The Role of the Moral Self-Concept in Young Children's Moral Development

Inaugural-Dissertation

Zur Erlangung des Doktorgrades der Philosophie

der Ludwig-Maximilians-Universität München

vorgelegt von

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Geboren am 4. August 1989

In Köln, Deutschland

München, 2022

Prüfungskommission

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Tag der mündlichen Prüfung: 08.11.2021

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Abstract

Pace the ancient Philosopher Plato's believe, to know good, means to do good. Current empirical research has found a gap between moral judgment and behavior, though (Blake, 2018; Smith et al., 2013). The moral self-concept (MSC) is seen as a bridge between this moral judgment-behavior gap (Blasi, 1983; Hardy & Carlo, 2011). Yet, little is known about its early development and internal dimensions or stability. The present thesis investigates the development of the MSC in early to middle childhood. It contains explicit and implicit interviews and behavioral observations that assess the MSC and prosocial behaviors in child appropriate manners.

In the first chapter, I will introduce relevant concepts and theories, and give an overview of how the self-concept and prosocial behaviors develop. I will turn to the question of why it is that children act prosocially, and what psychological mechanisms contribute to development of prosocial behaviors. To address these questions, I introduce broader theories of moral development and relevant conceptualizations. In particular, a rationalist, nativist and constructivist view are explained and discussed. As studies on the early MSC are few and far between, studies from other domains of the self-concept can help to predict the structure and development of the MSC. Previous research on the early MSC does not allow conclusions about the independence of the MSC from other self-concept domains, as previous research has not assessed the MSC in relation to other self-concept domains. Furthermore, research does not provide sufficient data about the invariance of the MSC. In relation to prosocial behaviors, I discuss different trajectories: According to the self-perception approach (Bem, 1972), the self-concept forms as a consequence of own behavior. According to the self-consistency approach (Blasi, 1983), the self-concept impacts own behavior. According to the reciprocal model (Marsh & Craven, 2006; Marsh, Trautwein, et al., 2005), the self-concept and behavior impact each other.

In this thesis, I aim to investigate four questions: How does the MSC relate to other self-concept domains? Research on this questions is important in order to gain knowledge about the (in-)dependence of the MSC. What is the internal structure of the MSC? As prosocial behaviors are suggested to be three-fold (Dunfield, 2014; Paulus, 2018) and the self-concept should relate to behavior, the MSC should be three-fold as well. How stable is the MSC in early childhood? Research on other self-concept domains suggests moderate to low stability of self-concepts in early childhood. This stability and invariance need to be investigated for the MSC as well. Lastly, I will address the question, of how the MSC relates to prosocial behavior. I aim to investigate the early MSC as a piece of the puzzle that can meaningfully relate to prosocial behavior. Thus, we get closer to bridging the gap between judgment and behavior.
Study one investigated the structure of the MSC and its relation to prosocial behavior in a cross-sectional sample. It aimed to answer the question if 1) the MSC differs from other self-concept domains, 2) it resembles the structure of prosocial behavior and 3) it relates to prosocial behavior meaningfully. To test these questions, I invited 127 four- to six-year-old children (study 1.1). The children responded to a

puppet-interview covering domains including the physical, verbal and moral self-concept. The items concerning the MSC contained helping, sharing and comforting. Besides the explicit measure, children participated in an implicit association task (IAT), which assessed their association between good vs. bad and self vs. other. Furthermore, children were observed in situations in which they could help, share and comfort. An exploratory factor analyses revealed that 1) the MSC is separate from the other self-concept domains; 2) the MSC was divided into the three areas of sharing, comforting and helping. A regression analysis revealed that 3) the explicit and not implicit MSC related meaningfully to sharing and comforting behavior, but not helping behavior. Study 1.2 confirmed the result from question 2) with a confirmatory factor analysis with a separate sample (N = 314). The results are in line with the hierarchical, multidimensional model of self-concept. Open questions remain: how stable is the MSC in early childhood? I aimed to answer this question in study two. Furthermore, I showed meaningful relations between prosocial behaviors and MSC, yet the direction of its relation remained unclear. I aimed to address this question in study three.

In study two, the focus was the development of the MSC. I investigated the structure of the MSC by conducting a confirmatory factor analysis for a three-dimensional model, testing its invariance, reliability and correlational structure over time. To do so, I conducted a longitudinal study with measurements 18 and 21 months after the first measurement. The 133 children of the sample were aged between four and six years at the first measurement. I assessed the MSC via a puppet-interview. The results showed a stable three-dimensional MSC, containing the dimensions helping, sharing and comforting. This underscores the stability of the early MSC and the measure.

In study three, I investigated the developmental relations between the early MSC and prosocial behaviors. In particular, I aimed to show that the constructs are stable across time and that they related to each other. I expected that prosocial behaviors would predict subsequent MSC from the first to the second measurement (self-perception). Then, once the MSC has formed, the MSC would predict subsequent behavior (self-consistency). A cross-lagged panel analysis was conducted on the same sample as the previous studies, as the participants also partook in prosocial situations during each measurement. Results showed moderate stability of the MSC dimensions and prosocial behaviors. Contrary to our hypothesis, self-perception effects became only marginally significant, but sharing MSC at the second measurement predicted sharing behavior at the third measurement. The study shows how stable individual differences in prosocial behavior and MSC are, already in early childhood. Furthermore, these results support the self-consistency approach.

I discuss the results in relation to the rationalist, nativist and constructivist approach. The results support the understanding of children as active agents, which is in line with the social-cognitive constructivist approach. Moreover, the results support the direction of self-consistency in relation to MSC and prosocial behaviors, which is a further sign that the MSC develops and stabilizes in early childhood.

Zusammenfassung (Deutsch)

Zu wissen was das Richtige ist, heißt nicht, das Richtige zu tun, entgegen den Ansichten des antiken Philosophen Platon. Die Forschung zeigt eine Lücke zwischen moralischem Urteil und Handeln (Blake, 2018; Smith et al., 2013). Das moralische Selbstkonzept (MSC) könnte helfen diese Lücke zu schließen (Blasi, 1983; Hardy & Carlo, 2011). Allerdings ist wenig über die frühe Entwicklung des MSCs, dessen interne Dimensionen und Strukturen bekannt. In der vorliegenden Arbeit wird die Entwicklung des MSCs in der frühen bis mittleren Kindheit untersucht. Es wurden explizite und implizite Interviewmethoden und Verhaltensbeobachtungen durchgeführt, die das MSC und prosoziale Verhalten auf altersgerechte Weise erfassen.

Im ersten Kapitel werde ich relevante Konzepte und Theorien vorstellen und Entwicklungsverläufe des Selbstkonzepts and prosozialen Verhaltens überblicken. Die Frage welche psychologischen Mechanismen zu prosozialem Verhalten beitragen wird behandelt. Ich gebe einen Überblick über Theorien zur moralischen Entwicklung und relevante Konzeptualisierungen. Im Spezifischen werden eine rationalistische, nativistische und konstruktivistische Sicht vorgestellt und diskutiert. Da Studien zum frühen MSC rar sind, werden Studien aus anderen Selbstkonzeptdomänen herangezogen, welche Vorhersagen zur Struktur und Entwicklung des MSCs unterstützen sollen. Vorherige Studien zum frühen MSC lassen keine Rückschlüsse zur Unabhängigkeit des MSCs von anderen Domänen zu, da diesbezügliche Forschung das MSC nicht in Relation zu anderen Selbstkonzeptdomänen erfasst hat. Weiterhin fehlt Forschung zur Invarianz des MSCs. In Bezug auf prosoziales Verhalten erörtern wir verschiedene Wirkrichtungen: Nach dem Self-Perception Ansatz (Bem, 1972) formt sich das Selbstkonzept basierend auf Verhalten. Nach dem Self-Consistency Ansatz (Blasi, 1983) beeinflusst das Selbstkonzept Verhalten. Nach dem Reciprocal Model (Marsh & Craven, 2006; Marsh, Debus, et al., 2005) beeinflussen sich Selbstkonzept und Verhalten gegenseitig.

Ziel der vorliegenden Arbeit ist es vier Fragen zu erforschen: In welcher Beziehung steht das MSC zu anderen Selbstkonzeptdomänen? Forschung zu diesem Thema ist wichtig, um mehr über die (Un-)Abhängigkeit des MSCs zu erfahren. Wie ist die interne Struktur des MSCs? Da prosoziales Verhalten als dreidimensional konzeptualisiert ist (Dunfield, 2014; Paulus, 2018) und das Selbstkonzept einen Bezug zu Verhalten haben soll, sollte das MSC ebenso drei dimensional sein. Wie stabil ist das MSC? Forschung aus anderen Selbstkonzeptdomänen zeigt schwache bis moderate Stabilität in der frühen Kindheit. Derartige Stabilitäten und Invarianzen sollen für das MSC ermittelt werden. In welcher Beziehung steht das MSC zu prosozialem Verhalten? Ein Ziel der These ist es das frühe MSC als Baustein zu erforschen, welcher sinnvoll mit prosozialem Verhalten in Beziehung steht. Die vorliegende Arbeit soll somit die Brücke zwischen moralischem Denken und Handeln mehr schließen.

Studie eins behandelt die Struktur des MSCs und seine Beziehung zu prosozialem Verhalten in einer querschnittlichen Untersuchung. Es wurde angestrebt die folgenden Fragen zu beantworten: 1) Unterscheidet sich das MSC von anderen Selbstkonzeptdomänen? 2) Ähnelt das MSC den Dimensionen

des prosozialen Verhaltens? 3) Hängt das MSC mit den prosozialen Dimensionen zusammen? Um diese Fragen zu erforschen, luden wir 127 Kinder zwischen vier und sechs Jahren ein (Studie 1.1). Kinder beantworteten ein Puppeninterview das aus den Domänen körperlich, verbal und moralisch bestand. Die Items des MSCs beinhalteten helfen, teilen und trösten. Abgesehen von dem expliziten Maß führten die Kinder einen impliziten Assoziationstest (IAT) durch, in welchem die Assoziationen zwischen gut vs. schlecht und ich vs. andere erfasst wurde. Weiterhin, beobachteten wir Kinder in Situationen, in denen sie helfen, teilen und trösten konnten. Exploratorische Faktorenanalysen zeigten, dass 1) das MSC getrennt von anderen Selbstkonzeptdomänen zu sein scheint; 2) das MSC in drei Dimensionen aufgeteilt zu sein scheint (helfen, teilen, trösten). Eine Regressionsanalyse zeigte, dass 3) das explizite und nicht implizite MSC erwartungsgemäß mit Teil- und Tröstverhalten zusammenhängt. Die Ergebnisse von 2) konnten wir mit einer neuen Stichprobe (N = 314) in einer konfirmatorischen Faktorenanalyse bestätigen (Studie 1.2). Die Ergebnisse stimmen mit dem hierarchischen, multidimensionalen Selbstkonzeptmodell überein. Jedoch bleiben einige Fragen ungeklärt: Wie stabil ist das MSC in der frühen Kindheit? Diese Fragen behandle ich in Studie zwei. Weiterhin zeigten die Ergebnisse erwartungsgemäße Beziehungen zwischen dem MSC und prosozialen Verhalten. Die Richtung der Beziehung bleibt jedoch ungewiss. Diese Frage adressiere ich in Studie drei.

In Studie zwei erforschte ich die Entwicklung des MSCs. Ich analysierte die Struktur des MSC indem ich eine konfirmatorische Faktorenanalyse für ein dreidimensionales Modell durchführte. Darüber hinaus wurde das MSC auf Invarianz, Reliabilität und seine internen Zusammenhänge über die Zeit getestet. Dazu lud ich die Stichprobe von Studie eins zu zwei weiteren Messpunkten ein (18 und 21 Monate nach dem ersten Messzeitpunkt). Das MSC wurde wieder Mittels des Puppeninterviews erfasst. Die Ergebnisse spiegeln Invarianz der drei Dimensionen (helfen, teilen, trösten) über die Zeit wider. Dies spricht für eine hohe Stabilität des MSCs und des Maßes.

In Studie drei erforschte ich die Beziehung zwischen dem frühen MSC und prosozialem Verhalten. Im Spezifischen wollte ich die Stabilität der Konstrukte und deren Wechselbeziehungen erforschen. Ich erwartete, dass prosoziales Verhalten zum ersten Messzeitpunkt späteres MSC vorhersagen würde (Self-Perception). Wenn sich das MSC konsolidiert hat, sollte es prosoziales Verhalten vorhersagen (Self-Consistency). Die gleiche Stichprobe wie in den vorherigen Studien wurde dazu herangezogen. Die Teilnehmenden hatten nämlich zu allen drei Messzeitpunkten Möglichkeiten sich prosozial zu Verhalten. Mit den vorliegenden Daten führte ich eine Cross-Lagged Panel Analyse durch. Die Ergebnisse spiegeln moderate Stabilität des MSCs und prosozialen Verhaltens wider. Entgegen der Hypothese fanden wir nur einen marginal signifikanten Self-Perception Effekt. Aber Teilen-MSC zum zweiten Messzeitpunkt sagte Teilverhalten zum dritten Messzeitpunkt vorher. Die Studie zeigt, wie stabil individuelle Unterschiede im prosozialen Verhalten und dem MSC bereits in der frühen Kindheit sind. Weiterhin, unterstützen diese Ergebnisse den Self-Consistency Ansatz.

Ich diskutiere die Ergebnisse in Bezug auf den rationalistischen, nativistischen und konstruktivistischen Ansatz. Die Ergebnisse unterstützen ein Menschenbild des aktiven, selbstbestimmten Kindes, was mit dem konstruktivistischen Ansatz übereinstimmt. Weiterhin unterstützen die Ergebnisse die Richtung der Self-Consistency, was darauf hindeutet, dass sich das MSC bereits in der frühen Kindheit entwickelt und stabilisiert.

“Zwei Dinge erfüllen das Gemüth mit immer neuer und zunehmender Bewunderung und Ehrfurcht, je öfter und anhaltender sich das Nachdenken damit beschäftigt: der bestirnte Himmel über mir und das moralische Gesetz in mir. Beide darf ich nicht als in Dunkelheiten verhüllt, oder im Überschwenglichen, außer meinem Gesichtskreise suchen und blos vermuthen: ich sehe sie vor mir und verknüpfe sie unmittelbar mit dem Bewußtsein meiner Existenz.“ (Kant, 1788, pp. 161-162).

“Two things fill the mind with ever-increasing wonder and awe, the more often and the more intensely the mind of thought is drawn to them: the starry heavens above me and the moral law within me. I do not seek or conjecture either of them as if they were veiled obscurities or extravagances beyond the horizon of my vision; I see them before me and connect them immediately with the consciousness of my existence.”

1. General Introduction

The Fridays for Future movement started with one young woman: Greta Thunberg who believed she had to do something against climate change. Her actions resonated in thousands of people across the globe. Even though the effects of climate change are known within the scientific communities (King, 2004; Thuiller, 2007) and the public (Hamilton, 2016; Reynolds et al., 2010), it took a young woman to renew civil efforts against climate change. How does Greta Thunberg differ from other teenagers? How did she become the leader of a global movement, which resonated with thousands of youths and adults? Thunberg appears to have a strong sense of morality. She appears to identify with her moral values and these values appear to urge her to action. In a talk-show interview she explained her motivation:

> "[…] it is my moral duty as a human being, as a citizen, to do everything I can. So, I just thought I do something. So, I just sat down and started school striking. I didn't think it would lead to anything. I just thought I need to do something, anything." (Thunberg)

Some might argue that sustainable, eco-friendly behavior is nothing more than a personal choice, while others, Thunberg including, see it as a moral, civic duty to act in manners that sustain the earth. Even though, Plato (trans. 2008) said: "To know right, means to do right", already Aristotle (trans. 2009) critiqued this intellectualist assumption. According to him, agents can be weak willed and act against their own best (moral or prudential) judgements (for a recent review see: Darnell et al., 2019). Studies show that moral reasoning (i.e., "evaluative judgments pertaining to others' welfare, rights, fairness or justice."; Dahl & Killen, 2018b, p. 3) does not necessarily lead to moral behavior (Blake, 2018; Hertz & Krettenauer, 2016; Perugini & Leone, 2009; Smith et al., 2013). This phenomenon is called the moral judgment-action gap. It is an aim of moral psychology to investigate this gap. There are different explanations for this gap: for example, differing motivations and emotion attributions (Malti, Gasser, et al., 2009; Malti et al., 2007) or differing self-centrality (Blasi, 1983; Harter, 2006; Krettenauer, 2011, 2020; Krettenauer & Hertz, 2015; Schwartz & Howard, 1984; Walker, 2004). Self-centrality means that moral norms are closely linked with a sense of self. Acting according to that sense of self, particularly if morality is central to the self, reduces anticipated negative emotions (Christner et al., 2020). This self-centrality corresponds to the strength of the moral self-concept (MSC). The MSC develops in early childhood (Kochanska, 2002; Kochanska et al., 2005; Kochanska et al., 2010; Krettenauer et al., 2013). Yet, its structure and relation to prosocial behaviors are still unknown. Knowledge about this can help to understand moral development in general. It can be the basis for training programs and a sign of adjustment.

In order to fill this research gap, I aim to investigate the early MSC. My investigation will show that young children already see themselves as moral agents and that the MSC remains stable in early

childhood. First, I will focus on the action part of the gap. This leads to a broader consideration of theories of moral development. I will emphasize the constructivist approach particularly, as this approach is best suited to explain individual differences between children. Lastly, I will expand on the MSC, its structure, development and relation to prosocial behaviors. All in all, this thesis supports the active role of children in their development to become moral agents, as it shows how early in their development children think of themselves as moral agents and how stable this self-concept is.

1.1 Development of Prosocial Behavior

Prosocial behaviors are actions that benefit another person (Paulus, 2018). The intention behind such behavior can be unknown and is for this conceptualization irrelevant. Prosocial behaviors manifest in different ways. While some relate to emotional states, others relate to considerations of fairness. One way to structure prosocial behaviors is in helping, sharing and comforting (Dunfield, 2014; Paulus, 2014). Helping is defined here, as the reaction to someone else's instrumental need (e.g., handing an out of reach object). Sharing is defined here, as a reaction to someone else' material desire (e.g., offering own resources to someone). Comforting is defined here, as a reaction to someone else's emotional distress (e.g., handing a security blanket to a crying child; Dunfield & Kuhlmeier, 2013). These three prosocial dimensions do not correlate and develop in different paces (Dunfield & Kuhlmeier, 2013; Kärtner et al., 2014).

Prosocial behaviors emerge within the first two years of life (Newton et al., 2016). Helping is the first behavior to manifest (with low cost helping emerging the earliest; Callaghan & Corbit, 2018; with signs of self-care related helping emerging as early as eight months; Hammond et al., 2017; Rheingold, 1982 showing chore-related helping around the second year of life). Children increase instrumental helping around the second birthday (Waugh & Brownell, 2017). Cognitive development relates to helping behavior, particularly understanding of other's intentions, joint attention and perspective taking (Callaghan & Corbit, 2018; Kärtner et al., 2010). Helping behavior becomes more selective over time and in line with developed skills (e.g., children help a well-intentioned agent more than a bad-intentioned agent; Behne et al., 2005; Vaish et al., 2010). This is a sign that children actively take further circumstances into account. They, thus, apply knowledge about norms in relation to different situations differently. This is a sign of the active roll children play in the construction of morality. All in all, children start to help almost as soon as they are physically capable to do so. With increasing age, children take more factors into account, such as the other's intention.

First instances of comforting appear around the second birthday, but increase in frequency until early childhood (Dunfield & Kuhlmeier, 2013; Zahn-Waxler et al., 1992). In order to be able to comfort others, children or toddlers have to be able to differentiate between own and other's emotions and they have to be able to regulate their own emotions (Svetlova et al., 2010). Furthermore, Theory of Mind

supports comforting behavior (Imuta et al., 2016). Thus, emotional and cognitive development is a prerequisite for comforting behavior. Children differentiate between comforting situations very early on; for example, 18- to 36-months-olds comfort more if the cause of upset is due to a broken object rather than pain (Bandstra et al., 2011). Around the same time, children comfort others without the other person showing signs of distress, but children infer other's distress from the situation (Vaish et al., 2009). In early childhood, comforting behavior increases in relation to moral reasoning (Malti, Gummerum, et al., 2009). All in all, comforting behavior becomes more specific to the recipient.

First instances of non-costly sharing occur around the second birthday (Brownell et al., 2009). Later on, children discriminate between recipients (for a review see Martin & Olson, 2015): They prefer to share with a friend over a non-friend (Moore, 2009) or a needy person (Paulus, 2016). Around five years of age, children recognize and enforce distribution norms (e.g., based on relationship; Paulus et al., 2020) or reciprocity (Wörle & Paulus, 2019). Yet, they consequently act according to norms only at the beginning of middle childhood (Smith et al., 2013). This shows how complex young children's understanding of distribution norms is and how this understanding can diverge from behavior. All in all, children share selectively and juggle different norms trough early to middle childhood.

It has become clear that different cognitive and emotional developments foster the three behavioral dimensions. Knowledge about norms impacts prosocial behaviors as well. Thus far, in reference to the judgment-behavior gap, I focused on the behavior-part. In the next part, I will focus on the judgment-part. More precisely, how do children learn moral rules and what could motivate prosocial conduct? As the focus of this thesis is the MSC, I will relate the theoretical accounts to the MSC, which is seen as a bridge between judgement and behavior.

1.2 Theories of Moral Development

Before diving into theoretical considerations, I present conceptualizations of morality. As this thesis focuses on the early development of morality, I utilize a narrow conceptualization, that bases on behavior. In line with Sengsavang and Krettenauer (2015), I dichotomize the moral domain into prosocial and antisocial behavior. In this thesis, I focus on the former. This dichotomization is in line with the Kantian (1991) differentiation into obligatory ends (e.g., helping others) and absolute prohibitions (e.g., avoiding harm). Borrowing the Kantian perspective (1781), according to his Formula of Humanity, we should treat others as an end and never merely as a means. That means, intentions of behavior matter, not just the displayed behavior itself. That means, moral behavior needs to entail the right intentions, while prosocial behavior (as defined above) does not require certain mental states in order to be prosocial. Note, there are other ways to conceptualize morality: for example, from a philosophical point of view, the virtue and utilitarian definitions. Yet, these will not be discussed. The focus on the individual, who grows to understand moral norms out of insight is crucial. This

conceptualization implies intrinsic motivation, to follow moral norms. This is important, as the MSC entails intrinsic preferences for prosocial or moral conduct.

I will start the thesis with theoretical frameworks on moral development. Starting with accounts that emphasize the passive role of the child, a rationalist account (Kohlberg, 1969) and a nativist account (Bloom, 2012; Hamlin et al., 2007; Tomasello, 2009). I will continue to constructivist accounts that emphasize the active role of children (e.g., Kochanska, 2002; Piaget, 1965).

1.2.1 Rationalist Account

Rationalist accounts of moral development from both psychology (Kohlberg, 1969) or philosophy (Kant, 1902) argue that the education of morality starts in childhood, but moral autonomy is reached in (early) adolescence or later. These accounts focus on reasons and judgments that can supposedly be derived largely independent form social context and emotions. Besides Jean Piaget, Lawrence Kohlberg (1927-1987) is one of the most prominent psychologist to investigate moral development. For example looking up "moral development" in a popular psychological encyclopedia (Dorsch et al., 2009), these two are the only researchers named. I distinguish Piaget's work from Kohlberg's work, as I focus on underlying assumptions of child development. Even though Kohlberg's approach builds upon Piaget's approach, Kohlberg focuses on cognitive development, without specifying the role of the person developing. On the other hand "(f)or Piaget, the best thing adults can do to foster moral development is to get out of the way" (Haidt, 2010, p. 66), as he assumed children create their moral concepts actively in interactions. I will focus on Piaget in subchapter 1.2.3.

Kohlberg's stage model of moral development (1969) bases on Piaget's stage model of cognitive development. In particular, both take children's increasing perspective taking abilities into account (Berk, 2011). Kohlberg (1969) proposed that moral reasoning (here: why one recommends a decision) reflects moral development. He tested moral reasoning with vignettes of moral dilemmas (such as stealing a drug that could cure a loved one's illness). The actual decision is less important (here for example to steal or not to steal). The reasoning for the decision is central. Kohlberg (1969) argued that moral reasoning followed three stages that contained 2 levels each: preconventional, conventional and postconventional. In the preconventional stage, morality is an external force personified in authority figures and direct consequences of their actions. On level one, a person strives to prevent punishment and they fear authorities such as "I will not do X, because mum said so". On level two, a person strives for the maximization of own interests, such as "If you do X for me, I will do Y for you". In the conventional stage, a person strives to conform to rules or laws. On level three, a person strives for moral virtues (such as being kind) to ensure positive relationships and reciprocity in their direct surroundings (e.g., following the golden rule). On level four, a person focuses on societal laws, by which everyone should abide, such as "I will not do X, because the law forbids it". In the postconventional phase, a

person strives for universal moral norms that might contradict current jurisdiction. On level five, a person argues in favor of global human rights and citizenship, which might diverge from the local laws, such as "Even if X is legal here, I will not do it, because it is harmful for the community". On level six, a person argues in favor of abstract, universal, moral principles, such as "One ought to do X rather than Y, because the virtue behind X is more important than the virtue behind Y." According to older studies, (Langford & George, 1975; White et al., 1978) only from teenage years on, one could reach postconventional stages, if at all. More recent research will be discussed in the paragraph after the next.

Kohlberg assumed that moral reasoning is consistent across situations. Yet, empirical studies showed heterogeneity (Krebs et al., 1991), which made his conclusions less generalizable. Moreover, his approach based on Plato's assumption "to know good means to do good". But Kohlberg did not investigate relations between moral reasoning and behavior – as the phenomenon of moral judgment-action gap embodies.

One can argue that children might have had a hard time relating to the vignettes in Kohlberg's studies. Proponents of the social domain theory (SDT; see section 1.2.3), might argue that children as young as three, display postconventional reasoning. According to the SDT, if someone transgressed a moral norm, young children would argue that it is wrong, even if an authority said it were ok, even if peers did it and even if out-group members did it (Rizzo et al., 2018). According to the SDT, these are indicators for moral instead of conventional transgressions (Smetana, 2006). But they also indicate postconventional reasoning as they are free from social concerns and relate to a universal moral codex as Kohlberg would have put it. The divergence of empirical evidence shows how broad moral reasoning can be operationalized.

A reoccurring critique of the concept of moral reasoning is, that it hardly relates to behaviors (Chadha & Misra, 2006; Haidt, 2001). In particular, different moral reasons can lead to the same behavior, and the same reason can lead to different behaviors, if at all (Blasi, 1983). This way, moral reasoning cannot help to explain or predict moral behavior. As explained above, the moral judgment-behavior gap reflects the empirical disparity between the two aspects. Haidt (2001) critics moral reasoning, surprisingly in concordance with Kohlberg's theory that the content-related decision is less important. But Haidt (2001) argues on that emotions lead to moral judgments and cognitions justify the emotional decision post hoc. That means, moral reasoning would be an epiphenomenon.

According to Haidt's interpretation of moral reasoning and in accordance to empirical research cognitive capacities impact moral reasoning (Doherty & Corsini, 1976; Walker, 1982). That means, that the moral reasoning task as used by Kohlberg is confounded with cognitive capacities (e.g., verbal skills) and educational opportunities. Yet verbal skills can merely be a vehicle to convey moral reasoning, it cannot be the determinant for moral maturity.

Besides the theoretical critic, it is important to regard practical considerations as well. If moral reasoning hardly relates to prosocial behaviors, how is it helpful is everyday life? From a self-concept

perspective moral judgment and reasoning should relate to the MSC, which in turn should relate to prosocial behaviors. Hence, moral reasoning should be part of the puzzle in order to explain prosocial behaviors. Only if someone considers an action as morally right, and only if the MSC is strong, the consideration should lead to action. The question arises how moral development captured by moral reasoning translates to behavioral changes. If one aims to explain moral behavior, moral reasoning will be of minor help, due to the gap. There are some empirical studies showing a relation between moral reasoning and behavior, though (Malti, Gasser, et al., 2009; Malti et al., 2016).

Kohlberg assumed that moral reasoning is consistent across situations. Yet, empirical studies showed heterogeneity (Krebs et al., 1991), which made his conclusions less generalizable. Moreover, his approach based on Plato's assumption "to know good means to do good". But Kohlberg did not investigate relations between moral reasoning and behavior – as the phenomenon of moral judgment-action gap embodies.

1.2.2 Nativist Account

In the following, I elaborate on the nativist approach, as this is a major and influential psychological approach that aims to explain moral development. A key element of this approach is that morality is innate, which means genes might impact them. If genes are a factor in moral development one can argue that they must have phylogenetic roots. Thus, the nativist approach links to evolutionary considerations (i.e., how this behavior fosters the survival of the group). Importantly, though, the motivation for moral behaviors does not fit to the previous conceptualization of morality as it often contains self-interest or using others as means, such as reputation management, which will be discussed in more detail below (Engelmann et al., 2013; Fu et al., 2016; Herrmann et al., 2019). On the other hand, prosocial behaviors do not necessarily require moral intentions or reasoning. Young children cannot always utter why they do certain acts and verbally reflect about the moral implications. Yet, young children show prosocial behaviors. These can be used as external indicators for moral development. Hence, even though the nativist account uses a different underlying moral conceptualization, the external behaviors assessed remain the same.

While according to the rationalist account (autonomous) morality is a developmental topic of adolescence, the nativist approach argues that morality is innate (Bloom, 2012; Hauser, 2006), and that they for example relate to evolutionary advantages (Tomasello & Vaish, 2013). The central idea is that humans are born with a moral foundation. This idea relates to Spelke's (2000) "core knowledge", according to which some knowledge is innate or emerges very early and without the help of the environment. Further understanding is rooted in this core knowledge. For example, Spelke (2000) proposes that the potential to use language (which she proposes is innate), is a key tool that makes shared intention possible. Shared intention is the root of cooperation, according to Tomasello (2009). In relation

to our close relatives, nonhuman primates appear to act not purely selfishly either (De Waal et al., 2006). That means, if prosocial (or altruistic) behavior emerges very early in human ontogeny and close nonhuman relatives exhibit it as well that these behaviors might be innate or ingrained into the genes.

In a classical study, six-months-olds preferred a shape that previously helped someone to get to a goal over a shape that previously hindered someone (Hamlin et al., 2007). The authors argue that at six months, children have not had enough time to learn moral norms in social interaction. They conclude that the reactions to moral behavior or transgression have to be innate. These reactions might be evolutionarily advantageous: spending time with a helper might foster chances of being helped oneself. Groups that foster cooperation have advantages over those that do not – thus institutionalizing prosocial behaviors.

Another support for this approach is research on reputation. Prosocial behavior, according to this account, has at least two functions: First, being able to profit from others' prosocial behavior; second, showing off one's own prosocial behavior in order to increase one's social standing. That means, prosocial behaviors have a reputational function. Only if others can observe the prosocial behaviors, will it foster one's reputation. Already children exhibit such strategic behavior: As children grow older and more competent, they display more prosocial behavior around observers than when alone (Engelmann et al., 2013; Herrmann et al., 2019; Rapp et al., 2019). Such situation-dependent behavior can lead to a positive reputation, which in turn, can increase children's chances of positive reciprocation (Nowak & Sigmund, 2005; Wynn, 2009). So, prosocial behaviors are means to promote self-enhancing behaviors.

This approach can explain very early prosocial behaviors and even prosocial behaviors in other primates (Hepach et al., 2019; Warneken & Tomasello, 2009). One particular advantage is that reputation research works with few assumptions, making it parsimonious. The nativist approach can explain why infants show helping behavior very early in life. Infants might want to build a positive rapport with their caregivers in order to ensure ongoing care. Sharing behavior is a manifest sign of prosociality. This can enhance reciprocity. Concerning comforting, it can strengthen the emotional bond to others, which can enhance the standing in the group. Yet, as comforting is a quite complex behavior, cognitive and emotional skills need to develop before it can be shown properly. The MSC does not play a role in the nativist approach, as foremost behaviors are central for it and considerations internal to an agent are less important.

While the nativist account appears to have many empirical evidence on its side, a major question is, whether tested behaviors (such as shape preference or reputation management) really apply to morality. Grasping for one shape rather than another does not allow to draw the conclusion that the participating infants understood the scene, interpreted it in moral dimension and concluded a preference. A simpler explanation could be that infants prefer a shape moving up, rather than down. For older children, acting more prosocially when observed in order to attain reciprocation, even though the behavior is prosocial, it is not moral. Following Kochanska's (2002) concept of committed compliance

(see subchapter 1.4.2), morality requires the right behavior without external observation otherwise it would be social desirable behavior or situational compliance. Yet, the motivating factor in the observer-studies appears to be potential personal gain. As conceptualized above, morality entails more than reactions to shapes or compliance to social desirability. More so, it entails other oriented elements, while reputation management does not necessarily entail them, but rather is self-oriented.

1.2.3 Constructivist Account

In the previous sections, moral development is portrayed as passive. Children grow into morality or are born with it. The constructivist approach, on the other hand, underscores the active role of children in moral development. The most prominent representative of this account is Jean Piaget (1896-1980). Piaget (1965) emphasizes the importance of social interaction for moral development. This social-cognitive approach is still en vogue today: children actively form an understanding of moral behavior and morality (Carpendale et al., 2013; Paulus, 2020a).

Piaget investigates rule understanding with the help of natural behaviors of children – games. He describes a change between heteronomy to autonomy in four stages. Heteronomy means following adult's rules as if they are unchangeable. Autonomy means reflecting about rules and changing them if all parties agree. Carpendale (2009) summarizes Piaget's description of four stages of social interaction, which relate to rule understanding. Toddlers are not aware of rules or do not consider them obligatory. In early childhood, children are in the egocentric stage. That means they play next to each other and not with each other, or they imitate other children. They strive for conformity and consider rules as unchangeable. Ironically, in this stage children do not follow the rule consistently. In the cooperative stage (middle to late childhood), change happens from heteronomy to autonomy. In the last stage (codification), children can master the rules. That means, they are aware that they can change rules in consent with other.

Besides active interaction, Piaget investigates children's judgments about different mishaps (e.g., either breaking many objects by accident, or breaking one while stealing something). Piaget identifies two types of responses: moral realism and subjective responsibility. According to moral realism, the factual consequence (breaking many vs. few items) was the predictor of judgment. According to the subjective responsibility, the intention (accident vs. negligence) predicts the judgment. Increasing age leads to more subjective responsibility judgments. This change from observable outcomes to introspection is a sign that children become aware of internal processes. The self-concept, as one internal process, might guide such considerations.

Piaget explains the acquisition of moral knowledge as adaptation (assimilation and accommodation). He emphasizes that missing prosocial behavior is due to missing knowledge. But his theory only focuses on the knowledge part of the equation. Within the knowledge part, different motivations and

emphasis can coexist. However, the Piagetian approach misses a "superordinate overarching central agency" (Blasi, 1983, p. 190), which regulates relations between different motives and actions. In this way, the Piagetian approach cannot help to explain the gap between judgment and behaviors. Blasi (1983) emphasizes that a central agency – or as he calls it: the self – is necessary to account for choices between differing motives and actions. Even though the constructivist approach sees the individual as an active part, the role of the self is neglected. In this theses, I emphasize the importance of the self.

A more recent theory within the constructivist approach is the social domain theory (SDT). According to the SDT, knowledge about morality arises early on. Furthermore, the SDT regards social interaction in different contexts as important in order to learn social knowledge (Sokol & Chandler, 2004). Other than Piaget, proponents of the SDT assume that children do not undergo a heteronomous stage. They propose that children learn from social interaction very early on and thus are directly in the autonomous stage (Smetana, 2006). The SDT has four central propositions (Lourenço, 2014): 1. There are three different types of judgments (moral, conventional and personal). The moral judgment "is universal as it is grounded on rational criteria" (Lourenço, 2014, p. 3), prescriptive and generalizable across contexts, using justifications concerned with the welfare of others. The conventional judgment is relative, changeable and dependent on authorities, using justifications concerning customs and social agreements. The personal judgment is a personal choice of preference (Smetana et al., 2018). 2. During development the judgments within one domain can change. Children learn to coordinate knowledge and prioritize certain moral principles (Dahl & Killen, 2018a; Jambon & Smetana, 2014). 3. Children construct their thought and knowledge through social interaction. This proposition emphasizes the SDT's connection with the constructivist approach (Smetana et al., 2018). 4. The individual coordinates the different domains, which lead to action (Turiel, 2015). This way the SDT builds a connection between judgment and behavior, which the previous approaches neglected to do. They either mainly focus on the judgment part (Kohlberg, 1969; Piaget, 1965) or the behavior part (Engelmann et al., 2018; Hamlin et al., 2007).

Despite the merits of the SDT there are some issues that need to be addressed. The SDT claims to be developmental and independent of Kohlberg's and Piaget's developmental approaches, yet it cannot predict developmental trajectories unless they recur to Kohlberg's or Piaget's approaches (Lourenço, 2014). Furthermore, and more importantly, the SDT cannot explain individual differences, which is important in order to understand mechanisms leading to more or less emphasis on morality during development (Hardy & Carlo, 2011). Particularly concerning a constructivist approach, one would expect that individuals differ in their capability to engage with others and their internal construction of their experience. The MSC can explain individual differences, and thus bridge this non-explained individual differences-gap. Besides the process of leaning moral norms through social interaction, children might differ in their evaluation of the importance of morality, i.e., whether morality is central to their selves or not. This way, individual differences can be explained. Only if being a moral person is central to the self, the MSC can be strong and prosocial behavior increases.

A presentation of the contrasting accounts shows that early to middle childhood is a central time for moral development. In particular, the MSC appears to form and manifest around that time (Krettenauer et al., 2013). I will argue, in concordance with others (Hardy & Carlo, 2011; Kochanska, 2002) that the MSC emerges early in childhood and it relates to prosocial behaviors. Different to previous research, I focus on the structure of the MSC within and in relation to other self-concepts. This is important as the reviewed theoretical approaches have different underlying assumptions about the function of a MSC. While some argue morality is a layer that impacts every action in life (e.g., Smetana, 2006), others argue the moral self is a separate dimension within the self and it differs between people (Kochanska, 2002; Krettenauer et al., 2013). Finding out about the structure of the MSC can help understand its role in moral conduct and reasoning. Such research is important as it opens possibilities for training programs and everyday encouragement to act intrinsically prosocial.

1.3 The Self-Concept

The self-concept is comprised of cognitions, emotions and evaluations of oneself and ones relations to others (Harter, 2015). The content of the self-concept does not necessarily relate to objective indicators (such as school grades, or the number of friends; Harter, 2015). Evaluations can be grounded in one's own subjective observations in relation to previous successes, others' successes or other's feedbacks (Marsh, 2014). This definition is comprised of an important part, which is: the self builds through own and other's evaluations. That means, that others are necessary to shape a sense of self. As James (1890) proposed, there are two parts of the self: the I and the me. The "I" represents self-perceptions and internal evaluations. It coordinates the me-selves, evaluates them and observes their continuity across time (Harter, 2015). Depending on the cognitive development of the I-self, the me-selves change. The "me" represents assumptions that others might have about oneself or the roll one assumes in a social setting. In particular, there can be multiple "me" selves, each for different situations and role expectations. Due to the multitude of roles one assumes (e.g., friend, student, grandchild), tension between the roles can occur and maintaining coherence can become difficult (Gergen, 1991). If too many roles tear on the I-self, the integrity of the "core" self might be in danger.

1.3.1 Structure of the Self-Concept

Almost 100 years after James proposed the multiple structure of the self, Shavelson et al. (1976) picked up the idea and created a comprehensive model of the self-concept as multidimensional and hierarchical. This model contains a developmental stance, which the former model missed. As the "I"-self required cognitive processes that only emerge in adolescence or adulthood (Harter, 2015), a model that works

with fewer cognitive strain is necessary to explain the early self-concept. A further aspect that is important for self-concept development is the aspect of socialization. The mature self is based on social interaction (as the me-self symbolizes). The process of internalization of feedback by others needs to be discussed at the time of its first occurrence – childhood (Harter, 2015).

In the beginning of modern research on self-concepts, there was debate about the dimensionality (i.e., uni- or multidimensionality) of the self-concept. Some argued that the general self-concept was so dominant that introducing more dimension could not create a better model (Coopersmith, 1967 and Marx & Winne, 1978 as cited in Marsh & Craven, 2006). Yet, research did not support this model (Marsh, Ellis, et al., 2002; Marsh & O'Mara, 2008). A multidimensional model fits the data better (Marsh, 1990b; Marsh & Craven, 2006). The following model combines both views, as it refers to a global self-concept at the hierarchical top, and a multidimensional model lower on the hierarchy.

According to the multidimensional, hierarchical model (Shavelson et al., 1976), the self-concept consists of a horizontal and vertical axes (see Figure 1). On the horizontal axis, the self-concept splits into domains, which again split into different dimensions, for example, the social domain might split into dimensions such as parent, peers etc. (Marsh, Ellis, et al., 2002). These dimensions differ from each other statistically and content wise, which can be shown in factor analyses (Marsh & Ayotte, 2003) and studies on the convergent and discriminant validity (Marsh & Craven, 1997). The vertical axis stretches from concrete preferences of behaviors that are quite malleable (e.g., “I like to play with X”), to abstract emotions and cognitions about the self (“I am a smart and lovable person.”), which become more stable over time and experience. The original model by Shavelson and colleagues (1976) could not be shown in empirical data, as for this model to be valid, the dimensions (here math and verbal self-concept) had to correlate substantially, which they did not (Möller et al., 2009). Several modifications have been proposed: for example, with a general overarching factor (“nested Marsh/Shavelson”), or with domains relating to separate and same dimensions ("Marsh/Shavelson Model"; Arens et al., 2021). Yet, these models mostly focus on the academic domain. The structure of other domains such as the physical or social self has barely been investigated.

