The Early Ontogeny of the Moral Self-Concept

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Abstract

Prosocial behavior plays a vital role in our daily lives and is essential for the fabric of our society. This applies not only to adults but also to children, as early manifestations of concern for others' well-being and other-oriented behavior become apparent in the first years of life (e.g., Dunfield & Kuhlmeier, 2013; Svetlova et al., 2010). Moreover, individuals perceive themselves as moral beings, beyond mere actions (Blasi, 1983). This indicates that individuals have a moral self-concept (short: moral self) that points to the integration of morality and the self (Hardy & Carlo, 2011; Lapsley & Narvaez, 2004). Seminal works by Blasi (1983) and Colby and Damon (1993) have given the moral self a voice in adult research. More recent approaches have extended their ideas to younger age groups, conceptualizing the moral self as children's representation of their preferences for morally relevant behavior (e.g., Krettenauer, 2013; Sengsavang & Krettenauer, 2015; Sticker et al., 2021). To date, there are still uncertainties regarding the early ontogeny of the moral self-concept in childhood. This dissertation aims to address some of the most significant research gaps.

This comprehensive thesis embarks on a thorough exploration of the early ontogeny of the moral self-concept, spanning a critical developmental period from infancy to middle childhood. The dissertation seeks to contribute new insights to existing theoretical models by elucidating the developmental pathways between early social interactions and the emerging moral self, its internal structure, coherency, and stability, as well as its subsequent influence on morally relevant behaviors. Four central studies form the backbone of this dissertation, each shedding light on different aspects of moral self-concept development.

The first study investigates the interplay between early social interactions, particularly between mothers and their infants, and the formation of a (positive) moral self-concept. Drawing on developmental theories such as Bowlby's attachment theory (1969, 1973, 1979) and the relational developmental system approach (Carpendale et al., 2013; Carpendale & Lewis, 2021; Carpendale & Wallbridge, 2023), this study posits that the quality of early interactions lays the groundwork for the emergence of a positive moral self-concept. To investigate this idea, a longitudinal study was conducted over three time points, testing children

at ages 1, 3, and 4 years. Maternal emotional availability and children's prosocial behaviors – helping, sharing, and comforting - were examined as potential predictors for the early moral self-concept. The study measured maternal sensitivity at T1, children's prosocial behaviors (helping, sharing, and comforting) through behavioral observations at T2, and the moral self-concept through a puppet-interview at T3. The puppet-interview assesses children's prosocial tendencies and behavioral preferences on different scales and is a common method to measure children's self-concept (e.g., Christner et al., 2020; Sengsavang & Krettenauer, 2015). The findings revealed that a mother's sensitivity when her child is just 1 year old profoundly shapes the child's moral self-concept by age 4. Study 1 further revealed that comforting behavior at the age of 3 acts as a critical mediator for the relation between maternal sensitivity and moral self-concept. With this, the study allowed to investigate the developmental routes that contribute to the moral self-concept in children and that they can be traced back to infancy.

In the second study, the developmental trajectory of the moral self-concept is traced, examining its evolution from a general and undifferentiated form in early preschool age to a more coherent and differentiated construct in middle childhood. The development of an established self-concept is believed to require the coherency of one's self-perceptions (Baumeister, 1997; Erikson, 1959; Rogers, 1959). Furthermore, the self-concept is theorized to become a stable, hierarchical and multidimensional construct over time (Marsh & Shavelson, 1985; Shavelson et al., 1976). This study therefore aimed to investigate the emergence of the moral self-concept by examining three key aspects: the development of coherency, stability, and a differentiated structure. Preschoolers were administered a puppet-interview at two time points, at ages 4 (T1) and 5 (T2). The interview included moral, physical, and verbal self-concept scales. Coherency in children's responses was analyzed to yield a coherency score. Higher variability in answers within scales corresponded to lower scores. During the preschool period, coherency in the moral self-concept increased significantly, with 5-year-olds exhibiting predominantly coherent responses. The stability of children's moral self-concept was linked to coherency, indicating greater stability for those with high coherency at T1 in Study 2. At age 5, factor analysis revealed a multidimensional structure of the moral self-concept, but not at age 4. These findings emphasize the importance of preschool years for developing a coherent and multidimensional moral self-concept. The analysis of this developmental trajectory is central to understanding how children's perceptions of themselves as prosocial beings evolve and consolidate over time, offering a novel perspective on the coherency of self-concept as a crucial feature of early self-concept development.

