			-.033(.053)	-.060		
	Age	-.186(.071)	-.253*			-.185(.071)	-.251*		
	Experimental group x age					-.069(.071)	-.094		

* $p < .05$, ** $p < .01$

even in the early stages of life self-evaluations can be associated with such an abstract and symbolic concept as money.

However, in line with the hypotheses, changes in self-evaluations only occurred in certain areas of self-evaluation, namely those involving perceptions of competence associated with feelings of agency, but not those linked to perceptions of social relationships (i.e., communally-oriented self-evaluations). In the first study, money-primed children produced higher self-evaluations with respect to both athletic and scholastic competence compared to a control group, although the effect was small for scholastic competence. No differences were observed across groups when it came to self-evaluations of social competence, physical appearance, behavioral conduct and global self-worth. These results indicate that money priming only produces changes in children's self-evaluations in areas linked to perceptions of personal competence related to agency, and not communion. Therefore, they direct their thinking about themselves towards an exchange orientation (market mode) and not towards a communal orientation.

Contrary to findings for adults, where changes in self-esteem have been observed under the influence of money priming (Gąsiorowska 2014), money priming did not have a significant effect on the global self-worth of children in our studies. This may be because the ability to carry out global self-worth evaluations appears at a later stage in life than the ability to carry out domain-specific self-evaluations (Harter 2005), and it is only in children aged 8 to 10 years that the ability

appears to use abstract categories that integrate knowledge about different abilities, traits, and behaviors into a higher-order generalization, i.e., the ability to form an evaluation of self-worth. Thus, perceptions of global self-worth may not have been properly formed in the current age groups studied. Also, the studies of Harter (2005) and Gacek et al. (2014) have shown that, in many different cultures, at the stages of life at which the present children were at global self-worth has the strongest relationship with perceived physical appearance, and not with evaluations of personal scholastic and athletic competence. This may also explain the present lack of change in children's global self-worth under the influence of money priming.

Preschool children, that is, children with very limited knowledge and experience of money, took part in our second study. The outcomes of this study only partially confirmed the second hypothesis forwarded, money priming enhancing children's perceived physical competence, although the effect was only modest. No difference in perceived cognitive competence was found between the experimental and control groups. The lack of a statistically significant difference for the latter domain may result from the fact that cognitive competences are not as salient as physical competences in children of preschool age (El Hassan 1999), and the fact that the reliability of the cognitive competence scale was only modest (as shown by Cronbach's alpha) may also have played a part. Moreover, physical competences are the most concrete and observable in preschool children, and, in comparison to other domains,

perceptions of these competences are the most congruent with teachers' ratings (El Hassan, *ibid.*).

The present results indicate that, as with adults, children's self-evaluations change under the influence of money priming. A novel aspect of our research is the discovery that subtle monetary cues can even change self-evaluations in children of ages where previous research has only shown that self-evaluations are based on children's observations of specific behaviors or comparisons with other children (Harter 2005): the current results show that abstract stimuli such as money can also shape children's self-evaluations.

It seems that money priming mainly affects children's sense of strength (their perceived physical competence and athletic competence). Such changes in self-evaluations may explain the transitions that have hitherto been observed in studies of money priming's effect on children's behavior. However, the present results indicated that money priming's effect was much stronger in primary school children than in preschoolers, but unfortunately the study was unable to locate the source of this difference. One possible explanation may be the fact that younger children have far less experience with money and therefore they may be less likely to use it as a basis for their self-evaluations. Nevertheless, taking into account the results of Gąsiorowska et al. (2012) indicating that money is highly symbolic of markets even for small children (aged from 4 to 6 years old) who do not use money on a day-to-day basis and who have very little knowledge of its instrumental functions, it seems more likely that the weak results obtained for preschoolers are due to the fact that they construct self-evaluations differently than older children: while primary school children base their self-evaluations on social comparisons of behavior, preschoolers rely on specific observable behaviors.

Limitations and Future Research

The present study's findings should be interpreted in the light of some limitations. First, the question of whether money priming changes children's self-evaluations is interesting because it may help to understand money priming's behavioral consequences, but in our studies behavioral outcomes were not measured, so it was not possible to test the mediating role of changing self-evaluations. Future studies should take-up the challenge of simultaneously examining money priming's consequences for both self-evaluations and behaviors. Another limitation of the present research is that the effect sizes obtained were relatively low (lower than expected). Therefore, these studies require replication.

Despite the current findings, it is important to note that recent large-scale replication projects have failed to replicate some money priming effects (Klein et al. 2014; Rohrer et al. 2015; Caruso et al. 2017). However, a

recently performed meta-analysis on both published and unpublished experiments using money priming manipulations (Lodder et al. 2019) yielded a reasonably large overall effect size estimate, although the magnitude of money priming effects was dependent on the design of studies. Vohs (2015) suggested possible reasons for the failed replications. According to her, these may result from differences between participants across study samples (e.g., differences in the perceived meaning of money). Given that, to date, a significant portion of research on money priming effects in children has been carried out in Poland (Gąsiorowska et al. 2012; Gąsiorowska et al. 2016; Trzcińska and Sekścińska 2016), there are good reasons for future studies of money priming's effects on children's self-evaluations to be performed in other cultures.

Conclusions

Taken together, our results demonstrate that money priming changes not only behaviors (as shown in previous studies), but also self-evaluations in children. However, under the influ-

ence of money priming, children's self-evaluations increased only in domains involving perceived competences (and associated with feelings of agency), and not in domains related to social relationships. Given that a feeling of agency is one of the hallmarks of the market mode, our results demonstrate that primary school children may connect money with this mode and demonstrate self-evaluations associated with it. However, the weak effects obtained for preschool children may suggest that connections between money and self-evaluations are not yet fully developed at this age.

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Data The datasets generated and analysed during the current study are available in the Open Science Framework repository: https://osf.io/zufgn/?view_only=bd77b020df654f7a9cabc7a5366e0616

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Compliance with Ethical Standards

Declaration of Interests On behalf of all the authors, the corresponding author states that there are no conflicts of interest.

Ethical Approval All procedures performed in the two studies reported were in accordance with the ethical standards of the institutional and/or

national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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