As James proposed in 1890, still the two major ways to investigate the self-concept are within-construct (object-self) and between-network (process-self; Byrne & Shavelson, 1996; Marsh, 2014). Research within-construct means investigating the dimensionality of the self-concept, (i.e., the distinctness of dimensions from each other). Research between-network means investigating the relation of the self-concept dimensions with outcome variables such as grades or behavior. A firm knowledge about the within-construct is a prerequisite for between-network research (Arens et al., 2021; Marsh, 2014), because one can only infer relations if the relating constructs are known. In this thesis, within-construct analyses of the MSC appear in chapter four and five; between-network analyses appear in chapter four and six.

As described above, the self-concept appears to consist of several domains, which split up into different subdimensions and dimensions. The multidimensionality of the self-concept is purposefully

open ended. That means, new dimensions can be integrated. The function of the domains might be to enhance accessibility to behavioral scripts of schemas (Bandura, 1991; Hardy & Carlo, 2011): Strong domains (e.g., MSC) can get activated more easily than weaker domains (e.g., academic self). That means, in a specific situation a person with a strong moral self would interpret this situation as morally relevant. A person with a strong academic self-concept might interpret the same situation as an opportunity to learn. As a consequence, behaviors differ: while stepping in and supporting another person might be the script for the morally inclined person, the script for the academically inclined person would be to watch and take notes. Thus, the domains of a self-concept can enhance access to interpretations and action plans in different situations.

In relation to the MSC, Krettenauer et al. (2013) suggest two subdomains: preference for prosocial behavior and avoidance of antisocial behavior. In this thesis, I will focus on the subdimension preference of prosocial behavior. Next, the development of MSC will be elaborated.

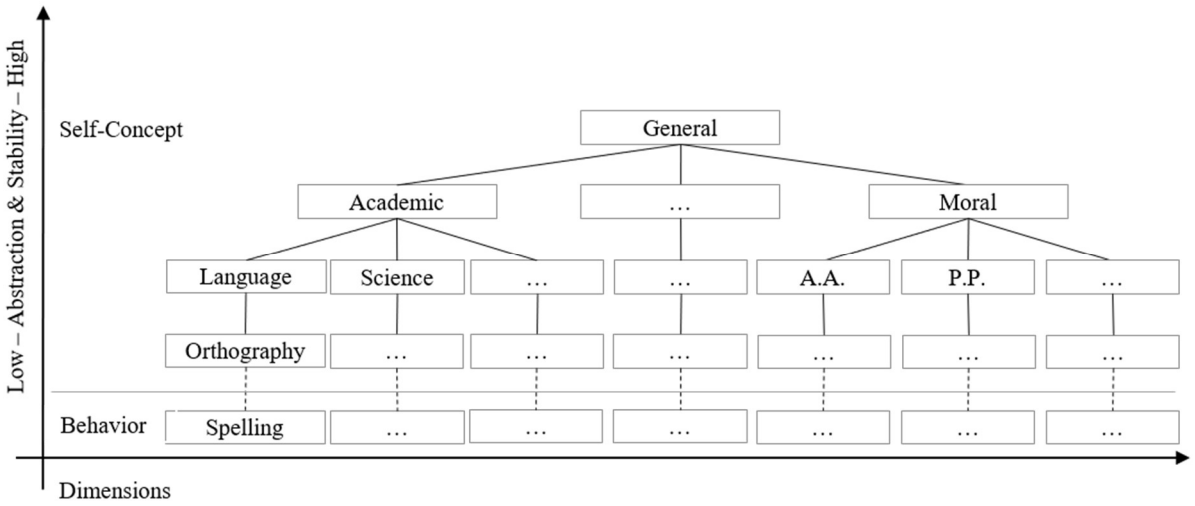

Figure 1. Schematic Depiction of the multidimensional, hierarchical Model of Self-Concept according to Shavelson, Hubner & Stanton (1976). The horizontal axis depicts the different dimensions. The vertical axis depicts the increasing abstraction and stability.
Note. A.A. = Avoidance of Antisocial Behavior; P.P. =Preference for Prosocial Behavior, dashed lines = relation between Self-Concept and Behavior.

1.3.2 Development of the Self-Concept

The development of the self-concept has several prerequisites. Toddlers have to understand that they and their surrounding are distinct from each other and that they themselves form an entity. In the following, I will describe the prototypical development of the self-concept. Negative experience, such

as unreliable or abusive caretakers, can impact the development negatively (Harter, 2015). Maladaptive self-concept development is not part of this thesis, which is why this will not be discussed further on.

The first sign of a self-concept in general is self-recognition. At around 18 to 24 months children recognize themselves in the mirror (Asendorpf et al., 1996; Broesch et al., 2011; Rochat, 2003), which is traditionally tested with the rouge-test. If children see in their refelction in a mirror a dot on their faces and touch their own faces rather than the reflection that is a sign of self-recognition. Slightly there after children develop an awareness of their own body (Brownell et al., 2007). The self-concept emerges further through first autobiographical memories and acquisition of language, which allows a sense of continuity (Jia et al., 2016; Marsh, Hau, et al., 2002). This allows children to report about their observable features that are closely tied to behaviors or demonstrations, such as appearance (e.g., "I have blue eyes. See!"), possessions (e.g., "I have a cat."), or abilities (e.g., "I can run fast."; Harter, 2015). Such utterances signal the emergence of an explicit self-concept (Eder, 1990). These utterances do not follow a logical path (e.g., "I can run fast. I have a sister.") though and do not combine together (e.g., "I can run fast." and "I can jump high." to "I am sporty."). This is due to working memory constraints, which let very young children only process one representation at a time (Harter, 2015). Other researchers do show that already three-year-olds display different factors of the self-concept, which were the same factors as for eight-year-olds (Eder & Mangelsdorf, 1997). These seemingly contradictory results might result from different levels of interpretations. Eder and Mangelsdorf (1997) showed the factors in a factor analysis, which means that the children did not explicitly show awareness of items accummulating to one dimension. They might display implicit ideas of the coherence of dimensions whithout being able to express the overarching concept, which appears to develop around the age of seven to eight (Eder & Mangelsdorf, 1997). Besides the lack of abstraction, children display a positivity bias (i.e., claiming unrealistically positive attributes). This bias is normal and even important in childhood, as this bias helps to maintain a high self-esteem and functions as motivator. The positivity bias is again due to cognitive constraints: young children cannot engange in social comparissons, differentiate between ideal (i.e., how one strives to be) and real self (i.e., how one is) or incorporate ambigious feedback (Harter, 2015).

Between early to middle childhood (i.e., five- to seven-year-olds), children become more active in their self-construction. That means, earlier, parental feedback was the center of children's self-narrative, now children display their own agency, experience and temporal continuity when describing themsevles (Harter, 2015). All-or-nothing thinking persists (Harter, 2015). That means, in the child's mind one can only be good or bad at something. These evaluations can differ between domains, (e.g., academic self vs. physical self). Children might sum up behaviors from one domain such as running, jumping, climbing, and judge their abilites (Marsh, Debus, et al., 2005), even though they do not label them (e.g., "athletic"). This would require a higher-order concept of personality, which children this age lack (Gnepp & Chilamkurti, 1988; Rholes & Ruble, 1984). Yet, children show different dimensions within the self-concept (Marsh, Ellis, et al., 2002). Slowly, self-evaluations shift from direct feddback

(such as scolding or appraisal) by others to internalized others, making anticipations of their reactions possible (Harter, 2015). With this ability, children can evaluate their behaviors without others being directly present (Bandura et al., 2003). This might contribute to increasing stability of the self-concept with higher test-retest stability in relation to increasing age (Spencer & Bornholt, 2003). However, as children this age still display immature perspective taking skills, they are incapable of critical self-evaluations of internalized others (Harter, 2015). Immature perspective taking is a further factor that contributes to the persistence of the positivity bias. The positivity bias might increase in its display, as children aquire more linguistic skills and with this, can articulate their self-conception more eloquently.

According to Harter (2015), in late childhood (eight- to ten-year olds), children eventually use more abstract and stable description for themselves (such as popular or smart). Additionally, all-or-nothing thinking makes way for more balanced evaluations, such as being smart and dumb at the same time or having mixed emotions. This is important as balanced evualutations of different topics reflect the different domains and dimensions within the self-concept (Marsh, Debus, et al., 2005). Compared to younger children, at this age, children display more agency in their narratives and signal that they know themselves better than their parents (see Burton & Mitchell, 2003 for research that shows an onset around the end of early childhood). With decreasing impact of the parents, peer relationships become increasingly important as references for the self. In particular, children become able to perform social comparissons, which requires cognitive capacities to evaluate own and other acchievements or behaviors simultaneously. More over, children start estimating their self-esteem. It is comprised of a combination of balanced evaluations, social comparissons and own estimations about what is important to someone. The child actively seeks out areas that are imporant to them and bases self-evaluations upon such areas rather than others. The cognitive processes that allow for a global self-esteem to emerge can contribute to a decrease in the positivity bias, as estimations become more attuned with external factors (such as own grades or acchievements in relation to others' grades or acchievements). Eventhough this might lead to a decrease in self-esteem, this process is helpful and necessary to develop a realistic self-concept.

In this section, I summarized findings on the structure and development of the self-concept: A hierarchical, multidimensional model represents the self-concept. The self-concept grounds on parental feedback and concrete behaviors. Due to developing cognitive abilities, the self-concept becomes more abstract, stable and realistic. In the following section, I will focus on one domain within the self-concept: the MSC. It is particularly important to investigate the MSC in early childhood, as there is few research on it (Hardy & Carlo, 2011), but research is essential as MSC should impact everyday life gravely. Prosocial behaviors should relate to the MSC (see chapter six; Bem, 1972; Blasi, 1983), which is a glue that keeps societies together.

1.4 Moral Self-Concept

The moral self-concept is said to be a precursor of the moral identity. Moral identity is defined as the "degree to which being a moral person is important to an individual's identity" (Hardy & Carlo, 2011, p. 212). Moral identity is comprised of concepts, such as compassion or generosity (Aquino & Reed, 2002) and "a commitment to moral values" (Sengsavang & Krettenauer, 2015, p. 214). MSC is defined as one's own representations about prosocial preferences (Sengsavang & Krettenauer, 2015). As this definition shows, moral identity is more abstract than MSC. In the middle of the last century, abstract thinking was thought to emerge around late childhood (e.g., as the formal-operational phase shows; Inhelder & Piaget, 1958). More recent approaches suggest different kinds of abstract concepts (such as emotions or personality terms), which go along with different developmental trajectories, hence some abstract concepts might develop earlier (Pexman, 2017). Abstract thinking also relates to neuro-cognitive development (Dumontheil, 2014). Studies show that children understand abstract moral norms such as fairness (Moore, 2009; Paulus et al., 2013), or reciprocity (Leimgruber, 2018; Wörle & Paulus, 2019; Xiong et al., 2016). Understanding the concepts does not mean that children can produce them explicitly. Protest-studies can give an idea of underlying moral norms as reaction to moral transgressions: for example, "You have to give her candies. She also gave you something." can be a sign of reciprocity understanding without using the terminology. The understanding might be implicit, while the MSC is explicit. This is why in childhood questions about the MSC usually base on concrete behaviors (such as helping doing X; Eder, 1990; Marsh, Ellis, et al., 2002). The advantage is, researchers ensure that children can relate to the items. The disadvantage is that the MSC and moral identity are operationalized differently, making inferences from one concept to the other difficult (Kingsford et al., 2018). This is why research on the MSC is particularly important. While the moral identity and its relation to other concepts such as prosocial behavior has been studied (Aquino & Reed, 2002; for a meta-analysis see Hertz & Krettenauer, 2016), such relations need investigation in childhood.

1.4.1 Structure of the Moral Self-Concept

The self-concept is structured into different domains, according to the multidimensional, hierarchical model (Marsh, 1990b). These domains have not been defined conclusively and shall not be defined conclusively, as the multidimensional, hierarchical model represents the structure, but not the content of the self-concept. This means, that the model can be expanded with more domains and dimensions. The MSC could be one domain within this model. There is one study that investigates the structure of young children's MSC (Krettenauer et al., 2013). Krettenauer and colleagues (2013) examined two subdimensions within the MSC: a preference for prosocial behaviors, such as sharing and helping, and an aversion to antisocial behaviors, such as not hitting someone or not taking something from someone. Yet, the relation to other self-concept domains has not been investigated. This is important though, as

only by investigating the MSC in relation to other domains, one can show that it is independent from or dependent on those domains.

As mentioned above, in this thesis, I focus on the preference for prosocial behavior subdimension. In particular, as behavior is said to be the basis of the self-concept (Shavelson et al., 1976), and prosocial behaviors are heterogeneous (Dunfield, 2014), I investigate the same heterogeneous representations of the prosocial behaviors in the MSC (see Figure 2). Research lacks information on the relation of the MSC to other self-concept domains and on the internal structure within the MSC (except for Krettenauer et al., 2013). Yet, knowledge about the internal structure (i.e., resemblance to the behavioral structure) gives insight into the developmental process of the MSC. If I show the same dimensions (helping, sharing and comforting) in the MSC as the prosocial behaviors, I can assume a bottom-up direction (i.e., self-perception as basis; Brunner et al., 2010; Newman, 1984). That would mean, that children grasp the world with their senses first, which then should lead to mental representations (Hunnius & Bekkering, 2010; Paulus et al., 2011). With the three different MSC dimensions, I can assume that children reflect about their behaviors early on, and that they form distinct preferences. That means, children internalize prosocial conduct very early on.

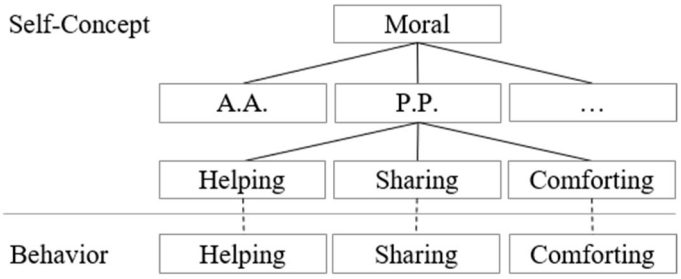

Figure 2. Proposed Structure of the Moral Self-Concept

Note. A.A. = avoidance of antisocial behavior; P.P. = preference for prosocial behavior. Dashed Lines indicate Relation between Self-Concept and Behavior.

1.4.2 Development of the Moral Self-Concept

First instances of the MSC appear around three to four years of age (Emde et al., 1991; Kochanska et al., 2010). Children internalize rules, norms, and parental feedback about them being good or bad agents, around that age (Kochanska et al., 2010). These interactions leave emotional associations about behaviors and feelings of right and wrong (Emde et al., 1991). In this early stage, emotions relate to "right or wrong" conduct, in particular, if the MSC is strong.

Kochanska (2002) proposed an account of internalization of moral rules. She used the terms situational and committed compliance. Situational compliance stands for external regulation of rule

following. Children only act according to rules under direct supervision. Committed compliance stands for intrinsic motivation to follow rules in absence of others. Children act according to rules with pride and whole-heartedly. Furthermore, Kochanska (2002) argued that committed compliance leads to successful internalization of rules. The internalized rules are represented in the child's self (the MSC), which guides subsequent behavior. This way, Kochanska (2002) explains differences between children's strengths of their moral selves trough different extents of internalization. If the rules are internalized, then children act out of committed compliance. Children who display more committed compliance develop a stronger MSCs than children who display more situational compliance.

Beyond internalization, children construct their moral surrounding (e.g., questioning parental judgments; Paulus, 2020a), which indicates that children's part in moral development is active. Around early childhood, children construct a coherent MSC (Kochanska et al., 2010). That means, children give similar statements within one domain (e.g., "I like to comfort another child" and "I like to share my candy with other children"). Around that age, children learn that their personality is stable over time and that the self-concept relates to behavior (Liu et al., 2007; Ruble et al., 1988).

Thus far, I have focused on the explicit self-concept, yet research suggests an implicit self-concept as well (De Cuyper et al., 2017; Gerstenberg et al., 2014; Peters & Gawronski, 2011; Strack & Deutsch, 2004). According to the dual process model, the explicit self-concept represents an active cognitive path, such as thoughts and evaluations (Aquino & Reed, 2002). The implicit self-concept represents associations between oneself and, for example, morality (Perugini & Leone, 2009). An implicit test could capture a facet of children's self-concept that cannot be tested explicitly (Cvencek et al., 2011), as children's verbal skills are still developing. Implicit measures can indicate preference for agents, which explicit measures would not capture, either because verbal skills are not developed enough (Hamlin et al., 2007), or because the responses might not be socially desirable (Rutland et al., 2005). I therefore aimed to investigate an implicit MSC in children and if it relates to prosocial behavior.

1.4.3 The Relation of Prosocial Behavior and Moral Self-Concept

There are several accounts that potentially explain the relation between self-concept and behavior. The most prominent accounts suggest different causation. While the self-perception account holds that own behavior leads to changes in the self-concept (Bem, 1972), the self-consistency account (Blasi, 1983; for a more recent review see Deci & Ryan, 2012) holds that self-concept leads to changes in behavior. I will discuss both accounts, followed by the reciprocal account (Marsh, Trautwein, et al., 2005), suggesting that self-concept and behavior impact each other.

Self-Perception

Self-perception means attributing own behavior to the self (Bem, 1972). Children learn concepts (such as games), words or internal states (such as hunger or sadness), by for example another person describing

and explaining them. This way, children channel the world through their experiences and learn to associate sensory information with terms (Pereira et al., 2014). In relation to the self, children might receive feedback on their behaviors or skills or they themselves evaluate their behaviors in relation to different circumstances (Harter, 2015). Over time, with repetition, children acquire knowledge about their attitudes, emotions and internal states (Bem, 1972). Regardless of whether the feedback derives from a second party or the children themselves, they attribute the feedback to themselves. For example, a child views own behavior such as helping to set the table and attributes that this is a behavior they enjoy and are good at. This attribution generalizes and becomes part of the self-concept. The self-perception account is in line with the multidimensional, hierarchical model of self-concept (Shavelson et al., 1976), as the multidimensional, hierarchical model assumes this directional relation to build the self-concept. As explained above, children internalize norms or feedback. One aim of this thesis is to investigate the directional relation of the MSC and behavior as this is unknown thus far. According to the self-perception theory, the basis of the MSC is specific behavior and the internalization of others' reactions to it.

Empirical studies show evidence for this account (Bryan et al., 2013; Bryan et al., 2014; Bryan et al., 2011; Grusec & Redler, 1980), which I will now describe briefly: Grusec and Redler (1980) showed that seven- to ten-year old children, who received global feedback ("I guess you're the kind of person who likes to help…"), were more likely to act prosocially afterwards, than children who received reinforcement ("It was good that you..."; Grusec & Redler, 1980, p. 527). The authors conclude that feedback targeted at the person affect subsequent behavior more than generic reinforcement, as personal attributions affect the self. In several studies with children and adults, Bryan and colleagues successfully replicated these results, for example, one labeling the person as "helper" vs. describing the behavior "to help" ("Some children choose to help [be helpers]…."; Bryan, Master & Walton, 2014, p. 1837) or voter vs. to voter (Bryan et al., 2011). They conclude that global feedback impacts the self, which then leads increased behaviors in this domain.

Self-perception is malleable: Moral licensing is a phenomenon of this account. If one has shown enough prosocial behavior, one slip up cannot affect the self-concept (Khan & Dhar, 2006). Over justification is another phenomenon: a person attributes a certain behavior to intrinsic motivation (the self), if other explanations for this behavior are absent. That means, if someone performed a boring task and got a very low reward, they would have to reevaluate their feelings towards the task. If there is no external incentive that made them do the task, they must have done it for other reasons, such as intrinsic motivation. This reasoning about own preferences can be manipulated in both directions. If children receive a reward that relates to the previous activity (here a book, after having "reviewed" another book) and if they do not receive anything, then this increases the likelihood that the children continue reading (Marinak & Gambrell, 2008). On the other hand, if the children receive another kind of incentive (here e.g., a rubber), the likelihood of them to continue reading decreases. The authors argue that rewards that match the wanted behavior are linked to intrinsic motivation, just as lack of reward is. The intrinsic

motivation is self-perception of own preferences and its attributions to the self. In the "other"-reward condition, children get to attribute their previous behavior to the independent reward and thus associate the behavior with external rewards rather than with own preferences. Thus, fitting feedback and contextualized attributions impact self-perception gravely.

On the methodological level, the self-perception account assumes self-consistency. Many of the studies that test the self-perception effect do not asses the self-concept (Bryan et al., 2013; Bryan et al., 2014; Bryan et al., 2011; Grusec & Redler, 1980). They rather asses behavioral group differences in relation to their manipulation. Based on the data, they infer a change in self-concept. Yet, this does not enable researchers to test the self-perception account. Furthermore, as self-consistency is assumed, in order to investigate the self-perception account, the different effects of self-consistency and self-perception are blurred. This is why it is crucial to investigate the self-concept, when testing self-perception. In the studies of this thesis, I did asses the self-concept, which makes a test of the self-perception possible.

From the empirical point of view, results in self-perception research are not homogeneous. Some studies could not replicate the mentioned self-perception effect (Gerber et al., 2016), or showed even the opposite effect (Foster-Hanson et al., 2018; Lei et al., 2019). In the case of the voter vs. to vote study (Bryan et al., 2011), Gerber and colleagues (2016) could not replicate the finding. On the one hand, the different results could be partially explained by different methods. On the other hand, theoretical issues could hinder the effect. Global attributions can be viewed as threatening, for example, if the global attribution cooccurred with a setback. Children would perceive themselves (that is themselves as a whole) as unworthy of the attribution and in order to reduce dissonance stop engaging in the activity (Foster-Hanson et al., 2018; Lei et al., 2019). These results show that feedback needs to be tailored to the situation and person. Self-perception could strengthen or weaken the self-concept and thus is not a one-size-fits all solution. More research on the strength and difficulties of this theory are necessary in order to prevent unwanted outcomes.

Self-consistency

The other major account describes the self-concept and behavior relation the other way around. A reason for moral or prosocial action might be alignment of self-interest and other-interest (Frimer & Walker, 2009). That means, actions that benefit others, will benefit the self. If self and other-interests overlap, exhibiting moral behavior will be considered self-consistent behavior, which is accompanied by positive affect.

This is the idea of self-consistency, which Blasi (1983) promoted. This theory bases on several internal steps. First, a person has to assume responsibility in a situation. Responsibility – or "obligation" (Blasi, 1983, p. 198) – depends on internal rules (i.e., moral understanding) and is stable across situations. That means, only if a person views a situation as morally relevant will that person assume

responsibility. In other words, the assumption of responsibility means that acting in a certain situation is necessary for the self, if this situation requires action based on the moral understanding of the person. Second, if responsibility is assumed, the necessary action is an expression of the self. That means, behavior reflects own understanding, which do not have to be moral though. The content of the understandings differs between persons (e.g., fairness or empathy). Third, self-consistency drives for congruence between the self and the action that is judged to be right. More precisely, self-consistency can only lead to action; it cannot lead to a change in the self, as the self "is judged to be the truth" (Blasi, 1983, p. 201). In relation to the MSC, this part is particularly important. As the strengths of MSCs differ between persons, this drive for consistency differs between persons as well, thus, promoting the according behaviors (such as prosocial behaviors) to different extents (Hardy & Carlo, 2011). Fourth, if inconsistency occurs, negative emotions such as guilt arise. Importantly, guilt in this context expresses a "fracture in one's self" (Blasi, 1983, p. 204), and does not function as punishment or as social cue. It is just an expression of the self. Blasi (1983) concludes that self-consistency (or integrity) requires development within all facets of a person. He assumes that this happens around adolescence. The role of moral emotions has been investigated in several empirical studies. The results are heterogeneous, though. Research with adults shows the expected relations between moral emotions, self-importance and behavior within adolescents and adults (Krettenauer & Johnston, 2011; Lefebvre & Krettenauer, 2019), yet this is not the case in child research: In line with Blasi's theory, research with children does not reflect this relation consistently (Christner et al., 2020 showing the relation; Johnston & Krettenauer, 2011; Krettenauer et al., 2013 not showing the relation).

In a review, Mullen and Monin (2016) investigated in which circumstances adults show self-consistent behavior rather than moral licensing behavior. They showed that self-consistent behavior was more likely, if behaviors and own values were viewed on an abstract level (rather than thinking about specific prosocial accomplishments). That means, the moral relevance needs to be emphasized. This is the basis of Blasi's (1983) theory. Only if moral knowledge is present can responsibility be assumed.

Blasi argues that the self is the truth and cannot be changed due to lack of consistency. Based on this reasoning his theory is strictly top-down. Change in the self is not a part of his theory. While in the multidimensional, hierarchical model (Brunner et al., 2010; Shavelson et al., 1976) the more abstract domains are also seen as stable, change and particularly developmental change would be possible. This appears to be an oversight in the self-consistency theory. The stability of different self-concept domains has been tested, but the stability of the MSC in childhood has not been investigated. Only under the assumption of stability can the self-consistency theory apply. In this thesis, I aim to investigate the stability of the self-concept in young children. Thus, enabling to test the self-consistency account.

Reciprocal Effect

Even though, the accounts above appear to be contrasting in their direction, they could work together. While in early childhood self-perception would be central in order to build a coherent self-concept, self-consistency becomes more salient later, when the self-concept is coherent and stable. This combined effect subsumes under the term reciprocal effects (Marsh, Trautwein, et al., 2005). Based on the multidimensional, hierarchical model of self-concept (Brunner et al., 2010; Shavelson et al., 1976), the direction from behavior or achievement to self-concept is evident in development, as children grasp a sense of themselves in a bottom-up (perceptual) manner. The direction from self-concept to behavior can be found in several domains as well, such as the physical domain (Marsh & Martin, 2011). That means that behavior or achievement and self-concept relate to each other dynamically and reciprocally.

Marsh (1990a) showed in a longitudinal study with teenagers the relation between self-concept and academic achievement that self-concept predated achievement. Additionally, grades precede self-concept. This study underscores the reciprocal effects. Beyond the academic self-concept, research could show the reciprocal effects for the artistic domain (Mansour et al., 2018) and the physical domain both from middle childhood to adolescence (Marsh et al., 2006). On the other hand, other researchers could only either show the self-consistency direction (here the self-concept predicting physical activity and not the other way around; Garn et al., 2016) or the self-perception direction (here achievement predicting self-concept in a young adults sample; Burns et al., 2020), even though they aimed to test a reciprocal effects model. This model is popular and very present in recent literature, yet it shows conflicting results. More precisely, studies for young children are missing. In this thesis, I aim to investigate these three directions in relation to the MSC and prosocial behavior.

2. The Current Thesis

2.1. Aims and Research Questions

In order to bridge the moral judgment-action gap in childhood, many researchers (Hardy & Carlo, 2005; Kochanska et al., 2010; Krettenauer, 2020) follow August Blasi's (1983) approach of positioning the MSC in this gap. Research on adults shows the MSC (or as it is more commonly called for adults: Moral Identity) relates to prosocial behavior (Aquino & Reed, 2002; Hertz & Krettenauer, 2016; Winterich et al., 2013).

Yet, as Hardy and Carlo (2005) pointed out, research on the development of MSC is missing. As described above, in order to assess development, one can investigate the early structure of a construct – within-network analysis (question 1-2) and the changes within that construct (question 3). Additionally, I investigate the stability of prosocial behaviors and their relation to the MSC (question 4) – between-network analysis (Byrne & Shavelson, 1996). In this section, I will discuss the theoretical and empirical relevance of the questions.

2.1.1 *How does the MSC Relate to other Self-Concept Domains?*

Is the MSC a distinct domain within the self-concept or an abstract construct that impacts all other self-concept domains? For instance, in the academic self-concept morality plays a role concerning not cheating, or in the physical self-concept morality is implied in "being a good sport". To investigate if morality is an omnipresent layer or a distinct domain, it is important to assess MSC alongside other self-concept domains (see chapter four).

This is an important theoretical question as the multidimensional, hierarchical model of self-concept (Brunner et al., 2010; Shavelson et al., 1976) would predict the MSC is a separate domain, which is what I hypothesize in this thesis. According to the social domain theory, though, moral would be an overarching layer that impacts all aspects in life. From an empirical point of view, it is important to investigate at which time (if at all) in development the MSC differs from other self-concept domains. At that point, one can explicitly show that children become intrinsically motivated moral agents. Acting as a role model and teaching children about the importance of moral interaction makes particular sense around that time.

2.1.2 What is the Internal Structure of the MSC?

Sengsavang and Krettenauer (2015) investigated two subdimensions of the MSC (preference for prosocial behavior and avoidance of antisocial behavior). As the focus of this thesis lies within the prosocial subdimension, I aim to investigate this subdimension further. Based on the multidimensional,

hierarchical model of self-concept (Brunner et al., 2010), behaviors are the foundation of the self-concept. I hypothesize three specific dimensions (i.e., helping, sharing, comforting) based on the work by Dunfield (2014) and Paulus (2014). According to the multidimensional, hierarchical structure of self-concept, the self-concept consists of multiple dimensions, leaving room for further dimensions, such as within the preference for prosocial behavior subdimensions (see chapter four).

From a theoretical perspective, the hierarchical, multidimensional model of self-concept would predict that the self-concept corresponds to according behaviors or achievements. From a developmental point of view, behaviors and feedbacks are seen as the basis of developing self-concept (Harter, 2015; Shavelson et al., 1976). Thus, one should expect that the three distinct prosocial dimensions are represented separately within the self-concept. Such results would underscore the multidimensional model of prosocial behaviors as well, as prosocial behaviors would be mentally represented. The nativist approach might argue in favor of a homogeneous representation of prosocial behaviors. As according to the nativist approach, prosocial behaviors function for example as indicators that the agent is a reliable cooperator (Engelmann et al., 2013; Fehr & Schneider, 2010). The MSC could coordinate reputation management. In this sense, the MSC would correlate with social desirability scales. If the MSC correlates highly with this scale, the MSC might be a tool for reputation management and thus support the nativist approach. If the MSC remains independent of the scale, it signals mora a relation between moral rules and the self.

From a practical perspective, it is also important to investigate the dimensions within the MSC. Such knowledge could support fostering programs. If the MSC is split into several dimensions it would be plausible to address each dimension individually, rather than addressing general prosocial preferences.

2.2.3 How Stable is the MSC in Early Childhood?

In early childhood, children start to experience themselves as entities distinct from their parent's narratives. They become aware of their own conceptions and how these might differ from other people's conceptions (Harter, 2015). This process is paired with an emerging understanding of continuity. As children become increasingly active agents in their self-narratives, their sense of continuity increases and with this their self-concept stabilizes (Harter, 2015). The MSC as part of the self-concept should become more stable around that time as well. This development is important, as a relative stability enables research on the invariance of constructs. Chapter five focuses on the developmental patterns of the MSC. Two patterns are possible: First, the stability pattern describes that the dimensions remain stable in relation to each other. Second, the differentiation pattern indicates correlational changes between the tested dimensions. From a theoretical perspective, such patterns are important to investigate as they support different theories. In the first pattern, long lasting stabilities of the self-concept are

predominant. This stability is assumed in Blasi's (1983) theory of self-consistency. The second pattern finds support through the distinctive differentiation hypothesis (i.e., correlations between dimensions decline).

2.2.4 How does the MSC Relate to Prosocial Behaviors?

I aim to explain prosocial behavior with the help of the MSC. The moral judgment-action gap appears to be bridged by the MSC (Blasi, 1983; Hardy & Carlo, 2011). Blasi (1983) would suggest that MSC predicts behavior. Yet, there is no empirical research showing this direction of the relation in children. Childhood is a peculiar time, as behaviors might impact the self-concept more than the other way around. Research on the direction of effect can help to understand the trajectory of the development. Moreover, as I investigate three distinct prosocial dimensions, the relations and directions could be different. For example, helping might not relate to the MSC, while sharing behavior might be predicted by the MSC. These different relations would impact our understanding of the complexity of prosocial dimensions (see chapter six).

From a theoretical perspective, early childhood is important as it might be the time in which the self-concept gains a more active role. With increasing stability, the self-concept can affect behaviors. That means, when in earlier childhood the self-concept was affected by behaviors and feedback, now the self-concept could become a cause. In early childhood, one might be able to show a change from the self-perception direction to the self-consistency direction. Hence, investigating the direction of effect would help to support one or the other theory. From a practical perspective, knowledge about the direction can help educators and caregivers to understand child behavior, predict it better and even foster wanted behaviors.

2.2 Summary of the Upcoming Studies

Next, I will summarize the conducted studies in order to discuss them afterwards. My contributions to the studies are listed in Table 1.

Table 1. Author contributions to the studies. ✓ major contribution, (✓) joint contribution

	Study 1	Study 2	Study 3
Study design	✓	✓	✓
Supervision of data collection	✓	✓	✓
Data analysis	✓	-	(✓)
Writing of the manuscript	✓	(✓)	✓

2.2.1 Summary of Study 1

In chapter four, the coauthors and I aimed to investigate the MSC in early childhood. Thus far in literature, the subdomains of the MSC were distinguished in a rather rough manner (preference for prosocial behavior vs. aversion of antisocial behavior; Krettenauer et al., 2013). Particularly, we investigated if the subdomain preference for prosocial behavior resembles the most prominent dimensions of prosocial behaviors (i.e., helping, sharing, comforting). The main goal of chapter four was to test these three dimensions in the MSC and to investigate if they related to the corresponding behaviors. It is important to investigate the internal structure of the MSC, as only with within-network knowledge, between-network analyses are possible. If the MSC has the same dimensions as prosocial behaviors, this would strengthen the self-perception account, because ontogenetically prosocial behaviors manifest earlier than the self-concept. Hence, children would view themselves act in different prosocial domains and attribute different traits to themselves.

To investigate the structure of the MSC and its relation to prosocial behaviors, we conducted two studies. For study 1.1, 127 four- to six-year-olds were invited. The experimenter assessed the explicit MSC and other self-concept domains (namely the verbal and physical domain) with a puppet-interview. The implicit MSC was tested with an implicit association task. To assess spontaneous behavior, the experimenter experienced two accidents, requiring help and comfort. Furthermore, the experimenter elicits sharing behavior. For study 1.2, 316 four- to eight-year-olds responded to a shortened version of the puppet-interview. The aim was to confirm the factor structure of the MSC tested in study 1.1.

Study 1.1 was the first to relate the different prosocial behaviors meaningfully to dimensions of the MSC. More importantly, results showed that the MSC is multidimensional (studies 1.1 and 1.2). This shows that the multidimensional, hierarchical model applies to the MSC. Children's drive to act prosocially appears to derive internally, rather than from external pressure, because incentives or forces were absent. That means that children create their own priorities earlier than traditionally assumed. Furthermore, children are active in their self-construction, which is expressed in differences between different children regarding their MSC and their prosocial behaviors.

2.2.2 Summary of Study 2

Chapter five focuses on the developmental patterns of the MSC. The previous chapter revealed a multidimensional structure. Yet, its developmental patterns are unclear. We investigated the three patterns described in question three.

In a longitudinal study (18 and 21 months after the first testing), children from the first study (study 1.1; chapter four) were invited back. They responded to the same puppet-interview again. This method allowed us to investigate the factor structure, reliability and invariance of young children's MSC over time. At the second measurement, 95 five- to eight-year-olds participated in the study. At the third measurement, 85 children participated. We explored the stability and invariance of the MSC over time.

Results showed, that helping, sharing and comforting were distinct factors at each measurement point. The reliabilities were acceptable. Importantly, the MSC was stable from an early age on and remained stable across the three measurement points. As the results reflected high stability (i.e., strong to strict invariance), the stability pattern appears to fit our data better than differentiation pattern.

We concluded that the internal structure of the MSC manifests early, as we did not show changes even within the first measurement point (aged four to six years). These results indicate the early stability of the three-dimensional MSC, means that the MSC is more than a momentary caption. This leads to the conclusion that particularly early experience and social interaction might imprint on the MSC, rather than formal education.

2.2.3 Summary of Study 3

In chapter six, we aimed to investigate the stability and relation of MSC and prosocial behavior. We tested the self-perception account and the self-consistency account. Investigating this presumed that the self-concept and prosocial behaviors were stable to some degree. Otherwise, the pattern of change would make it impossible to investigate impacting directions. This is why we conducted a longitudinal study with different intervals. This enabled us to assess long-term and short-term stabilities.

We analyzed that same sample as in the previous chapter. Children participated in the puppet-interview and helping, sharing, comforting behavior. This method allowed us to investigate the directional relations of MSC and behaviors. We conducted a cross-lagged model analysis with ML estimator.

Results showed moderate to high stability of the MSC and prosocial behaviors in particular over a short period of time, and to a lesser extent over a long period of time. Results revealed one longitudinal cross-relation in the direction of sharing MSC to sharing behavior from the second to the third measurement, and a marginally significant relation from sharing behavior to sharing self-concept from the first to the second measurement. Furthermore, behavior and self-concept correlated in several instances cross-sectionally.

Importantly, results showed stability of the investigated constructs (within-network analysis), which enabled between-network analyses. The results of the between-network analyses leaned towards the self-consistency theory. That meant that the MSC influenced prosocial behaviors. Still, results also showed marginal evidence for the self-perception theory.

3. General Discussion

How does morality develop? What motivates prosocial behaviors? Why do humans differ in their moral conduct? These questions are as old as moral philosophy and still contested today. One historically influential view, propagated in ancient Greece to the enlightenment to the sixties of the twentieth century, is rationalism, according to which teaching the right behaviors and the reasons for this behavior was seen as sufficient to motivate moral behavior. As the judgment-behavior gap shows, judgment does not necessarily lead to behavior. The early MSC might be a factor that can help to explain this gap (Blasi, 1983; Eisenberg, 1996; Hardy & Carlo, 2011). Studies in adults show this effect (Aquino & Reed, 2002; Hardy et al., 2014). As research in childhood was scarce, this thesis addressed this research gap. The studies of this thesis show a link between self-concept and behaviors in childhood. Ultimately, it is important that children grow up to be moral agents, who act accordingly. The MSC can help understand individual differences in prosocial behaviors. This thesis offers one building block to bridge the gap between moral judgment and behavior. Furthermore, it brings forth knowledge about early moral development.

To answer some of the pressing questions, I investigated the structure of the MSC and its relation to prosocial behaviors in a cross-sectional and longitudinal study. Results showed that the MSC partially fits the multidimensional, hierarchical model of self-concept. Moreover, they showed meaningful relations between the MSC and behavior, which point in the direction of self-consistency. The self-concept highlights the active role of the child to define themselves and their role in the world. Hence, the results support the constructivist approach.

3.1 Contribution to Research

In this thesis, I aimed to investigate the MSC in childhood. In particular, I investigated its structure, stability and relation to prosocial behaviors. In the following, I am going to recapitulate the findings in relation to the theoretical considerations.

3.1.1 How does the MSC Relate to other Self-Concept Domains?

In chapter four, results showed that the MSC differs from other self-concept domains. These findings show that a potential bridging factor between judgment and behavior is already present in young children. This is in line with Harter (2015) and Marsh, Debus and colleagues (2005): children differentiate between their prosocial preferences, which they value differently, even though they might not be aware of overarching themes such as helping vs. comforting, or prosocial behaviors vs. physical

abilities. Hence, the results of the MSC in particular fit into research about the early self-concept in general.

For my purposes, it is particularly enticing that this study is the first to show that the MSC is independent of other self-concept domains, as previous research only tested MSC exclusively and not in relation to other self-concept domains (Kochanska, 2002; Krettenauer et al., 2013). Thus, there is evidence for the model of the multidimensional, hierarchical self-concept (Brunner et al., 2010; Shavelson et al., 1976), as the model predicts separate domains for different roles an individual assumes. The roles might relate to scripts and schemas that foster quick accessibility of interpretations and behavioral patterns. That means children with a strong MSC might interpret a situation as morally relevant, which a child with a weaker MSC might interpret as not morally relevant. These results are not in line with the social domain theory (SDT, e.g., Smetana, 1995; Smetana et al., 2018) that proposes that morality depends on characteristics inherent to different situations. The MSC shows that beyond the situation, the agent's individual judgment is important for interpreting a situation as morally relevant. Both the multidimensional, hierarchical model of self-concept and the SDT belong to the constructivist approach. Yet, the multidimensional, hierarchical model emphasizes the role of the individual more and allows for differences between individuals.

As the MSC differs from other self-concept domains, one can conclude that the MSC is one piece of the puzzle within the self-concept. That means, fostering the MSC might work like fostering other self-concepts domains. Based on present training of, for example, the academic self-concept, training for the MSC could be constructed. For example, Cvencek and colleagues (2020), conducted a training program of primary school student's math self-concept. The training program comprised for example of tasks of positive in-group identity, self-efficacy, self-perception and chances to partake in math activities Some of these techniques can be applied to the MSC, such as offering children chances to act prosocially (Chernyak & Kushnir, 2018). Yet, as we will see next, the MSC is stable already in early childhood. Hence, training programs might not be as effective around early childhood. This could indicate that particularly very early interaction and experience shape the MSC, which is in line with Kochanska's work (Kochanska, 2002; Kochanska et al., 2010).