The third study places significant emphasis on the relation between guilt-related behavior and the moral self-concept during the preschool years. The association between early prosocial and moral development and the emergence of moral emotions, such as guilt, has been suggested (e.g., Hoffman, 1982; Nikolić et al., 2023; Vaish, 2018). Guilt, a significant psychological factor, motivates prosocial behavior and plays a role in various social functions (e.g., Baumeister et al., 1994; Tangney & Dearing, 2003; Vaish, 2018). Guilt can be expressed through guilt-related behavior including speech and action (e.g., Zahn-Waxler & Kochanska, 1990). However, the factors that influence the degree to which children exhibit guilt-related behavior remain unclear. Study 3 therefore examined two potential factors that contribute to the emergence of guilt: children's moral self-concept and their theory of mind abilities. The cross-sectional study involved children aged 5-6 years. The results indicate that the moral self-concept is a predictor of guilt-related behavior in children, while children's theory of mind skills did not predict guilt-related behavior. That means, that children with a more positive moral self-concept display more guilt-related behavior. By focusing on predictors of guilt-related behavior, this study provides critical insights into how children's representations of themselves as prosocial agents manifest in their behavior. These findings support theoretical perspectives that propose guilt development is based on children's self-concept (Kagan, 1987; Rosenberg, 1979; Stipek et al., 1990). The developmental interplay between guilt, a key moral emotion, and the moral self is examined, unraveling the intricacies of how children reconcile their actions with their evolving prosocial standards.

A pivotal aspect of this thesis is the exploration of the development of the association between the moral self-concept and prosocial behavior in the fourth study. By examining various theoretical perspectives, including Blasi's (1980, 1983, 1993) model of self-consistency, Bem's (1972) self-perception theory, and Marsh and Craven's (2006) account on reciprocal effects, this study elucidates the directionality and nature of this association. Study 4 was a longitudinal study which aimed to address this topic by examining the development, structure, and interplay of prosocial behaviors and the moral self-concept during childhood. Data were collected at three measurement points (ages 4, 5, and 6.5 years) to assess children's moral self-concept, as well as their helping, sharing, and comforting behaviors. Confirmatory factor analyses revealed a three-dimensional structure for moral self-concept at 5 and 6.5 years, but not at 4 years. Inconsistent stability was observed over time for both prosocial behavior and moral self-concept. Notably, cross-lagged relations between self-concept and comforting behavior were evident, while such relations were absent for other domains. Furthermore, at 6.5

years, an interrelation between helping behavior and self-concept emerged. These findings indicate that there are reciprocal associations between the moral self-concept and prosocial behavior, particularly in the comforting domain, what is align with the reciprocal effects model (Marsh & Craven, 2006). The study highlights the importance of distinguishing between different types of prosocial behavior and corresponding dimensions of the self-concept, revealing distinct developmental trajectories and associations. From early preschool age to the onset of elementary school, study 4 sheds light on how children's self-concept as moral beings influences and is influenced by their prosocial behaviors, contributing significantly to the understanding of the implications of moral self-concept on human prosociality.

Taken together, an integrative perspective on moral self-concept development is woven throughout the dissertation, providing a cohesive overview that spans more than five years of ontogeny, commencing at the age of 12 months. The findings of the dissertation demonstrate that the foundation for the development of a positive moral self is laid in the first year of life through sensitive interactions between mothers and their children, as highlighted in Study 1. The moral self-concept, as identified in the first study, is an initial representation integrated into children's self-concept concerning behaviors and preferences related to prosociality. By the age of 5, children develop a three-dimensional moral self-concept with subdimensions of helping, sharing, and comforting, equivalent to the three forms of prosocial behavior. This phase marks a significant increase in the coherency of the moral self-concept, aligning with influential theoretical accounts that emphasize differentiated structure and coherency within self-concept domains. At the age of 5, correlations between moral self-concept and actual behavior become observable. The global moral self-concept is significantly related to behavior following transgressions, termed guilt-related behavior. In the prosocial subdimensions of the moral self, Study 4 suggests different patterns in the interrelation between the moral self and actual prosocial behavior during childhood development, highlighting a reciprocal influence between the comforting dimension of the moral self-concept and comforting behavior. Across the studies, a picture emerges of an evolving moral self-concept that is actively acquired by children through social interaction and emerges in early childhood, becomes increasingly coherent and differentiated in the preschool years, and has an impact on children's prosocial behavior later in development. The results thus provide a consistent picture of early moral self-concept development that fits well with developmental theories that see the child as an active participant in their own development and emphasize social interactions as a driving force (Carpendale & Lewis, 2021; Piaget, 2010; Vygotskij, 1978).

In summary, this thesis improves our understanding of early moral self-concept development by incorporating various theoretical perspectives, clarifying early predictors and the internal framework of the moral self-concept, and highlighting the complex relation between moral self-concept and behavior in early to middle childhood. The findings of this dissertation provide opportunities for further investigation into the complexities of moral self-concept development, establishing a foundation for future research and interventions aimed at fostering positive moral self-concepts in children.

Zusammenfassung (Deutsch)

Prosoziales Verhalten spielt eine wichtige Rolle in unserem täglichen Leben und ist für das Gefüge unserer Gesellschaft unerlässlich. Dies gilt nicht nur für Erwachsene, sondern auch für Kinder. Frühzeitig zeigen sich Manifestationen von Fürsorglichkeit und altruistischem Verhalten in den ersten Lebensjahren (vgl. Dunfield & Kuhlmeier, 2013; Svetlova et al., 2010). Individuen handeln nicht nur moralisch, sondern betrachten sich auch als moralische Wesen (Blasi, 1983). Das bedeutet, dass Menschen ein moralisches Selbstkonzept (kurz: moralisches Selbst) haben, das auf die Integration von Moral und Selbst hinweist (Hardy & Carlo, 2011; Lapsley & Narvaez, 2004). Einflussreiche theoretische Arbeiten von Blasi (1983) und Colby und Damon (1993) haben dem moralischen Selbst in der Erwachsenenforschung eine Stimme gegeben. Neuere Ansätze haben ihre Ideen auf jüngere Altersgruppen ausgedehnt und das moralische Selbst als Repräsentation der Präferenzen von Kindern für moralisch relevantes Verhalten konzeptualisiert (z. B. Krettenauer, 2013; Sengsavang & Krettenauer, 2015; Sticker et al., 2021). Trotzdem bestehen immer noch Unsicherheiten hinsichtlich der frühen Ontogenese des moralischen Selbstkonzepts in der Kindheit. Das Ziel dieser Dissertation ist es, einige der Forschungslücken in diesem Themenbereich zu schließen.

Diese Arbeit untersucht die frühe Ontogenese des moralischen Selbstkonzepts in einer kritischen Entwicklungsphase, die vom Säuglingsalter bis zur mittleren Kindheit reicht. Die Dissertation trägt neue Erkenntnisse zu bestehenden theoretischen Modellen bei, indem sie die Entwicklungswege zwischen frühkindlichen sozialen Interaktionen und dem aufkommenden moralischen Selbst, seiner internen Struktur, Kohärenz und Stabilität sowie seinem Einfluss auf moralisch relevante Verhaltensweisen aufklärt. Vier zentrale Studien bilden das Rückgrat dieser Dissertation und beleuchten verschiedene Aspekte der Entwicklung des moralischen Selbstkonzepts.

Die erste Studie untersucht das Zusammenspiel zwischen frühkindlichen sozialen Interaktionen, insbesondere zwischen Mutter und Kind, und der Entwicklung eines (positiven) moralischen Selbstkonzepts. Basierend auf klassischen Entwicklungsmodellen wie Bowlbys Bindungstheorie (1969, 1973, 1979) und dem neueren relationalen Entwicklungsansatz