3.1.2 What is the Internal Structure of the MSC*?*

In chapter four, results showed a three-fold pattern within the MSC. These results again support the multidimensional model of self-concept. Just as prosocial behaviors (Dunfield, 2014), the MSC is divided into helping, sharing and comforting. The results from chapter four diverge from the nativist approach. According to the nativist approach, reputation management is a part of prosocial behaviors, as showing prosocial behaviors indicates being a reliable partner and thus getting chosen for collaboration more often. This could lead to the gain of more resources which then could lead to more

protection and a higher chance of survival in difficult situations. Individual differences, such as via MSC, are not accounted for in the nativist approach. If the strength of the MSC, according to the nativist approach, is less important to predict prosocial behaviors, why would the MSC be threefold? One explanation could be that the MSC promotes reputation management. Reputation management requires at least a dyadic situation, because others have to recognize own virtues in order to evaluate them as a good cooperator. This could mean that saying that one likes to share own toys might already enhance the chances of being picked for an activity that requires resource allocation (such as playing Legos together). Saying one likes to share would be assumed to be socially desirable (i.e., exaggerating "a person's willingness to engage in socially desirable behaviors"; Krettenauer et al., 2013, p. 165). This would mean that, according to the nativist approach, social desirability would relate to the MSC. In chapter four, social desirability was assessed as well, and only showed a relation to the helping self-concept, and not the other MSC domains. That means that the other MSC dimensions did not relate to social desirability and thus external motivations, such as the enhancement of reputation, cannot be the main explanation for the three-foldedness of the MSC. Thus, the internalization of rules or the genuine intrinsic preference for certain prosocial behaviors might be a driving force.

With the MSC being three-fold, we showed how children early on in their development think about themselves as moral agents in a differentiated manner. This differentiation supports the active role of children. From a practical point of view, fostering the threefold MSC could target each dimensions (e.g., emphasizing fairness to encourage a strong sharing MSC); or the MSC domain (e.g., emphasizing the importance to act according to one's own moral judgment).

3.1.3 How Stable is the MSC in Early Childhood*?*

In chapter five, results showed invariance of the MSC over time. These results indicate that 1) the MSC has a stable meaning across age cohorts. The number of dimensions and the correlations between the dimensions are stable during early to middle childhood. The high stability supports Blasi's (1983) account, of an unchangeable, stable, true self. 2) The different dimensions remain stable with individuals. Children show individual preference, for example, to comfort, but not to share. These preferences could relate to different virtues: in this example, compassion and fairness respectively. That could mean that from an early age on children prioritize certain norms. Other studies show that already in early childhood, children engage in such norm prioritizing (here sharing with the friend rather than a needy person; Paulus, 2016; Paulus et al., 2020). That means, children could juggle priorities within one domains (as shown by the research on sharing norms), but they can also juggle priorities between domains: as our research shows stable differences between the dimensions intraindividually. It could also mean that children might merely differ in their preference for specific actions. The stable three-

foldedness of the MSC also supports the differentiation of prosocial behaviors into these three dimensions (Dunfield, 2014; Paulus, 2014).

3.1.4 How does the MSC Relate to Prosocial Behaviors?

The focus of chapter six was on the stability of prosocial behaviors and MSC and their relations with each other. Results reflected high stability of the MSC and behaviors. Chapter four already showed that prosocial behavior and MSC correlated with each other. Chapter six informed about the direction of effects. Results showed that the MSC predicted behavior three months later. This direction of effects favors the self-consistency approach (Blasi, 1983). That means, that in early to middle childhood the MSC already impacts behaviors. Blasi expected adolescence to be the time in which self-consistent behavior emerges. Cognitive development and moral emotions appear to impact this development. In the current research, I tested this relation earlier. I suggest it is possible that either the cognitive processes develop earlier or the assumptions of the processes were too conservative.

According to the multidimensional, hierarchical model of self-concept, behaviors should be the basis of self-concept ontogenetically. After the self-concept has solidified, the direction of effects can be reciprocal (Marsh & Craven, 2006; Marsh et al., 2006) or from the self-concept towards behavior (Bornholt & Piccolo, 2005; Kerns et al., 2008). As the results foremostly showed the self-consistency direction for the moral domain (i.e., MSC precedes behavior), three explanations appear plausible: first, the self-perception direction emerges earlier than four years of age. This might be plausible, as children start to act prosocially early in life (Rheingold, 1982; Svetlova et al., 2010). Most research on the self-concept has been conducted in relation to the academic self-concept. Self-concepts in this domain should relate to behaviors or achievements later, as feedbacks and experiences in this domain occur at the earliest in early childhood (i.e., around four years of age; Harter, 2015). Second, the self-consistency or -perception last for a short time interval (not over 18 months). Even though 18 months is a long time – particularly for young children – this does not explain why my studies did not show self-perception effects from the second to third measurement, which was only three months apart. Third, the self-perception direction is absent for the moral domain. This explanation is not conform with the multidimensional, hierarchical model of self-concept or with Kochanska's (2002) empirical findings (i.e., interaction and experiences being the basis of self-concept and internalization of moral norms). It would suggest a top-down moral development. With this, the assumption of innate moral norms would come along. Besides the nativist approach, the SDT might support this direction, as the proponents assume moral interpretations already in toddler age (Turiel et al., 1987). Yet, research shows that children *act* prosocially (Hammond et al., 2017) before one can assume self-awareness (Asendorpf et al., 1996), let alone a self-concept (Harter, 2015). Thus, with self-awareness as a necessary precursor of a self-concept, the MSC cannot be the origin of prosocial behaviors. All in all, the first explanation appears to be the most plausible. Future research on the moral development in toddlerhood would be a way to investigate this explanation.

Thus far, I have not discussed the development of the different dimensions. I found that sharing drove the self-consistency relation from the second to the third measurement. This emphasizes again, the importance to analyze the three domains separately. In depth information might go unnoticed, if the three dimensions are analyzed together.

From a practical view, as the MSC impacts behaviors, children might benefit from opportunities to put their MSC into action. That means, including children in chores (even though their help might not be helpful yet; Hammond & Brownell, 2018), or letting children share items autonomously (Chernyak & Kushnir, 2013). Such opportunities can strengthen the relation between the emerging MSC and behavior.

In the previous subchapters, I discussed the research questions of this theses. From a broader point of view, I discuss conclusions about the theoretical intricacies next.

3.2 Contribution to Theoretical Approaches

3.2.1 The Moral Self-Concept

Results showed that the MSC is 1) distinct from other self-concept domains. I am the first to investigate the MSC in relation to other self-concept domains. Finding that the MSC is a distinct domain within the self-concept underscores the importance of morality during early development. Prosocial preferences are not as salient as physical abilities. But they are as much part of the self as the physical self-concept. This early representation stresses the emphasis children put on prosocial conduct early on and that this conduct has an intrinsic component. In early childhood, children have experienced prosocial behaviors often enough to understand how much they like or dislike to act prosocially. These experiences are reflected in their MSC. Hence, children's active role in moral development is underscored by our finding of a multifaceted MSC. 2) The MSC is threefold. As the dimensions of the MSC resemble the three dimensions of prosocial behaviors (Dunfield, 2014; Dunfield & Kuhlmeier, 2013; Paulus, 2014), this finding shows the early and active role children play in managing their surroundings in relation to themselves. 3) The dimension of the MSC are already stable in early childhood. This fits with results of other self-concept domains (showing high stability of different self-concept domains such as achievment of three- to seven-year-olds; Eder, 1990; showing high stability of academic achievement of seven- to thirteen-year-olds; Guay et al., 2003) or shows even higher stability (showing mixed stabilities of different self-concept domains such as achievment in early childhood; Jia et al., 2016; showing increasing stabilities of, for example, the academic self-concept with age; Marsh et al., 1998).

According to our research, there are interindividual differences in children's preferences for prosocial behaviors. Children appear to order their prosocial preferences internally, without external force. Kochanska and colleagues (2010) already showed this: situational compliance entails external encouragement, committed compliance seems to derive from the child themselves. This shows that

children differ early on in their motivation to act prosocially or to abide by parental rules. The findings of this thesis are in line with Kochanska and colleagues (2002; 2010) studies, showing that children are active and diverse moral agents, rather than passive vessels.

3.2.2 The Self-Concept

The studies in this thesis show that the self-concept in early childhood is already multidimensional. Children give coherent responses within one dimension and the responses might differ from another coherent dimension. This is in line with Eder and Mangelsdorf's (1997) findings of separate self-concept dimensions. Harter (2015) expected coherence a bit later (five to seven years of age). Yet, this can be explained by different methods. While Harter (1996) assessed children's self-concept with self-narratives, I analyzed responses in relation to factor structures. The multidimensionality might not be explicitly represented in children, but factor analyses show it. Thus, the results show that the self-concept might be more organized than previously theorized, even though this organization is not necessarily explicitly represented. Another aspect that might affect this disparity might be that the active production of self-narratives is cognitively more challenging than passive responses to questions (Camparo et al., 2001; Lamb et al., 2003). With the current research, one could argue, that the MSC makes up another domain within the multidimensional, hierarchical model of self-concept.

3.2.3 Moral Development

Based on Piaget's and Kohlberg's account, children's internalized moral should arise at the earliest around middle to late childhood. With the present studies, I am able to show that children view themselves as moral agents earlier. That means moral autonomy could emerge earlier as well, as external forces (such as punishment or praise) were absent and thus did not predict prosocial conduct. Rather the results reflect that children value their moral conduct intrinsically. Kochanska (2002) and colleagues (2010) stress that children internalize norms based on natural interactions with caregivers. The early MSC might reflect this indirect learning and internalization of norms. Kochanska's (2002) concept of committed compliance shows how early children reach moral compliance and that the locus of motivation appears to be internal. Importantly, the compliance is measured by observation, while the MSC is measured by direct interview. With this latter method, the MSC might be the first explicit indicator that signals explicit awareness of moral agency.

The nativist approach emphasizes innate moral processes and according advantages for the group. They might favor a homogeneous MSC domain, as every kind of prosocial behavior should benefit the group and thus none of the dimensions should have a higher survival advantage than the other, as long as the preference for prosocial behaviors is prevalent. Contrary to this, I showed that the MSC resembles

the differentiated prosocial behavioral domains proposed by Dunfield (2014). That means that either the different prosocial domains have different survival advantages or that prosociality as a whole domain is not innate. The nativist approach could not explain interindividual differences, though. The constructivist approach is more parsimonious as it can explain the differences with fewer assumptions – such as calculations necessary for reputation management. That is, children become moral agents based on experience with their surrounding and themselves.

The SDT proposes that every situation can be interpreted as moral, conventional or private domain. According to our research, one could argue that children might be more inclined to label a situation as moral if they have strong MSC. That would mean that the domain of a situation is not universal, but rather depends on who judges it. The SDT could respond that children who do not judge a moral situation as moral, might not be morally developed enough, yet. However, the MSC can still explain individual differences on top of that.

The constructivist approach sets the individual and their interaction with others in the center of the developmental process. Children internalize rules and knowledge about the world and themselves via interaction (Carpendale et al., 2013). The MSC fits well into this approach as the self builds upon experience and own evaluations. The centrality of morality can differ between children, which might be due to early feedback and experiences, but also due to own evaluations and priorities. The results of this thesis show that the MSC predicts prosocial behaviors, stressing the importance of individual evaluations.

Finding a MSC in early childhood also has implications for teaching moral development. Thus far, Kohlberg's (1969) stage approach on moral development is predominantly taught in developmental psychology to psychology students. It might be worthwhile to consider approaches that emphasize social interaction and the central role of the individual during moral development. In particular, when working with children, this thesis reveals the importance of acknowledging the active role of a child during development. Thinking of a child as eager to act prosocially and the care giver or teacher as supporter for this intrinsic motivation should impact how one encourages prosocial behaviors. Framing prosocial behaviors, such as helping or sharing, for example, as chores can impact the children's evaluation of such behaviors – as can be seen in the corruption of motivation (Kunda & Schwartz, 1983; Marinak & Gambrell, 2008). On the other hand, encouraging the child's internal desire to act prosocially can foster such behaviors more.

3.3 Directions for Future Research

Thus far, I have discussed the merits of the present thesis, yet more investigations of the MSC are necessary to gain a better understanding of moral and self-concept development.

I observed the MSC in different ages and at different times. This produced ample information on the structure and stability of the MSC. An aspect that this thesis did not address was processes that impact the strength of the MSC. Experimental studies that highlight the self-awareness of children and, in doing so, set a focus on the self-concept, might shed light on such processes. Self-awareness could be increased due to attention being directed away from the self and to experience oneself as the source of others' judgments (subjective self-awareness), or due to inward directed attention, with the self being the object of own evaluations (objective self-awareness; Silvia & Duval, 2001). These two kinds of awareness could impact the (moral) self-concept (Bender et al., 2018). In particular the subjective self-awareness has been investigated in childhood (Engelmann et al., 2012, 2015, 2018; Engelmann et al., 2013; Herrmann et al., 2019; Rapp et al., 2019). The quoted authors are associated with the nativist approach, which emphasizes the phylogenetic advantage of prosocial behaviors. Reputation management appears to be a central part of prosocial behaviors. This motivation to act prosocially cannot be aligned with moral development, though. In the case of moral behaviors, and in contrast to prosocial behaviors, the *intention* is to do the right thing, such as to benefit someone else. With the aim of reputation management, own interest is the goal and prosocial behavior would be the means to achieve it. This is why investigating the objective self-awareness as mechanism to strengthen the self-concept or foster prosocial behaviors is so important. The focus in this comparison between objective vs. subjective self-awareness shows different motivations to act according to the MSC. Future research in this area would help to tease the different motivation mechanisms apart and with this support the constructivist or nativist approach.

This thesis could also not shed light on the early precursors of the MSC. As the results showed a stable MSC in early childhood, even earlier precursors should impact the development of the MSC. Based on the self-perception theory (Bem, 1976) and the multidimensional, hierarchical model of self-concept (Shavelson et al., 1976), behaviors should be the basis of the self-concept. That means, future research needs to investigate early prosocial behaviors and relate them to later MSC. Kochanska and colleagues (2002; 2010) did that, yet, they did not investigate the different dimension of prosocial behaviors and the resulting MSC.

3.4 Conclusion

This thesis investigates the early development of the moral self, its independence from other self-concept domains, its stability and its relation to prosocial behaviors. Thus far, research on the early development of the MSC has been scarce and I aim to change this in this thesis.

The thesis shows how early on in their development children view themselves as moral agents. This contradicts rationalist accounts, such as Lawrence Kohlberg, who viewed morality as a developing only in late childhood. Yet, in particular Kochanska's more recent work combines ideas of autonomy

with the current self-concept approach. Autonomy and the active self are aspects that support the impact of the MSC on behaviors. Our results are in line with such findings, thus supporting the social-cognitive constructivist approach (among others supported by Jean Piaget).

The thesis shows that the MSC appears to impact behaviors more than the other way around and earlier than expected. By this, Blasi's self-consistency approach is supported. The great degree of stability of the MSC indicates that children appear to keep standards of their own values over a long time. That indicates that they must have internalized rules and norms early on. External factors, such as personal gain (as the nativist view proposes), might be less important.

The MSC appears to be a motor that impacts prosocial behaviors. The conceptualization of morality differs between the different approaches, yet a common goal is to foster wanted behaviors and help children to grow into contributing members of society. The current thesis supports early fostering of intrinsically led moral development, as the MSC represents internalized rules and a preference to follow them. Practical upshots of my research might be letting children participate in chores and by giving them room to share with peers or comforting peers without care-giver interference.

4. Study 1

The Moral Self-Concept in Preschool Children: its Dimensions and Relation to Prosocial Behaviors

Sticker, R. M., Christner, N., Pletti, C., & Paulus, M. (2021). The moral self-concept in preschool children: its dimensions and relation to prosocial behaviors. *Cognitive Development*, 58. https://doi.org/10.1016/j.cogdev.2021.101033

Abstract

Recent theories have highlighted the relevance of the moral self-concept (MSC) for prosocial behavior. Its early development and internal structure are still unknown, though. With two studies, we aimed to investigate the structure of the MSC in early childhood. Furthermore, we explored prosocial behavioral correlates (helping, sharing, comforting). In a first study, we explored four- to six-year-olds (N = 127). We assessed explicit (puppet-interview) and implicit (IAT) measures of the MSC and observed child behavior. Our results show that MSC was independent from other self-concept domains. The three prosocial dimensions (helping, sharing and comforting) appear to be represented within the MSC separately. While the IAT yielded no significant relations with behaviors, the explicit MSC was meaningfully related to prosocial behavior. The second study (N = 314) underscores the results of the first, by replicating the factor structure of the MSC in confirmatory factor analysis. In conclusion, the studies underscore the MSC's different dimensions and their relations to prosocial behaviors in preschool children.

4.1 Introduction

Moral behavior is an important aspect of everyday life (Hofmann et al., 2014). First signs of other-oriented concerns and behaviors emerge in the first years of life (for a review see Dunfield & Kuhlmeier, 2013; Svetlova et al., 2010; Tomasello, 2019). Beyond acting prosocially, humans also reflect on themselves as moral creatures. They consider how important it is for them to be a moral person and to engage in moral behavior (Blasi, 1983). Being moral can thereby be perceived as being more or less central to one's self, and thus defines the extent of one's moral identity (Hardy & Carlo, 2011). Empirical research with adults has demonstrated that moral identity relates positively to prosocial behavior (Aquino et al., 2009; Hertz & Krettenauer, 2016; Reynolds & Ceranic, 2007). The development of a moral identity in adolescence is preceded by a moral self-concept (MSC) that is supposed to emerge in early childhood (Hardy & Carlo, 2011). Notably, interventions aiming at the MSC in early childhood

can increase prosocial or moral behavior (Bender et al., 2018; Bryan et al., 2014). Yet, little is known on the early development of the MSC, its internal structure, and its relation to prosocial behavior during childhood (Hardy & Carlo, 2011). In other words, do young children conceive themselves as moral agents and does their MSC actually relate to their prosocial behavior?

4.2.1 The Ontogeny of a Moral Self

The self-concept is a consistent representation of oneself (Jia et al., 2016). According to the hierarchical model of self-concept and self-perception theory (Bem, 1972; Shavelson et al., 1976), personal experiences are the basis of the self-concept. In other words, these theoretical views suggest that children develop a self-concept based on their experiences with their own reactions and actions. This is supported by understanding that personality traits are stable over time and predict behavior, which develops between preschool and elementary school (Liu et al., 2007; Ruble et al., 1988). Furthermore, around that age, children start to think about others in more abstract terms (Gnepp & Chilamkurti, 1988; Rholes & Ruble, 1984). Once that such an understanding has developed, the urge to act consistently with one's self becomes more salient (Blasi, 1983). Thus, self-concept and behavior appear to affect each other. Self-concept research supports this relation between children's behavior and their self-concept for the academic, social, and physical self-concept (middle school students, Knowles et al., 2009; high school students, Marsh, Hau, et al., 2002; second to eighth grade students, Salley et al., 2010). With age, the self-concept becomes more differentiated, adding more domains and subdomains (henceforth called dimensions), which differ in evaluations (Marsh, 1990b). Moreover, the information condenses and forms an abstract, global representation of the self (here four- to seven-year-olds, Cimpian et al., 2017). This development could be supported by children's increasing ability for internal reflection around the age of four years (Allen & Bickhard, 2018). A positivity bias usually underlies the self-concept in early childhood. That is, children tend to think of themselves in overly positive terms. For example, they tend to say they are excellent in everything they do and overestimate their abilities (Harter, 2015; Mezulis et al., 2004). With increasing age, the self-concept is increasingly in line with external criteria (such as grades; Marsh & Martin, 2011).

Developmental theories and empirical research has suggested that the self-concepts of physical ability and verbal ability fall in two different self-concept domains (Marsh, Ellis, et al., 2002). That means, that the self-concept consists of different independent domains, as suggested by the hierarchical model of self-concept (Brunner et al., 2010). Most important for our study, influential developmental theories propose the existence of a MSC (for a review see Hardy & Carlo, 2011) and that its early roots are in early childhood (Krettenauer, 2013). The MSC is defined as "children`s self-representations about their moral behavioral preferences" (Sengsavang & Krettenauer, 2015, p. 214). Based on these

considerations, we assume that it is distinct from the other self-concept domains, just as they are distinct from each other.

Early indicators of the MSC, such as showing signs of guilt and shame, emerge around the third and fourth year of life (Kochanska et al., 2010; Vaish et al., 2016). At that age, it has been suggested that the MSC consists of internalized parental rules, norms, and personal experience as good or bad agents (Kochanska, 2002). Rules, norms, and experiences are proposed to not yet be combined to a meaningful self at four years, but to rather exist next to each other (Kochanska, 2002). First evidence of the early meaning of the MSC comes from a study by Kochanska (2002). She observed children (longitudinally from 14–56 months) and their mothers in different situations. At the 56-months measurement point, children responded to questions about their moral self using a puppet-interview, for example, concerning their empathy: "If I see a child being hurt, I try to help." vs. "…, I don't try to help". Results show that previous eager compliance at 14–45 months correlated with children's moral selves, at least in boys. Around 5 to 6 years children`s MSC is supposed to become internally consistent (i.e., similar statements within the moral domain; Kochanska et al., 2010). Krettenauer, Campbell & Hertz (2013) administered a puppet-interview to five- to twelve-year-olds about their moral self-concepts. Results reveal two differentiated and internally consistent scales: preference for prosocial behavior and aversion of antisocial behavior (Krettenauer et al., 2013). These findings suggest that early to middle childhood is a central phase for the initial emergence of a MSC. Therefore, we decided to focus in our study on this age group. Further on, we focused on the preference for prosocial behavior as representative of MSC (similar to Aquino & Reed, 2002, who created the well established Moral Identity Questionnaire for adults). This choice for investigating the self-concept regarding concrete, observable behaviors in the moral domain rather than abstract moral concepts was for a reason: Children have a hard time expressing abstract concepts or applying them to themselves (Harter, 2015). In other words: children rather act than explain. This is why breaking down complex reasoning to concrete behavioral indicators is the status quo for research with young children (here for example, four- to five-year-olds, Marsh, Ellis, et al., 2002; and five- to seven-year-olds, Measelle et al., 2005).

Thus far, little is known on whether the MSC forms an independent self-concept domain that differs from other aspects of the self. Based on self-perception theory (Bem, 1972) and the hierarchical model of self-concept (Shavelson et al., 1976),there are reasons to assume that the MSC of children is distinct from other self-concept domains. While previous studies examined the presence of a moral self in early childhood (Kochanska, 2002; Krettenauer et al., 2013); they did not include self-concept measures for other domains. Hence, it is an open question whether the MSC is distinct from other self-concept domains. The current study aimed to contribute to this question.

4.1.2 Moral Self-Concept and Prosocial Behavior

Prosocial behavior is defined as behavior that benefits someone else (Eisenberg et al., 2006). Recent work suggests that prosocial behavior can be classified into three different domains, namely instrumental need (leading to helping), emotional distress (leading to comforting), and material desire (leading to sharing; Dunfield, 2014; Paulus, 2018). These three prosocial dimensions were found not to correlate, to emerge at different times in development and to different extents within one child (Dunfield & Kuhlmeier, 2013). The reviewed theoretical considerations on the development of self-concept could indicate that the MSC in preschool children relates to their prosocial behavior. Different researchers proposed that early prosocial behavior consists of three distinct dimensions (Dunfield, 2014; Dunfield et al., 2011; Paulus, 2018). We hypothesized that the MSC should consist of the same three dimensions as prosocial behavior: a self-concept for helping, sharing, and comforting. Furthermore, as the MSC can be supposed to develop based on perceptions of one's own behavior, we hypothesized that the three distinct behavioral dimensions will meaningfully relate to the three distinct self-concept dimensions.

Besides an explicit self-concept, recent research suggested the existence of an implicit self-concept in adults (De Cuyper et al., 2017; Peters & Gawronski, 2011). The co-existence of an implicit and an explicit self-concept is captured in so-called dual process models (Gerstenberg et al., 2014; Strack & Deutsch, 2004). These models suggest that the explicit self-concept represents active thoughts and evaluations (Aquino & Reed, 2002) whereas the implicit self-concept represents learned associations between the self and other concepts, such as morality (Perugini & Leone, 2009). To our knowledge, the relation between the implicit MSC and prosocial behavior has not been investigated in young children. The implicit self-concept is particularly interesting in research with children. Young children's verbal abilities are limited. An implicit test could capture a facet of children`s self-concept that is not explicitly accessible to the children themselves (here four-year-olds, Cvencek et al., 2011). Hence, we want to investigate the relation between the implicit MSC of preschool children and prosocial behavior.

4.1.3 The Present Studies

The current study aims at exploring the early origins of the MSC with respect to different prosocial behaviors and in relation to other domains of the self-concept. We chose to focus on the positive, prosocial aspects of morality, rather than the avoidance of antisocial behavior. This was due to different considerations: first, we aim to increase comparability with a long tradition of research on moral identity in adults in which moral identity was assessed as concordance with a number of positive moral traits (Aquino et al., 2009; Aquino & Reed, 2002; Jennings et al., 2015). Second, we aim to explain active, prosocial behavior. In other words, we focus on the active, prosocial part of the MSC. Thus, when trying to explain prosocial behavior, it is conceptually appropriate to focus on the prosocial aspects of the MSC. Third, in the specific case of MSC, preference for prosocial behavior appears to be more

independent of social desirability than avoidance of antisocial behavior (Krettenauer et al., 2013). This is particularly important, as we aim to investigate the relation of MSC and observable behavior.

In order to investigate the early ontogeny of the MSC, we explored its structure and function in early childhood with two studies. In study 1, we examined four hypotheses: According to the multifaceted hierarchical model, the self-concept is structured in different domains (Brunner et al., 2010; Shavelson et al., 1976). Thus, we hypothesized that the MSC is distinct from other self-concept domains (H1). To test this hypothesis, we decided to use conceptually different domains as comparisons (verbal and physical self-concept) as we had a clear hypothesis about them. We conducted an exploratory factor analysis with the items of the explicit MSC interview. If we are able to find distinct factors (moral, verbal, physical self-concept) in our data, we can conclude that the prosocial dimensions exist independently of other self-concept domains at all.

According to self-perception theory (Bem, 1972), self-concept dimensions derive from concrete behaviors – helping, sharing, and comforting. These behaviors appear to shape distinct dimensions in early childhood (Dunfield & Kuhlmeier, 2013). Hence, we hypothesized that the MSC divides in the same dimensions: helping, sharing, and comforting (H2). Following theories on relations between behavior and self-concept, we hypothesized that the self-concept dimensions correlate with the corresponding prosocial behaviors (H3). According to the dual process model, the implicit self-concept offers information on top of the explicit, because the implicit self-concept seems less dependent on active verbal skills. Thus, we hypothesized that the implicit MSC relates to prosocial behaviors (H4). In study 2, we aimed at further confirming the existence of three distinct dimensions of the MSC (H2) by means of a confirmatory factor analysis in a large sample.

To test these hypotheses, we assessed preschool children's explicit and implicit MSC, and their prosocial behaviors (helping, sharing, comforting). To measure the explicit self-concept, we relied on a puppet-interview approach (e.g., Measelle et al., 1998) that we adapted from an interview by Krettenauer et al. (2013). In order to assess children's prosocial behavior, we adapted established tasks to assess preschool children's helping, sharing, and comforting (Dunfield & Kuhlmeier, 2013; Kenward et al., 2015; Svetlova et al., 2010). To assess the implicit self-concept, we adapted an Implicit Association Test (IAT; Perugini & Leone, 2009) measuring attitudes (Good, Bad) towards Self or Other. We analyzed the reaction latency in the different conditions of the IAT in relation to the prosocial behaviors.

4.2 Study 1

4.2.1 Method

Participants

The final sample consisted of 127 four- to six-year-olds (62 female; M = 64.77 months, SD = 9.86). There was no age difference between genders, $t(125) = .88$, $p = .513$. Eight additional children were

excluded because of not completing the study due to language problems (n = 2) and fussiness (n = 6). Sample size is based on previous work which examined differentiation of preschool children's self-concept (Marsh, Ellis, et al., 2002). Moreover, according to a power analysis a sample of 109 participants would suffice to detect a small effect ($f^2 = 0.15$) with a power of 80% and alpha of .05 when calculating a linear multiple regression with eight predictors. We kept testing until we had a comparable number of children of each age. We recruited families via mail. Their addresses came from the city's natal register. A third of parents raised their children bilingually, 61% held a university's degree, and 14% completed high school. The sample consisted of 105 Western European, 10 Eastern European, 8 Middle Eastern, 3 Asian and 2 African children. The children's caregivers gave written informed consent for participation. The local ethics committee approved the study. Parents received compensation for travel expenses. Each child received a small gift and stickers.

Procedure

Testings took place at the developmental laboratory at a large German city. Each child was tested individually in a quiet room by a female experimenter. We videotaped the experimental session for later coding. At first, the children performed the sharing task, then the puppet-interview, then the helping task. After that, the children completed the IAT. Subsequently, they performed the comforting task.

Measures

The tasks relied on established measures comprising behavioral tasks (sharing, helping, comforting) and self-concept measures (puppet-interview, IAT). This study is the first measurement point of an ongoing longitudinal study and we report here only the measures relevant for this study. We did not counterbalance the measures to keep order effects constant across participants, allowing to investigate individual differences.

Behavioral tasks. Sharing. This task was based on Smith et al. (2013), who conducted their study with three- to eight-year-olds. Children could decide how many out of 4 stickers they wanted to share with an absent child. The instructions were: "Here are 4 stickers. They are yours now. You can share them with another child. [Experimenter places picture of other androgynous child] This is Nina/Nico [depending on gender of participant]. You can give the Nina/Nico one, two, three, four or no sticker. You can decide by yourself. The stickers for Nina/Nico come in this box. When you are done, close the box." Signaling the end of the transaction by closing the box reduced the demand characteristic of having to share. The number of items in the box (0–4 items) represents children's sharing behavior.

Helping. Following previous studies with preschoolers, we used a costly helping task (Svetlova et al., 2010). Experimenter and child played a competitive game, in which the child was asked to finish a jigsaw puzzle and the experimenter had to draw the depiction of the puzzle. During this game, the experimenter dropped items (ten pens). This gave the child simultaneously an advantage to win or an opportunity to help. Prompts were "Oh" (seven seconds pause), "Now I can't keep on drawing" (seven

seconds pause), "Ok, then I will quickly pick up the pens". If the child helped at any point, no further prompts followed. If the child did not help, the experimenter picked up the pens after the last prompt. Then the game continued, ending with the child winning the game. We decided to use a competition scenario, because helping someone while making personal sacrifice is more clearly a prosocial act (Gneezy et al., 2012). Child behavior was coded from the video recordings of the task and scored on a 4-point scale, 0 = no reaction; 1 = short help (e.g., "You have to pick them up"); 2 = moderate help (picking up a few pens, or only helping after the second prompt); 3 = intensive, immediate help (picking up all the pens, right away). The helping coding scheme is adapted from Vaish et al. (2009) and Newton et al. (2014). To ensure interrater reliability, a trained assistant coded one third of the behaviors in addition to the first coder. We achieved a high reliability for the behavioral helping task. The Intra-Class Correlation (ICC) was .95 with a 95% CI [.90–.98], $F(26, 26) = 39.41$, $p < .001$.

Comforting. The procedure was adapted from Young, Fox, and Zahn-Waxler (1999). The experimenter pretended to hit her foot. This was followed by "Ow" and a distressed facial expression, rubbing the foot, whining, (seven seconds pause); "I bumped my foot!" (seven seconds pause). If the child comforted, no further prompts followed. If the child did not comfort, the experimenter reduced her hurt facial expressions after the last pause and said, "Ah, I am better now." She continued with explaining the next game. To code comforting behavior, we followed previous work and relied on the global empathy scale (i.e., a combined scale comprising empathic concern and prosocial behavior). We used a global score, because this score includes the variety of comforting tendencies and behavior (Robinson et al., 1994). Child behavior was scored from the video recordings on a seven point scale: 0 = not involved at all (e.g., casually investigating a toy); 2 = slight concern (e.g., tension in upper body and face), no prosocial behavior; 4 = moderate concern (e.g., change in facial expression from slight smile to raised eyebrows and open mouth), slight prosocial behavior (e.g., "Yes, this hurts."); 6 = strong concern (e.g., very worried face), prosocial behavior (e.g., singing a healing song). Ratings between the scores were possible, if a behavior fell in between two anchor points. The reliability for the behavioral comforting task was high. The ICC was .74 with 95% CIs [.51–.87], $F(26, 26) = 6.61$, $p < .001$.

Self-concept measures. Puppet-Interview. The puppet-interview is an established measure to assess children's self-concept (Measelle et al., 1998). Our interview items were based on Krettenauer et al. (2013) and Marsh, Ellis, et al. (2002). We addressed the prosocial dimensions of helping, sharing, and comforting, as well as physical and verbal abilities. Each dimension consisted of four items with the exception of physical (five items), resulting in 21 items. The prosocial items are adaptations from Krettenauer et al. (2013). The physical and verbal items are adaptation from Marsh, Ellis, et al. (2002). We rephrased the questions to statements in order to fit the interview format. Additionally, we adapted some items to fit our preschool sample better (see Table 3 for the final items). For each item, two puppets stated opposing information (e.g., "I like to help doing the dishes" vs. "I don't like to help doing the dishes"). The opposing puppets for each item were identical. By this, we ensured that children replied based on the statements rather than the puppets' appearances. In order to reduce carry over effects, we

exchanged the puppets after each item pair. After each item pair, the experimenter asked: “And you? Are you more like this puppet or like this puppet?” The child chose the puppet with whom they identified most. Next, the experimenter asked: “Are you a bit or a lot like this puppet?” If the child could not side for one or the other puppet, the experimenter asked: “Are you sometimes like this one and sometimes like that one? So, in the middle?” This resulted in a five-point Likert-scale for each item: 1 = a lot like the negating puppet; 2 = a bit like the negating puppet; 3 = not like either of the puppets or equal identification; 4 = a bit like the affirmative puppet; 5 = a lot like the affirmative puppet.

We used the same method to include a control measure of social desirability. Social desirability does not represent a part of the self-concept, but functions as control measure to test whether the MSC explains variance in behavior beyond a social desirable response. We administered three social desirability items by Krettenauer et al. (2013), “When I get what I asked for, I always say thank you”, “I’m never angry”, and “I always say please, if I want to have something”.

Implicit self-concept measure. The implicit association test (IAT) is a computer-based test in which participants sort words in two different dimensions by clicking one of two designated buttons as fast as possible (see Greenwald et al., 1998). We used the moral self-concept IAT by Christner et al. (2020). This task was based on an IAT for preschoolers, which has been successfully used with four-year-olds (Cvencek et al., 2011). The first dimension included the categories *Self* and *Others* (I, me, mine vs. other, they, their). The second dimension reflected the categories of *Good* and *Bad* attributes of pro- and antisocial behaviors (to help, to share, to comfort vs. to hit, to steal, to push). In *congruent* trials, items of the categories Self and Good were paired on one side of the screen and one button. The category Other and Bad were paired on the other side of the screen. In *incongruent* trials, the target categories Self and Bad were paired on one side of the screen and the category Other and Good on the other side. As many of the children were not literate yet, we presented the items in audio. First, the experimenter checked that the children knew all the words and were able to sort them to the correct sides of the dimensions. The instructions for the children were: “Every time you hear ‘I’, ‘me’ or ‘mine’ you push this button” (pointing at the designated button for this trial). “Every time you hear ‘other’, ‘they’ or ‘their’ you press this button” (pointing at the other designated button). This was followed by the question: “So if you hear ‘I’, which button do you press?” The experimenter corrected if the response was wrong or continued with a new item. The same procedure was executed for the pro- and antisocial behaviors. Thereafter, the task started.

The entire task consisted of seven blocks: Good vs. Bad discrimination (12 trials, learning block), Self vs. Other discrimination (12 trials, learning block), two paired blocks (24 trials each), Good vs. Bad discrimination with reversed sides (24 trials, learning block), two reversed paired blocks (24 trials). The experimenter introduced each new block. Here is an example of the congruent paired block: “Every time you hear ‘I’, ‘me’, ‘mine’ or ‘to help’, ‘to share’, ‘to comfort’ you press this button. Every time you hear ‘other’, ‘they’, ‘their’ or ‘to hit’, ‘to steal’, ‘to push’, you press this button. Ok?” The explanation was accompanied by according pointing gestures. A fixation cross appeared for 400 ms between trials. If the

children made a mistake, a red question mark appeared on screen. The task continued as soon as the child responded correctly.

We measured the average response latency for those children whose accuracy was significantly higher than chance (n = 102) based on the scoring algorithm by Greenwald et al. (2003). We calculated a difference score between the incongruent and congruent condition. The difference score reflects the association between Self and Good vs. Bad attributes. The higher the score, the stronger the association between self and prosocial attributes. In our sample, we found a split-half reliability of .70.

4.2.2 Results

We first describe the results concerning the internal structure of the MSC (H1 and H2). Second, we investigate the relation of the MSC (explicit and implicit) and prosocial behavior (H3 and H4). For descriptive purposes, a zero-order correlation matrix of all variables is presented in Table 2.

Table 2. Correlations of all scales

	Behavioral			Explicit						Implicit
	1	2	3	4	5	6	7	8	9	10
Behavior										
1. Share	--									
2. Help	.15	--								
3. Comfort	.17	.24**	--							
Self-Concept										
4. Share	.24**	-.08	.09	--						
5. Help	-.09	.01	.03	.22*	--					
6. Comfort	.31**	.10	.20*	.16	.22*	--				
7. Physical	-.02	-.06	-.04	.20*	.14	.06	--			
8. Verbal	.08	.01	.16	.23*	.11	.13	.19*	--		
9. Social Desirability	.11	.05	.08	.08	.35**	.18	.14	-.03	--	
IAT										
10. Difference Score	-.11	.07	.06	.00	-.09	.04	.02	.37**	-.04	--
11. Age	.09	.03	.22*	.18	.18	-.16	-.04	.26**	-.21*	.20*

Note. The columns are the transposed rows. Scales 4-9 constitute the puppet-interview.

* $p < .05$; ** $p < .01$

Means and standard deviations of the prosocial behavioral dimension and explicit MSC measures are displayed in Table 3. Note that we assessed the physical and the verbal SC, but not corresponding behavioral abilities.

Table 3. Descriptive information on the behavioral and self-concept measures

	Behavior		Self-Concept Puppet-Interview	
Dimension	*n*	*M (SD)*	*n*	*M (SD)*
Share	127	0.85 (1.04)	121	4.05 (0.89)
Help	123	1.20 (1.28)	125	3.57 (1.15)
Comfort	126	2.07 (1.23)	120	3.31 (1.19)
Physical			120	3.93 (0.75)
Verbal			122	4.28 (0.69)
Social Desirability			123	3.44 (1.11)

Note. The range for sharing behavior was 0-4, for helping behavior 0-3, and for comforting behavior 0-6. For the self-concept measures, the range was 1-5, excluding items Sh2, He1 and Co1 due to subsequent results from factor analysis.

The self-concept is differentiated.

We analyzed the factor structure of the puppet-interview (H1). We conducted an exploratory factor analysis (EFA) with *varimax* rotation. When creating a new questionnaire, an exploratory factor analysis can help identifying outlying items and fitting items. This method ensures that only the most appropriate items get carried to the latest version of the questionnaire (see Aquino & Reed, 2002). The varimax rotation maximizes the differences between factors, as we do not expect the three factors to relate with each other (Field, 2015). As we employed items from established interviews and created new items, the first step is an EFA to ensure that our new interview matches the general expected structure.

We investigated the three main factors of the puppet-interview: prosocial, verbal and physical. We excluded three items (Co1, Ve4, Ph1) from further analysis due to low correlations with the other items (based on the "garbage in, garbage out" problem; Field, 2015, p. 685). In the exploratory factor analysis, the Kaiser-Meyer-Olkin (KMO) – without the excluded items – was .60, being above the acceptable limit of .50 (Field, 2015). Overall, our analyses showed a three-factor solution. The three factors explained a variance of 37.15%. Table 4 displays the factor loadings and internal consistency after rotation. The items that loaded on the same factor suggest that factor one stands for prosocial behavior, factor two for verbal abilities, and factor three for physical abilities.

Table 4. Factor loadings for principal component factor analysis with varimax rotation of the puppet-interview

Code	Item-Content	Prosocial	Verbal	Physical
Sh1	I like to share my pencils.	.29	.35	.11
Sh2	I like to share my toys with other children.	**.54**	.11	.09
Sh3	I take care that everyone gets the same amount.	.16	.34	.25
Sh4	I like to let other children play with my toys.	**.50**	.01	.09
Co2	I like to comfort a child, even if it was mean to me once.	**.46**	-.11	.15
Co3	I stop playing my favorite game to comfort a crying child.	**.48**	.20	-.20
Co4	I comfort a child, even when it has started the fight itself.	**.59**	-.01	.11
He1	I like to help tidy up the play area.	**.71**	.24	.18
He2	I like to help folding the laundry.	**.54**	.09	-.25
He3	I like to help setting the table at home.	**.58**	.11	-.18
He4	I like to help doing the dishes.	**.59**	.01	.24
Ph2	I would like to be strong.	.05	.07	**.53**
Ph3	I can run very fast.	.07	-.02	**.60**
Ph4	I can jump very far.	.08	-.06	**.71**
Ph5	I like to romp around.	-.02	**.44**	**.45**
Ve1	I enjoy looking at books.	.13	**.59**	-.23
Ve2	I enjoy listening to stories.	.07	**.70**	.04
Ve3	I like it when people read me a story.	-.09	**.76**	-.01
Eigenvalue		2.71	1.91	1.75
% of variance		15.96	11.71	10.30
Cronbach‘s α		.72	.52	.46

Note. Factor loadings > .40 appear bold. Sh = Sharing, Co = Comforting, He = Helping, Ph = Physical, Ve = Verbal. Cronbach’s α as measure of internal consistency for items > .40 on that factor. Items were translated from German.

The MSC is threefold

In a next step, we investigated the internal structure of the eleven items of the prosocial factor (H2). We assumed three dimensions within this factor: helping, comforting, sharing. We conducted an EFA with oblique rotation, because it allows the factors to correlate with each other (Field, 2015). Based on the previous analysis we found out that the prosocial domains are related. The KMO measure for the analysis was .73, which is above the acceptable limit of .50 (Field, 2015). The three expected factors all had Eigenvalues higher than one and explained a total amount of 52.25% of the variance. The factors

clustered in the three expected dimensions helping, comforting and sharing as Table 5 depicts. The only exception was one sharing item ("I like to share my toys with other children.") that fit into the helping dimension. We excluded this item from subsequent analyses. We only included items in further analysis if the following criteria were met (Stevens, 2012): first, items loaded on one factor (> .40) and not on others (< .40); second, the content of the items was conceptually coherent with the factor.

Table 5. Factor loadings for principal component factor analysis with direct oblimin rotation of the puppet-interview's prosocial items

Code	Helping	Comforting	Sharing
Sh1	-.21	.16	**.76**
Sh2	**.40**	.16	.26
Sh3	.08	-.12	**.52**
Sh4	.11	.00	**.71**
Co2	-.24	**.85**	.07
Co3	.10	**.64**	-.03
Co4	.16	**.70**	-.04
He1	.39	.39	.34
He2	**.68**	-.16	.18
He3	**.76**	-.03	-.02
He4	**.73**	.20	-.20
Eigenvalue	2.37	2.16	1.89
Cronbach's α	.67	.62	.50

Note. Factor loadings > .40 appear bold. Cronbach's α as measure of internal consistency for items > .40 on that factor.

The MSC corresponds to prosocial behavior.

We investigated the relation of the explicit MSC and prosocial behavior (H3). In three stepwise linear regressions, we used helping, sharing and comforting behavior as dependent variables and the explicit self-concept measures as predictors (i.e., sharing, helping, comforting, verbal, and physical of the puppet-interview). We averaged the items for each scale that the previous factor analysis revealed. The assumptions for regressions were met, with the exception of sharing behavior, which needed to be weighted due to heteroscedasticity. In a first step, before inserting the mentioned predictors, we included age and social desirability as an obligatory predictor, because higher age relates to increased prosocial

behavior (Smith et al., 2013; Taylor et al., 2013). Results of the stepwise regressions are presented in Table 6.

Table 6. Linear regression of explicit and implicit moral self-concept and prosocial behavior.

	Behavior								
	Sharing			Comforting			Helping		
Predictor	ß	95% CI	t	ß	95% CI	t	ß	95% CI	t
Explicit Regression									
Age	.11	[-0.01, 0.02]	1.24	.24*	[0.01, 0.05]	2.64	-.01	[-0.03, 0.02]	-0.09
SoDe	-.05	[-0.17, 0.09]	-0.60	.10	[-0.10, 0,31]	1.01	.05	[-0.16, 0.28]	0.51
SC									
Comfort	.28**	[0.08, 0.32]	3.23	.20*	[0.01, 0.40]	2.13	n.s.		
Share	.38**	[0.11, 0.31]	4.17	n.s.					
Help	n.s								
Physical	n.s.								
Verbal	n.s.								
R^2		.31**			.07*			-.01	
Implicit Regression									
Age	.13	[-0.01, .0.04]	1.36	.22**	[0.01, 0.06]	2.33	-.11	[-0.04, 0.01]	-1.09
IAT	n.s.								
ΔR^2		.01			.04			.00	

Note. CI = confidence interval. SC = Self-Concept. SoDe = Social Desirability. IAT = Implicit Association Test.

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

The regression for the dependent measure sharing behavior showed an effect of the comforting and sharing MSC, $F(3, 106) = 17.29$, $p < .001$. Age did not contribute to the regression of sharing behavior. None of the other predictors became significant. The regression for the dependent measure comforting behavior indicated an effect of the comforting MSC and age, $F(2, 112) = 5.57$, $p = .005$. None of the other predictors became significant. The regression for the dependent measure helping behavior was non-significant, $F(1, 113) = 0.04$, $p = .841$.

The implicit self-concept and prosocial behavior.

We investigated the relation of the implicit MSC with prosocial behavior (H4). We had to exclude 25 children from the analysis, whose IAT performance was at chance level (see above). We calculated three multiple regressions (one for each prosocial behavior) with age and the difference score of the IAT as predictors. None of the regressions became significant with the exception of the comforting regression. Age predicted comforting behavior, $F(1, 105) = 5.44$, $p = .022$. Thus, the implicit MSC did not relate to prosocial behavior.

4.2.3 Discussion

As hypothesized, the MSC appears to be distinct from other self-concept domains (H1), to be threefold (H2), and to relate to prosocial behaviors (H3). In particular, it relates to sharing and comforting, but not to helping behavior. Contrary to our hypothesis, the implicit MSC does not relate to prosocial behaviors. We will discuss this result in the general discussion.

The MSC appears to fit in the hierarchical model (Shavelson et al., 1976): It seems to be distinct from other domains (e.g., physical and verbal; as the analyses for H1 show) that means, moral attributes are organized in a distinct category. Furthermore, the MSC appears to be threefold (helping, sharing, comforting; as the analyses of H2 show), or multidimensional (Marsh, Ellis, et al., 2002). Note that items representing both preferences ("I like to …") and behaviors ("I do…") appear to fit in the same dimension. This hints at a broader understanding of the dimensions. The dimensions helping, sharing, and comforting seem to be subcategories of the MSC, since the first EFA revealed a homogenous factor for the MSC.

In addition, the MSC domains appear to relate to the assessed prosocial behaviors. This finding is in line with self-perception theory (Bem, 1972). That means, prosocial behavior and MSC relate to each other meaningfully. Hence, our results relate to proposals that suggest a bridging role of the MSC between moral judgment and behavior (Hardy & Carlo, 2011). Neither the other self-concept measures (physical and verbal) nor social desirability related to prosocial behavior. We will discuss this point further in the general discussion.

Because other studies reported ceiling effects for helping behavior in the preschool period (Engelmann et al., 2012; Svetlova et al., 2010), we decided to rely on a costly helping task. This is also morally more relevant as it requires to balance own interests and other's well-being. As a consequence, children showed less helping behavior. Please consider that the helping task was a game that the experimenter and the child played next to each other rather than together. The helping task contains a conflict of interest: selfishly winning or prosocially helping. This is also true for the sharing task. As the attractive stickers belong to the child, participants have to decide if they selfishly want to keep them all, or if they prosocially want to share them with a stranger. This way, helping and sharing resemble similar conflicts. Yet, it is sharing and comforting, not helping that relate to the MSC. This suggests that the

presence or absence of a conflict of interest does not determine relations between the behaviors and the MSC. We will argue in the general discussion that helping behavior might have a higher social rather than prosocial focus.

One of the main findings, as this has not been investigated in previous studies, is that the MSC appears to be threefold as shown by an exploratory factor analysis. In a next step, we wanted to confirm the structure of the MSC with a second study.

4.3 Study 2

Testing the identified structure of the MSC with a new, large sample allows for a robust confirmation of the MSC dimensions. Hence, we analyzed data from different assessments that included the moral items of our puppet-interview. The sample consists of participants from different assessments that all contained the same shortened version of the puppet-interview used in study 1 (resulting from the EFA of study 1). A data set of 172 children was taken from Christner et al. (2020). The remaining data (n = 144) was taken from unpublished studies, which had different research questions than the present one. We expected the MSC to show the three dimensions helping, sharing and comforting that we found in the first study. In order to investigate this hypothesis, we conducted a confirmatory factor analysis (CFA) to test how well the data fit the predefined model.

4.3.1 Methods

Participants

The sample contained 314 four- to eight-year-olds (158 female, M = 81.57 months, SD = 16.45). Children were drawn from the same population as the first sample, but were different to the first sample. We contacted parents either through data apprehended by the city's natal register or in local Kindergartens. According to a power analysis, a minimum sample of 296 participants would suffice to detect a small effect ($f^2 = 0.15$) with a power of 80% and alpha of .05 when conducting a CFA with three factors and nine observed items. Testings took place in the lab (n = 145) or in Kindergartens (n = 169).

Procedure

The procedure of the puppet-interview was identical as in study 1. We included the moral items that resulted as relevant by the previous EFA (Sh1, Sh3; Sh4, Co2-4, He2-4, see Table 5). Additionally, we included four distractor items (from the physical and verbal domain, 2 each), which have shown to be unrelated to the moral items. The order of the moral items differed between the subsamples of study 2, ensuring that order of items did not influence the responses. Before the puppet-interview, all children participated in a sharing task as in study 1. Tasks after the puppet-interview differed between the

subsamples. Neither the sharing task nor the subsequent tasks are part of the current research question; hence, we will not discuss them further.

4.3.2 Results

Table 7 depicts Pearson-correlations of the three summary scores of the MSC dimensions. We conducted a CFA with the items that fit the model of the first study (see H2). We set the items that should represent the MSC of sharing (Sh1, Sh3, and Sh4) as the first factor, of comforting (Co2-4) as a second factor, and of helping (He2-4) as the third factor. We used the R lavaan package (Rosseel, 2012) for computing the CFA. According to Byrne (2013), cut offs for a good model fit are CFI > .95, SRMR < .05, RMSEA < .05, for the Chi-squared test >.05. In order to investigate the goodness of fit, we compared the three-factor model with an one-factor model. As the one-factor model has fewer restrictions, it should fit better than the three-factor model, if the null hypothesis (i.e., all items belong in one factor) were true. We compared the models in a χ^2-test. Table 8 depicts results for a single-factor solution in contrast to a three-factor solution. The χ^2-test reveals a significant difference between the two models; $\chi^2(9, 314) = 77.49$; $p < .001$, in direction of a better three-factor fit (see smaller AIC-scores). Factor loadings are reported in Table 9.

Table 7. Pearson-correlations with pair-wise-deletion of moral self-concept domains in study 2

	Sharing	*Comforting*
Sharing	--	
Comforting	0.42***	--
Helping	0.26***	0.25***

** $p < .01$, *** $p < .001$

Table 8. Goodness-of-fit indicators of models for moral self-concept measure including (n = 314) and excluding older participants (n = 221)

Model	χ^2	df	p	CFI	RMSEA	SRMR	AIC	BIC
Single Factor	135.15	29	<.001	.72	.11	.08	9074.4	9175.5
Three Factors	34.26	24	.080	.97	.03	.04	8983.3	9075.5
Younger Children (4 – 6 years)								
Single Factor	79.00	27	<.001	.79	.09	.07	6514.3	6605.8
Three Factors	32.26	24	.121	.97	.04	.04	6473.6	6575.3

Note. Comparison of Confirmatory Factor Analysis for MSC of single Factor solution vs. three Factor solution.

Table 9. Factor loadings for confirmatory factor analysis of the puppet-interview's prosocial items

Code	Helping	Comforting	Sharing
Sh1			.58
Sh3			.47
Sh4			.55
Co2		.56	
Co3		.44	
Co4		.75	
He2	.66		
He3	.60		
He4	.61		
Cronbach's α	.66	.59	.55

Note. Cronbach's α as measure of internal consistency

To confirm that the model fit was not driven by the higher age of the second sample, we excluded all children above six years, as our first sample only included four- to six-year-olds. We repeated the analysis with this smaller sample. With the smaller sample (n = 221, mean age in months = 71.91, SD = 7.00), the χ^2-test likewise revealed a better fit of the three-factor model $\chi^2(9, 221) = 45.95$, $p < .001$ (see Table 8 lower part).

4.3.3 Discussion

As hypothesized, results from the second study replicated the threefold dimensions of the MSC. A confirmatory factor analysis, ran on a large sample, revealed that the MSC of five- to eight-year-olds

consists of the dimensions of helping, sharing, and comforting. This finding further strengthens the result of study 1 by showing that the MSC appears to be multidimensional as suggested by hierarchical models of the self-concept (Marsh, Ellis, et al., 2002; Shavelson et al., 1976).

4.4 General Discussion

The moral self-concept (MSC) has been suggested to play an important role in human moral development (Blasi, 1983; Hardy & Carlo, 2011). Yet, little is known about its early development. In the current studies, we investigated whether preschoolers' MSC has an internal structure and whether it meaningfully relates to prosocial behavior. In a first study, we assessed children's explicit and implicit MSC. Moreover, we assessed prosocial behavior in terms of helping, sharing, and comforting. We expected the children to have distinct dimensions of the moral self (H1 and H2) and that these explicit dimensions (H3) correspond to the according behavior. Moreover, we explored the relation between the implicit self-concept and prosocial behaviors (H4). We analyzed H1 and H2 with exploratory factor analysis. Our analysis confirmed that the MSC was distinct from other self-concept domains. More important, we found that preschoolers' MSC internally differentiated into helping, sharing, and comforting, indicating that children have a representation of themselves that differs in relation to the three different prosocial behaviors. In a second study, we replicated this factor structure. We conducted a confirmatory factor analysis with an independent, large sample indicating strong evidence for a threefold model. The dimensions of the MSC seem to be independent of age, as they appear from Kindergarten to school age. Finally, a regression analysis revealed that preschoolers' explicit MSC related to the prosocial behaviors sharing and comforting. The results are in line with self-perception theory and the hierarchical structure model according to which the self-concept relates to actual behavior. Overall, our findings demonstrate that a differentiated MSC emerges in the preschool years.

Our results show that the MSC of four- to six-year-old children is distinct from two other self-concept domains, that is those from the Marsh, Ellis, et al. (2002) questionnaire. This means that children mentally represent their prosociality from early on. Our results are in line with other studies demonstrating that a differentiated view of oneself emerges in early childhood (Brown et al., 2008; Brunner et al., 2010). Furthermore, our data support a multifaceted model of the self-concept. The similarity between the multifaceted model of the self-concept in general and the multifaceted structure of the MSC hints to further questions. For example, the development of the academic self-concept begins with a positivity bias and, around the third grade, becomes more attuned to external indicators (Marsh & Martin, 2011). It would be an interesting topic for future research to examine whether the MSC shows a similar developmental trajectory. Hereby, self-perception and parental feedback might be major contributors to the development of a self-concept (Bryan et al., 2014; Foster-Hanson et al., 2018).

Importantly, we found that preschool children's MSC is internally structured. Specifically, our analyses confirmed that preschoolers possess three dimensions of MSC, which are equivalent to the

prosocial behaviors described by recent theoretical frameworks (Dunfield, 2014; Paulus, 2018). Some authors suggest further prosocial domains, such as cooperation (Malti et al., 2016; Tomasello & Vaish, 2013). We leave it up to future research to investigate further dimensions of the MSC. In line with findings of the existence of three unrelated dimensions of prosocial behaviors (Dunfield & Kuhlmeier, 2013), the three MSC dimensions are distinct from each other. We were able to support this conclusion with an exploratory factor analysis and a confirmatory factor analysis in two separate samples. Replicating the findings of study 1 with a separate sample shows how stable the distinction in helping, sharing, and comforting appears to be across samples. The current study extends previous findings that suggest two dimensions of children's MSC: avoidance of antisocial behavior and preference for prosocial behavior (see Krettenauer et al., 2013). The three factors we identified might be dimensions within preference for prosocial behavior. Helping, sharing, and comforting all represent active prosocial actions in contrast to avoidance of antisocial behavior (e.g., not hurting someone). Previous research has mainly focused on the dimensions of the academic self-concept (Arens et al., 2016; Bossaert et al., 2011; Marsh & Martin, 2011). Our findings extend research on preschool children's self-concept with a moral domain.

Central findings are the meaningful relations between the different MSC dimensions and the corresponding dimensions of prosocial behaviors. This is in line with self-perception theory (Bem, 1972). It suggests that preschool children register and reflect on their own prosociality. Importantly, none of the other self-concept domains predicted any of the three prosocial behaviors. That highlights the meaningful relation of children's MSC and own behavior. Although this was true for sharing and comforting behavior, it was different for helping. We will discuss the potentially special role of helping later on.

Both comforting self-concept and age predicted comforting behavior. Increasing comforting with age is in line with the literature (Kienbaum, 2014) and can be explained by developing cognitive processes: With increasing age, children recognize needs easier and gain a broader repertoire of comforting behaviors. Furthermore, moral reasoning (Malti & Latzko, 2010) as well as empathy (Catherine & Schonert-Reichl, 2011) improve with age, which in turn is related to increasing comforting skills (Catherine & Schonert-Reichl, 2011).

Sharing and comforting self-concept predicted sharing behavior. That is, children with a stronger sharing self-concept and a stronger comforting self-concept shared more. Sharing behavior might result from different motivations: on the one hand, from a cognitive point of view, one might share in order to respect fairness norms (McAuliffe et al., 2017) and to demonstrate equal respect (Engelmann & Tomasello, 2019); on the other hand, from a more emotional perspective, one might share out of empathy with a potential receiver who does not have any resources. Thus, one might speculate that children with a strong sharing self-concept have a stronger motivation to share in order to follow fairness norms (Paulus et al., 2018). On the other hand, children with a strong comforting self-concept might have a stronger motivation to share in order to reduce emotional distress (cf. Ongley & Malti, 2014).

This way, the fairness norm and the reaction to emotional distress might both motivate sharing behavior. Yet, these two motives might be related in ontogeny as the fairness norm might develop out of the caring about others' perspectives (Carpendale, 2009). That means, while these two motives may be closely intertwined in their ontogeny, they can constitute distinct motives for actual prosocial behavior.

Although we found an independent helping self-concept, it did not predict helping behavior. Instead, the helping self-concept was the only dimension that correlated with social desirability. This points to a difference in the helping compared to sharing and comforting MSC. With regard to helping behavior, there is indeed a debate on its underlying function and motivation (e.g., Carpendale et al., 2015). For instance, Pletti et al. (2017) argue that in early childhood helping results from a generally social, rather than prosocial, motivation: children help because they want to engage in cooperative activities with other people. They might use instrumental helping (such as handing over of objects) as an opportunity to interact with others (Dahl, 2019). It is possible that in our study, helping behavior was rather triggered by children's wish to cooperatively interact with the other person (as the game they were involved in was competitive, not cooperative) than by a motive to support a needy other. Recent work showed that helping based on need develops in the preschool years (Paulus, 2020b).

An alternative explanation for the null-effect regarding helping might base on the especially social desirable nature of helping. Furthermore, the items to assess the helping self-concept referred to actions that relate more to adult-child interaction, whereas sharing and comforting self-concept items referred to peer interaction. In a hierarchical dyad (adult-child), adult's requests might activate child compliance. In particular, situational compliance is a reaction to requests, lacking internal motivation (Kochanska, 2002). Thus, helping could have been triggered by a motivation to comply with others rather than by prosocial motives. Further research is needed to investigate the emergence of the helping self-concept within the MSC.

Notably, we did not find a relation between the implicit MSC and prosocial behavior. Other studies reported a relation of other implicit concepts (such as attitudes) and external measures in four-year-olds (Cvencek et al., 2011). Yet, it is possible that the implicit MSC differs from other implicit concepts with respect to some properties. Implicit associations in the moral domain might take many experiences and time to build. This could explain why an implicit MSC is present in adults (Perugini & Leone, 2009), but not in young children. It would be interesting to explore the implicit measure of a MSC across a wider age range to identify the developmental stage in which an implicit self-concept forms.

While the current study extends our knowledge on preschool children's MSC, one should note a number of limitations and open questions. One limitation concerns our "WEIRD" sample (western, educated, industrialized, rich, democratic; Henrich et al., 2010). Mostly educated families replied to our invites. Research shows that socio-economic status might influence the extent of prosocial behavior. Some find that SES relates positively to prosocial behavior (Kosse et al., 2020), others find negative relations (Piff et al., 2010; Piff & Robinson, 2017). Thus, future research with more diverse samples is

warranted. Second, we did not control for task order, thus carry-over effects are possible. Further research with counter-balanced tasks is necessary. Third, the items of the current puppet-interview refer to specific actions and situations. Using this approach, we might have assessed children's preference for specific actions rather than their general view of themselves. Yet, due to the young age of the children it is necessary to use specific, everyday items (Harter, 2006), as inferring abstract concepts on behavior is just developing in preschool years (Ruble et al., 1988). We leave it to future research to explore these issues in more detail.

Despite these open questions, the current findings extend our knowledge on the emergence of the MSC. The findings suggest the existence of an internally structured MSC that shows meaningful relations to children's own sharing and comforting behavior. This enables an interesting perspective on how to foster moral development. For example, interventions on the self-concept can increase prosocial behavior in children (Bryan et al., 2014; Grusec & Redler, 1980). One could speculate that specific attributions to the distinct self-concept dimensions might foster related behaviors systematically. Thus, this study can be groundwork for future prosocial interventions on a personal level. This is particularly important since interventions on the personal level should have a longer and stronger impact than interventions on behavioral levels (Bryan et al., 2013).

The current study demonstrated that preschoolers' self-concepts are differentiated. Additionally, we found a relation between the dimensions of the MSC and the corresponding prosocial behaviors. This study shows the significance of the MSC in early childhood.

5. Study 2

A Longitudinal Assessment of the Stability of the Three-Dimensional Moral Self-Concept during Early Childhood

Gniewosz, G., **Sticker, R. M.,** & Paulus, M. (2022). A longitudinal assessment of the stability of the three-dimensional moral self-concept during early childhood. *European Journal of Developmental Psychology,* 1-20. https://doi.org/10.1080/17405629.2022.2090333

Abstract

Moral self-concept (MSC) is an important aspect of human morality and emerges in early childhood. It indicates how early children view themselves as moral agents. Yet, its structure and developmental patterns are unclear and require more research. This study addresses if the multidimensional structure of MSC is stable during early childhood and if the dimensions are differentiating over early to middle childhood. We explored the structure of MSC by testing a three-dimensional CFA model, its longitudinal invariance, reliability and correlational structure. Using a three-wave longitudinal sample (N = 133) of children aged between four to six years at T1, we found evidence for a stable three-dimensional MSC model, including the dimensions helping, sharing and comforting.

5.1 Relevance of the moral self-concept

Moral identity has received considerable attention in the past years (Aquino & Reed, 2002; Paruzel-Czachura & Blukacz, 2021; Reed et al., 2016). It helps to explain why someone is inclined to act more or less prosocially (Hertz & Krettenauer, 2016). Large parts of research on moral identity has been concerned with adults, however (for an exception see Pletti et al., 2022 as they investigated 10-year-olds' moral identity). Moral identity is a term usually used for adults, as identity is constructed as being more abstract. The Moral Self-concept (MSC), on the other hand, is defined more specific as self-representations about one's moral behavioral preferences and plays an important role in children's development (Sengsavang & Krettenauer, 2015). It is a multifaceted construct and is formed through experiences made in early childhood. The MSC represents an important domain in which children define themselves as moral agents (4;8-year-olds report about their MSC via the method of the puppet-interview; Kochanska, 2002) and it appears to relate to prosocial behaviors throughout childhood (e.g., Christner et al., 2020). Yet, the current research only grazed the different dimensions within the MSC

and little is known about the distinctiveness and reliability of the MSC dimensions at an early point in children's development.

5.1.1 The self-concept structure in childhood

Following the general self-concept research, the MSC is described as a multidimensional construct, whose dimensions may develop differently across time (Harter, 2006). This difference might be caused a) by children's growing cognitive abilities and b) by increasing experiences and information about oneself over time (Wigfield & Eccles, 2002). As life experiences increase and children learn more about themselves, children get a more nuanced perception about own (domain-specific) strengths and weaknesses (see self-perception theory; Bem, 1972). For example, first graders differentiate between the academic, social and general self-concept in the Self-Description Questionnaire (SDQ; Verschueren et al., 2012). One consequence is that the same multifaceted structure of self-concept is applicable across early, middle and late childhood (e.g., the math self-concept of four- to six-year-olds in a three-wave longitudinal study, Arens et al., 2016) but becomes more distinct and reliable with increasing age (e.g., seven to eleven-year-olds in three waves with the SDQ, Marsh & Ayotte, 2003).

Research on the structure of the self-concept across childhood describes alternative developmental patterns, representing a rather stable or dynamic perspective: *First*, research shows that the multidimensional structure of the self-concept is quite stable in early childhood – henceforth *stability pattern*. For example, Putnick and colleagues (2020) conducted a five-wave longitudinal study using a sample of four- to 24-year-olds. Results show that the differentiation between four dimensions of self-concept (i.e., using an adaptation of the Harter self-competence scales, academic, social, athletic and physical competence) was relatively stable across time (Putnick et al., 2020). *Second*, studies show that the (degree of) differentiation of the self-concept dimensions may change during the developmental phase of childhood – henceforth *differentiation pattern*. For example, Cohrssen and colleagues (2016) show that four-year-olds' self-reported academic self-concept is rather a global than a distinguishable construct. That means, new dimensions appear in one domain in the course of development. Additionally, research shows that the multidimensional structure of self-concept becomes more differentiated through childhood (here: six- to ten-year-olds; Schmidt et al., 2017), meaning that the dimensions correlate less, the older children are. Thus, the correlational structure between self-concept dimensions should change over time (i.e., decline substantially with age). Schmidt and colleagues (2017), for example, report in a cross-sectional study showing that the different self-reported domains of the academic self-concept are traceable in six-year-olds. They become less correlated four years later, indicating a stronger differentiation between dimensions.

These developmental patterns focus on different aspects: The *first* pattern emphasizes general stability. The multifaceted structure of the self-concept is clearly evident from early childhood (Marsh & Shavelson, 1985) and age-related experiences only affect it slightly (see for physical self-concept

measured with a self-report at age eleven and fourteen; Klomsten et al., 2004). The *second* pattern emphasizes change within a self-concept domain. Either dimensions emerge with higher age or the strength of relations between dimensions of a self-concept domain may change over time. For instance, dimensions might correlate less over time. This can be explained by children's better cognitive or verbal skills leading to a more fine-grained representation of oneself (Harter, 1999). MSC is supposed to be a multidimensional construct, however, the developmental pattern behind MSC is not yet fully understood.

5.1.2 The moral self-concept

While the relevance of children's moral identity or MSC has been confirmed in many studies (e.g., a meta-analysis by Hertz & Krettenauer, 2016), little is known about the ontogeny of the MSC (Hardy & Carlo, 2011). According to Krettenauer (2013) moral identity develops through a process of internalization of moral norms. The process of internalization is encouraged by parental rules and interactions. However, the more such moral norms and rules are internalized, the stronger the MSC of children is (e.g., at five-years old assessed with a puppet-interview; Kochanska et al., 2010).

The development of the MSC's structure seems less clear: Around five years, children respond similarly to questions from the same domain (e.g., "I like to help tidying up." and "I like to help setting the table."), showing that children's answers are rather consistent across the specific domain of moral perceptions (Kochanska et al., 2010). Moreover, the MSC appears to be differentiated within, meaning that children consistently respond differently to questions from different dimensions. For example, Krettenauer and colleagues (2013) conducted a puppet-interview in a cross-sectional study with five- to twelve-year-olds. They found that children differentiated between preference for prosocial behavior vs. avoidance of anti-social behavior. The former focuses on active prosocial behaviors such as being fair, the latter concerns the avoidance of antisocial behavior such as harming or teasing others. As prosocial behavior emerges early in life, it is a pressing question to investigate the development of cognitive representations of prosocial behavior in early childhood.

The underlying study focuses on the concept of prosocial behavior preferences. The study proposes a more nuanced dimensional structure of the prosocial part of the MSC, than previous research by, i.e., Krettenauer and colleagues (2013). That means, we distinguish the domain preference for prosocial behavior in three dimensions: The first dimension *helping* comprises preference for instrumental helping, such as helping others to tidying up, the second dimension *sharing* includes behavioral tendencies like sharing toys and the third dimension *comforting* represents behaviors such as supporting a crying child. The assumption of a three-dimensional MSC is grounded on a multidimensional model of prosocial behavior, comprising helping, sharing and comforting (e.g., Dunfield, 2014; Paulus, 2014). These prosocial (behavioral) dimensions appear to be independent, from toddlerhood to early childhood and may be associated with different needs (e.g., Dunfield & Kuhlmeier,

2013) or motives (e.g., Paulus, 2018). Taking these differentiations of prosocial behavior into account and the idea that self-concept bases on behavior (see Marsh & Ayotte, 2003), the MSC is proposed to derive of the same three dimensions.

We conducted a longitudinal study, enabling developmental research. The time intervals between the measurements differed by duration. By this, we could investigate short- and long-term changes, if present. In particular, the age between four and six appears to be important as this is the first time the (moral) self-concept can be measured in self-report (see for the academic self-concept Cohrssen et al., 2016; see for the MSC Kochanska et al., 2002). Additionally, this is the time, when the self-concept either stays stable (Putnick et al., 2020) or starts to differentiate (see Schmidt et al., 2017). In relation to the MSC, the domain preference for prosocial behavior might differentiate into three dimensions.

5.1.3 The present study

With regard to different developmental patterns of children's self-concept, this research aimed to explore the question of structural consistency of MSC dimensions in greater detail. Taking a longitudinal perspective, we investigate the dimensional structure of preschool children's MSC over a course of 21 months, including three measurement points. Specifically, an adapted version of the puppet-interview (Krettenauer et al., 2013) was used to capture the three dimensions of helping, sharing, comforting.

To address the question of how (in-)stable the MSC is from early to middle childhood, various aspects have to be considered from a methodological perspective, which, in turn, draw different conclusions about the development and structure of MSC:

First, at each measurement point, we investigate whether the assumed *three-dimensional* concept of MSC with the dimensions of helping, sharing and comforting fits the data. This allows to assess the distinctiveness of the MSC dimensions and provides a first insight into the (in-)stability of the MSC dimensions. For instance, assuming a stable and distinct multidimensional MSC, the three dimensions should show substantial item-factor correlation for each dimension at each measurement point. Further, no or few significant cross-loadings should occur. As described below in more detail, this is shown in the context of a confirmatory framework with the help of (multivariate) modification indices (Jorgensen, 2017).

A *second* aspect for a reliable interpretation of the dimensions over time is the longitudinal invariance of the measurement models. Using differently restricted models, it has to be shown that items represent one dimension in the same way at different measurement points. As noted by Fink and colleagues (2020), configural invariance is a necessary, but not sufficient condition for a valid interpretation of the measured variables at different measurement points. Only if the dimensions remain at least stable on the level of factor loadings (= weak invariance) and intercepts (= strong invariance)

over time, we can accept invariance, allowing conclusions on the structural level. If MSC is a stable construct, then we should find at least strong longitudinal invariance.

Third, based on invariant measurement models, the correlations between the three dimensions have to be examined across time. It needs to be shown whether the correlations of the three dimensions differ across measurement points. If differences are absent, we can assume a rather stable relation between the dimensions. Yet, if we find differences, this may indicate a differentiation (e.g., a decline in correlations) or an indication changing numbers of dimensions (e.g., merging two dimensions into one). For example, if the correlations among multiple dimensions of MSC become smaller (e.g., Marsh & Ayotte, 2003), the dimensions become more independent. In contrast, if the correlations become higher, the dimensions become more dependent or merge into one dimension. Thus, the number of dimensions within the MSC might change. If neither the correlations nor the number of dimensions changes, this supports the alternative explanation of high stability in early childhood.

5.2 Method

Participants

The data collection was conducted at three measurement points, with the children being invited again after 18 and 21 months. The sample comprised 133 German speaking children at T1. Each age group (four, five and six years) comprised a third of the sample. In the initial sample, 61% of the parents held a university's degree, 14% completed high school and a third of parents raised their children bilingually. The sample was predominantly from European background (86.47%). Families came to a second (18 months) and third measurement (3 months). Across time, the sample was reduced by 28.57% at T2 (N=95) and by 34.59% at T3 (N=87). The attrition is attributable to families' moving and scheduling difficulties. However, testing if missing values were random, Little's MCAR test (Little, 1988) revealed that missing values across all three measurement points were random for sharing (p=.431), helping (p=.247), and comforting (p=.645). The child's caregiver gave written informed consent for participation (see for more recruiting information, Sticker et al., 2021). The faculty's ethics committee approved the study. Parents received commute compensation and each child received gifts. Further sample information can be found in *Table 10*.

Table 10. Age and Gender of Sample

Time	*n*	Age *M(SD)*	*Range*	*Boys/Girls*
1	133	65.18 (9.96)	50-83	69/64
2 + 18m	95	82.12 (9.82)	67-100	50/45
3 + 3m	87	85.07 (9.67)	70-103	46/41

Note. Age in Month

Procedure

The female experimenter introduced herself and chatted with the child casually. Each child was tested individually in a quiet room. Testings took place at the labs of a university in a German city. The experimental sessions were videotaped for later coding. The measure of the MSC was embedded in a series of other tasks. The other tasks are irrelevant for the present questions and are reported elsewhere (Sticker et al., 2021).

Measures

The puppet-interview is a well-established measure to assess children's self-concept (e.g., Eder, 1990). Based on previous research, the adapted puppet-interview addressed the dimensions of helping, sharing and comforting (e.g., Krettenauer et al., 2013). The items were mixed in a longer puppet-interview (in total 24 items, including items of the physical and verbal self-concept) to ensure low contextual similarities between the items (for more details see Sticker et al., 2021). Each moral dimension consisted of four items, resulting in a total of twelve items per measurement point. Preliminary analyses showed that at T1 the fourth comforting item diverged from the others, that is, it hardly correlated with the total factor and was therefore removed from the analysis. We used gender-matched puppets. For each item, two puppets stated opposing information (e.g., for helping MSC: "I like to help doing the dishes" vs. "I don't like to help doing the dishes"; e.g., for comforting MSC: "I like to comfort a child, even if they were mean to me." vs. "I do not like…"; e.g., for sharing MSC: "I like to share my pencils." vs. "I do not like…"). Then the experimenter asked: "And you? Are you more like this puppet or like this puppet?". The child chose the puppet they identified with most. Next, the experimenter asked "Are you a bit or a lot like this puppet". The puppet-interview produced a 5-point scale: 1= a lot like the negating puppet, 2 = a bit like the negating puppet, 3= like neither both, 4= a bit like the affirmative puppet, 5= a lot like the affirmative puppet. The middle option (3) was added as some children spontaneously responded in that manner.

Statistical Analysis

The data that support the findings of this study are openly available in OSF Storage at https://osf.io/4wtus/?view_only=e81dcd943d8549febf199cad09e9afc6. To test the structure of MSC

across three measurement points, several steps were necessary. All analyses based on the items of the MSC measurement (i.e., helping, sharing and comforting), using an adapted 4-point rating scale (see supplemental material, S-Table 1). After testing the normality distribution, we found that the additionally included category 3 had only a very low cell count (low N), i.e., was only very rarely used. Consequently, we decided - following the original scaling - to combine this category with category 4. With the combination of level three and four, we were able to achieve a distribution that made interpretations possible.

All statistical analyses on a latent level, were conducted with the R package "lavaan" (Rosseel, 2012), using a robust maximum likelihood (ML) estimator, recommended especially for not completely normally distributed data (Finney & DiStefano, 2006, p. 289). The full information ML adjustment method (Arbuckle, 1996) was applied to account for missing data. We emphasized different fit indices to evaluate goodness of fit (e.g. RMSEA, TLI/CFI), but also present the χ^2-test statistic and an evaluation of parameter estimates (Hu & Bentler, 2009; Xia & Yang, 2019).

The analysis comprised several models: In *step one*, we focused on the distinctiveness of the three MSC dimensions. We tested three-factor models via separate CFA for each measurement point. We inspected the factor loading patterns and the modification indices (*MI*). *MI* help to illustrate which additional item-factor assignment is plausible, i.e., improve the model fit, when freeing specific parameter constraints. *MI* indicate the change in χ^2 value when the constrained parameter is freely estimated (Jorgensen, 2017). With the help of the *MI*, one can thus find the best fit for a model in an effect manner. EPC/ SEPC represent the predicted change in the parameter (unstandardized and standardized), if the parameter was freely estimated. Values bigger than 3.84 indicate an improved model for the added parameter ($p < .05$).

In *step two*, we evaluate time-related differences in the structure of the MSC. According to Widaman and colleagues (2010), invariance should be tested based on several consecutive and differently restricted models: Measurement invariance was tested on the configural (factor structure same across time; same items associated with same factors), weak (additionally equal factor loadings over time), strong (additionally equal item intercepts over time) and residual (additionally equal residuals over time) invariance level. Differences between nested models, under appropriate conditions, can be tested for statistical significance using the difference of the χ^2-values (e.g., Chen et al., 2020). Hence, a more parsimonious model was preferred, if the χ^2-fit of the parsimonious model did not worsen compared to the less restricted model. In other words, the χ^2-difference between both models should be insignificant. Note, strong invariance is at least needed to draw conclusions about the correlations between the extracted dimensions over time.

Step three refers to the correlations between the three dimensions over time. Based on the factor scores, saved from the invariant measurement models, we specified the correlations at each measurement point and tested the difference between two (dependent) correlations with different variables (i.e., Steiger Test). We repeated the same analysis within each MSC dimension (i.e.,

Williams's Test). Finally, we inspected the reliability using an alternative Cronbach's alpha coefficient, which base on the estimated factors scores (see Bentler, 2009; Jorgensen et al., 2021) of the invariant measurement models.

5.3 Results

5.3.1 Distinctiveness of the MSC Dimensions

First, we focused on the distinctiveness of the MSC dimensions at each measurement point (step 1). We specified separate three-factor models, including helping, sharing and comforting, for each measurement point. Table 11 represents the global model fit at each measurement point. At each measurement point, the three-dimensional model provides a good (T1: $\chi^2(df)$=27.76(24), p=.270; T2: $\chi^2(df)$=28.13(24), p=.254) to acceptable T3: $\chi^2(df)$=31.42(24), p=.142) model fit. Note, the change in the model fit might be due to the reduced sample size between T1 and T3.

Further, the expected item-factor structure also appears to be clear across the three measurement points. Even though some of the standardized loadings are less than β<.6, they are significant (see Table 12).

Additionally, the three-dimensional model shows only few and low 'cross-loadings' with *MIs* <.10, providing evidence that alternative item-factor specifications do not fit the data more closely. Only a few parameters are larger than the criteria of 3.84 (e.g., largest *MI* = 7.49 for Comforting3_3r on sharing T3), so that a specification (i.e., freeing) of the corresponding parameter would only slightly improve the overall model (see supplemental material, S-Table 2-4). Note, considering the significance under the correction of multiple testing (here the Bonferroni-adjustment), a change in item-factor assignment would not result in a significant improvement of the model.

5.3.2 Time Related Differences of MSC Dimensions

The second step aimed to clarify the significance of longitudinal invariance on a configural level, on the level of factor loadings (weak invariance), intercepts (strong invariance), and residuals (strict invariance) for each MSC dimension. We only report the highest fitting model. For the MSC dimension *sharing*, the level of strong invariance across time was reached ($\chi^2_\Delta(df_\Delta)$=2.33(*6*), p=.887). The same is true for *comforting* ($\chi^2_\Delta(df_\Delta)$=5.67(*4*), p=.225). *Helping* reached a strict invariance ($\chi^2_\Delta(df_\Delta)$=5.07(*8*), p=.750). An overview of the fit indices at each invariance level are shown in S-Table 5 in the supplemental material.

Based on the factor scores of the invariant models, the final step comprises the correlations of all three MSC dimensions within and between measurement points. Correlations and further descriptive information of the MSC dimensions are shown in Table 13. Here, we also included children's reported

gender and age (at T1). Only for helping (at all measurement time points), we found that boys tend to prefer helping less than girls. Note, reliability estimates are shown in Table 11.

In short, the correlations between the dimensions are significant, but moderate (r=.26 to r=.44). The difference between correlations for sharing and helping over time (t=0.25, p=*.807*), between sharing and comforting (t=-1.86, p=*.065*) and sharing and helping (t=-0.88, p=*.380*) were not significant, supporting the stability pattern. Finally, we consider the correlations within the MSC dimensions between two measurement points (T1->T2; T1->T3) as an indicator of the stability of the dimensions: While the MSC dimension comforting is highly stable over time (r_{12}=.72, r_{13}=.65, z=.63, p=.522), suggesting that children with strong comforting MSC at T1 are more likely to show the same at T2 and T3. Sharing (r_{12}= .50, r_{13}=.48, z=.53, p=.599) and especially helping (r_{12}=.25, r_{13}=.31, z=.21, p=.832) seem rather dynamic across time.