(Carpendale et al., 2013; Carpendale & Lewis, 2021; Carpendale & Wallbridge, 2023) postuliert diese Studie, dass die Qualität frühkindlicher Interaktionen die Grundlage für ein positives moralisches Selbstkonzept bildet. Um diese Idee zu untersuchen, wurde eine Längsschnittstudie über drei Messzeitpunkte durchgeführt. Dabei wurden Kinder im Alter von 1, 3 und 4 Jahren getestet. Es wurde untersucht, ob die emotionale Verfügbarkeit der Mutter und das prosoziale Verhalten der Kinder potenzielle Prädiktoren für die Entwicklung des moralischen Selbstkonzepts sind. Hierfür wurden die mütterliche Sensitivität zu T1, das prosoziale Verhalten der Kinder (Helfen, Teilen und Trösten) durch Verhaltensbeobachtungen zu T2 und das moralische Selbstkonzept durch ein Puppeninterview zu T3 in einem Laborsetting gemessen. Das Puppeninterview erfasst die Verhaltenstendenzen und -präferenzen der Kinder auf verschiedenen Skalen und ist eine bewährte Messmethode zur Erhebung des kindlichen Selbstkonzepts (z.B., Christner et al., 2020; Sengsavang & Krettenauer, 2015). Die Ergebnisse zeigen, dass die Sensitivität einer Mutter, wenn ihr Kind erst ein Jahr alt ist, das moralische Selbstkonzept des Kindes nachhaltig prägt. Studie 1 ergab außerdem, dass tröstendes Verhalten im Alter von 3 Jahren als entscheidender Vermittler zwischen mütterlicher Sensitivität und moralischem Selbstkonzept wirkt. Die Studie ermöglichte es, die Entwicklungspfade zu untersuchen, die zu einem (positiven) moralischen Selbstkonzept bei Kindern beitragen, und kann zeigen, dass diese bis zur Säuglingszeit zurückverfolgt werden können.

In der zweiten Studie wurde die Entwicklung des moralischen Selbstkonzepts von einem allgemeinen und undifferenzierten Zustand im frühen Vorschulalter bis hin zu einem kohärenteren und differenzierteren Konstrukt im mittleren Kindesalter im Detail untersucht. Einflussreiche Entwicklungstheoretiker aus verschiedenen Richtungen sind der Ansicht, dass die Entwicklung eines etablierten Selbstkonzepts eine gewisse Kohärenz der Selbstwahrnehmungen erfordert (Baumeister, 1997; Erikson, 1959; Rogers, 1959). Darüber hinaus wird angenommen, dass sich das Selbstkonzept im Laufe der Zeit zu einem stabilen, hierarchischen und multidimensionalen Konstrukt entwickelt (Marsh & Shavelson, 1985; Shavelson et al., 1976). Daher untersuchte Studie 2 das moralischen Selbstkonzept hinsichtlich Kohärenz, Stabilität und differenzierter Struktur. Die Längsschnittstudie erhob das Selbstkonzept der Kinder im Alter von 4 (T1) und 5 Jahren (T2) über ein Puppeninterview. Das Interview umfasste Skalen zur Bewertung des moralischen, physischen und verbalen Selbstkonzepts. Die Kohärenz der Antworten der Kinder wurde analysiert, um einen Kohärenzscore zu erhalten. Höhere Variabilität in den Antworten innerhalb der Skalen entsprach niedrigeren Scores. Während der Vorschulzeit nahm die Kohärenz im moralischen

Selbstkonzept signifikant zu. Fünf-Jährige zeigten vorwiegend kohärente Antworten. Die Stabilität des moralischen Selbstkonzepts von Kindern war mit der Kohärenz assoziiert: Kinder mit hoher Kohärenz zu T1 wiesen eine größere Stabilität auf. Im Alter von 5 Jahren zeigte die Faktorenanalyse eine multidimensionale Struktur des moralischen Selbstkonzepts mit den drei Skalen Helfen, Teilen und Trösten – äquivalent zu den drei prosozialen Verhaltensweisen. Im Alter von 4 Jahren zeigte sich diese Differenzierung noch nicht. Diese Ergebnisse betonen die Bedeutung der Vorschuljahre für die Entwicklung eines kohärenten und multidimensionalen moralischen Selbstkonzepts. Die Analyse dieses Entwicklungsverlaufs ist wichtig, um zu verstehen, wie sich die Vorstellungen von Kindern über sich selbst als prosoziale Wesen im Laufe der Zeit entwickeln und festigen. Die Befunde bieten eine neue Perspektive auf die Kohärenz des Selbstkonzepts als entscheidendes Merkmal der frühen Selbstkonzeptentwicklung.

Die dritte Studie legt einen erheblichen Schwerpunkt auf die Beziehung zwischen schuldbezogenem Verhalten und dem moralischen Selbstkonzept während der Vorschuljahre. Es wird angenommen, dass es eine Verbindung zwischen frühkindlicher prosozialer und moralischer Entwicklung und dem Auftreten moralischer Emotionen wie Schuld gibt (z. B. Hoffman, 1982; Nikolić et al., 2023; Vaish, 2018). Schuld ist ein bedeutender psychologischer Faktor, der prosoziales Verhalten motiviert und in verschiedenen sozialen Funktionen eine Rolle spielt (vgl. Baumeister et al., 1994; Tangney & Dearing, 2003; Vaish, 2018). Schuld kann sich durch schuldbezogenes Verhalten, einschließlich Sprache und Handlungen, äußern (vgl. Zahn-Waxler & Kochanska, 1990). Es ist jedoch unklar, welche Faktoren den Grad beeinflussen, in dem Kinder schuldbezogenes Verhalten zeigen. Studie 3 untersuchte zwei potenzielle Faktoren, die zum Auftreten von Schuld beitragen: das moralische Selbstkonzept der Kinder und ihre Fähigkeit zur Perspektivübernahme (Theory of Mind). An der Querschnittsstudie nahmen Kinder im Alter von 5-6 Jahren teil. Die Ergebnisse legen nahe, dass das moralische Selbstkonzept ein Prädiktor für schuldbezogenes Verhalten bei Kindern ist: Je höher das moralische Selbst, desto mehr schulbezogenes Verhalten zeigten die Kinder. Im Gegensatz dazu konnte die Theory of Mind der Kinder schuldbezogenes Verhalten nicht vorhersagen. Studie 3 liefert wichtige Einblicke darüber, wie sich die Vorstellungen von Kindern über sich selbst als prosoziale Akteure in ihrem schuldbezogenen Verhalten manifestieren. Die Ergebnisse unterstützen theoretische Perspektiven, die postulieren, dass die Entwicklung von Schuld auf Veränderungen im Selbstkonzept der Kinder basiert (vgl., Kagan, 1987; Rosenberg, 1979; Stipek et al., 1990). Es wird der Zusammenhang zwischen Schuld,

einer zentralen moralischen Emotion, und dem moralischen Selbst im Entwicklungsprozess bestätigt.

Ein wichtiger Aspekt dieser Dissertation ist die Untersuchung der Entwicklung der Verbindung zwischen dem moralischen Selbstkonzept und prosozialem Verhalten in der vierten Studie. Die Studie untersuchte verschiedene theoretische Perspektiven, einschließlich Blasis (1980, 1983, 1993) Modell der Selbstkonsistenz, Bems (1972) Selbstwahrnehmungstheorie und Marsh und Cravens (2006) Ansatz zu reziproken Effekten, um die Richtung und die Natur dieser Verbindung zu klären. Diese Längsschnittstudie untersuchte die Entwicklung, Struktur und das Zusammenspiel von prosozialen Verhaltensweisen und dem moralischen Selbstkonzept im Kindesalter. Daten wurden zu drei Messzeitpunkten (im Alter von 4, 5 und 6,5 Jahren) gesammelt, um das moralische Selbstkonzept der Kinder sowie ihr Hilfe-, Teil- und Tröstverhalten zu untersuchen. Konfirmatorische Faktorenanalysen haben gezeigt, dass das moralische Selbstkonzept bei 5- und 6,5-jährigen Kindern eine multidimensionale Struktur aufweist, während dies bei 4-jährigen Kindern nicht der Fall ist. Eine inkonsistente Stabilität sowohl für prosoziales Verhalten als auch für das moralische Selbstkonzept wurde über die drei Messzeitpunkte hinweg beobachtet. Bemerkenswerterweise wurden längsschnittliche wechselseitige längsschnittliche Beziehungen zwischen dem Selbstkonzept und tröstendem Verhalten festgestellt, während solche Beziehungen in anderen Bereichen (Helfen und Teilen) fehlten. Im Alter von 6,5 Jahren zeigte sich außerdem eine Wechselbeziehung zwischen hilfsbereitem Verhalten und Selbstkonzept. Diese Ergebnisse deuten darauf hin, dass es reziproke Verbindungen zwischen dem moralischen Selbstkonzept und prosozialem Verhalten gibt, insbesondere im Bereich des Tröstens. Dies stimmt mit dem theoretischen Modell der reziproken Effekte (Marsh & Craven, 2006) überein. Die Studie betont die Wichtigkeit der Unterscheidung zwischen verschiedenen Arten von prosozialem Verhalten und den entsprechenden Dimensionen des Selbstkonzepts. Dadurch können unterschiedliche entwicklungsbezogene Verläufe und Verbindungen aufgedeckt werden. Studie 4 beleuchtete das Selbstkonzept von Kindern als prosoziale Wesen und dessen Einfluss auf prosoziales Verhalten von der frühen Vorschulzeit bis zum Beginn der Grundschule. Die Ergebnisse tragen wesentlich zum Verständnis der Auswirkungen des moralischen Selbstkonzepts auf die menschliche Prosozialität.