Table 11. Goodness of Fit Indices and Reliability for the three-dimensional MSC model

	T1				T2				T3			
Scale/ Factor	Cronbach's α	χ^2 (*df*)	*RMSEA*	*CFI/ TLI*	Cronbach's α	χ^2 (*df*)	*RMSEA*	*CFI/ TLI*	Cronbach's α	χ^2 (*df*)	*RMSEA*	*CFI/ TLI*
Sharing	.50				.71				.63			
Helping	.67	27.76 (24) *p*=.270	.03	.97/ .95	.60	28.13 (24) *p*=.254	.04	.97/.95	.68	31.42 (24) *p*=.142	.06	.95/ .93
Comforting	.64				.69				.74			

Note. Information based on separate CFAs for each dimension and for MSC total score; Cronbach's α bases on factor score reliability (see, Bentler, 2009)

Table 12. Factor Loadings for the three-dimensional MSC model

		T1			T2			T3		
MSC Measure	Nb. Items	1	2	3	1	2	3	1	2	3
		Factor Loadings								
1 Sharing	1	(fixed)			(fixed)			(fixed)		
	2	0.41			0.54			0.56		
	3	0.58			0.79			0.61		
	4	0.56			0.83			0.65		
2 Helping	1		(fixed)			(fixed)			(fixed)	
	2		0.51			0.45			0.54	
	3		0.76			0.66			0.48	
	4		0.54			0.43			0.79	
3 Comforting	1			(fixed)			(fixed)			(fixed)
	2			0.67			0.56			0.76
	3			0.66			0.52			0.57

Note. Factor loadings are presented for the three-factor model of MSC, specified separately at each measurement point.

Table 13. Means, standard deviations, and correlations for MSC-dimensions

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Gender T1	female	n=69										
	male	n= 64										
2. Age T1	65.18	9.96	-.10									
3. Sharing T1	3.18	0.38	-.10	.11								
4. Helping T1	3.04	0.37	.05	-.21*	.43**							
5. Comforting T1	2.58	0.60	.05	-.06	.26**	.32**						
6. Sharing T2	3.22	0.53	.08	-.02	.25**	.20*	.30**					
7. Helping T2	2.81	0.33	.14	-.21*	.21*	.50**	.37**	.41**				
8. Comforting T2	2.72	0.55	.09	.06	.15	.18*	.72**	.42**	.40**			
9. Sharing T3	3.08	0.43	.09	-.09	.31**	.24**	.34**	.86**	.51**	.45**		
10. Helping T3	2.79	0.35	.17	-.20*	.21*	.48**	.36**	.33**	.95**	.37**	.44**	
11. Comforting T3	2.58	0.63	.08	.07	.12	.15	.65**	.37**	.37**	.98**	.42**	.35**

Note. M and *SD* are used to represent mean and standard deviation, respectively. Age in months. Boys are coded 0, girls are coded 1. *indicates $p < .05$. **indicates $p < .01$. Information is based on factor sores of invariant measurement models; Information in the dotted box is the correlations between MSC dimensions; information shaded in gray are the correlations within each dimension

5.4 Discussion

Research has highlighted the moral self-concept (MSC) as an important aspect of human morality (e.g., Hertz & Krettenauer, 2016). Developmental studies have explored the MSC in early childhood (e.g., Krettenauer et al., 2013) and have demonstrated its relevance for children's prosocial behavior (e.g., Christner et al., 2020). This study aimed to fill a gap by investigating the (in-)stability of young children's MSC across three measurement points. Using a three-wave longitudinal sample of children aged between four and six years at T1, we found a highly stable three-dimensional MSC model, including helping, sharing and comforting.

Based on the *factor analytical models*, we found helping, sharing and comforting as distinct latent dimensions at each measurement point. Although the factor loadings were small, all items loaded on a separate factor without significant cross-correlation. Further, we found acceptable reliabilities for each MSC dimension on most measurement point (note, sharing at T1 as an exception). Sharing valuable resources is a behavior that emerges later in development than , for example instrumental helping (Svetlova et al., 2010). One could thus argue that a self-concept related to sharing emerges later as well. This could explain, why the reliability of the sharing sub-dimension was rather low at T1 and reached satisfactory reliabilities only in the later measurement points.

However, in the background of this sample of young children, we would suggest a factor structure with three distinctive dimensions for this first step. In reference to the multidimensional model of prosocial behavior, our results indicate that the MSC shows the same three-dimensional structure (Dunfield, 2014; Paulus, 2018). However, future research is needed to investigate parallel or reciprocal developments of prosocial behavior and MSC dimensions.

For a reliable interpretation of the MSC dimensions, we need *longitudinal invariance* or measurement stability. We found this for all three dimensions, indicating that time – here 21 months – was independent of the structure of each dimension. This extents on previous research on the MSC, showing two subdomains (Krettenauer et al., 2013) and three dimensions within the subdomain preference for prosocial behavior cross-sectionally (Sticker et al., 2021). Interestingly, helping reached strict invariance, showing residual or invariant uniqueness across time. We assume that helping is a behavior that is learned at an early age (Hammond et al., 2017) and is, thus, incorporated into children's MSC very early.

On a *structural level of MSC,* our results show that the correlations between the dimensions are stable over time. This contrasts with the assumption that dimensions differentiate with increasing age and experience (e.g., Cohrssen et al., 2016). The significant but moderate correlations indicate stability of the MSC, a finding that was also found for the differentiation of academic, social, athletic and physical self-concept (e.g., Klomsten, 2004; Putnick et al., 2020). That means, we find a stability pattern. This goes beyond the work by Kochanska and colleagues (2010). They showed consistent responses within domains cross-sectionally. Furthermore, this contradicts notions that the MSC is constructed "moment

to moment" (Monin & Jordan, 2009). Our results show stability over time, which could hint in the direction of MSC being more trait-like (Blasi, 1983), than situational. Interestingly, the correlations across time within each dimension suggest high rank order stability for comforting, but a greater dynamic in children's rank order position for helping and sharing. More precisely, children who have a strong comforting MSC early on, also show strong comforting later. For helping and sharing MSC, change is more likely.

From previous research on the MSC (Sengsavang & Krettenauer, 2015) it seems plausible that boys and girls differ in their preferred dimensions. However, we find only a few differences by gender, more precisely, we find them only in the dimension helping. Boys report lower preference for helping than girls. Due to implicit socialization experiences (e.g., Eccles et al., 1990) it can be assumed that behavior, e.g. helping behavior, is reinforced or sanctioned differently for boys and girls. Consequently, it is possible that – in line with a gender-typical parenting (e.g., Hastings et al., 2007) – girls are more likely to be encouraged or positively reinforced to help than boys and, therefore, show a stronger preference for helping. This possibility requires further research on socialization effects on MSC.

Although our results provide first evidence for a highly stable, three-dimensional MSC already in early childhood, there are some limitations: *First*, although we administered a well-established method of the puppet-interview, we reduced the responses to four options post-facto. In particular, the middle option "neither nor" was used very rarely, which concurs with literature on questionnaires for children (Bell, 2007). Yet, we included it to encourage children to voice uncertainty about the dichotomy of the puppet's statements. *Second*, the underlying focus was specifically on helping, sharing and comforting. Notably, the current study focused on the prosocial aspects of the MSC. One could thus argue that our study explores the prosocial self-concept. Yet, as this aspect has been regarded a central part of the MSC (Krettenauer et al., 2013), we decided to rely on this term. Other subdimensions of MSC such as avoidance of antisocial behavior have been described theoretically, but the findings are mixed (Sengsavang & Krettenauer, 2015). Further research is needed to investigate this question. *Third,* the different intervals between the three measurements were meant to show different stabilities over long or short periods of time. As we did not find such differences, two explanations are possible: either the MSC is stable over short and long periods of time, or the periods were not spaced out wide enough. Potentially, a very short interval (e.g., one day) would show a different stability than a longer interval (e.g., two years). Future research could investigate this. *Finally*, although our sample size was comparable to other studies (e.g., Cohrssen et al., 2016), a larger sample would allow for greater power. However, post-hoc analyses reveal sufficient power, though (98% at $N = 30$; 99% at $N = 50$; 99,999% at $N = 100$) for each separate CFA model (each dimension across time separately). That means, random effects are unlikely for specific models. Yet, to account for dependencies among the three dimensions over multiple measurement points, all three dimensions needed to be specified over time within the same model. This requires a larger sample.

Conclusion

To our knowledge, there are few studies that look at the MSC over a two-year period from the perspective of young children, instead of interviewing mothers. Based on our findings, we conclude that the MSC should be regarded as a stable and multidimensional model of MSC as the most appropriate concept across time. These results indicate that even young children have fairly stable self-evaluations of their different types of prosocial behavior. Thus, questionnaires tailored for young children appear to measure the same constructs. On a developmental level, the MSC emerges at a similar time as other self-concept domains and shows comparable stability. Furthermore, children reflect on their prosocial tendencies quite early. This research contributes to our understanding of the emergence of young children's moral autonomy.

Supplemental Material to Study 2

S-Table 1. Item information for helping, sharing & comforting at each measurement point

ID	Name	Label	Missings	Value Labels[1]	Freq.	%
1	Sharing1_1r	First item sharing at T1 (recoded)	9 (6.77%)	1	14	11.29
				2	18	14.52
				3	28	22.58
				4	64	51.61
2	Sharing1_2r	Second item sharing at T1 (recoded)	9 (6.77%)	1	8	6.45
				2	16	12.90
				3	31	25.00
				4	69	55.65
3	Sharing1_3r	Third item sharing at T1 (recoded)	10 (7.52%)	1	6	4.88
				2	19	15.45
				3	35	28.46
				4	63	51.22
4	Sharing1_4r	Fourth item sharing at T1 (recoded)	9 (6.77%)	1	11	8.87
				2	13	10.48
				3	36	29.03
				4	64	51.61
5	Sharing2_1r	First item sharing at T1 (recoded)	39 (29.32%)	1	2	2.13
				2	17	18.09
				3	31	32.98
				4	44	46.81
6	Sharing2_2r	Second item sharing at T2 (recoded)	39 (29.32%)	1	2	2.13
				2	15	15.96
				3	26	27.66
				4	51	54.26
7	Sharing2_3r	Third item sharing at T2 (recoded)	39 (29.32%)	1	5	5.32
				2	9	9.57
				3	25	26.60
				4	55	58.51
8	Sharing2_4r	Fourth item sharing at T2 (recoded)	39 (29.32%)	1	6	6.38
				2	15	15.96
				3	29	30.85
				4	44	46.81
9	Sharing3_1r	First item sharing at T3 (recoded)	46 (34.59%)	1	1	1.15
				2	15	17.24
				3	41	47.13
				4	30	34.48
10	Sharing3_2r	Second item sharing at T3 (recoded)	46 (34.59%)	1	3	3.45
				2	16	18.39
				3	30	34.48
				4	38	43.68
11	Sharing3_3r	Third item sharing at T3 (recoded)	46 (34.59%)	1	5	5.75
				2	6	6.90
				3	32	36.78
				4	44	50.57
12	Sharing3_4r	Fourth item sharing at T3 (recoded)	46 (34.59%)	1	4	4.60
				2	14	16.09
				3	40	45.98
				4	29	33.33

13	Comforting1_1r	First item comforting at T1 (recoded)	9 (6.77%)	1	42	33.87
				2	43	34.68
				3	27	21.77
				4	12	9.68
14	Comforting1_2r	Second item comforting at T1 (recoded)	9 (6.77%)	1	26	20.97
				2	31	25.00
				3	30	24.19
				4	37	29.84
15	Comforting1_3r	Third item comforting at T1 (recoded)	13 (9.77%)	1	22	18.33
				2	22	18.33
				3	29	24.17
				4	47	39.17
16	Comforting1_4r	Fourth item comforting at T1 (recoded)	9 (6.77%)	1	26	20.97
				2	31	25.00
				3	27	21.77
				4	40	32.26
17	Comforting2_1r	First item comforting at T2 (recoded)	39 (29.32%)	1	22	23.40
				2	25	26.60
				3	30	31.91
				4	17	18.09
18	Comforting2_2r	Second item comforting at T2 (recoded)	40 (30.08%)	1	15	16.13
				2	23	24.73
				3	32	34.41
				4	23	24.73
19	Comforting2_3r	Third item comforting at T2 (recoded)	40 (30.08%)	1	7	7.53
				2	13	13.98
				3	32	34.41
				4	41	44.09
20	Comforting2_4r	Fourth item comforting at T2 (recoded)	40 (30.08%)	1	16	17.20
				2	23	24.73
				3	29	31.18
				4	25	26.88
21	Comforting3_1r	First item comforting at T3 (recoded)	46 (34.59%)	1	21	24.14
				2	32	36.78
				3	22	25.29
				4	12	13.79
22	Comforting3_2r	Second item comforting at T3 (recoded)	48 (36.09%)	1	13	15.29
				2	22	25.88
				3	25	29.41
				4	25	29.41
23	Comforting3_3r	Third item comforting at T3 (recoded)	46 (34.59%)	1	8	9.20
				2	19	21.84
				3	29	33.33
				4	31	35.63
24	Comforting3_4r	Fourth item comforting at T3 (recoded)	46 (34.59%)	1	17	19.54
				2	27	31.03
				3	21	24.14
				4	22	25.29
25	Helping1_1r	First item helping at T1 (recoded)	8 (6.02%)	1	14	11.20
				2	24	19.20
				3	33	26.40
				4	54	43.20
26	Helping1_2r	Second item helping at T1 (recoded)	8 (6.02%)	1	24	19.20
				2	25	20.00
				3	23	18.40
				4	53	42.40

27	Helping1_3r	Third item helping at T1 (recoded)	8 (6.02%)	1	8	6.40
				2	23	18.40
				3	30	24.00
				4	64	51.20
28	Helping1_4r	Fourth item helping at T1 (recoded)	8 (6.02%)	1	28	22.40
				2	27	21.60
				3	28	22.40
				4	42	33.60
29	Helping2_1r	First item helping at T2 (recoded)	40 (30.08%)	1	12	12.90
				2	23	24.73
				3	26	27.96
				4	32	34.41
30	Helping2_2r	Second item helping at T2 (recoded)	40 (30.08%)	1	20	21.51
				2	27	29.03
				3	19	20.43
				4	27	29.03
31	Helping2_3r	Third item helping at T2 (recoded)	40 (30.08%)	1	13	13.98
				2	30	32.26
				3	23	24.73
				4	27	29.03
32	Helping2_4r	Fourth item helping at T2 (recoded)	39 (29.32%)	1	23	24.47
				2	30	31.91
				3	18	19.15
				4	23	24.47
33	Helping3_1r	First item helping at T3 (recoded)	46 (34.59%)	1	14	16.09
				2	15	17.24
				3	33	37.93
				4	25	28.74
34	Helping3_2r	Second item helping at T3 (recoded)	46 (34.59%)	1	19	21.84
				2	24	27.59
				3	22	25.29
				4	22	25.29
35	Helping3_3r	Third item helping at T3 (recoded)	46 (34.59%)	1	10	11.49
				2	29	33.33
				3	25	28.74
				4	23	26.44
36	Helping3_4r	Fourth item helping at T3 (recoded)	46 (34.59%)	1	24	27.59
				2	24	27.59
				3	16	18.39
				4	23	26.44

Note. The distribution of the items after recoding into a 4-point scale is shown here with response category 1 = a lot like the negating puppet, 2 = a bit like the negating puppet, combined categories 3 and 4 = like neither/both, a bit like the affirming puppet and category 5 = a lot like the affirming puppet.

S-Table 2. Largest univariate and multivariate modification indexes for fixed (to zero) parameters in the three-dimensional model of MSC at T1

Factor at T1 (latent variable)		Parameter (Item)	*MI*	*EPC*	*SEPC*
SHARING_1	→	Helping1_2r	0.69	1.35	0.27
SHARING_1	→	**Helping1_4r**	**5.87**[a]	**-3.91**	**-0.80**
SHARING_1	→	**Helping1_1r**	**4.12**[a]	**3.47**	**0.79**
SHARING_1	→	Helping1_3r	0.69	-1.11	-0.28
SHARING_1	→	Comforting1_3r	0.71	0.53	0.11
SHARING_1	→	Comforting1_4r	0.97	0.70	0.15
SHARING_1	→	Comforting1_2r	2.98	-1.18	-0.25
HELPING_1	→	Sharing1_3r	0.09	-0.18	-0.10
HELPING_1	→	Sharing1_1r	0.66	-0.61	-0.29
HELPING_1	→	Sharing1_4r	0.54	-0.70	-0.36
HELPING_1	→	Sharing1_2r	2.89	1.49	0.81
HELPING_1	→	Comforting1_3r	2.10	0.47	0.21
HELPING_1	→	Comforting1_4r	0.80	0.33	0.15
HELPING_1	→	**Comforting1_2r**	**4.86**[a]	**-0.80**	**-0.36**
COMFORTING_1	→	Sharing1_3r	0.64	-0.16	-0.11
COMFORTING_1	→	Sharing1_1r	0.79	0.21	0.12
COMFORTING_1	→	Sharing1_4r	0.53	-0.17	-0.11
COMFORTING_1	→	Sharing1_2r	0.22	0.10	0.07
COMFORTING_1	→	Helping1_2r	1.93	-0.39	-0.20
COMFORTING_1	→	Helping1_4r	0.45	0.19	0.10
COMFORTING_1	→	Helping1_1r	1.01	0.28	0.16
COMFORTING_1	→	Helping1_3r	0.64	-0.18	-0.11

Note. MI represents modification index; (S)EPC represents (standardized) expected parameter change; → indicates a factor loading; [a] significant at $\alpha = 5\%$; [b,c] significant at Bonferroni-adjusted $\alpha = 0.05/54 = 0.00093$ for 1-df MIs, or $\alpha = 0.05/27 = 0.00185$ for 2-df MIs.

S-Table 3. Largest univariate and multivariate modification indexes for fixed (to zero) parameters in the three-dimensional model of MSC at T2

Factor at T2 (latent variable)		Parameter (Item)	*MI*	*EPC*	*SEPC*
SHARING_2	→	Helping2_2r	2.75	-1.36	-0.44
SHARING_2	→	Helping2_4r	0.74	-0.71	-0.23
SHARING_2	→	**Helping2_1r**	**5.66**[a]	**2.29**	**0.79**
SHARING_2	→	Helping2_3r	0.36	-0.47	-0.16
SHARING_2	→	Comforting2_3r	1.32	0.74	0.29
SHARING_2	→	Comforting2_4r	0.12	-0.18	-0.06
SHARING_2	→	Comforting2_2r	0.80	-0.43	-0.15
HELPING_2	→	**Sharing2_3r**	**5.70** [a]	**1.26**	**0.60**
HELPING_2	→	Sharing2_1r	0.79	0.43	0.22
HELPING_2	→	Sharing2_4r	3.00	-1.03	-0.46
HELPING_2	→	Sharing2_2r	0.07	-0.14	-0.07
HELPING_2	→	Comforting2_3r	3.85	2.20	0.97
HELPING_2	→	Comforting2_4r	0.10	-0.24	-0.09
HELPING_2	→	Comforting2_2r	2.11	-0.99	-0.40
COMFORTING_2	→	Sharing2_3r	2.93	0.30	0.27
COMFORTING_2	→	Sharing2_1r	0.02	-0.02	-0.02
COMFORTING_2	→	Sharing2_4r	3.70	-0.34	-0.30
COMFORTING_2	→	Sharing2_2r	1.26	0.19	0.18
COMFORTING_2	→	Helping2_2r	1.48	0.44	0.31
COMFORTING_2	→	Helping2_4r	0.32	-0.21	-0.15
COMFORTING_2	→	Helping2_1r	0.28	0.22	0.17
COMFORTING_2	→	Helping2_3r	1.29	-0.39	-0.30

Note. MI represents modification index; (S)EPC represents (standardized) expected parameter change; → indicates a factor loading; [a] significant at $\alpha = 5\%$; [b,c] significant at Bonferroni-adjusted $\alpha = 0.05/54 = 0.00093$ for 1-df MIs, or $\alpha = 0.05/27 = 0.00185$ for 2-df MIs.

S-Table 4. Largest univariate and multivariate modification indexes for fixed (to zero) parameters in the three-dimensional model of MSC at T3

Factor at T3 (latent variable)		Parameter (Item)	*MI*	*EPC*	*SEPC*
SHARING_3	→	Helping3_2r	1.47	-0.65	-0.21
SHARING_3	→	Helping3_4r	0.25	-0.28	-0.09
SHARING_**3**	→	**Helping3_1r**	**4.95**[a]	**1.13**	**0.39**
SHARING_3	→	Helping3_3r	0.07	-0.16	-0.06
SHARING_**3**	→	**Comforting3_3r**	**7.49**[a]	**-1.15**	**-0.42**
SHARING_3	→	Comforting3_4r	2.32	0.69	0.23
SHARING_3	→	Comforting3_2r	2.53	0.67	0.23
HELPING_3	→	Sharing3_3r	2.76	0.42	0.29
HELPING_3	→	Sharing3_1r	2.09	0.32	0.25
HELPING_3	→	Sharing3_4r	0.44	-0.17	-0.12
HELPING_3	→	Sharing3_2r	3.31	-0.49	-0.33
HELPING_3	→	**Comforting3_3r**	**4.38**[a]	**-0.42**	**-0.25**
HELPING_3	→	Comforting3_4r	3.45	0.40	0.22
HELPING_3	→	Comforting3_2r	0.15	0.08	0.05
COMFORTING_3	→	Sharing3_3r	1.85	0.22	0.20
COMFORTING_3	→	Sharing3_1r	0.11	-0.05	-0.05
COMFORTING_3	→	Sharing3_4r	2.09	0.23	0.22
COMFORTING_3	→	Sharing3_2r	3.49	-0.34	-0.31
COMFORTING_3	→	Helping3_2r	1.32	0.20	0.14
COMFORTING_3	→	Helping3_4r	0.13	0.07	0.04
COMFORTING_3	→	Helping3_1r	1.90	0.23	0.17
COMFORTING_3	→	**Helping3_3r**	**4.09** [a]	**-0.34**	**-0.27**

Note. MI represents modification index; (S)EPC represents (standardized) expected parameter change; → indicates a factor loading; [a] significant at α = 5%; [b,c] significant at Bonferroni-adjusted α =0.05/54 = 0.00093 for 1-df MIs, or α = 0.05/27 = 0.00185 for 2-df MIs.

S-Table 5. Longitudinal Measurement Invariance for MSC dimensions

	Invariance model	*n*	χ^2	*df*	*p*	*CFI*	*TLI*	*RMSEA*	*SRMR*
Sharing									
	configural	133	35.79	39	0.617	0.99	0.98	0.02	0.06
	weak	133	42.28	45	0.588	0.98	0.96	0.03	0.07
	strong[a]	*133*	*44.90*	*51*	*0.713*	*0.99*	*0.99*	*0.02*	*0.07*
	strict	133	78.41	59	0.046	0.84	0.82	0.07	0.10
Helping									
	configural	133	46.14	39	0.201	0.96	0.92	0.05	0.06
	weak	133	49.0	45	0.316	0.96	0.95	0.04	0.07
	strong	133	53.56	51	0.376	0.97	0.96	0.03	0.07
	strict[a]	*133*	*59.25*	*59*	*0.466*	*0.99*	*0.98*	*0.02*	*0.07*
Comforting									
	configural	133	14.02	15	0.524	0.99	0.99	0.01	0.05
	weak	133	20.47	19	0.367	0.98	0.97	0.04	0.07
	strong[a]	*133*	*25.98*	*23*	*0.302*	*0.98*	*0.97*	*0.04*	*0.08*
	strict	133	45.35	29	0.027	0.91	0.89	0.07	0.08

Note. The information on the model fit of the different invariance models was specified separately for each dimension. [a] represents the level of invariance

6. Study 3

Longitudinal stability and cross-relations of prosocial behavior and the moral self-concept in young children

Sticker, R. M., Christner, N., Gniewosz, G., Pletti, C., & Paulus, M. (under review). Longitudinal stability and cross-relations of prosocial behavior and the moral self-concept in young children.

Abstract

Children act prosocially very early in life. They help, share or comfort and they differ in their representation of preferences (i.e., moral self-concept) to do so. How stable are such behaviors and how stable is the moral self-concept? And how does the moral self-concept relate to prosocial behavior? In a longitudinal study, we investigated the stability and cross-relations between prosocial behaviors and the moral self-concept. We invited four- to six-year-old children to three measurement points (N = 127, 62 female). Children were mostly White and came from middle class families. We assessed children's helping, sharing, and comforting with established behavioral paradigms and the moral self-concept with a puppet-interview. Results showed moderate stability of both behaviors and moral self-concept across the measurements, with strongest long-term stability for helping behavior and comforting moral self-concept. Moreover, moral self-concept at measurement two predicted prosocial behavior at measurement three. This effect was driven by the sharing dimension. Overall, the study points to stability of individual differences in prosocial behaviors and moral self-concept in early childhood. Moreover, it provides first empirical evidence for a developmental effect of the moral self-concept on prosocial behavior.

6.1 Introduction

Prosocial behaviors are important pillars of communities. Even though they often come with a cost (time or resources), people of all ages and backgrounds show prosocial behaviors (Blake, 2018; Smith et al., 2013). The underlying factors of prosocial behavior remain thus a prevailing topic in developmental research (Bem, 1972; Blasi, 1983; Hardy & Carlo, 2011). One of these factors might be the moral self-concept (MSC; Hardy & Carlo, 2011), which is defined in childhood as children's representation about their preference for prosocial behaviors (Sengsavang & Krettenauer, 2015). That is, having a strong

MSC reflects that children conceive of themselves as someone who engages in prosocial behavior. In line with research on the impact of the self-concept for human behavior (e.g., Marsh & Craven, 2006), it has been proposed that a strong MSC raises the likelihood to engage in prosocial behavior (Young et al., 2012).

Indeed, research showed that adults with a strong MSC act more prosocially (Aquino et al., 2009; Aquino & Reed, 2002). This relation between MSC (or moral identity in adults) and prosocial behavior was confirmed by a meta-analysis including 111 studies (Hertz & Krettenauer, 2016). Developmental literature showed that children also depict a MSC (Bem, 1972; Kochanska et al., 2010; Krettenauer et al., 2013). Yet, so far the relation between MSC and prosocial behavior is barely studied in young children (Marsh, Debus, et al., 2005; Sengsavang & Krettenauer, 2015). Investigating the early MSC in relation to prosocial behaviors is important, as fostering the MSC might help to encourage moral development. Moreover, it is unclear whether in childhood the disposition to behave prosocially and the MSC are individual characteristics that remain stable in time. With respect to the relation between the MSC and behavior, an important question regards how behavior and MSC influence each other: Models such as the self-perception theory or the hierarchical model of the self-concept point toward previous behavior being the bases for future self-concept (Bem, 1972; Marsh & Craven, 2006; Marsh, Ellis, et al., 2002). However, other approaches, such as those focusing on self-consistency, indicate the opposite (i.e., self-concept fosters future behavior; Blasi, 1983). Thus, whether the MSC predicts future prosocial behavior, or vice versa, is unclear. We investigated these questions in a longitudinal study.

6.1.1 Prosocial behaviors and their development

Prosocial behaviors are acts that appear to benefit another person without providing a direct pay-off for the agent (Thuiller, 2007). Prosocial behaviors can be divided in three domains: sharing, helping and comforting (Dunfield & Kuhlmeier, 2013). They firstly manifest around the first to second birthday (see for sharing: Brownell et al., 2009; Dunfield et al., 2011; see for helping: Reynolds et al., 2010; Warneken & Tomasello, 2007; see for comforting: Davidov et al., 2021; Zahn-Waxler et al., 1992; for a review see: Brownell, 2013). Sharing can be defined by distributing own resources to others. Between toddlerhood and early childhood, a shift appears to happen from hardly sharing to more equal sharing (Perugini & Leone, 2009; Smith et al., 2013). Around middle childhood, sharing on average further increases, with interindividual instability (Malti et al., 2016). That means, children's sharing was not related across an interval of three years, thus there was a lack of rank-order stability. The aversion of advantageous inequality, which is theoretically similar to sharing as it requires to refrain from own benefit, appears to remain stable between 4.5 and 5.5 years and correlated across time points (Smith et al., 2013). Yet, this study focused only on one aspect of fairness, leaving the developmental stability of sharing an open question. Sharing, thus, seems to generally increase in childhood, with unclear rank-

order stability of individuals' extent of sharing across time. That means, children who share more than others at one point in time, do not necessarily share more than others at another point in time.

Helping refers to assisting another person in achieving an instrumental goal (Dunfield, 2014). In their first three years, children increasingly engage in instrumental helping (Malti et al., 2007), which might be linked to positive parent-child interactions (Blasi, 1983). Tavassoli and colleagues (2004) report a general increase in helping behavior around early childhood. Findings on the stability of helping behavior indicate high rank-stability during early to middle childhood based on parent- (Malti et al., 2016) and teacher-reports, though the assessed items are quite heterogeneous (some refer to e.g. comforting; Krettenauer & Hertz, 2015). Schachner and colleagues (2020) report behavioral observations, which indicate moderate stability of individuals' quantity of helping behavior over 18 months in early childhood.

Comforting refers to actions that aim to reduce others' negative affect (Dunfield, 2014). In toddlerhood (14 to 36 months) and early childhood, comforting appears to be stable (Christner et al., 2020; Schwartz & Howard, 1984). Empathy-based responding appears to increase in toddlerhood and stabilize in early childhood (Kochanska et al., 2005; Kochanska et al., 2010; Taylor et al., 2013). Comforting appears to increase between five to seven years, with high rank-stability over three years (Krettenauer et al., 2013). Furthermore, sympathy appears to remain stable over a year in five- to seven-year-olds as well (Paulus, 2018). The results point to early childhood as a time in which comforting appears to stabilize.

All in all, research shows stability of comforting behavior (Dunfield, 2014; Edwards et al., 2015; Eisenberg et al., 1999; Kärtner et al., 2014; Paulus, 2014; Taylor et al., 2013). Yet, fewer studies investigated the stability of the other prosocial domains (for sharing: Malti et al., 2016; Williams & Moore, 2016; for helping: Rheingold, 1982). Taken together, previous studies suggest that the different prosocial behaviors might differ in their stability. Yet, little is known on stability of the three different types of prosocial behaviors in early childhood. That means, to which degree do young children maintain their relative level of engaging in prosocial behavior across time? While this question is interesting in itself, it is also crucial to examine in the context of the moral self-concept. Based on the notion that the self-concept builds on own behavior (Marsh et al., 2002; Marsh & Shavelson, 1985), particularly in comparison to others (Dijkstra et al., 2008), some stability in behavior might be required for a self-concept to be constructed. This study aimed at making a novel contribution to the field by systematically investigating the stabilities of sharing, helping, and comforting over time.

6.1.2 Moral Self-Concept and its development

First hints of the MSC emerge around the third and fourth year of life (Callaghan & Corbit, 2018; Kochanska et al., 2010). At that age, children acquire a representation of themselves as good or bad agent based on their experiences with parental rules (Kochanska, 2002). These experiences do not

constitute a concise self-representation, yet. They are rather pieces of a jigsaw puzzle that have not been assembled. It is around early childhood, that children's MSC becomes internally consistent, presenting an assembled puzzle (i.e., similar statements within the moral domain; Kochanska et al., 2010). These findings suggest that early childhood is a central phase for the initial emergence of a MSC.

Like the other self-concept domains, the MSC appears to consist of different dimensions. Krettenauer and colleagues (2013) propose two: the avoidance of antisocial behavior (e.g., not wanting to hurt someone) and preference for prosocial behavior (e.g., wanting to help someone). These dimensions correlated highly, though. A recent study on preschool children found that the MSC appears to be different from other self-concept domains (namely verbal and physical; Zahn-Waxler et al., 1992). Furthermore, the MSC appears to be differentiated according to the three different prosocial domains – helping, sharing and comforting. An additional confirmatory factor analysis replicated these results with a separate, large sample (Dunfield & Kuhlmeier, 2013).

There is research on early predictors of the MSC, such as compliance in parent-child interaction in toddler age predicting MSC in early childhood (Kochanska, 2002; Kochanska et al., 2010). Furthermore, moral emotion attributions appear to correlate with the MSC subdimension preference for prosocial behavior in middle childhood (Krettenauer et al., 2013; Sengsavang & Krettenauer, 2015). Yet, most relevant for the present research question, research on the early stability of the MSC is scarce. That is, nothing is known on the stability of the MSC in early development. Theories suggest that self-concept and behavior are closely intertwined (Bem, 1972; Blasi, 1983; Brunner et al., 2010), with self-concept guiding behavior and being constructed based on previous behavior. Empirical studies show this relation (Marsh et al., 2006 for physical self-concept; e.g., Paulus, 2016; Paulus et al., 2020 for academic self-concept). We focus on these theoretical ideas within the domain of prosociality, assuming that the moral self-concept guides prosocial behavior. Consequently, in order to understand stability and developmental changes of prosocial behavior, it is crucial to investigate stability of the moral self-concept.

Knowledge about the general development of the self-concept might be transferable to the MSC in specific. The self-concept in general appears to be instable around early childhood and to stabilize in middle childhood (Wörle & Paulus, 2019): In early childhood, children show moderate retest stability with a one month interval (Smith et al., 2013). But in a one-year interval assessing sociability, control and assurance, they show low retest reliability (Jia et al., 2016). The stability increases around middle childhood. In one year intervals, five- to seven- and seven- to twelve-year-olds show high stabilities in their non-academic (e.g., peers, appearance) and academic self-concepts (Kant, 1991; Marsh et al., 1998). Putnick and colleagues (1969) assessed scholastic, social and physical self-concept of children longitudinally between four and fourteen years. They found moderate stability between the measurements points. Overall, these results indicate increasing stability of self-concept in shorter rather than longer intervals and from early to middle childhood. As we have reviewed in the previous paragraph, prosocial behaviors appear to become more stable in early childhood, just like different self-

concept domains. Based on the similarity between the structure of the MSC and different domains of prosocial behavior (Hamlin et al., 2007), it remains an interesting question whether stability of the MSC resembles stability of prosocial behaviors. As behaviors stabilize, the MSC should stabilize as well.

6.1.3 Relation between Self-Concept and Behavior

So far, most research on longitudinal relations between self-concept and behavior in childhood stems from research on the academic domain. Research with children finds relations between self-concept and behavior or achievement (Arens et al., 2016; Piaget, 1965; Tomasello, 2009). Studies show different directions of effects: First, scholastic achievement impacts the academic self-concept in early childhood (Arens et al., 2016). Second, the academic self-concept impacts scholastic achievement in adolescence (Kohlberg, 1969). Third, academic self-concept and achievement impact each other in adolescence (Kant, 1902). Thus, there seem to be uni- and bidirectional effects between self-concept and behavior.

Regarding the MSC, there is ample evidence showing relations with prosocial behavior in adults (Aquino & Reed, 2002; Berk, 2011; Hertz & Krettenauer, 2016). The relation between the MSC and prosocial behavior in children is less studied: Kochanska and colleagues (2010) assessed children's internalization of rules at 25, 38 and 52 months, MSC with a puppet-interview at 67 months, and adaptive functioning by parent and teacher rating at 80 months. Children with stronger maternal internalization of rules appear to be better socialized. This relation is mediated by children's MSC. The result shows that MSC positively relates to rule internalization and adaptive social functioning. This result is also supported by Kochanska (2002), but only for boys. The MSC appears to positively relate to prosocial behaviors in middle childhood (White et al., 1978), and negatively relate to parent-reported antisocial behaviors in the same age range (Sengsavang & Krettenauer, 2015).

Importantly, one recent cross-sectional study directly investigates the relation between the different facets of the MSC and different prosocial behaviors (Rizzo et al., 2018). Results show a correlation between self-concept and prosocial behaviors, which is specific for each prosocial dimension: in particular, comforting MSC (MSC-c) correlates with both comforting and sharing behavior, while sharing MSC (MSC-s) correlates with sharing behavior (Smetana, 2006). However, given the correlational approach, this study does not allow to clarify whether the MSC develops as a consequence of prosocial behavior (self-perception; Bem, 1972), whether it leads to prosocial behavior (self-consistency; Blasi, 1983), or whether both directions apply (reciprocal effects; Marsh et al., 2006). First of all, according to the self-perception account (Bem, 1972), experiences of behavioral skills foster the development of the self-concept. According to this account, agents implicitly infer personality traits based on the perception of their own behaviors. The agents get to know their own personality as they watch themselves act (e.g., share, help, or comfort). Based on their behaviors, the agents attribute certain aspects to their selves. For example, watching oneself donate, impacts the way one views oneself. This account also resonates with the theoretical view that children's self-representations build on parental

narratives (Doherty & Corsini, 1976), that is, children internalize own experiences and other's narratives of their behaviors. Evidence in support of this account comes from research in early childhood, where math achievement predicts math self-concept over the course of one year (Arens et al., 2016) and cognitive functioning predicts the academic self-concept four years later (Malti, Gasser, et al., 2009). Also, school adjustment appears to impact later academic self-concept (Sotiriou & Zafiropoulou, 2003). Thus, the self-perception account appears to be the dominant direction in early to middle childhood.

Second, according to the self-consistency theory, the self-concept should impact subsequent behaviors or achievements (Blasi, 1983; see self-determination theory for a more recent account, Fu et al., 2016). If a characteristic represents a central part of the self, one tends to act accordingly. That is, if being helpful is central to children's selves, they will be eager to help if the opportunity presents itself. Evidence for this account comes from research on high school students, whose self-concept appears to foster their academic achievement (Meißner et al., 2016; Prince & Nurius, 2014). The social self-concept in middle to late childhood appears to predict positive relationships with peers (Hauser, 2006). The physical and social self-concept also appear to impact subsequent participation in physical activities in late childhood (Tomasello & Vaish, 2013). The academic self-concept appears to impact teacher-rated academic effort in late childhood (Spelke, 2000). Evidence for the self-consistency account thus, mostly stems from middle to late childhood.

Finally, according to the reciprocal effects account, both directions might coexist (i.e., self-concept and behavior might foster each other). Studies show the reciprocal effect concerning the academic (De Waal et al., 2006; Spelke, 2000) or physical domain from middle childhood to adolescence (Marsh et al., 2006). That means, the academic achievement predicts academic self-concept, which in turn predicts academic achievement (see Engelmann et al., 2013), or that both the self-concept and the behavior predict subsequent self-concept and behavior (here the physical domain; Marsh et al., 2006).

Current theoretical and empirical data on the development of self-concept in early childhood suggest the self-perception direction (Arens et al., 2016; also in middle childhood; Newman, 1984; Rapp et al., 2019). In middle childhood, the reciprocal effect appears to emerge, with the self-concept gaining more impact on achievement (Hepach et al., 2019). As research on the longitudinal relations between MSC and prosocial behavior is lacking, we make a first empirical step in investigating this. Early to middle childhood appears to be a central phase for the stabilization of prosocial behavior and the self-concept, which is why we focused on this age range.

6.1.4 The present study

The aim of the current longitudinal study was manifold. First, we aimed at exploring in greater detail the stability of three domains of prosocial behavior, that is, helping, sharing, and comforting. Second, we explored the stability of young children's MSC, focusing on both the general MSC as well as its domain-specific components. Third, we explored longitudinal relations between the MSC and prosocial

behavior, thereby informing current theorizing about the directionality of the relation between the MSC and prosocial behavior.

To investigate these research questions, we conducted a longitudinal study with three measurements. We tested four- to six-year-old children at the first measurement. We chose this age range, because developmental theories suggest the MSC to become a coherent representation of oneself as a good or bad agent around that age (Kochanska et al., 2010). As we were interested in long- and short-term stability, we included three measurement points with different intervals – 18 and three months. Based on the reported stabilities of other self-concept domains and prosocial behaviors, we hypothesized that prosocial behavior would be highly stable over a short time and moderately stable over a longer time. As self-concept stabilizes around early childhood, we expected lower stability for the MSC (i.e. moderate stability for a short period of time and low stability for a long period of time). At each measurement point, we assessed the MSC with an adapted puppet-interview (Sticker et al., 2021) that targets the three dimensions of the MSC (helping, sharing, comforting). In addition, we assessed sharing, helping and comforting-related aspects in behavioral tasks, in order to achieve a differentiated assessment of these dimensions (see Dunfield & Kuhlmeier, 2013).

Particularly, we examined stability of the three behavioral dimensions separately. That means, we investigated the relation within each behavioral dimension across time. Research on comforting suggests some stability, whereas little is known on helping and sharing behaviors. As research on the stability of self-concepts is inconclusive, we do not have a specific hypothesis on the stability of the MSC in childhood.

Concerning the relations between MSC and behavior, we can formulate three different hypotheses: according to the self-perception theory, previous prosocial behavior should influence subsequent MSC. This would suggest that children construct representations about themselves from own early experiences with prosocial situations. According to the self-consistency account, previous MSC should influence subsequent prosocial behavior. This would suggest that children first form a cognitive representation of their prosociality, which might be shaped by other factors than children's own prosocial behavior. Finally, according to the reciprocal effect account, behavior and self-concept should affect each other. That means, behaving prosocially would lead to a strong MSC, which in turn would predict future prosocial behavior. We hypothesized the self-perception account to be dominant from the first to the second measurement (that is, when the self-concept emerges and stabilizes), and the self-consistency account to be prevalent from the second to third measurement (that is, when a self-concept is acquired).

Gross and colleagues (2017) suggest to investigate prosocial behaviors on two levels: first the domain level (i.e., prosocial behavior and MSC), second the dimension level (i.e., helping, sharing and comforting within the prosocial behaviors and MSC). The first level investigates, if there are significant relations between the variables at all (here: a relation between the averaged prosocial behaviors and MSC). The second level provides a more detailed view, focusing on the specific dimensions such as

helping. Our study followed this recommendation. In line with this, we examine both relations on the domain level (i.e., prosocial behavior and MSC in general) and relations on the individual dimensions within prosocial behavior and MSC.

6.2 Method

Participants

The full sample at the first measurement included 127 German speaking children aged 50-83 months (with age distributed evenly between the ages). At the second measurement, 94 children participated, and at the third measurement, 87 children participated. Detailed information on the sample can be found in Table 14. Over the consecutive measurements, attrition was due to participants ceasing to participate and families moving away. We received the mail addresses from the local natal registry. About 5% of parents responded to our request. The child's caregiver gave written informed consent for participation. The study was approved by the faculty's ethics committee. Parents received a compensation for their travel expenses and each child received a gift.

Table 14. Age in Months and Gender Distribution of Sample at the three Measurements

Measurement	Interval in months	n	Age M(SD)	Range	Girls/Boys
1		127	64.77 (9.86)	50-83	62/65
2	+18	94	82.02 (9.83)	67-100	44/50
3	+3	87	84.9 (9.73)	70-103	38/47

Procedure

At the first measurement point (t1), each child was tested individually in a quiet room by one of four female experimenters. Assessments took place at the labs of a German university. The experimental session was videotaped for later coding. All children performed the tasks in the same order (i.e., sharing, puppet-interview, helping, implicit association task, comforting, a MSC-ranking). At t1, we also included an implicit association test (IAT; Cvencek et al., 2011). Furthermore, children participated in an interview for emotion attribution and moral reasoning (Malti et al., 2016) at measurement 2 (t2) and measurement 3 (t3) and a verbal intelligence test (t3, PPVT; Carpendale et al., 2013). The IAT, emotion attribution task and intelligence test are not part of the current questions as they were not longitudinally assessed, and will thus not be further discussed. Families were invited three times; 18 months after the first session and three months after the second session. We choose a long and a short interval in order to investigate stability across different times. As outlined in the introduction, stabilities can vary in relation to the time that has elapsed, with higher stabilities typically reported across shorter time spans.

We employed these different intervals as means to investigate short- and long-term stabilities. The results of the cross-sectional analysis of t1 and the IAT are reported elsewhere (Sticker et al., 2021) as this study focuses on the longitudinal relations across all three measurement points.

Measures

Behavioral Tasks. We assessed three different behavioral tasks: sharing, helping, comforting. In the following, we first describe the tasks that were employed at the first assessment. Consecutively, we describe the tasks that differed between the measurements.

Sharing: The task was based on Smith and colleagues (2013). Children decided how many out of four stickers they wanted to share with an absent, unfamiliar child. The recipient child was symbolized by a photograph of a gender-matched child of similar age. The children could place the number of stickers they wanted to share in a box for the other child. The experimenter said: "Here are 4 stickers. These are yours now. You can share them with another child. [Experimenter places picture of other child] This is Nina/Nico [depending on gender of participant]. You can give Nina/Nico one, two, three, four or no sticker. You can decide by yourself. The stickers for Nina/Nico belong in this box. When you are done, close the box." The number of shared stickers, counted after the testing, served as a measure of sharing behavior.

Helping: Helping behavior was assessed by children's reactions to instrumental need of the experimenter in a competitive situation. The competitive situation was supposed to make the instrumental helping task more difficult for the child, in order to circumvent ceiling effects. The child tried to finish a puzzle before the experimenter finished a painting. In the middle, the experimenter dropped ten pens, hindering the experimenter to continue. Dropping items was followed by "Oh" (seven seconds pause), "Now I can´t keep on drawing" (seven seconds pause), "Ok, then I will quickly pick them up". If the child helped at any point, no further prompts followed. For coding, we relied on an adaptation of an established helping coding scheme (Newton et al., 2014; Smetana, 2006) by putting the observable behaviors in an order of helpfulness. Child behavior was scored on a 4-point scale, 0 = no reaction, 1 = short help (including advice such as "You have to pick them up"), 2 = moderate help (picking up a few items, or only after the second prompt), 3 = intensive, immediate help (picks up all the items, right away). To ensure interrater reliability, a trained assistant coded 15% of the behaviors in addition to the first coder. We combined reliability calculation of t1, t2 and t3. The ICC was .96 with a 95% CI [.93 to .98], $F(46, 46) = 47.55$, $p = .001$.

Comforting: We assessed comforting and comforting-related aspects (i.e., other-oriented concern) by children's reaction to emotional distress of the experimenter following Young and colleagues (1999). During a ball game, the experimenter injured her foot, accompanied with a loud banging noise. The experimenter said "Ow" with a distressed facial expression, rubbing the foot, whining, (seven seconds pause) "I hurt my foot!" (seven seconds pause) "Ah, I am better now." To code comforting we used the global empathy scale following Young and colleagues (1999). The global

empathy scale comprises prosocial behavior and emotional concern. It informs "about the overall quality and strength of empathic responding" (Young et al., 1999, p. 1192). As requirements for other-oriented concern are less circumscribed than for sharing and helping, this comprehensive scale enables a better overview of the complex set of possible behaviors. Child behavior was scored on a seven-point scale, 0 = not involved at all (e.g., handling a toy), 2 = slight concern (e.g., tense demeanor), no prosocial behavior, 4 = moderate concern (e.g., change in demeanor from relaxed to tense face and body), slight prosocial behavior (e.g., "Yes, that hurts"), 6 = strong concern (e.g., very worried facial expression), prosocial behavior (e.g., blowing on the injured body part). Numbers in between are given, if only one aspect is depicted such as slight concern and no prosocial behavior, which would result in three points. That means, if a behavior was coded as 3, the child might have validated the experimenters feeling (prosocial behavior), but shown no concern, or the child might have shown moderate concern (empathy), but no prosocial behavior. We calculated the reliability over t1, t2 and t3 combined. The ICC was .82 with 95% CIs [.70 to .90], $F(45, 45) = 10.32$, $p = .001$.

Subsequent measurement points (t2 & t3): The procedure of the behavioral tasks at t2 was generally the same as at t1, only using slightly different materials. In the sharing task, only the stickers that could be shared and the picture of the recipient differed (still depicting an age- and gender-matched child). In the helping task, we used a different puzzle. In the comforting task, the experimenter hurt her hand during another ball game. For t3, piloting with a different sample showed that children remembered the tasks from t2, probably because the interval was quite short. This was particularly problematic for the behavioral tasks in which the experimenter experienced "accidents" (helping and comforting). Hence, we prepared slightly different helping and comforting tasks for t3 to prevent suspicion, still measuring the same construct.

Helping: At t3, the child tried to finish a "painting by numbers"-game against the running clock within 5 minutes. At half-time, the experimenter dropped items (ten building blocks). The experimenter said "Oh" (seven second pause); "That is so much work now" (seven second pause). "Ok, then I will quickly pick them up". If the child helped at any point, no further prompts followed

Comforting: While transitioning from a task to a break, the experimenter pinched her finger in a clipping board with a loud banging sound. The experimenter said "Ow" with a distressed facial expression, rubbing the finger, whining, (seven seconds pause) "I pinched my finger!" (seven seconds pause) "Ah, I am better now."

Moral Self-Concept Puppet-Interview. We adapted the self-concept puppet-interview from Krettenauer and colleagues (2013) and Marsh, Ellis and colleagues (2002) in order to assess children's self-concept. We addressed the moral domain with three items each about helping (MSC-h), sharing (MSC-s), and comforting (MSC-c), resulting in nine moral items overall. In each trial, two identical puppets gave opposing statements (e.g., "I like to help doing the dishes" vs. "I don´t like to help doing the dishes"). Then the experimenter asked: "And you? Are you more like this puppet or like this puppet?" The child chose the puppet they identified with most. Next, the experimenter asked "Are you

a bit or a lot like this puppet?". The puppet-interview ranged on a five-point scale: 1 = a lot like negating puppet, 2 = a bit like negating puppet, 3 = like both, 4 = a bit like the affirming puppet, 5 = a lot like the affirming puppet. We averaged the items of the puppet-interview according to their dimensions into MSC-s (sharing), MSC-h (helping), MSC-c (comforting).

We built a global score for prosocial behavior averaging the three behavioral tasks (helping, sharing, comforting) after the codes were z-transformed. Additionally, we averaged the z-transformed scores of the puppet-interview to a global MSC-score.

Analysis. In order to investigate our hypotheses, we conducted manifest cross lagged models (CLM) with the R Studio package lavaan (Turiel, 2015). This method allowed us to examine stabilities as well as directional effects between self-concept and behavior over time and was also suitable for rather small samples as in behavioral studies with young children. Piaget (1965) and Schreiber and colleagues (1969) state that an appropriate sample size when conducting a path analysis is 10 times the parameters considered in the study. In the models specified here, a total of 21 parameters are to be estimated with all regression paths, correlations, and residual variances (that is, calculated across all measurement points). The sample includes n = 306 children (calculated across all measurement points; approx. 100 children per measurement point) and exceeds thus the sample size that can be considered as sufficient. We used the maximum likelihood estimator (ML). Further, the full information ML adjustment method (Hamlin et al., 2007) was applied to account for missing data (across time). In order to ensure that missing data were at random, we conducted a Little's MCAR test within and between measurement points. All missing data was missing at random (for t1: $\chi 2$ = 357.51, df = 379, p = .780; for t2: $\chi 2$ = 373.82, df = 354, p = .225; for t3: $\chi 2$ = 133.02, df = 129, p = .386 and for all measurements combined: $\chi 2$ = 2498.08, df = 2504 p = .530).The advantage of the underlying analysis was that one can examine the stability of variables over time (e.g., prosocial behavior at t1 to prosocial behavior at t2 to prosocial behavior at t3) while modeling the interrelations between different constructs (e.g., MSC at t1 to prosocial behavior at t2 and prosocial behavior at t1 to MSC at t2). Finally, children's age served as covariate in all analyses to control for age-related differences across measurements. Thus, age related effects were partialed out of the equations, so that the relations in the models are tested, while controlling for age effects.

Based on this, different models were specified: *First*, given findings that children might include representations of abstract traits (Engelmann et al., 2018), we calculated a "general" Model (Model 1), including the global MSC-score and a global prosocial behavior-score (domain level). *Second*, we calculated "specific" models by specifying the same model separately for each dimension (dimension level, Model 2a, b, c: sharing, helping, comforting). For all models, values of the same variable at the previous measurement point (e.g., global score MSC t1) and the other variable (e.g., global prosocial behavior-score t1) predicted the values of a variable at a later measurement point (e.g., global score MSC t2). In this way, both the stability of the moral self-concept and prosocial behavior (relations within each variable over time) and the reciprocity (relations between different variables over time) were

considered. With this method of analysis, we can thus, first, test the stability of prosocial behavior, second, test the stability of the moral self-concept, and third, examine cross-relations between behavior and self-concept. The latter point allows us to test the self-perception, self-consistency, and reciprocal effects account. The different models (global model; dimensional models) serve to investigate stabilities and cross-relations both on a global level and on the dimensional levels of sharing, helping, and comforting. Further, we used children's age (t1) as predictor for all variables at each measurement point. Finally, we specified the correlations between different variables at the same time (e.g., global score MSC t1 and global score prosocial behavior t1)

This study was not preregistered. The data that support the findings of this study are openly available on OSF at https://osf.io/d64fz/?view_only=8665dc853a61424ea97df08ac87522d1.

6.3 Results

6.3.1 Descriptive analyses

Table 15 displays means and standard deviations of MSC and prosocial behavior. The averages show that we avoided ceiling effects in the prosocial behavior measures, as children showed on average low intensity of prosocial behavior. For descriptive purposes, a zero-order correlation matrix of all measures at t1 to t3 is presented in Table 16. We report both original significance levels and significance after applying Benjamini-Hochberg correction to control for false discovery rate. Different prosocial behaviors within each measurement point showed moderate to minimal correlations (*r*s ranging from .15 to .44). Other-oriented concern and helping correlated positively at all measurement points, while sharing correlated significantly with the other behaviors only at t2. Different domains of the moral self-concept were weakly to moderately interrelated within measurement points (*r*s ranging from .20 to .46).

Table 15. Means (Standard Deviations) of Prosocial Behavior and Moral Self-Concept

	t1		t2		t3	
Dimension	*n*	*M (SD)*	*n*	*M (SD)*	*n*	*M (SD)*
Prosocial Behavior						
Sharing	127	0.85 (1.04)	94	1.16 (0.88)	87	1.11 (0.91)
Helping	123	1.20 (1.28)	91	1.36 (1.31)	85	0.88 (1.23)
Comforting	126	2.07 (1.23)	89	2.52 (1.76)	85	2.21 (1.48)
Moral Self-Concept	125	3.64 (0.76)	94	3.62 (0.78)	87	3.55 (0.76)
Sharing	125	4.03 (0.90)	94	4.13 (0.85)	87	4.08 (0.71)
Helping	125	3.57 (1.15)	94	3.16 (1.12)	87	3.16 (1.16)
Comforting	125	3.32 (1.20)	94	3.56 (1.11)	87	3.42 (1.17)

Note. The range for sharing behavior was 0-4, for helping behavior 0-3, and for comforting 0-6. MSC ranges 1-5

Table 16. Pearson Correlation with pairwise deletion of averaged prosocial behaviors and moral self-concept over three measurement points

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
Prosocial Behavior																	
1. Sharing T1																	
2. Sharing T2	.15																
3. Sharing T3	.13	.67$^{***\circ}$															
4. Comforting T1	.17	.13	-.03														
5. Comforting T2	.16	.31$^{**\circ}$	.25*	.33$^{**\circ}$													
6. Comforting T3	.18	.08	.17	.27*	.35$^{**\circ}$												
7. Helping T1	.15	.02	-.16	.24$^{**\circ}$	.21	.15											
8. Helping T2	.13	.38$^{***\circ}$	.28$^{**\circ}$	.27*	.44$^{***\circ}$	.19	.43$^{***\circ}$										
9. Helping T3	-.10	.17	.27*	.08	.31$^{**\circ}$	.41$^{***\circ}$	.23*	.57$^{***\circ}$									
Moral Self-Concept																	
10. Sharing T1	.18*	.00	.07	.07	.03	-.08	-.09	.09	-.18								
11. Sharing T2	.16	.36$^{***\circ}$	.44$^{***\circ}$	-.04	.20	.14	-.14	.09	.11	.07							
12. Sharing T3	.11	.27*	.26*	-.12	.13	.06	.06	.14	.06	.16	.45$^{***\circ}$						
13. Comforting T1	.23$^{*\circ}$	.19	.18	.13	.16	.19	.06	.13	.07	.20*	.21	.18					
14. Comforting T2	.13	.40$^{***\circ}$	.28$^{**\circ}$	.12	.11	.19	.03	.05	.08	.01	.38$^{***\circ}$	.40$^{***\circ}$	.27*				
15. Comforting T3	.14	.20	.29$^{**\circ}$	.07	.14	.29$^{**\circ}$	.02	.08	.16	.05	.16	.46$^{***\circ}$	.30$^{**\circ}$	.67$^{***\circ}$			
16. Helping T1	-.09	-.01	.05	.03	-.02	-.06	.01	.05	-.10	.23$^{**\circ}$	.09	-.10	.25$^{**\circ}$	.02	-.07		
17. Helping T2	-.03	.22*	.22*	.01	.08	-.05	-.05	.22*	.14	.10	.41$^{***\circ}$	.40$^{***\circ}$	.25*	.30$^{**\circ}$	.31$^{**\circ}$	.21	
18. Helping T3	.03	.11	.07	-.09	.08	-.07	.01	.18	.11	.05	.18	.36$^{***\circ}$	.25*	.23*	.24*	.20	.64$^{***\circ}$

Note. Number behind T indicates measurement point.

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

° significant when applying Benjamini-Hochberg correction to control the false discovery rate at 5%

6.3.2 Inferential Analyses.

Global Score. We conducted a CLM to address stabilities of prosocial behavior and MSC over time and cross relations between the constructs. The first model on the global scores showed an acceptable model fit: $\chi^2 = 1.68$, df = 4, $p = .795$. Figure 4 depicts the relations for the global-score of prosocial behavior and MSC with age at t1 as covariate (model 1). The results revealed stability between t1 and t2, behavior: $\beta = .28$, $SE = .10$, $p = .007$; MSC: $\beta = .25$, $SE = .11$, $p = .030$ and between t2 and t3, behavior: $\beta = .42$, $SE = .10$, $p = .001$; MSC: $\beta = .70$, $SE = .09$, $p = .001$. All relations are depicted in Table 17. Correlations between prosocial behavior and MSC within the same measurement time were clearly present at t2 ($\beta = .33$, $SE = .10$, $p = .001$), and not significant at t1 and t3. Most importantly, the interrelation between MSC and prosocial behavior revealed that MSC of t2 predicted prosocial behavior at t3, $\beta = .21$, $SE = .10$, $p = .043$. Finally, the covariate age related positively to prosocial behaviors at t1, $\beta = .24$, $SE = .01$, $p = .026$, and t2, $\beta = .30$, $SE = .01$, $p = .004$.

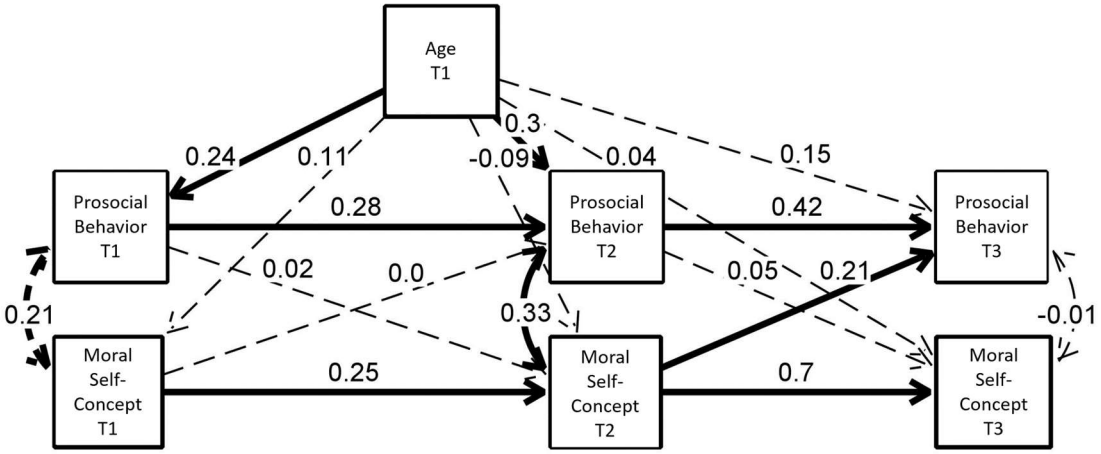

Figure 3. Model 1. Results of CLM for longitudinal relations between prosocial behavior and Moral Self-Concept. T1 indicates measurement point 1, T2 = measurement point 2, T3 = measurement point 3. Horizontal arrows indicate stability over time. Cross arrows indicate cross relations between behavior and MSC and vice versa. Arrows going both directions indicate correlations at the same measurement point.

Note. Dashed lines = n.s., dashed & bold lines: $p < .10$, bold lines: $p < .05$

Table 17. Standardized path coefficients, standard errors and p-values of Model 1

Relation	β	SE	p
Prosocial Behavior T1 – Prosocial Behavior T2	.27	.10	.007
Prosocial Behavior T2 – Prosocial Behavior T3	.42	.10	.000
Prosocial Behavior T1 – Moral Self-Concept T2	.02	.10	.839
Prosocial Behavior T2 – Moral Self-Concept T3	.05	.09	.578
Moral Self-Concept T1 – Moral Self-Concept T2	.25	.11	.030
Moral Self-Concept T2 – Moral Self-Concept T3	.70	.09	.000
Moral Self-Concept T1 – Prosocial Behavior T2	.00	.11	.982
Moral Self-Concept T2 – Prosocial Behavior T3	.21	.10	.043
Prosocial Behavior T1 – Moral Self-Concept T1	.21	.10	.069
Prosocial Behavior T2 – Moral Self-Concept T2	.33	.10	.001
Prosocial Behavior T3 – Moral Self-Concept T3	-.01	.06	.834
Age – Prosocial Behavior T1	.24	.01	.026
Age – Prosocial Behavior T2	.30	.01	.004
Age – Prosocial Behavior T3	.15	.01	.123
Age – Moral Self-Concept T1	.11	.01	.328
Age – Moral Self-Concept T2	-.09	.01	.432
Age – Moral Self-Concept T3	.04	.01	.656

Note. T refers to the measurement point: T1 = measurement point 1, and so on.

Domain-specific scores. Before getting into a detailed overview over the stability, we compared the means of the behaviors over time, in order to evaluate changes within the domains. A paired t-test showed no significant changes in the means from t1 to t2: helping $t(81) = -0.32$, $p = .749$, comforting $t(82) = 1.52$, $p = .131$, sharing $t(87) = 1.62$, $p = .109$. From t2 to t3, helping behavior decreased significantly, $t(81) = -3.50$, $p = .001$. We did not find a difference for comforting behavior: t2 to t3, $t(79) = -1.35$, $p = .182$ or sharing behavior: t2 to t3, $t(85) = 0.74$, $p = .459$. Correcting for multiple testing via Bonferroni correction ($p < .008$), the difference in the helping tasks remained significant.

In order to account for claims that prosocial behavior is heterogeneous (Dunfield & Kuhlmeier, 2013), we conducted further CLM for each dimension individually. Figure 5 depicts the results of the three separate analyses for the dimension sharing, helping, comforting of prosocial behavior in relation to the corresponding MSC (Model 2a, b, c). The global model fit for the models were good: model 2a ($\chi^2 = 1.62$, $df = 4$, $p = .806$), model 2b ($\chi^2 = 3.85$, $df = 4$, $p = .426$) and model 2c ($\chi^2 = 5.66$, $df = 4$, $p = .226$). The most relevant findings for the three models were as follows:

Model 2a - Sharing: The stability coefficients for sharing behavior and MSC-s were significant for t2 to t3, for behavior: $\beta = .57$, $SE = .09$, $p = .001$; MSC-s: $\beta = .47$, $SE = .11$, $p = .001$, and not between t1and t2. Inspecting the correlation coefficients between MSC-s and sharing behavior within

one time point showed significant relations for t1, β = .26, *SE* = .13, *p* = .045, and t2, β = .27, *SE* = .10, *p* = .007. MSC-s at t2 predicted sharing behavior at t3, β = .24, *SE* = .09, *p* = .010. Finally, children's age at t1 related to MSC-s at t1, β = .26, *SE* = .01, *p* = .019 (see Table 18).

Model 2b - Helping: Helping showed a somewhat different pattern. It appeared to be stable over t1 to t2, behavior: β = .40, *SE* = .11, *p* = .001; MSC-h: β = .21, *SE* = .12, *p* = .083, and t2 to t3, behavior: β = .45, *SE* = .11, *p* = .001; MSC-h: β = .69, *SE* = .10, *p* = .001. Further, helping behavior and MSC-h correlated with each other at t2, β = .32, *SE* = .10, *p* = .002. Finally, children's age was significantly associated with helping behavior at t1, β = .24, *SE* = .01, *p* = .033 and t2, β = .23, *SE* = .01, *p* = .027.

Model 2c- Comforting: Similar to the results pattern for helping, comforting and MSC-c showed significant stability across time, especially between t2 and t3, behavior: β = .28, *SE* = .12, *p* = .017; MSC-c: β = .75, *SE* = .09, *p* = .001. For t1 and t2 only the MSC-c variable was stable, MS-c: β = .30, *SE* = .11, *p* = .007. Furthermore, we found a correlation between comforting and MSC-c at t1, β = .35, *SE* = .13, *p* = .006. Children's age at t1 related to comforting at t1(β =.34, *SE* = .01, *p* = .002) and t2 (β = .38, *SE* = .01, *p* = .001).

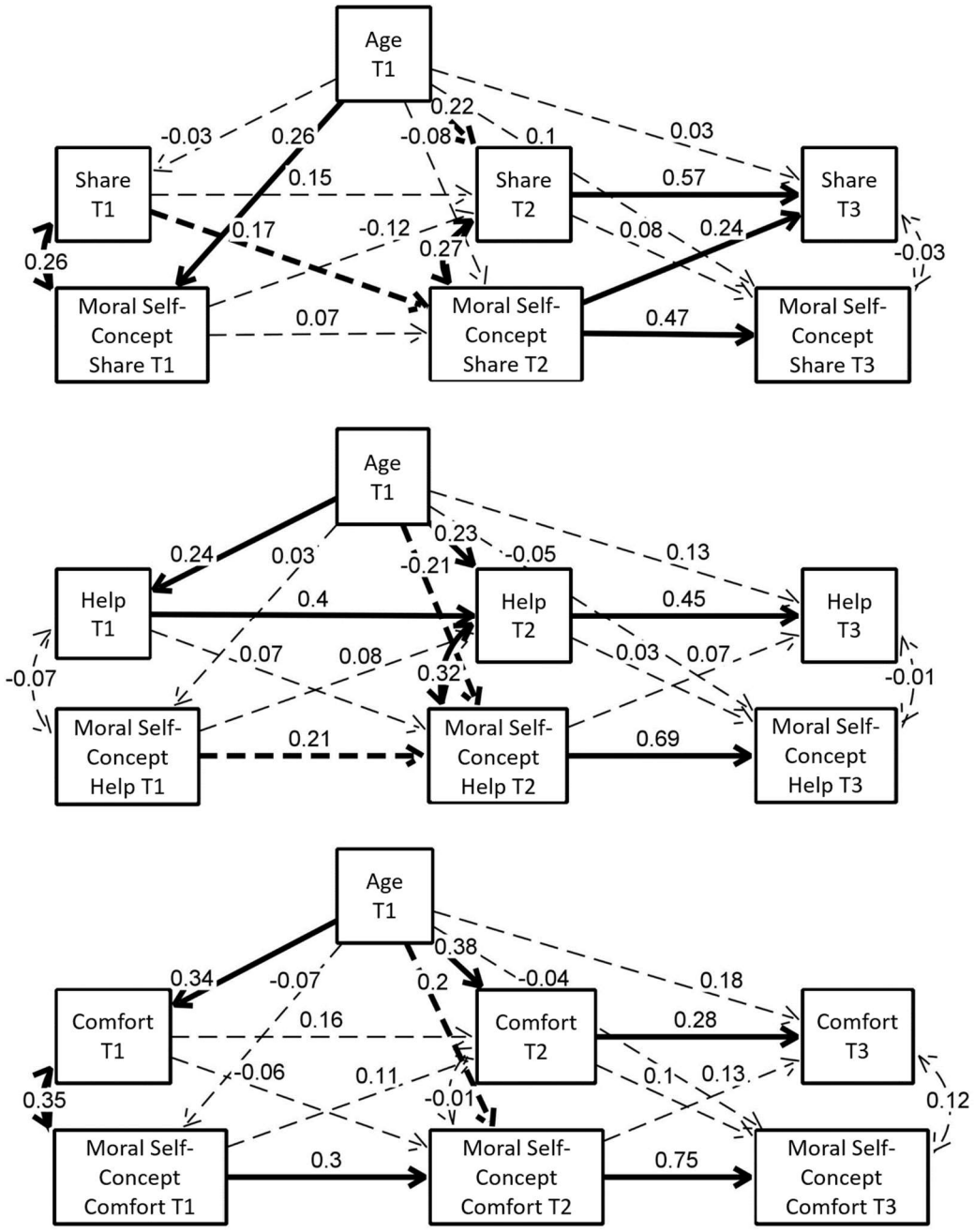

Figure 4. Model 2a, b, c. CLM for longitudinal relations of MSC teased in sharing, helping, comforting dimensions and the three prosocial behaviors, with age as covariate. Horizontal arrows indicate stability over time. Cross arrows indicate cross relations between behavior and MSC and vice versa. Arrows going both directions indicate correlations at the same measurement point.

Note. Dashed lines = n.s., dashed & bold lines: $p < .10$, bold lines: $p < .05$

Table 18. Relations of Behavior and MSC over time, as indicated by standardized path coefficients, standard errors, and p-values of Model 2a, b, c

	Share			Help			Comfort		
Relation	β	SE	p	β	SE	p	β	SE	p
Behavior T1 – Behavior T2	.15	.10	.152	.40	.11	.000	.16	.12	.174
Behavior T2 – Behavior T3	.57	.09	.000	.45	.11	.000	.28	.12	.017
Behavior T1– Self-Concept T2	.17	.10	.073	.07	.11	.562	-.06	.11	.591
Behavior T2 – Self-Concept T3	.08	.11	.464	.03	.10	.743	.10	.09	.272
Self-Concept T 1 – Self-Concept T2	.07	.10	.498	.21	.12	.083	.30	.11	.007
Self-Concept T 2 – Self-Concept T3	.47	.11	.000	.69	.10	.000	.75	.09	.000
Self-Concept T1– Behavior T2	-.12	.11	.301	.08	.11	.470	.11	.11	.318
SC2 – Behavior T3	.24	.09	.243	.07	.11	.557	.13	.11	.125
Behavior T1 – Self-Concept T1	.26	.13	.045	-.07	.10	.518	.35	.13	.006
Behavior T2 – Self-Concept T2	.27	.10	.007	.32	.10	.002	-.01	.10	.930
Behavior T3 – Self-Concept T3	-.03	.07	.645	.07	.07	.921	.12	.08	.148
Age – Behavior T1	-.03	.01	.764	.24	.01	.033	.34	.01	.002
Age – Behavior T2	.22	.01	.054	.23	.01	.027	.38	.01	.001
Age – Behavior T3	.03	.01	.765	.13	.01	.246	.18	.01	.128
Age – Self-Concept T1	.26	.01	.019	.03	.01	.770	-.07	.01	.543
Age – Self-Concept T 2	-.08	.01	.509	-.21	.01	.078	.20	.01	.022
Age – Self-Concept T3	.10	.01	.306	-.05	.01	.641	-.04	.01	.705

Note. Behavior and Self-Concept refer to the dimension of the columns. β = standardized path coefficient, SE = standard errors, p = p-value

6.4 Discussion

The present study aimed at investigating the developmental stability of three key domains of prosocial behavior (helping, sharing, comforting) and the respective dimensions of children's moral self-concept (MSC). Moreover, we analyzed the direction of the relation between MSC and prosocial behavior, as suggested by the different theories (self-perception, self-consistency, reciprocal effects). To investigate these questions, we conducted a longitudinal study with four- to six-year-old children whom we reinvited 18 and again three months later. Results of cross lagged models showed that MSC and prosocial behavior show mixed stability over a short and long period of time. Helping showed high stability across all measurement points. Yet, sharing and comforting were only stable for a short time

period. With respect to the self-concept, the comforting self-concept showed highest stability, whereas the sharing self-concept was only stable across a short time period. This study, thus provides first empirical evidence on some stability of the MSC in young children. Moreover, we found a relation from MSC at t2 to prosocial behavior at t3. In line with self-consistency theory, our study provides first evidence for a directional developmental effect of the MSC on prosocial behavior.

6.4.1 The stability of prosocial behaviors: helping, sharing, and comforting

First, we examined the stability of helping, sharing, and comforting. Looking at the results in detail, we investigated these behaviors separately, as they are assumed to constitute different domains and show different developmental pathways (Dunfield et al., 2011; Malti et al., 2016). This assumed independence of the three dimensions is partly supported by our findings as well. Correlations between the dimensions of prosocial behavior revealed no coherent pattern within measurement points as they ranged from very low to medium. This pattern of results, while indicating higher coherence than has been reported from studies with infants and toddlers (Dunfield, 2014; Hardy & Carlo, 2011), partly supports the independence of prosocial domains.

The means of the prosocial behaviors do not change over time (except for helping once). This finding goes beyond research by Côté and colleagues (2002), who reported high mean stability within their prosocial scale. Using the cross-lagged model, we found high stability for sharing behavior over the short but not the long interval. In an observational setting, Smetana (2006) found stability of aversion to advantageous inequality over six months, but not for disadvantageous inequality. These results, in line with ours, show how complex the development of sharing behavior is. It seems, sharing in early childhood is stable for three to six months, when it concerns costs to the self (here: costly sharing or rectifying advantages inequality), and becomes less stable over a longer period of time. As sharing behavior strongly relates to normative development and fairness considerations (Harter, 2015; Krettenauer et al., 2013; Malti & Latzko, 2010), it would be interesting to assess to which extent developmental changes in normative views could explain stability and instability in sharing behavior. The finding that stability differs for different types of inequality (Harter, 2015) hints to this possibility.

For helping behavior, we found stability over the long and short interval. Schachner and colleagues (2014) found marginal correlations from four- to six-years. We extended this work by examining short- and long-term stability. Stability of helping behavior seems to be high over short and long intervals, only slightly decreasing across an interval of one to two years. The length of the interval could explain why Schachner and colleagues (2018) also found only moderate stability. Thus, it seems that the likelihood to engage in helping is a stable characteristic in young children.

Comforting was stable over the short period and not the long period. Hence, the finding on the long period indicates lower stability in childhood than hypothesized. Similarly, a study with 14- to 20-months-olds showed low but significant stability of empathy (James, 1890). Yet, our results show lower

stability than previous findings that used a multi-measure approach: High-stability of sympathy was shown for five- to seven-year-olds over one to three years (Gergen, 1991; Harter, 2015). Note, that following Young and colleagues (1999) other-oriented concern was conceptualized in a broad manner in this study, meaning that it comprised both active comforting behavior and clear indication of other-oriented concern. Children's average comforting response was low. That means, most children who engaged in comforting did so by showing concern.

All in all, we found stability across all prosocial behaviors over the short interval. Only helping showed high stability over the long interval. These results are in line with considerations by Dunfield and colleagues (2011), who have argued that the prosocial behaviors develop differently. Different developmental factors impact the three prosocial behaviors. Helping behavior develops early, it might require little sophisticated skills, and might be driven by situational cues (Harter, 2015). Once the social routines for helping are established (Dahl, 2015), individual differences stabilize. In contrast, developmental variables that affect particularly sharing and comforting might be the reason for lower long-term stability in these behaviors. Comforting might be unstable over a long interval, because impacting factors such as empathy (Marsh, Ellis, et al., 2002; Marsh & O'Mara, 2008) might change based on experiences with parents or peers (Marsh, 1990b; Marsh & Craven, 2006). Different experiences might lead to enhanced or reduced comforting in young children and thus to instability over a long time. Likewise, normative conceptions emerge that have a particularly strong impact on resource allocations and thus sharing behavior (e.g., Marsh, Ellis, et al., 2002; Shavelson et al., 1976). To sum up, as helping develops very early and requires few skills, fewer developing factors might impact its long-term stability. Comforting and sharing behaviors require more skills and develop later, which is why other variables might impact these behaviors over a longer time and thus result in less stability.

6.4.2 The stability of the moral self-concept

First, we generally examined the stability of MSC, without dividing it into its dimensions. With the help of the cross-lagged model, we found both short-term and long-term stability. This concurs with research on other self-concept domains (namely academic self-concept; Marsh et al., 1998; cognitive, physical competence and peer, maternal acceptance; Zafiropoulou et al., 2007). Our study thus provides first empirical evidence that young children possess a MSC that has some stability over time.

To have more fine-grained results and speak to theories that suggest distinct dimensions of prosociality (Dunfield & Kuhlmeier, 2013), we also investigated the three dimensions of MSC separately. MSC-s showed high stability over the short, and no stability over the long interval. For helping and comforting MSC, we found high stability over the short time and moderate stability over the long interval. The different results support the importance to distinguish between the different dimensions of prosociality (Dunfield & Kuhlmeier, 2013), as the dimensions display different stabilities over time.

All in all, the short-term stability of prosocial behaviors and the MSC dimensions shows how stable children appear to act and think about themselves. The lack of stability over the long interval shows how different developmental factors impact the early MSC and prosocial behaviors. Instability leaves room for interventions. This means, during the time in which the MSC manifests and prosocial behaviors increase (for comforting behavior, Marsh, 2014; for sharing behavior, Smith et al., 2013) intervention programs might be particularly meaningful (Bender et al., 2018; Bryan et al., 2013; Bryan et al., 2014; but see also Foster-Hanson et al., 2018). As the short-term analysis of prosocial behavior and MSC dimensions shows, stability does occur, which stresses that even young children's behaviors and MSC could be predictable, based on previous observations and reports.

6.4.3 Relations of MSC and prosocial behaviors

Lastly, we generally examined the cross-relations of the cross-lagged model between MSC and prosocial behavior. We hypothesized that the self-perception account would predominate from the first to the second measurement. The self-consistency account was hypothesized to dominate from the second to third measurement. According to the self-perception account, behavior impacts self-concept. According to the self-consistency account, self-concept impacts behavior. According to the reciprocal effects account, both impact each other.

We found cross-sectional correlations of behavior and MSC-s at t1 (as reported in Sticker et al., 2021) and t2, which is consistent with previous findings (Harter, 2015; Hertz & Krettenauer, 2016). More importantly, our results extend previous developmental research, as they inform about the directionality of the relation between MSC and prosocial behavior. We found evidence that MSC at t2 predicted prosocial behavior at t3. This finding provides first empirical evidence for a causal effect of the MSC on the emergence of prosocial behavior in childhood. These results are in line with self-consistency theory (Blasi, 1983) and underscore developmental theories that highlight the role of the MSC for the emergence of prosocial behavior (Hardy & Carlo, 2011).

How to explain this relation? Acting consistently with the self-concept appears to result from anticipated affect, according to the self-consistency theory (Blasi, 1983). For instance, the anticipation of negative feelings about not-sharing tends to mediate the relation between the MSC and sharing behavior: The stronger children's MSC, the more negative feelings they anticipate if they would not share, and in turn the more they share (Brownell et al., 2007; Jia et al., 2016). The role of affective processes for prosocial behavior is further supported by a meta-analysis demonstrating a relation between emotion attributions in morally relevant scenarios and prosocial behavior (Marsh, Hau, et al., 2002). For example, sympathy and negative moral emotions appear to positively impact sharing behavior (Harter, 2015). Taking these results together, the MSC appears to relate to emotions and these might impact sharing behaviors. Our results add to these findings by shedding first empirical light on the directionality between the MSC and prosocial behavior.

To get a more fine-grained picture of the relations, we investigated each domain separately. Interestingly, we found that MSC-s at t2 predicted sharing behavior at t3. This indicates a self-consistency direction – similar to findings on the academic self-concept later in life. According to the hierarchical model, behavior should be the basis for the self-concept. Our results hint to a relation from sharing behavior to sharing self-concept, yet, the small effect only reached a significance level of .10. Children show prosocial behaviors earlier than they show signs of a self-concept in the way we operationalized it in this study. That means earlier experience might still impact the MSC. Thus, investigating this question in the future might be beneficial with a younger sample.

Why was sharing the only dimension of the MSC that showed such longitudinal relations between self-concept and behavior? We offer a tentative explanation. Sharing behavior might be a more reflected, cognitive process (see also Eder & Mangelsdorf, 1997; Harter, 2015; Kenward & Dahl, 2011). This might also explain why they show increased happiness after sharing (Harter, 2015). In turn, when reflecting on how to share resources, children might integrate considerations stemming from their moral self-concept in their decision making. On the other hand, children's helping and comforting behavior in everyday situations might be more spontaneous acts (Harter, 2015) and established routines (Dahl, 2015), which might relate less to their MSC. The assessed MSC-h items can be interpreted as sociable acts such as setting the table. Furthermore, children might attribute comforting also to external, social factors ("the other child needs to stop being upset") rather than internal preferences. Interestingly, also Eisenberg and colleagues (1999) reported that low-cost helping behavior in children does not predict prosocial behavior later in life. This would mean that particularly well thought out behaviors would connect to MSC, which in turn appears to foster such prosocial behaviors. On that account, it might be interesting to differentiate in future research more clearly between externally triggered prosocial behaviors and those that are subject to reflection.

6.4.4 Limitations and Conclusion

This longitudinal study adds to our understanding of the development of prosocial behavior and the MSC in early to middle childhood. Yet, there are issues that need to be viewed critically. First, as other longitudinal research, our study experienced some attrition. A smaller sample size can decrease the power of the analyses, which might cause non-significant results. In order to deal with that, we used the full information ML approach. Second, we implemented small differences in behavioral tasks across time. In order to prevent suspicion within the "accidental" behavioral tasks, we altered these tasks slightly. Carry-over effects and such changes could reduce the validity or comparability of the measures, though. Yet, at least for comforting, different empathy probing situations are typically employed (Harter, 2015; Schuhmacher et al., 2017), which resemble the different comforting tasks of our measurement. As this appears to be common practice, our alterations should not have impacted the validity of the tasks either. Third, our comforting tasks captured comforting behavior and other-oriented concern, as a

comforting-related reaction. We decided for this global measure because it is well-established for children (Rholes & Ruble, 1984; Robinson et al., 1994) and because other-oriented concern and comforting behavior partly overlap. It remains an interesting avenue for future research to differentiate between these comforting-related aspects (e.g., empathic concern and comforting behavior) and, for example, to identify unique predictors. Last, age and time might be confounded. A potential critique of the design might be, that conclusions about age related differences cannot be drawn from the current analysis, as time elapsed and aging coincide. Future studies should replicate our findings with a more homogenous age-sample. Yet, despite this challenge, the study makes a number of novel contributions: It investigates developmental stability of the MSC in young children, at a general level as well as for different dimensions, and it systematically explores interrelations between the MSC and prosocial behavior across three measurement points. Thus, despite the open questions, this study offers new and unique contributions to literature.

Our research extends current knowledge of the development of MSC and prosocial behavior in various ways. Yet, a few questions remain unanswered. While we did find longitudinal relations between MSC and prosocial behavior in the dimension of sharing, we did not find such relations for the comforting or helping dimension. Future research could investigate the three dimensions over different ages. This would be relevant in order to assess the different stabilities and cross-relations of the early MSC and prosocial behaviors. Furthermore, the origins of the MSC are still unclear. Future research should investigate early precursors such as parent-child interaction and prosocial behaviors and subsequent MSC. In particular, this longitudinal research should investigate the developmental emergence of the different dimensions within in the MSC and prosocial behavior.

In conclusion, this study was the first study to investigate long- and short-term stability and cross relations of prosocial behavior and MSC in early to middle childhood. Our results highlighted the stability of both prosocial behavior and the MSC, while also revealing subtle differences between the three domains (helping, sharing, comforting). In addition, they provided first empirical evidence for directionality of effects, as the MSC appeared to impact later prosocial behavior, pointing to the developmental relevance of the MSC.

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Acknowledgements

Diese Arbeit wäre ohne die Unterstützung anderer Menschen nicht möglich gewesen. Bei diesen möchte ich mich an dieser Stelle bedanken.

Mein erster Dank gilt meinem Betreuer Markus Paulus, der mir die Chance gegeben hat seine Vision zu verwirklichen und mich gefordert und gefördert hat. Weiterhin möchte ich mich bei Frank Niklas bedanken für seine Zweitbetreuung. Bei den Post-Docs Carolina Pletti, Antonia Misch, Maria Mammen und Gabriela Gniewosz möchte ich mich ebenso bedanken für die Unterstützung. Unsere Meetings haben die Motivation hochgehalten und die Studien verbessert. Von euch und Ihnen werde ich mitnehmen, dass eine gut gestellte Frage weiterbringen kann als eine direkte Antwort.

Bei Petra Janßen möchte ich mich ebenso bedanken. In allen Fragen die Bürokratie, Finanzen oder den allgemeinen Umgang an der Universität angingen, war sie geduldig und hilfsbereit.

Bei Natalie Christner, Marina Kammermeier, Samantha Lenz, Monika Wörle, Kerstin Ganglmeier, Saskia Melzel, Tamara Hack, Samuel Essler, Imge Saltik, Nina-Alisa Hinz und Lena Söldner möchte ich mich besonders bedanken! Ihr habt berufliche und persönliche Höhen mitgefeiert und Tiefen abgefangen.

Ich möchte mich auch bei den studentischen Hilfskräften bedanken, die mich bei den Terminvereinbarungen und Testungen unterstützt haben. Das sind Hanna Münch, Nadine Sauer, Eva Merrath und Milena Plach. Weiterhin möchte ich mich bei den Familien bedanken, die an meinen Studien teilgenommen haben; sowie bei dem Deutschen Museum, dass ich dort testen durfte.

Mein Dank geht an meine Familie und Denis: für die Interessen und Werkzeuge, die ihr mir mit auf den Weg gegeben habt, sowie dafür, dass ihr mich unterstützt habt, wenn ich es brauchte.

Appendix

Published Manuscripts – Study 1 & Study 2

Sticker, R. M., Christner, N., Pletti, C., & Paulus, M. (2021). The moral self-concept in preschool children: its dimensions and relation to prosocial behaviors. *Cognitive Development*, 58. https://doi.org/10.1016/j.cogdev.2021.101033

Gniewosz, G., **Sticker R. M**., & Paulus, M. (2022). A longitudinal assessment of the stability of the three-dimensional moral self-concept during early childhood, *European Journal of Developmental Psychology*, 1-20. https://doi.org/10.1080/17405629.2022.2090333

Cognitive Development 58 (2021) 101033

Contents lists available at ScienceDirect

Cognitive Development

journal homepage: www.elsevier.com/locate/cogdev

The moral self-concept in preschool children: Its dimensions and relation to prosocial behaviors

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ARTICLE INFO

Keywords:
Moral self-concept
Prosocial behavior
Early childhood

ABSTRACT

Recent theories have highlighted the relevance of the moral self-concept (MSC) for prosocial behavior. Its early development and internal structure is still unknown, though. With two studies, we aimed to investigate the structure of the MSC in early childhood. Furthermore, we explored prosocial behavioral correlates (helping, sharing, comforting). In a first study, we explored four- to six-year-olds ($N = 127$). We assessed explicit (puppet-interview) and implicit (IAT) measures of the MSC and observed child behavior. Our results show that MSC was independent from other self-concept domains. The three prosocial dimensions (helping, sharing and comforting) appear to be represented within the MSC separately. While the IAT yielded no significant relations with behaviors, the explicit MSC was meaningfully related to prosocial behavior. The second study ($N = 314$) underscores the results of the first, by replicating the factor structure of the MSC in confirmatory factor analysis. In conclusion, the studies underscore the MSC's different dimensions and their relations to prosocial behaviors in preschool children.

1. Introduction

Moral behavior is an important aspect of everyday life (Hofmann, Wisneski, Brandt, & Skitka, 2014). First signs of other-oriented concerns and behaviors emerge in the first years of life (for a review see Dunfield & Kuhlmeier, 2013; Svetlova, Nichols, & Brownell, 2010; Tomasello, 2019). Beyond acting prosocially, humans also reflect on themselves as moral creatures. They consider how important it is for them to be a moral person and to engage in moral behavior (Blasi, 1983). Being moral can thereby be perceived as being more or less central to one's self, and thus defines the extent of one's moral identity (Hardy & Carlo, 2011). Empirical research with adults has demonstrated that moral identity relates positively to prosocial behavior (Aquino, Freeman, Reed, Lim, & Felps, 2009; Hertz & Krettenauer, 2016; Reynolds & Ceranic, 2007). The development of a moral identity in adolescence is preceded by a moral self-concept (MSC) that is supposed to emerge in early childhood (Hardy & Carlo, 2011). Notably, interventions aiming at the MSC in early childhood can increase prosocial or moral behavior (Bender, O'Connor, & Evans, 2018; Bryan, Master, & Walton, 2014). Yet, little is known on the early development of the MSC, its internal structure, and its relation to prosocial behavior during childhood (Hardy & Carlo, 2011). In other words, do young children conceive themselves as moral agents and does their MSC actually relate to their prosocial behavior?

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https://doi.org/10.1016/j.cogdev.2021.101033
Received 9 October 2020; Received in revised form 3 February 2021; Accepted 25 February 2021
Available online 13 March 2021

1.1. The ontogeny of a moral self

The self-concept is a consistent representation of oneself (Jia, Lang, & Schoppe-Sullivan, 2016). According to the hierarchical model of self-concept and self-perception theory (Bem, 1972; Shavelson, Hubner, & Stanton, 1976), personal experiences are the basis of the self-concept. In other words, these theoretical views suggest that children develop a self-concept based on their experiences with their own reactions and actions. This is supported by understanding that personality traits are stable over time and predict behavior, which develops between preschool and elementary school (Liu, Gelman, & Wellman, 2007; Ruble, Newman, Rholes, & Altshuler, 1988). Furthermore, around that age, children start to think about others in more abstract terms (Gnepp & Chilamkurti, 1988; Rholes & Ruble, 1984). Once that such an understanding has developed, the urge to act consistently with one's self becomes more salient (Blasi, 1983). Thus, self-concept and behavior appear to affect each other. Self-concept research supports this relation between children's behavior and their self-concept for the academic, social, and physical self-concept (middle school students, Knowles, Niven, Fawkner, & Henretty, 2009; high school students, Marsh, Hau, & Kong, 2002; second to eighth grade students, Salley, Vannatta, Gerhardt, & Noll, 2010). With age, the self-concept becomes more differentiated, adding more domains and subdomains (henceforth called dimensions), which differ in evaluations (Marsh, 1990). Moreover, the information condenses and forms an abstract, global representation of the self (here four- to seven-year-olds, Cimpian, Hammond, Mazza, & Corry, 2017). This development could be supported by children's increasing ability for internal reflection around the age of four years (Allen & Bickhard, 2018). A positivity bias usually underlies the self-concept in Kindergarten age. That is, children tend to think of themselves in overly positive terms. For example, they tend to say they are excellent in everything they do and overestimate their abilities (Harter, 2015; Mezulis, Abramson, Hyde, & Hankin, 2004). With increasing age, the self-concept is increasingly in line with external criteria (such as grades; Marsh & Martin, 2011).

Developmental theories and empirical research has suggested that the self-concepts of physical ability and verbal ability fall in two different self-concept domains (Marsh, Ellis, & Craven, 2002). That means, that the self-concept consists of different independent domains, as suggested by the hierarchical model of self-concept (Brunner et al., 2010). Most important for our study, influential developmental theories propose the existence of a MSC (for a review see Hardy & Carlo, 2011) and that its early roots are in early childhood (Krettenauer, 2013). The MSC is defined as "children`s self-representations about their moral behavioral preferences" (Sengsavang & Krettenauer, 2015, p. 214). Based on these considerations, we assume that it is distinct from the other self-concept domains, just as they are distinct from each other.

Early indicators of the MSC, such as showing signs of guilt and shame, emerge around the third and fourth year of life (Kochanska, Koenig, Barry, Kim, & Yoon, 2010; Vaish, Carpenter, & Tomasello, 2016). At that age, it has been suggested that the MSC consists of internalized parental rules, norms, and personal experience as good or bad agents (Kochanska, 2002). Rules, norms, and experiences are proposed to not yet be combined to a meaningful self at four years, but to rather exist next to each other (Kochanska, 2002). First evidence of the early meaning of the MSC comes from a study by Kochanska (2002). She observed children (longitudinally from 14–56 months) and their mothers in different situations. At the 56-months measurement point, children responded to questions about their moral self using a puppet-interview, for example concerning their empathy: "If I see a child being hurt, I try to help." vs. "…, I don't try to help". Results show that previous eager compliance at 14–45 months correlated with children's moral selves, at least in boys. Around five to six years children's MSC is supposed to become internally consistent (i.e., similar statements within the moral domain; Kochanska et al., 2010). Krettenauer, Campbell, and Hertz (2013) administered a puppet-interview to five to twelve-year-olds about their moral self-concepts. Results reveal two differentiated and internally consistent scales: preference for prosocial behavior and aversion of antisocial behavior (Krettenauer et al., 2013). These findings suggest that early to middle childhood is a central phase for the initial emergence of a MSC. Therefore, we decided to focus in our study on this age group. Further on, we focused on the preference for prosocial behavior as representative of MSC (similar to Aquino & Reed, 2002, who created the well established Moral Identity Questionnaire for adults). This choice for investigating the self-concept regarding concrete, observable behaviors in the moral domain rather than abstract moral concepts was for a reason: Children have a hard time expressing abstract concepts or applying them to themselves (Harter, 2015). In other words: children rather act than explain. This is why breaking down complex reasoning to concrete behavioral indicators is the status quo for research with young children (here for example four to five-year-olds, Marsh, Ellis et al., 2002; and five- to seven-year-olds, Measelle, John, Ablow, Cowan, & Cowan, 2005).

Thus far, little is known on whether the MSC forms an independent self-concept domain that differs from other aspects of the self. Based on self-perception theory (Bem, 1972) and the hierarchical model of self-concept (Shavelson et al., 1976), there are reasons to assume that the MSC of children is distinct from other self-concept domains. While previous studies examined the presence of a moral self in early childhood (Kochanska, 2002; Krettenauer et al., 2013); they did not include self-concept measures for other domains. Hence, it is an open question whether the MSC is distinct from other self-concept domains. The current study aimed to contribute to this question.

1.2. Moral self-concept and prosocial behavior

Prosocial behavior is defined as behavior that benefits someone else (Eisenberg, Fabes, & Spinrad, 2006). Recent work suggests that prosocial behavior can be classified into three different domains, namely instrumental need (leading to helping), emotional distress (leading to comforting), and material desire (leading to sharing; Dunfield, 2014; Paulus, 2018). These three prosocial dimensions were found not to correlate, to emerge at different times in development and to different extents within one child (Dunfield & Kuhlmeier, 2013). The reviewed theoretical considerations on the development of self-concept could indicate that the MSC in preschool children relates to their prosocial behavior. Different researchers proposed that early prosocial behavior consists of three distinct dimensions

(Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011; Dunfield, 2014; Paulus, 2018). We hypothesized that the MSC should consist of the same three dimensions as prosocial behavior: a self-concept for helping, sharing, and comforting. Furthermore, as the MSC can be supposed to develop based on perceptions of one's own behavior, we hypothesized that the three distinct behavioral dimensions will meaningfully relate to the three distinct self-concept dimensions.

Besides an explicit self-concept, recent research suggested the existence of an implicit self-concept in adults (De Cuyper et al., 2017; Peters & Gawronski, 2011). The co-existence of an implicit and an explicit self-concept is captured in so-called dual process models (Gerstenberg, Imhoff, Banse, & Schmitt, 2014; Strack & Deutsch, 2004). These models suggest that the explicit self-concept represents active thoughts and evaluations (Aquino & Reed, 2002) whereas the implicit self-concept represents learned associations between the self and other concepts, such as morality (Perugini & Leone, 2009). To our knowledge, the relation between the implicit MSC and prosocial behavior has not been investigated in young children. The implicit self-concept is particularly interesting in research with children. Young children's verbal abilities are limited. An implicit test could capture a facet of children`s self-concept, that is not explicitly accessible to the children themselves (here four-year-olds, Cvencek, Greenwald, & Meltzoff, 2011). Hence, we want to investigate the relation between the implicit MSC of preschool children and prosocial behavior.

1.3. The present studies

The current study aims at exploring the early origins of the MSC with respect to different prosocial behaviors and in relation to other domains of the self-concept. We chose to focus on the positive, prosocial aspects of morality, rather than the avoidance of antisocial behavior. This was due to different considerations: first, we aim to increase comparability with a long tradition of research on moral identity in adults in which moral identity was assessed as concordance with a number of positive moral traits (Aquino & Reed, 2002; Aquino et al., 2009; Jennings, Mitchell, & Hannah, 2015). Second, we aim to explain active, prosocial behavior. In other words, we focus on the active, prosocial part of the MSC. Thus, when trying to explain prosocial behavior, it is conceptually appropriate to focus on the prosocial aspects of the MSC. Third, in the specific case of MSC, preference for prosocial behavior appears to be more independent of social desirability than avoidance of antisocial behavior (Krettenauer et al., 2013). This is particularly important, as we aim to investigate the relation of MSC and observable behavior.

In order to investigate the early ontogeny of the MSC, we explored its structure and function in early childhood with two studies. In study 1, we examined four hypotheses: According to the multifaceted hierarchical model, the self-concept is structured in different domains (Brunner et al., 2010; Shavelson et al., 1976). Thus, we hypothesized that the MSC is distinct from other self-concept domains (H1). To test this hypothesis, we decided to use conceptually different domains as comparisons (verbal and physical self-concept) as we had a clear hypothesis about them. We conducted an exploratory factor analysis with the items of the explicit MSC interview. If we are able to find distinct factors (moral, verbal, physical self-concept) in our data, we can conclude that the prosocial dimensions exist independently of other self-concept domains at all.

According to self-perception theory (Bem, 1972), self-concept dimensions derive from concrete behaviors – helping, sharing, and comforting. These behaviors appear to shape distinct dimensions in early childhood (Dunfield & Kuhlmeier, 2013). Hence, we hypothesized that the MSC divides in the same dimensions: helping, sharing, and comforting (H2). Following theories on relations between behavior and self-concept, we hypothesized that the self-concept dimensions correlate with the corresponding prosocial behaviors (H3). According to the dual process model, the implicit self-concept offers information on top of the explicit, because the implicit self-concept seems less dependent on active verbal skills. Thus, we hypothesized, that the implicit MSC relates to prosocial behaviors (H4). In study 2, we aimed at further confirming the existence of three distinct dimensions of the MSC (H2) by means of a confirmatory factor analysis in a large sample.

To test these hypotheses, we assessed preschool children's explicit and implicit MSC, and their prosocial behaviors (helping, sharing, comforting). To measure the explicit self-concept, we relied on a puppet-interview approach (e.g., Measelle, Ablow, Cowan, & Cowan, 1998), that we adapted from an interview by Krettenauer et al. (2013). In order to assess children's prosocial behavior, we adapted established tasks to assess preschool children's helping, sharing, and comforting (Dunfield & Kuhlmeier, 2013; Kenward, Hellmer, Winter, & Eriksson, 2015; Svetlova et al., 2010). To assess the implicit self-concept, we adapted an Implicit Association Test (IAT; Perugini & Leone, 2009) measuring attitudes (Good, Bad) towards Self or Other. We analyzed the reaction latency in the different conditions of the IAT in relation to the prosocial behaviors.

2. Study 1

2.1. Method

2.1.1. Participants

The final sample consisted of 127 four- to six-year-olds (62 female; $M = 64.77$ months, $SD = 9.86$). There was no age difference between genders, $t(125) = .88$, $p = .513$. Eight additional children were excluded because of not completing the study due to language problems ($n = 2$) and fussiness ($n = 6$). Sample size is based on previous work which examined differentiation of preschool children's self-concept (Marsh, Ellis et al., 2002). Moreover, according to a power analysis a sample of 109 participants would suffice to detect a small effect ($f^2 = 0.15$) with a power of 80 % and alpha of .05 when calculating a linear multiple regression with eight predictors. We kept testing until we had a comparable number of children of each age. We recruited families via mail. Their addresses came from the city's natal register. A third of parents raised their children bilingually, 61 % held a university's degree, and 14 % completed high school. The sample consisted of 105 Western European, 10 Eastern European, 8 Middle Eastern, 3 Asian and 2 African children. The

children's caregivers gave written informed consent for participation. The local ethics committee approved the study. Parents received compensation for travel expenses. Each child received a small gift and stickers.

2.1.2. Procedure

Testings took place at the developmental laboratory at a large German city. Each child was tested individually in a quiet room by a female experimenter. We videotaped the experimental session for later coding. At first, the children performed the sharing task, then the puppet-interview, then the helping task. After that, the children completed the IAT. Subsequently, they performed the comforting task.

2.1.3. Measures

The tasks relied on established measures comprising behavioral tasks (sharing, helping, comforting) and self-concept measures (puppet-interview, IAT). This study is the first measurement point of an ongoing longitudinal study and we report here only the measures relevant for this study. We did not counterbalance the measures to keep order effects constant across participants, allowing to investigate individual differences.

2.1.3.1. Behavioral tasks. Sharing. This task was based on Smith, Blake, and Harris (2013), who conducted their study with three- to eight-year-olds. Children could decide how many out of 4 stickers they wanted to share with an absent child. The instructions were: "Here are 4 stickers. They are yours now. You can share them with another child. [Experimenter places picture of other androgynous child] This is Nina/Nico [depending on gender of participant]. You can give Nina/Nico one, two, three, four or no sticker. You can decide by yourself. The stickers for Nina/Nico come in this box. When you are done, close the box." Signaling the end of the transaction by closing the box reduced the demand characteristic of having to share. The number of items in the box (0–4 items) represents children's sharing behavior.

Helping. Following previous studies with preschoolers, we used a costly helping task (Svetlova et al., 2010). Experimenter and child played a competitive game, in which the child was asked to finish a jigsaw puzzle and the experimenter had to draw the depiction of the puzzle. During this game, the experimenter dropped items (ten pens). This gave the child simultaneously an advantage to win or an opportunity to help. Prompts were "Oh" (seven seconds pause), "Now I can't keep on drawing" (seven seconds pause), "Ok, then I will quickly pick up the pens". If the child helped at any point, no further prompts followed. If the child did not help, the experimenter picked up the pens after the last prompt. Then the game continued, ending with the child winning the game. We decided to use a competition scenario, because helping someone while making personal sacrifice is more clearly a prosocial act (Gneezy, Imas, Brown, Nelson, & Norton, 2012). Child behavior was coded from the video recordings of the task and scored on a 4-point scale, 0 = no reaction; 1 = short help (e.g., "You have to pick them up"); 2 = moderate help (picking up a few pens, or only helping after the second prompt); 3 = intensive, immediate help (picking up all the pens, right away). The helping coding scheme is adapted from Vaish, Carpenter, and Tomasello (2009) and Newton, Goodman, and Thompson (2014). To ensure interrater reliability, a trained assistant coded one third of the behaviors in addition to the first coder. We achieved a high reliability for the behavioral helping task. The Intra-Class Correlation (ICC) was .95 with a 95 % CI [.90–.98], $F(26, 26) = 39.41$, $p < .001$.

Comforting. The procedure was adapted from Young, Fox, and Zahn-Waxler (1999). The experimenter pretended to hit her foot. This was followed by "Ow" and a distressed facial expression, rubbing the foot, whining, (seven seconds pause); "I bumped my foot!" (seven seconds pause). If the child comforted, no further prompts followed. If the child did not comfort, the experimenter reduced her hurt facial expressions after the last pause and said, "Ah, I am better now." She continued with explaining the next game. To code comforting behavior, we followed previous work and relied on the global empathy scale (i.e., a combined scale comprising empathic concern and prosocial behavior). We used a global score, because this score includes the variety of comforting tendencies and behavior (Robinson, Zahn-Waxler, & Emde, 1994). Child behavior was scored from the video recordings on a seven point scale: 0 = not involved at all (e.g., casually investigating a toy); 2 = slight concern (e.g., tension in upper body and face), no prosocial behavior; 4 = moderate concern (e.g., change in facial expression from slight smile to raised eyebrows and open mouth), slight prosocial behavior (e.g., "Yes, this hurts."); 6 = strong concern (e.g., very worried face), prosocial behavior (e.g., singing a healing song). Ratings between the scores were possible, if a behavior fell in between two anchor points. The reliability for the behavioral comforting task was high. The ICC was .74 with 95 % CIs [.51–.87], $F(26, 26) = 6.61$, $p < .001$.

2.1.3.2. Self-concept measures. Puppet-Interview. The puppet-interview is an established measure to assess children's self-concept (Measelle et al., 1998). Our interview items were based on Krettenauer et al. (2013) and Marsh, Ellis et al. (2002). We addressed the prosocial dimensions of helping, sharing, and comforting, as well as physical and verbal abilities. Each dimension consisted of four items with the exception of physical (five items), resulting in 21 items. The prosocial items are adaptations from Krettenauer et al. (2013). The physical and verbal items are adaptation from Marsh, Ellis et al. (2002). We rephrased the questions to statements in order to fit the interview format. Additionally, we adapted some items to fit our preschool sample better (see Table 2 for the final items). For each item, two puppets stated opposing information (e.g., "I like to help doing the dishes" vs. "I don't like to help doing the dishes"). The opposing puppets for each item were identical. By this, we ensured that children replied based on the statements rather than the puppets' appearances. In order to reduce carry over effects, we exchanged the puppets after each item pair. After each item pair, the experimenter asked: "And you? Are you more like this puppet or like this puppet?" The child chose the puppet with whom they identified most. Next, the experimenter asked: "Are you a bit or a lot like this puppet?" If the child could not side for one or the other puppet, the experimenter asked: "Are you sometimes like this one and sometimes like that one? So, in the middle?" This resulted in a

five-point Likert-scale for each item: 1= a lot like the negating puppet; 2 = a bit like the negating puppet; 3 = not like either of the puppets or equal identification; 4 = a bit like the affirmative puppet; 5 = a lot like the affirmative puppet.

We used the same method to include a control measure of social desirability. Social desirability does not represent a part of the self-concept, but functions as control measure to test whether the MSC explains variance in behavior beyond a social desirable response. We administered three social desirability items by Krettenauer et al. (2013), "When I get what I asked for I always say thank you", "I'm never angry", and "I always say please, if I want to have something".

Implicit self-concept measure. The implicit association test (IAT) is a computer-based test in which participants sort words in two different dimensions by clicking one of two designated buttons as fast as possible (see Greenwald, McGhee, & Schwartz, 1998). We used the moral self-concept IAT by Christner, Pletti, and Paulus (2020). This task was based on an IAT for preschoolers, which has been successfully used with four-year-olds (Cvencek et al., 2011). The first dimension included the categories *Self* and *Others* (I, me, mine vs. other, they, their). The second dimension reflected the categories of *Good* and *Bad* attributes of pro- and antisocial behaviors (to help, to share, to comfort vs. to hit, to steal, to push). In *congruent* trials, items of the categories Self and Good were paired on one side of the screen and one button. The category Other and Bad were paired on the other side of the screen. In *incongruent* trials, the target categories Self and Bad were paired on one side of the screen and the category Other and Good on the other side. As many of the children were not literate yet, we presented the items in audio. First, the experimenter checked that the children knew all the words and were able to sort them to the correct sides of the dimensions. The instructions for the children were: "Every time you hear 'I', 'me' or 'mine' you push this button" (pointing at the designated button for this trial). "Every time you hear 'other', 'they' or 'their' you press this button" (pointing at the other designated button). This was followed by the question: "So if you hear 'I', which button do you press?" The experimenter corrected if the response was wrong or continued with a new item. The same procedure was executed for the pro- and antisocial behaviors. Thereafter, the task started.

The entire task consisted of seven blocks: Good vs. Bad discrimination (12 trials, learning block), Self vs. Other discrimination (12 trials, learning block), two paired blocks (24 trials each), Good vs. Bad discrimination with reversed sides (24 trials, learning block), two reversed paired blocks (24 trials). The experimenter introduced each new block. Here is an example of the congruent paired block: "Every time you hear 'I', 'me', 'mine' or 'to help', 'to share', 'to comfort' you press this button. Every time you hear 'other', 'they', 'their' or 'to hit', 'to steal', 'to push', you press this button. Ok?" The explanation was accompanied by according pointing gestures. A fixation cross appeared for 400 ms between trials. If the children made a mistake, a red question mark appeared on screen. The task continued as soon as the child responded correctly.

We measured the average response latency for those children whose accuracy was significantly higher than chance ($n = 102$) based on the scoring algorithm by Greenwald, Nosek, and Banaji (2003). We calculated a difference score between the incongruent and congruent condition. The difference score reflects the association between Self and Good vs. Bad attributes. The higher the score, the stronger the association between self and prosocial attributes. In our sample, we found a split-half reliability of .70.

2.2. Results

We first describe the results concerning the internal structure of the MSC (H1 and H2). Second, we investigate the relation of the MSC (explicit and implicit) and prosocial behavior (H3 and H4). For descriptive purposes, a zero-order correlation matrix of all variables is presented in Table 1.

Means and standard deviations of the prosocial behavioral dimension and explicit MSC measures are displayed in Table 2. Note that we assessed the physical and the verbal SC, but not corresponding behavioral abilities.

Table 1
Correlations of all scales.

	Behavioral			Explicit						Implicit
	1	2	3	4	5	6	7	8	9	10
Behavior										
1. Share	–									
2. Help	.15	–								
3. Comfort	.17	.24**	–							
Self-Concept										
4. Share	.24**	−.08	.09	–						
5. Help	−.09	.01	.03	.22*	–					
6. Comfort	.31**	.10	.20*	.16	.22*	–				
7. Physical	−.02	−.06	−.04	.20*	.14	.06	–			
8. Verbal	.08	.01	.16	.23*	.11	.13	.19*	–		
9. Social Desirability	.11	.05	.08	.08	.35**	.18	.14	−.03	–	
IAT										
10. Difference Score	−.11	.07	.06	.00	−.09	.04	.02	.37**	−.04	–
11. Age	.09	.03	.22*	.18	.18	−.16	−.04	.26**	−.21*	.20*

Note. The columns are the transposed rows. Scales 4-9 constitute the puppet-interview.
* $p < .05$.
** $p < .01$.

Table 2
Descriptive Information on the Behavioral and Self-Concept Measures.

	Behavior		Self-Concept	
			Puppet-Interview	
Dimension	*n*	*M (SD)*	*n*	*M (SD)*
Share	127	0.85 (1.04)	121	4.05 (0.89)
Help	123	1.20 (1.28)	125	3.57 (1.15)
Comfort	126	2.07 (1.23)	120	3.31 (1.19)
Physical			120	3.93 (0.75)
Verbal			122	4.28 (0.69)
Social Desirability			123	3.44 (1.11)

Note. The range for sharing behavior was 0–4, for helping behavior 0–3, and for comforting behavior 0–6. For the self-concept measures, the range was 1–5, excluding items Sh2, He1 and Co1 due to subsequent results from factor analysis.

2.2.1. *The self-concept is differentiated*

We analyzed the factor structure of the puppet-interview (H1). We conducted an exploratory factor analysis (EFA) with *varimax* rotation. When creating a new questionnaire, an exploratory factors analysis can help identify outlying items and fitting items. This method ensures that only the most appropriate items get carried to the latest version of the questionnaire (see Aquino & Reed, 2002). The varimax rotation maximizes the differences between factors, as we do not expect the three factors to relate with each other (Field, 2015). As we employed items from established interviews and created new items, the first step is an EFA to ensure that our new interview matches the general expected structure.

We investigated the three main factors of the puppet-interview: prosocial, verbal and physical. We excluded three items (Co1, Ve4, Ph1) from further analysis due to low correlations with the other items (based on the "garbage in, garbage out" problem; Field, 2015, p. 685). In the exploratory factor analysis, the Kaiser-Meyer-Olkin (KMO) – without the excluded items – was .60, being above the acceptable limit of .50 (Field, 2015). Overall, our analyses showed a three-factor solution. The three factors explained a variance of 37.15 %. Table 3 displays the factor loadings and internal consistency after rotation. The items that loaded on the same factor suggest that factor one stands for prosocial behavior, factor two for verbal abilities, and factor three for physical abilities.

2.2.2. *The MSC is threefold*

In a next step, we investigated the internal structure of the eleven items of the prosocial factor (H2). We assumed three dimensions within this factor: helping, comforting, sharing. We conducted an EFA with oblique rotation, because it allows the factors to correlate with each other (Field, 2015). Based on the previous analysis we found out that the prosocial domains are related. The KMO measure for the analysis was .73, which is above the acceptable limit of .50 (Field, 2015). The three expected factors all had Eigenvalues higher than one and explained a total amount of 52.25 % of the variance. The factors clustered in the three expected dimensions helping, comforting and sharing as Table 4 depicts. The only exception was one sharing item ("I like to share my toys with other children.") that fit into the helping dimension. We excluded this item from subsequent analyses. We only included items in further analysis if the

Table 3
Factor Loadings for Principal Component Factor Analysis with Varimax Rotation of the Puppet-Interview.

Code	Item-Content	Prosocial	Verbal	Physical
Sh1	I like to share my pencils.	.29	.35	.11
Sh2	I like to share my toys with other children.	**.54**	.11	.09
Sh3	I take care that everyone gets the same amount.	.16	.34	.25
Sh4	I like to let other children play with my toys.	**.50**	.01	.09
Co2	I like to comfort a child, even if it was mean to me once.	**.46**	−.11	.15
Co3	I stop playing my favorite game to comfort a crying child.	**.48**	.20	−.20
Co4	I comfort a child, even when it has started the fight itself.	**.59**	−.01	.11
He1	I like to help tidy up the play area.	**.71**	.24	.18
He2	I like to help folding the laundry.	**.54**	.09	−.25
He3	I like to help setting the table at home.	**.58**	.11	−.18
He4	I like to help doing the dishes.	**.59**	.01	.24
Ph2	I would like to be strong.	.05	.07	**.53**
Ph3	I can run very fast.	.07	−.02	**.60**
Ph4	I can jump very far.	.08	−.06	**.71**
Ph5	I like to romp around.	−.02	**.44**	**.45**
Ve1	I enjoy looking at books.	.13	**.59**	−.23
Ve2	I enjoy listening to stories.	.07	**.70**	.04
Ve3	I like it when people read me a story.	−.09	**.76**	−.01
Eigenvalue		2.71	1.91	1.75
% of variance		15.96	11.71	10.30
Cronbach's α		.72	.52	.46

Note. Factor loadings > .40 appear bold. Sh = Sharing, Co = Comforting, He = Helping, Ph = Physical, Ve = Verbal. Cronbach's α as measure of internal consistency for items > .40 on that factor. Items were translated from German.

Table 4
Factor Loadings for Principal Component Factor Analysis with Direct Oblimin Rotation of the Puppet Interview's Prosocial Items.

Code	Helping	Comforting	Sharing
Sh1	−.21	.16	**.76**
Sh2	**.40**	.16	.26
Sh3	.08	−.12	**.52**
Sh4	.11	.00	**.71**
Co2	−.24	**.85**	.07
Co3	.10	**.64**	−.03
Co4	.16	**.70**	−.04
He1	.39	.39	.34
He2	**.68**	−.16	.18
He3	**.76**	−.03	−.02
He4	**.73**	.20	−.20
Eigenvalue	2.37	2.16	1.89
Cronbach's α	.67	.62	.50

Note. Factor loadings > .40 appear bold. Cronbach's α as measure of internal consistency for items > .40 on that factor.

following criteria were met (Stevens, 2012): first, items loaded on one factor (>.40) and not on others (<.40); second, the content of the items was conceptually coherent with the factor.

2.2.3. The MSC corresponds to prosocial behavior

We investigated the relation of the explicit MSC and prosocial behavior (H3). In three stepwise linear regressions, we used helping, sharing and comforting behavior as dependent variables and the explicit self-concept measures as predictors (i.e., sharing, helping, comforting, verbal, and physical of the puppet-interview). We averaged the items for each scale that the previous factor analysis revealed. The assumptions for regressions were met, with the exception of sharing behavior, which needed to be weighted due to heteroscedasticity. In a first step, before inserting the mentioned predictors, we included age and social desirability as an obligatory predictor, because higher age relates to increased prosocial behavior (Smith et al., 2013; Taylor, Eisenberg, Spinrad, Eggum, & Sulik, 2013). Results of the stepwise regressions are presented in Table 5.

The regression for the dependent measure sharing behavior showed an effect of the comforting and sharing MSC, $F(3, 106) = 17.29$, $p < .001$. Age did not contribute to the regression of sharing behavior. None of the other predictors became significant. The regression for the dependent measure comforting behavior indicated an effect of the comforting MSC and age, $F(2, 112) = 5.57$, $p = .005$. None of the other predictors became significant. The regression for the dependent measure helping behavior was non-significant, $F(1, 113) = 0.04$, $p = .841$.

2.2.4. The implicit self-concept and prosocial behavior

We investigated the relation of the implicit MSC with prosocial behavior (H4). We had to exclude 25 children from the analysis, whose IAT performance was at chance level (see above). We calculated three multiple regressions (one for each prosocial behavior) with age and the difference score of the IAT as predictors. None of the regressions became significant with the exception of the

Table 5
Linear Regression of explicit and implicit MSC and Prosocial Behavior.

	Behavior								
	Sharing			Comforting			Helping		
Predictor	ß	95 % CI	t	ß	95 % CI	t	ß	95 % CI	t
Explicit Regression									
Age	.11	[−0.01, 0.02]	1.24	.24*	[0.01, 0.05]	2.64	−.01	[−0.03, 0.02]	−0.09
SoDe	−.05	[−0.17, 0.09]	−0.60	.10	[−0.10, 031]	1.01	.05	[−0.16, 0.28]	0.51
SC									
Comfort	.28**	[0.08, 0.32]	3.23	.20*	[0.01, 0.40]	2.13	n.s.		
Share	.38**	[0.11, 0.31]	4.17	n.s.					
Help	n.s								
Physical	n.s.								
Verbal	n.s.								
R^2	.31**			.07*			−.01		
Implicit Regression									
Age	.13	[−0.01, .0.04]	1.36	.22**	[0.01, 0.06]	2.33	−.11	[−0.04, 0.01]	−1.09
IAT	n.s.								
ΔR^2		.01			.04			.00	

Note. CI = confidence interval. SC = Self-Concept. SoDe = Social Desirability. IAT = Implicit Association Test.
* $p < .05$.
** $p < .01$.

comforting regression. Age predicted comforting behavior, $F(1, 105) = 5.441$, $p = .022$. Thus, the implicit MSC did not relate to prosocial behavior.

2.3. Discussion

As hypothesized, the MSC appears to be distinct from other self-concept domains (H1), to be threefold (H2), and to relate to prosocial behaviors (H3). In particular, it relates to sharing and comforting, but not to helping behavior. Contrary to our hypothesis, the implicit MSC does not relate to prosocial behaviors (H4). We will discuss this result in the general discussion.

The MSC appears to fit in the hierarchical model (Shavelson et al., 1976): It seems to be distinct from other domains (e.g., physical and verbal; as the analyses for H1 show), that means, moral attributes are organized in a distinct category. Furthermore, the MSC appears to be threefold (helping, sharing, comforting; as the analyses of H2 show), or multidimensional (Marsh, Ellis et al., 2002). Note that items representing both preferences ("I like to …") and behaviors ("I do…") appear to fit in the same dimension. This hints at a broader understanding of the dimensions. The dimensions helping, sharing, and comforting seem to be subcategories of the MSC, since the first EFA revealed a homogenous factor for the MSC.

In addition, the MSC domains appear to relate to the assessed prosocial behaviors. This finding is in line with self-perception theory (Bem, 1972). That means, prosocial behavior and MSC relate to each other meaningfully. Hence, our results relate to proposals that suggest a bridging role of the MSC between moral judgment and behavior (Hardy & Carlo, 2011). Neither the other self-concept measures (physical and verbal) nor social desirability related to prosocial behavior. We will discuss this point further in the general discussion.

Because other studies reported ceiling effects for helping behavior in the preschool period (Engelmann, Herrmann, & Tomasello, 2012; Svetlova et al., 2010), we decided to rely on a costly helping task. This is also morally more relevant as it requires to balance own interests and other's well-being. As a consequence, children showed less helping behavior. Please consider that the helping task was a game that the experimenter and the child played next to each other rather than together. The helping task contains a conflict of interest: selfishly winning or prosocially helping. This is also true for the sharing task. As the attractive stickers belong to the child, participants have to decide if they selfishly want to keep them all, or if they prosocially want to share them with a stranger. This way helping and sharing resemble similar conflicts. Yet, it is sharing and comforting, not helping that relate to the MSC. This suggests that the presence or absence of a conflict of interest does not determine relations between the behaviors and the MSC. We will argue in the general discussion that helping behavior might have a higher social rather than prosocial focus.

One of the main findings, as this has not been investigated in previous studies, is that the MSC appears to be threefold as shown by an exploratory factor analysis. In a next step, we wanted to confirm the structure of the MSC with a second study.

3. Study 2

Testing the identified structure of the MSC with a new, large sample allows for a robust confirmation of the MSC dimensions. Hence, we analyzed data from different assessments that included the moral items of our puppet-interview. The sample consists of participants from different assessments that all contained the same shortened version of the puppet-interview used in study 1 (resulting from the EFA of study 1). A data set of 172 children was taken from Christner et al. (2020). The remaining data (n = 144) was taken from unpublished studies, which had different research questions than the present one. We expected the MSC to show the three dimensions helping, sharing and comforting, that we found in the first study. In order to investigate this hypothesis, we conducted a confirmatory factor analysis (CFA) to test how well the data fit the predefined model.

3.1. Methods

3.1.1. Participants

The sample contained 314 four- to eight-year-olds (158 female, $M = 81.57$ months, $SD = 16.45$). Children were drawn from the same population as the first sample, but were different to the first sample. We contacted parents either through data apprehended by the city's natal register or in local Kindergartens. According to a power analysis, a minimum sample of 296 participants would suffice to detect a small effect ($f^2 = 0.15$) with a power of 80 % and alpha of .05 when conducting a CFA with three factors and nine observed items. Testings took place in the lab ($n = 145$) or in Kindergartens ($n = 169$).

Table 6
Pearson-Correlations with pair wise-deletion of MSC Domains in Study 2.

	Sharing	*Comforting*
Sharing	–	
Comforting	0.42***	–
Helping	0.26***	0.25***

** $p < .01$.
***p < .001.

3.1.2. Procedure

The procedure of the puppet-interview was identical as in study 1. We included the moral items that resulted as relevant by the previous EFA (Sh1, Sh3; Sh4, Co2-4, He2-4, see Table 4). Additionally, we included four distractor items (from the physical and verbal domain, 2 each), which have shown to be unrelated to the moral items. The order of the moral items differed between the subsamples of study 2, ensuring that order of items did not influence the responses. Before the puppet-interview, all children participated in a sharing task as in study 1. Tasks after the puppet-interview differed between the subsamples. Neither the sharing task nor the subsequent tasks are part of the current research question; hence, we will not discuss them further.

3.2. Results

Table 6 depicts Pearson-correlations of the three summary scores of the MSC dimensions. We conducted a CFA with the items that fit the model of the first study (see H2). We set the items that should represent the MSC of sharing (Sh1, Sh3, and Sh4) as the first factor, of comforting (Co2-4) as a second factor, and of helping (He2-4) as the third factor. We used the R lavaan package (Rosseel, 2012) for computing the CFA. According to Byrne (2013), cut offs for a good model fit are CFI $> .95$, SRMR $< .05$, RMSEA $< .05$, for the χ^2 test $> .05$. In order to investigate the goodness of fit, we compared the three-factor model with a one-factor model. As the one-factor model has fewer restrictions, it should fit better than the three- factor model, if the null hypothesis (i.e., all items belong in one factor) were true. We compared the models in a χ^2-test. Table 7 depicts results for a single-factor solution in contrast to a three- factor solution. The χ^2-test reveals a significant difference between the two models; $\chi^2(9, 314) = 77.49$; $p < .001$, in direction of a better three-factor fit (see smaller AIC-scores). Factor loadings are reported in Table 8.

To confirm that the model fit was not driven by the higher age of the second sample, we excluded all children above six years, as our first sample only included four- to six-year-olds. We repeated the analysis with this smaller sample. With the smaller sample ($N = 221$, mean age in months $= 71.91$, SD $= 7.00$), the χ^2-test likewise revealed a better fit of the three-factor model $\chi^2(9, 221) = 45.95$, $p < .001$ (see Table 7 lower part).

3.3. Discussion

As hypothesized, results from the second study replicated the threefold dimensions of the MSC. A confirmatory factor analysis, ran on a large sample, revealed that the MSC of five- to eight-year-olds consists of the dimensions of helping, sharing, and comforting. This finding further strengthens the result of study 1 by showing that the MSC appears to be multidimensional as suggested by hierarchical models of the self-concept (Marsh, Ellis et al., 2002; Shavelson et al., 1976).

4. General discussion

The moral self-concept (MSC) has been suggested to play an important role in human moral development (Blasi, 1983; Hardy & Carlo, 2011). Yet, little is known about its early development. In the current studies, we investigated whether preschoolers' MSC has an internal structure and whether it meaningfully relates to prosocial behavior. In a first study, we assessed children's explicit and implicit MSC. Moreover, we assessed prosocial behavior in terms of helping, sharing, and comforting. We expected the children to have distinct dimensions of the moral self (H1 and H2) and that these explicit dimensions (H3) correspond to the according behavior. Moreover, we explored the relation between the implicit self-concept and prosocial behaviors (H4). We analyzed H1 and H2 with exploratory factor analysis. Our analysis confirmed that the MSC was distinct from other self-concept domains. More important, we found that preschoolers' MSC internally differentiated into helping, sharing, and comforting, indicating that children have a representation of themselves that differs in relation to the three different prosocial behaviors. In a second study, we replicated this factor structure. We conducted a confirmatory factor analysis with an independent, large sample indicating strong evidence for a threefold model. The dimensions of the MSC seem to be independent of age, as they appear from Kindergarten to school age. Finally, a regression analysis revealed that preschoolers' explicit MSC related to the prosocial behaviors sharing and comforting. The results are in line with self-perception theory and the hierarchical structure model according to which the self-concept relates to actual behavior. Overall, our findings demonstrate that a differentiated MSC emerges in the preschool years.

Our results show that the MSC of four- to six-year-old children is distinct from two other self-concept domains, that is those from the Marsh, Ellis et al. (2002) questionnaire. This means that children mentally represent their prosociality from early on. Our results are in line with other studies demonstrating that a differentiated view of oneself emerges in early childhood (Brown, Mangelsdorf, Agathen,

Table 7
Goodness-of-Fit Indicators of Models for MSC Measure including (n = 314) and excluding older participants (n = 221).

Model	χ^2	df	p	CFI	RMSEA	SRMR	AIC	BIC
Single Factor	135.15	29	<.001	.72	.11	.08	9074.4	9175.5
Three Factors	34.26	24	.080	.97	.03	.04	8983.3	9075.5
Younger Children (4–6 years)								
Single Factor	79.00	27	<.001	.79	.09	.07	6514.3	6605.8
Three Factors	32.26	24	.121	.97	.04	.04	6473.6	6575.3

Comparison of Confirmatory Factor Analysis for MSC of single Factor solution vs. three Factor solution.

Table 8
Factor Loadings for Confirmatory Factor Analysis of the Puppet-Interview's Prosocial Items.

Code	Helping	Comforting	Sharing
Sh1			.58
Sh3			.47
Sh4			.55
Co2		.56	
Co3		.44	
Co4		.75	
He2	.66		
He3	.60		
He4	.61		
Cronbach's α	.66	.59	.55

Note. Cronbach's α as measure of internal consistency.

& Ho, 2008; Brunner et al., 2010). Furthermore, our data support a multifaceted model of the self-concept. The similarity between the multifaceted model of the self-concept in general and the multifaceted structure of the MSC hints to further questions. For example, the development of the academic self-concept begins with a positivity bias and, around the third grade, becomes more attuned to external indicators (Marsh & Martin, 2011). It would be an interesting topic for future research to examine whether the MSC shows a similar developmental trajectory. Hereby, self-perception and parental feedback might be major contributors to the development of a self-concept (Bryan et al., 2014; Foster-Hanson, Cimpian, Leshin, & Rhodes, 2018).

Importantly, we found that preschool children's MSC is internally structured. Specifically, our analyses confirmed that preschoolers possess three dimensions of MSC, which are equivalent to the prosocial behaviors described by recent theoretical frameworks (Dunfield, 2014; Paulus, 2018). Some authors suggest further prosocial domains, such as cooperation (Malti et al., 2016; Tomasello & Vaish, 2013). We leave it up to future research to investigate further dimensions of the MSC. In line with findings of the existence of three unrelated dimensions of prosocial behaviors (Dunfield & Kuhlmeier, 2013), the three MSC dimensions are distinct from each other. We were able to support this conclusion with an exploratory factor analysis and a confirmatory factor analysis in two separate samples. Replicating the findings of study 1 with a separate sample shows how stable the distinction in helping, sharing, and comforting appears to be across samples. The current study extends previous findings that suggest two dimensions of children's MSC: avoidance of antisocial behavior and preference for prosocial behavior (see Krettenauer et al., 2013). The three factors we identified might be dimensions within preference for prosocial behavior. Helping, sharing, and comforting all represent active prosocial actions in contrast to avoidance of antisocial behavior (e.g., not hurting someone). Previous research has mainly focused on the dimensions of the academic self-concept (Arens et al., 2016; Bossaert, Doumen, Buyse, & Verschueren, 2011; Marsh & Martin, 2011). Our findings extend research on preschool children's self-concept with a moral domain.

Central findings are the meaningful relations between the different MSC dimensions and the corresponding dimensions of prosocial behaviors. This is in line with self-perception theory (Bem, 1972). It suggests that preschool children register and reflect on their own prosociality. Importantly, none of the other self-concept domains predicted any of the three prosocial behaviors. That highlights the meaningful relation of children's MSC and own behavior. Although this was true for sharing and comforting behavior, it was different for helping. We will discuss the potentially special role of helping later on.

Both comforting self-concept and age predicted comforting behavior. Increasing comforting with age is in line with the literature (Kienbaum, 2014) and can be explained by developing cognitive processes: With increasing age, children recognize needs easier and gain a broader repertoire of comforting behaviors. Furthermore, moral reasoning (Malti & Latzko, 2010) as well as empathy (Catherine & Schonert-Reichl, 2011) improve with age, which in turn is related to increasing comforting skills (Catherine & Schonert-Reichl, 2011).

Sharing and comforting self-concept predicted sharing behavior. That is, children with a stronger sharing self-concept and a stronger comforting self-concept shared more. Sharing behavior might result from different motivations: on the one hand, from a cognitive point of view, one might share in order to respect fairness norms (McAuliffe, Blake, Steinbeis, & Warneken, 2017) and to demonstrate equal respect (Engelmann & Tomasello, 2019); on the other hand, from a more emotional perspective, one might share out of empathy with a potential receiver who does not have any resources. Thus, one might speculate that children with a strong sharing self-concept have a stronger motivation to share in order to follow fairness norms (Paulus, Nöth, & Wörle, 2018). On the other hand, children with a strong comforting self-concept might have a stronger motivation to share in order to reduce emotional distress (cf. Ongley & Malti, 2014). This way, the fairness norm and the reaction to emotional distress might both motivate sharing behavior. Yet, these two motives might be related in ontogeny as the fairness norm might develop out of the caring about others' perspectives (Carpendale et al., 2009). That means, while these two motives may be closely intertwined in their ontogeny, they can constitute distinct motives for actual prosocial behavior.

Although we found an independent helping self-concept, it did not predict helping behavior. Instead, the helping self-concept was the only dimension that correlated with social desirability. This points to a difference in the helping compared to sharing and comforting MSC. With regard to helping behavior, there is indeed a debate on its underlying function and motivation (e.g., Carpendale, Kettner, & Audet, 2015). For instance, Pletti, Scheel, and Paulus (2017) argue that in early childhood helping results from a generally social, rather than prosocial, motivation: children help because they want to engage in cooperative activities with other people. They might use instrumental helping (such as handing over of objects) as an opportunity to interact with others (Dahl, 2019). It is possible

that in our study, helping behavior was rather triggered by children's wish to cooperatively interact with the other person (as the game they were involved in was competitive, not cooperative) than by a motive to support a needy other. Recent work showed that helping based on need develops in the preschool years (Paulus, 2020).

An alternative explanation for the null-effect regarding helping might base on the especially social desirable nature of helping. Furthermore, the items to assess the helping self-concept referred to actions that relate more to adult-child interaction, whereas sharing and comforting self-concept items referred to peer interaction. In a hierarchical dyad (adult-child), adult's requests might activate child compliance. In particular, situational compliance is a reaction to requests, lacking internal motivation (Kochanska, 2002). Thus, helping could have been triggered by a motivation to comply with others rather than by prosocial motives. Further research is needed to investigate the emergence of the helping self-concept within the MSC.

Notably, we did not find a relation between the implicit MSC and prosocial behavior. Other studies reported a relation of other implicit concepts (such as attitudes) and external measures in four-year-olds (Cvencek et al., 2011). Yet, it is possible that the implicit MSC differs from other implicit concepts with respect to some properties. Implicit associations in the moral domain might take many experiences and time to build. This could explain why an implicit MSC is present in adults (Perugini & Leone, 2009), but not in young children. It would be interesting to explore the implicit measure of a MSC across a wider age range to identify the developmental stage in which an implicit self-concept forms.

While the current study extends our knowledge on preschool children's MSC, one should note a number of limitations and open questions. One limitation concerns our "WEIRD" sample (western, educated, industrialized, rich, democratic; Henrich, Heine, & Norenzayan, 2010). Mostly educated families replied to our invites. Research shows that socio-economic status might influence the extent of prosocial behavior. Some find that SES relates positively to prosocial behavior (Kosse, Deckers, Pinger, Schildberg-Hörisch, & Armin, 2018), others find negative relations (Piff & Robinson, 2017; Piff, Kraus, Côté, Cheng, & Keltner, 2010). Thus, future research with more diverse samples is warranted. Second, we did not control for task order, thus carry-over effects are possible. Further research with counter-balanced tasks is necessary. Third, the items of the current puppet-interview refer to specific actions and situations. Using this approach, we might have assessed children's preference for specific actions rather than their general view of themselves. Yet, due to the young age of the children it is necessary to use specific, everyday items (Harter, 2006), as inferring abstract concepts on behavior is just developing in preschool years (Ruble et al., 1988). We leave it to future research to explore these issues in more detail.

Despite these open questions, the current findings extend our knowledge on the emergence of the MSC. The findings suggest the existence of an internally structured MSC that shows meaningful relations to children's own sharing and comforting behavior. This enables an interesting perspective on how to foster moral development. For example, interventions on the self-concept can increase prosocial behavior in children (Bryan et al., 2014; Grusec & Redler, 1980). One could speculate that specific attributions to the distinct self-concept dimensions might foster related behaviors systematically. Thus, this study can be groundwork for future prosocial interventions on a personal level. This is particularly important since interventions on the personal level should have a longer and stronger impact than interventions on behavioral levels (Bryan, Adams, & Monin, 2013).

The current study demonstrated that preschoolers' self-concepts are differentiated. Additionally, we found a relation between the dimensions of the MSC and the corresponding prosocial behaviors. This study shows the significance of the MSC in early childhood.

Acknowledgements

For help with data acquisition we are thankful to Milena Plach and Hanna Münch. This work was supported by a European Research Council Starting Grant [MORALSELF; No. 679000] to MP.

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European Journal of Developmental Psychology

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/pedp20

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To cite this article: Gabriela Gniewosz, Regina M. Sticker & Markus Paulus (2022): A longitudinal assessment of the stability of the three-dimensional moral self-concept during early childhood, European Journal of Developmental Psychology, DOI: 10.1080/17405629.2022.2090333

To link to this article: https://doi.org/10.1080/17405629.2022.2090333

EUROPEAN JOURNAL OF DEVELOPMENTAL PSYCHOLOGY
https://doi.org/10.1080/17405629.2022.2090333

Routledge
Taylor & Francis Group

ORIGINAL ARTICLE

A longitudinal assessment of the stability of the three-dimensional moral self-concept during early childhood

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ABSTRACT

Moral self-concept (MSC) is an important aspect of human morality and emerges in early childhood. It indicates how early children view themselves as moral agents. Yet, its structure and developmental patterns are unclear and require more research. This study addresses if the multidimensional structure of MSC is stable during early childhood and if the dimensions are differentiating over early to middle childhood. We explored the structure of MSC by testing a three-dimensional CFA model, its longitudinal invariance, reliability and correlational structure. Using a three-wave longitudinal sample ($N = 133$) of children aged between four to six years at T1, we found evidence for a stable three-dimensional MSC model, including the dimensions helping, sharing and comforting.

ARTICLE HISTORY Received 11 January 2022; Accepted 03 June 2022

KEYWORDS Moral self-concept; early childhood; longitudinal data; invariance

Relevance of the moral self-concept

Moral identity has received considerable attention in the past years (Aquino & Reed, 2002; Paruzel-Czachura & Blukacz, 2021; Reed et al., 2016). It helps to explain why someone is inclined to act more or less prosocially (Hertz & Krettenauer, 2016). Large parts of research on moral identity has been concerned with adults (for an exception see, Pletti et al., 2022 as they investigated 10-year-olds' moral identity). Moral identity is a term usually used for adults, as identity is constructed as being more abstract. The Moral Self-concept (MSC), on the other hand, is defined

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Supplemental data for this article can be accessed online at https://doi.org/10.1080/17405629.2022.2090333

more specific as self-representations about one's moral behavioural preferences and plays an important role in children's development (Sengsavang & Krettenauer, 2015). It is a multifaceted construct and is formed through experiences made in early childhood. The MSC represents an important domain in which children define themselves as moral agents (e.g., 4;8-year-olds report about their MSC via the method of the puppet-interview; Kochanska, 2002) and it appears to relate to prosocial behaviours throughout childhood (e.g., Christner et al., 2020). Yet, the current research only grazed the different dimensions within the MSC and little is known about the distinctiveness and reliability of the MSC dimensions at an early point in children's development.

The self-concept structure in childhood

Following the general self-concept research, the MSC is described as a multidimensional construct, whose dimensions may develop differently across time (Harter, 2006). This difference might be caused a) by children's growing cognitive abilities and b) by increasing experiences and information about oneself over time (Wigfield & Eccles, 2002). As life experiences increase and children learn more about themselves, children get a more nuanced perception about own (domain-specific) strengths and weaknesses (see self-perception theory; Bem, 1972). For example, first graders differentiate between the academic, social and general self-concept in the Self-Description Questionnaire (SDQ; Verschueren et al., 2012). One consequence is that the same multifaceted structure of self-concept is applicable across early, middle and late childhood (e.g., the maths self-concept of four- to six-year-olds in a three-wave longitudinal study, Arens et al., 2016) but becomes more distinct and reliable with increasing age (e.g., seven to eleven-year-olds in three waves with the SDQ, Marsh & Ayotte, 2003).

Research on the structure of the self-concept across childhood describes alternative developmental patterns, representing a rather stable or dynamic perspective: *First*, research shows that the multidimensional structure of the self-concept is quite stable in early childhood – henceforth *stability pattern*. For example, Putnick et al. (2020) conducted a five-wave longitudinal study using a sample of four- to 24-year-olds. Results show that the differentiation between four dimensions of self-concept (i.e., using an adaptation of the Harter self-competence scales, academic, social, athletic and physical competence) was relatively

stable across time (Putnick et al., 2020). *Second*, studies show that the (degree of) differentiation of the self-concept dimensions may change during the developmental phase of childhood – henceforth *differentiation pattern*. For example, Cohrssen et al. (2016) show that four-year-olds' self-reported academic self-concept is rather a global than a distinguishable construct. That means, new dimensions appear in one domain in the course of development. Additionally, research shows that the multidimensional structure of self-concept becomes more differentiated through childhood (here: six- to ten-year-olds; Schmidt et al., 2017), meaning that the dimensions correlate less, the older children are. Thus, the correlational structure between self-concept dimensions should change over time (i.e., decline substantially with age). Schmidt et al. (2017), for example, report in a cross-sectional study showing that the different self-reported domains of the academic self-concept are traceable in six-year-olds. They become less correlated four years later, indicating a stronger differentiation between dimensions.

These developmental patterns focus on different aspects: The *first* pattern emphasizes general stability. The multifaceted structure of the self-concept is clearly evident from early childhood (Marsh & Shavelson, 1985) and age-related experiences only affect it slightly (see for physical self-concept measured with a self-report at age 11 and 14; Klomsten et al., 2004). The *second* pattern emphasizes change within a self-concept domain. Either dimensions emerge with higher age or the strength of relations between dimensions of a self-concept domain may change over time. For instance, dimensions might correlate less over time. This can be explained by children's better cognitive or verbal skills leading to a more fine-grained representation of oneself (Harter, 1999). MSC is supposed to be a multidimensional construct, however, the developmental pattern behind MSC is not yet fully understood.

The moral self-concept

While the relevance of children's moral identity or MSC has been confirmed in many studies (e.g., a meta-analysis by Hertz & Krettenauer, 2016), little is known about the ontogeny of the MSC (Hardy & Carlo, 2011). According to Krettenauer (2013) moral identity develops through a process of internalization of moral norms. The process of internalization is encouraged by

parental rules and interactions. However, the more such moral norms and rules are internalized, the stronger the MSC of children is (e.g., at five-years old assessed with a puppet-interview; Kochanska et al., 2010).

The development of the MSC's structure seems less clear: Around five years, children respond similarly to questions from the same domain (e.g., 'I like to help tidying up.' and 'I like to help setting the table.'), showing that children's answers are rather consistent across the specific domain of moral perceptions (Kochanska et al., 2010). Moreover, the MSC appears to be differentiated within, meaning that children consistently respond differently to questions from different dimensions. For example, Krettenauer et al. (2013) conducted a puppet-interview in a cross-sectional study with five- to twelve-year-olds. They found that children differentiated between preference for prosocial behaviour vs. avoidance of anti-social behaviour. The former focuses on active prosocial behaviours such as being fair, the latter concerns the avoidance of antisocial behaviour such as harming or teasing others. As prosocial behaviour emerges early in life, it is a pressing question to investigate the development of cognitive representations of prosocial behaviour in early childhood.

The underlying study focuses on the concept of prosocial behaviour preferences. The study proposes a more nuanced dimensional structure of the prosocial part of the MSC, than previous research by, that is, Krettenauer et al. (2013). That means, we distinguish the domain preference for prosocial behaviour in three dimensions: The first dimension *helping* comprises preference for instrumental helping, such as helping others to tidying up, the second dimension *sharing* includes behavioural tendencies like sharing toys and the third dimension *comforting* represents behaviours such as supporting a crying child. The assumption of a three-dimensional MSC is grounded on a multidimensional model of prosocial behaviour, comprising helping, sharing and comforting (e.g., Dunfield, 2014; Paulus, 2014). These prosocial (behavioural) dimensions appear to be independent, from toddlerhood to early childhood and may be associated with different needs (e.g., Dunfield & Kuhlmeier, 2013) or motives (e.g., Paulus, 2018). Taking these differentiations of prosocial behaviour into account and the idea that self-concept bases on behaviour (see, Marsh & Ayotte, 2003), the MSC is proposed to derive of the same three dimensions.

We conducted a longitudinal study, enabling developmental research. The time intervals between the measurements differed by duration. By this, we could investigate short- and long-term changes, if present. In

particular, the age between four and six appears to be important as this is the first time the (moral) self-concept can be measured in self-report (see for the academic self-concept Cohrssen et al., 2016; see for the MSC; Kochanska, 2002). Additionally, this is the time, when the self-concept either stays stable (Putnick et al., 2020) or starts to differentiate (see, Schmidt et al., 2017). In relation to the MSC, the domain preference for prosocial behaviour might differentiate into three dimensions.

The present study

With regard to different developmental patterns of children's self-concept, this research aimed to explore the question of structural consistency of MSC dimensions in greater detail. Taking a longitudinal perspective, we investigate the dimensional structure of preschool children's MSC over a course of 21 months, including three measurement points. Specifically, an adapted version of the puppet-interview (Krettenauer et al., 2013) was used to capture the three dimensions of helping, sharing, comforting.

To address the question of how (in-)stable the MSC is from early to middle childhood, various aspects have to be considered from a methodological perspective, which, in turn, draw different conclusions about the development and structure of MSC:

First, at each measurement point, we investigate whether the assumed *three-dimensional* concept of MSC with the dimensions of helping, sharing and comforting fits the data. This allows to assess the distinctiveness of the MSC dimensions and provides a first insight into the (in-)stability of the MSC dimensions. For instance, assuming a stable and distinct multidimensional MSC, the three dimensions should show substantial item-factor correlation for each dimension at each measurement point. Further, no or few significant cross-loadings should occur. As described below in more detail, this is shown in the context of a confirmatory framework with the help of (multivariate) modification indices (Jorgensen, 2017).

A *second* aspect for a reliable interpretation of the dimensions over time is the longitudinal invariance of the measurement models. Using differently restricted models, it has to be shown that items represent one dimension in the same way at different measurement points. As noted by Fink et al. (2020), configural invariance is a necessary, but not sufficient condition for a valid interpretation of the measured variables at different measurement points. Only if the dimensions remain at least stable on the level of factor loadings (= weak invariance) and intercepts (= strong

invariance) over time, we can accept invariance, allowing conclusions on the structural level. If MSC is a stable construct, then we should find at least strong longitudinal invariance.

Third, based on invariant measurement models, the correlations between the three dimensions have to be examined across time. It needs to be shown whether the correlations of the three dimensions differ across measurement points. If differences are absent, we can assume a rather stable relation between the dimensions. Yet, if we find differences, this may indicate a differentiation (e.g., a decline in correlations) or an indication changing numbers of dimensions (e.g., merging two dimensions into one). For example, if the correlations among multiple dimensions of MSC become smaller (e.g., Marsh & Ayotte, 2003), the dimensions become more independent. In contrast, if the correlations become higher, the dimensions become more dependent or merge into one dimension. Thus, the number of dimensions within the MSC might change. If neither the correlations nor the number of dimensions change, this supports the alternative explanation of high stability in early childhood.

Method

Participants

The data collection was conducted at three measurement points, with the children being invited again after 18 and 21 months. The sample comprised 133 German-speaking children at T1. Each age group (four, five, and six years) comprised a third of the sample. In the initial sample, 61% of the parents held a university's degree, 14% completed high school and a third of parents raised their children bilingually. The sample was predominantly from European background (86.47%). Families came to a second (18 months) and third measurement (3 months). Across time, the sample was reduced by 28.57% at T2 (N = 95) and by 34.59% at T3 (N = 87). The attrition is attributable to families' moving and scheduling difficulties. However, testing if missing values were random, Little's MCAR test (Little, 1988) revealed that the missing values across all three measurement points were random for sharing (p = .431), helping (p = .247), and comforting (p = .645). The child's caregiver gave written informed consent for participation (see for more recruiting information Sticker

Table 1. Age and sex of sample.

Time	n	Age M(SD)	Range	Boys/Girls
1	133	65.18 (9.96)	50–83	69/64
2 + 18 m	95	82.12 (9.82)	67–100	50/45
3 + 3 m	87	85.07 (9.67)	70–103	46/41

Note. Age in Month

et al., 2021). The faculty's ethics committee approved the study. Parents received commute compensation and each child received gifts. Further sample information can be found in Table 1.

Procedure

The female experimenter introduced herself and chatted with the child casually. Each child was tested individually in a quiet room. Testings took place at the labs of a university in a German city. The experimental sessions were videotaped for later coding. The measure of the MSC was embedded in a series of other tasks. The other tasks are irrelevant for the present questions and are reported elsewhere (Sticker et al., 2021).

Measures

The puppet-interview is a well-established measure to assess children's self-concept (e.g., Eder, 1990). Based on previous research, the adapted puppet-interview addressed the dimensions of helping, sharing and comforting (e.g., Krettenauer et al., 2013). The items were mixed in a longer puppet-interview (in total 24 items, including items of the physical and verbal self-concept) to ensure low contextual similarities between the items (for more details see, Sticker et al., 2021). Each moral dimension consisted of four items, resulting in a total of 12 items per measurement point. Preliminary analyses showed that at T1 the fourth comforting item diverged from the others, that is, it hardly correlated with the total factor and was therefore removed from the analysis. We used gender-matched puppets. For each item, two puppets stated opposing information (e.g., for helping MSC: 'I like to help doing the dishes' vs. 'I don't like to help doing the dishes'; for example, for comforting MSC: 'I like to comfort a child, even if they were mean to me.' vs. 'I do not like . . . '; for example, for sharing MSC: 'I like to share my pencils.' vs. 'I do not like . . . '). Then, the experimenter asked: 'And you? Are you more like this puppet or like this puppet?'. The child chose the puppet they identified with most. Next, the

experimenter asked 'Are you a bit or a lot like this puppet'. The puppet-interview produced a 5-point scale: 1 = a lot like the negating puppet, 2 = a bit like the negating puppet, 3 = like neither both, 4 = a bit like the affirmative puppet, 5 = a lot like the affirmative puppet. The middle option (3) was added as some children spontaneously responded in that manner.

Statistical analysis

The data that support the findings of this study are openly available in OSF Storage at https://osf.io/4wtus/?view_only=e81dcd943d8549febf199cad09e9afc6. To test the structure of MSC across three measurement points, several steps were necessary. All analyses based on the items of the MSC measurement (i.e., helping, sharing and comforting), using an adapted 4-point rating scale (see supplemental material, Table S1). After testing the normality distribution, we found that the additionally included category 3 had only a very low cell count (low N), i.e., was only very rarely used. Consequently, we decided – following the original scaling – to combine this category with category 4. With the combination of level three and four, we were able to achieve a distribution that made interpretations possible.

All statistical analyses on a latent level, were conducted with the R package 'lavaan' (Rosseel, 2012), using a robust maximum likelihood (ML) estimator, recommended especially for not completely normally distributed data (Finney et al., 2006, p. 289). The full information ML adjustment method (Arbuckle, 1996) was applied to account for missing data. We emphasized different fit indices to evaluate goodness-of-fit (e.g., RMSEA, TLI/CFI), but also present the χ^2-test statistic and an evaluation of parameter estimates (Hu & Bentler, 1999; Xia & Yang, 2019).

The analysis comprised several models: In *step one*, we focused on the distinctiveness of the three MSC dimensions. We tested three-factor models via separate CFA for each measurement point. We inspected the factor loading patterns and the modification indices (*MI*). *MI* help to illustrate which additional item-factor assignment is plausible, that is, improve the model fit, when freeing specific parameter constraints. *MI* indicate the change in χ^2 value when the constrained parameter is freely estimated (Jorgensen, 2017). With the help of the *MI*, one can thus find the best fit for a model in an effect manner. EPC/SEPC represent the

predicted change in the parameter (unstandardized and standardized), if the parameter was freely estimated. Values bigger than 3.84 indicate an improved model for the added parameter ($p < .05$).

In *step two*, we evaluate time-related differences in the structure of the MSC. According to Widaman et al. (2010), invariance should be tested based on several consecutive and differently restricted models: Measurement invariance was tested on the configural (factor structure same across time; same items associated with same factors), weak (additionally equal factor loadings over time), strong (additionally equal item intercepts over time) and residual (additionally equal residuals over time) invariance level. Differences between nested models, under appropriate conditions, can be tested for statistical significance using the difference of the χ^2-values (e.g., Chen et al., 2020). Hence, a more parsimonious model was preferred, if the χ^2-fit of the parsimonious model did not worsen compared to the less restricted model. In other words, the χ^2-difference between both models should be insignificant. Note, strong invariance is at least needed to draw conclusions about the correlations between the extracted dimensions over time.

Step three refers to the correlations between the three dimensions over time. Based on the factor scores, saved from the invariant measurement models, we specified the correlations at each measurement point and tested the difference between two (dependent) correlations with different variables (i.e., Steiger Test). We repeated the same analysis within each MSC dimension (i.e., Williams's Test). Finally, we inspected the reliability using an alternative Cronbach's alpha coefficient, which base on the estimated factors scores (see, Bentler, 2009; Jorgensen et al., 2021) of the invariant measurement models.

Results

Distinctiveness of the MSC dimensions

First, we focused on the distinctiveness of the MSC dimensions at each measurement point (step 1). We specified separate three-factor models, including helping, sharing and comforting, for each measurement point. Table 2 represents the global model fit at each measurement point. At each measurement point, the three-dimensional model provides a good (T1: $\chi^2(df) = 27.76(24)$, $p = .270$; T2: $\chi^2(df) = 28.13(24)$,

Table 2. Goodness-of-fit indices and reliability for the three-dimensional MSC model.

	T1				T2				T3			
Scale/ Factor	Cronbach's *α*	χ^2 (*df*)	*RMSEA*	*CFI/ TLI*	Cronbach's *α*	χ^2 (*df*)	*RMSEA*	*CFI/ TLI*	Cronbach's *α*	χ^2 (*df*)	*RMSEA*	*CFI/ TLI*
Sharing	.50	27.76 (24)	.03	.97/ .95	.71	28.13 (24)	.04	.97/.95	.63	31.42 (24)	.06	.95/ .93
Helping	.67	$p = .270$			.60	$p = .254$			.68	$p = .142$		
Comforting	.64				.69				.74			

Note. Information based on separate CFAs for each dimension and for MSC total score; Cronbach's *α* bases on factor score reliability (see, Bentler, 2009)

Table 3. Factor loadings for the three-dimensional MSC model.

		T1			T2			T3		
MSC Measure	Nb. Items	1	2	3	1	2	3	1	2	3
		Factor Loadings								
1 Sharing	1	(fixed)			(fixed)			(fixed)		
	2	0.41			0.54			0.56		
	3	0.58			0.79			0.61		
	4	0.56			0.83			0.65		
2 Helping	1		(fixed)			(fixed)			(fixed)	
	2		0.51			0.45			0.54	
	3		0.76			0.66			0.48	
	4		0.54			0.43			0.79	
3 Comforting	1			(fixed)						(fixed)
	2			0.67			0.56			0.76
	3			0.66			0.52			0.57

Note. Factor loadings are presented for the three-factor model of MSC, specified separately at each measurement point.

p = .254) to acceptable T3: $\chi^2(df)$ = 31.42(24), p = .142) model fit. Note, the change in the model fit might be due to the reduced sample size between T1 and T3.

Further, the expected item-factor structure also appears to be clear across the three measurement points. Even though some of the standardized loadings are less than *ß* < .6, they are significant (see, Table 3).

Additionally, the three-dimensional model shows only few and low 'cross-loadings' with *MIs* <.10, providing evidence that alternative item-factor specifications do not fit the data more closely. Only a few parameters are larger than the criteria of 3.84 (e.g., largest *MI* = 7.49 for Comforting3_3 r on sharing T3), so that a specification (i.e., freeing) of the corresponding parameter would only slightly improve the overall model (see supplemental material, Table S2a-S2c). Note, considering the significance under the correction of multiple testing (here the Bonferroni-adjustment), a change in item-factor assignment would not result in a significant improvement of the model.

Time related differences of MSC dimensions

The second step aimed to clarify the significance of longitudinal invariance on a configural level, on the level of factor loadings (weak invariance), intercepts (strong invariance), and residuals (strict invariance) for each MSC dimension. We only report the highest fitting model. For the MSC dimension *sharing*, the level of strong invariance across time was reached (χ^2_Δ (df_Δ) = 2.33(*6*), p = .887). The same is true for *comforting* (χ^2_Δ (df_Δ) = 5.67

Table 4. Means, standard deviations, and correlations for MSC-dimensions.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Gender T1	girls	n=64										
	boys	n= 69										
2. Age T1	65.18	9.96	-.10									
3. Sharing T1	3.18	0.38	-.10	.11								
4. Helping T1	3.04	0.37	.05	-.21*	.43**							
5. Comforting T1	2.58	0.60	.05	-.06	.26**	.32**						
6. Sharing T2	3.22	0.53	.08	-.02	.25**	.20*	.30**					
7. Helping T2	2.81	0.33	.14	-.21*	.21*	.50**	.37**	.41**				
8. Comforting T2	2.72	0.55	.09	.06	.15	.18*	.72**	.42**	.40**			
9. Sharing T3	3.08	0.43	.09	-.09	.31**	.24**	.34**	.86**	.51**	.45**		
10. Helping T3	2.79	0.35	.17	-.20*	.21*	.48**	.36**	.33**	.95**	.37**	.44**	
11. Comforting T3	2.58	0.63	.08	.07	.12	.15	.65**	.37**	.37**	.98**	.42**	.35**

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. Age in months. Boys are coded 0, girls are coded 1. *indicates $p < .05$. **indicates $p < .01$. Information is based on factor sores of invariant measurement models; Information in the dotted box is the correlations between MSC dimensions; information shaded in grey are the correlations within each dimension

(*4*), $p = .225$). *Helping* reached a strict invariance (χ^2_Δ (df_Δ) = 5.07(*8*), $p = .750$). An overview of the fit indices at each invariance level are shown in Table S3 in the supplemental material.

Based on the factor scores of the invariant models, the final step comprises the correlations of all three MSC dimensions within and between measurement points. Correlations and further descriptive information of the MSC dimensions are shown in Table 4. Here, we also included children's reported gender and age (at T1). Only for helping (at all measurement time points), we found that boys tend to prefer helping less than girls (non-significant, though). Note, reliability estimates are shown in Table 2.

In short, the correlations between the dimensions are significant, but moderate ($r = .26$ to $r = .44$). The difference between correlations for sharing and helping over time ($t = 0.25$, $p = .807$), between sharing and comforting ($t = -1.86$, $p = .065$) and sharing and helping ($t = -0.88$, $p = .380$) were not significant, supporting the stability pattern. Finally, we consider the correlations within the MSC dimensions between two measurement points (T1 -> T2; T1 -> T3) as an indicator of the stability of the dimensions: While the MSC dimension comforting is highly stable over time ($r_{12} = .72$, $r_{13} = .65$, $z = .63$, $p = .522$), suggesting that children with strong comforting MSC at T1 are more likely to show the same at T2 and T3. Sharing ($r_{12} = .50$, $r_{13} = .48$, $z = .53$, $p = .599$) and especially helping ($r_{12} = .25$, $r_{13} = .31$, $z = .21$, $p = .832$) seem rather dynamic across time.

Discussion

Research has highlighted the moral self-concept (MSC) as an important aspect of human morality (e.g., Hertz & Krettenauer, 2016). Developmental studies have explored the MSC in early childhood (e.g., Krettenauer et al., 2013) and have demonstrated its relevance for children's prosocial behaviour (e.g., Christner et al., 2020). This study aimed to fill a gap by investigating the (in-)stability of young children's MSC across three measurement points. Using a three-wave longitudinal sample of children aged between four and six years at T1, we found a highly stable three-dimensional MSC model, including helping, sharing and comforting.

Based on the *factor analytical models*, we found helping, sharing and comforting as distinct latent dimensions at each measurement point. Although the factor loadings were small, all items loaded on a separate factor without significant cross-correlation. Further, we found acceptable reliabilities for each MSC dimension on most measurement point (note,

sharing at T1 as an exception). Sharing valuable resources is a behaviour that emerges later in development than, for example, instrumental helping (Svetlova et al., 2010). One could thus argue that a self-concept related to sharing emerges later as well. This could explain, why the reliability of the sharing sub-dimension was rather low at T1 and reached satisfactory reliabilities only in the later measurement points.

However, in the background of this sample of young children, we would suggest a factor structure with three distinctive dimensions for this first step. In reference to the multidimensional model of prosocial behaviour, our results indicate that the MSC shows the same three-dimensional structure (Dunfield, 2014; Paulus, 2018). However, future research is needed to investigate parallel or reciprocal developments of prosocial behaviour and MSC dimensions.

For a reliable interpretation of the MSC dimensions, we need *longitudinal invariance* or measurement stability. We found this for all three dimensions, indicating that time – here 21 months – was independent of the structure of each dimension. This extents on previous research on the MSC, showing two subdomains (Krettenauer et al., 2013) and three dimensions within the subdomain preference for prosocial behaviour cross-sectionally (Sticker et al., 2021). Interestingly, helping reached strict invariance, showing residual or invariant uniqueness across time. We assume that helping is a behaviour that is learned at an early age (Hammond et al., 2017) and is, thus, incorporated into children's MSC very early.

On a *structural level of MSC*, our results show that the correlations between the dimensions are stable over time. This contrasts with the assumption that dimensions differentiate with increasing age and experience (e.g., Cohrssen et al., 2016). The significant but moderate correlations indicate stability of the MSC, a finding that was also found for the differentiation of academic, social, athletic and physical self-concept (e.g., Klomsten et al., 2004; Putnick et al., 2020). That means, we find a stability pattern. This goes beyond the work by Kochanska et al. (2010). They showed consistent responses within domains cross-sectionally. Furthermore, this contradicts notions that the MSC is constructed 'moment to moment' (Monin & Jordan, 2009). Our results show stability over time, which could hint in the direction of MSC being more trait-like (Blasi, 1983), than situational. Interestingly, the correlations across time within each dimension suggest high-rank order stability for comforting, but a greater dynamic in children's rank order position for

helping and sharing. More precisely, children who have a strong comforting MSC early on, also show strong comforting later. For helping and sharing MSC, change is more likely.

From previous research on the MSC (Sengsavang & Krettenauer, 2015) it seems plausible that boys and girls differ in their preferred dimensions. However, we find only a few differences by gender, more precisely, we find them only in the dimension helping. Boys report lower preference for helping than girls. Due to implicit socialization experiences (e.g., Eccles et al., 1990) it can be assumed that behaviour, for example, helping behaviour, is reinforced or sanctioned differently for boys and girls. Consequently, it is possible that – in line with a gender-typical parenting (e.g., Hastings et al., 2007) – girls are more likely to be encouraged or positively reinforced to help than boys and, therefore, show a stronger preference for helping. This possibility requires further research on socialization effects on MSC.

Although our results provide first evidence for a highly stable, three-dimensional MSC already in early childhood, there are some limitations: *First*, although we administered a well-established method of the puppet-interview, we reduced the responses to four options post-facto. In particular, the middle option 'neither nor' was used very rarely, which concurs with literature on questionnaires for children (Bell, 2007). Yet, we included it to encourage children to voice uncertainty about the dichotomy of the puppet's statements. *Second*, the underlying focus was specifically on helping, sharing and comforting. Notably, the current study focused on the prosocial aspects of the MSC. One could thus argue that our study explores the prosocial self-concept. Yet, as this aspect has been regarded a central part of the MSC (Krettenauer et al., 2013), we decided to rely on this term. Other subdimensions of MSC such as avoidance of antisocial behaviour have been described theoretically, but the findings are mixed (Sengsavang & Krettenauer, 2015). Further research is needed to investigate this question. *Third*, the different intervals between the three measurements were meant to show different stabilities over long or short periods of time. As we did not find such differences, two explanations are possible: either the MSC is stable over short and long periods of time, or the periods were not spaced out wide enough. Potentially, a very short interval (e.g., one day) would show a different stability than a longer interval (e.g., two years). Future research could investigate this. *Finally*, although our sample size was comparable to other studies (e.g., Cohrssen et al., 2016), a larger sample would allow for greater power. However,

post-hoc analyses reveal sufficient power, though (98% at $N = 30$; 99% at $N = 50$; 99,999% at $N = 100$) for each separate CFA model (each dimension across time separately). That means, random effects are unlikely for specific models. Yet, to account for dependencies among the three dimensions over multiple measurement points, all three dimensions needed to be specified over time within the same model. This requires a larger sample.

Conclusion

To our knowledge, there are few studies that look at the MSC over a two-year period from the perspective of young children, instead of interviewing mothers. Based on our findings, we conclude that the MSC should be regarded as a stable and multidimensional model of MSC as the most appropriate concept across time. These results indicate that even young children have fairly stable self-evaluations of their different types of prosocial behaviour. Thus, questionnaires tailored for young children appear to measure the same constructs. On a developmental level, the MSC emerges at a similar time as other self-concept domains and shows comparable stability. Furthermore, children reflect on their prosocial tendencies quite early. This research contributes to our understanding of the emergence of young children's moral autonomy.

Acknowledgments

This work was supported by a European Research Council Starting Grant [MORALSELF, No. 679 000] to MP.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the H2020 European Research Council [MORALSEF; No. 679000].

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Data Availability Statement

The data that support the findings of this study are openly available in OSF Storage at https://osf.io/4wtus/?view_only=e81dcd943d8549febf199cad09e9afc6, Version 1.

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