Über die Studien hinweg bietet diese Arbeit eine integrative Perspektive auf die Entwicklung des moralischen Selbstkonzepts. Die Dissertation gibt einen kohärenten Überblick über mehr als fünf Jahre Ontogenese, beginnend im Alter von 12 Monaten. Die

Dissertationsergebnisse zeigen, dass im ersten Lebensjahr durch sensible Interaktionen zwischen Müttern und ihren Kindern die Grundlage für die Entwicklung eines positiven moralischen Selbstkonzepts gelegt wird. Dies wurde in Studie 1 herausgestellt. Das moralische Selbstkonzept, wie es in der ersten Studie untersucht wurde, beinhaltet Repräsentationen von Kindern in Bezug auf Verhaltensweisen und Präferenzen im Zusammenhang mit Prosozialität. Im Alter von 5 Jahren entwickeln Kinder ein dreidimensionales moralisches Selbstkonzept mit Subdimensionen für Helfen, Teilen und Trösten, die den drei Formen von prosozialem Verhalten entsprechen. Diese Phase ist außerdem geprägt durch einen signifikanten Anstieg der Kohärenz des moralischen Selbstkonzepts. Dies stimmt mit einflussreichen theoretischen Ansätzen überein, die eine differenzierte Struktur und Kohärenz innerhalb von Selbstkonzeptdomänen betonen. Ab einem Alter von 5 Jahren sind Korrelationen zwischen dem moralischen Selbstkonzept und dem tatsächlichen Verhalten beobachtbar. Das moralische Selbstkonzept steht in signifikanter Beziehung zu Verhalten nach Verstößen, welches als schuldbezogenes Verhalten bezeichnet werden kann. Studie 4 deutet auf unterschiedliche Muster in der Wechselbeziehung zwischen moralischem Selbst und tatsächlichem prosozialem Verhalten während der kindlichen Entwicklung hin. Eine reziproke Beeinflussung zwischen der tröstenden Dimension des moralischen Selbstkonzepts und tröstendem Verhalten sticht besonders hervor. In allen Studien zeigt sich, dass Kinder ein sich entwickelndes moralisches Selbstkonzept aktiv durch soziale Interaktion erwerben. Dieses entsteht in der frühen Kindheit und wird in den Vorschuljahren zunehmend kohärenter und differenzierter. Es beeinflusst das prosoziale Verhalten der Kinder im späteren Verlauf der Entwicklung. Die Ergebnisse liefern ein konsistentes Bild der frühen Entwicklung des moralischen Selbstkonzepts. Dies passt gut zu Entwicklungstheorien, die das Kind als aktiven Teilnehmer an seiner eigenen Entwicklung sehen und soziale Interaktionen als treibende Kraft betonen (Carpendale & Lewis, 2021; Piaget, 2010; Vygotskij, 1978).

Zusammenfassend trägt diese Dissertation zur Verbesserung unseres Verständnisses der frühkindlichen moralischen Selbstkonzeptentwicklung bei, indem sie verschiedene theoretische Perspektiven integriert, frühzeitige Prädiktoren und die interne Struktur des moralischen Selbstkonzepts klärt und die komplexe Beziehung zwischen moralischem Selbstkonzept und Verhalten in der frühen bis mittleren Kindheit hervorhebt. Die Ergebnisse dieser Dissertation bieten Möglichkeiten für weitere Untersuchungen zur Komplexität der Entwicklung des moralischen Selbstkonzepts und schaffen eine Grundlage für zukünftige Forschung und Interventionen, die darauf abzielen, positive moralische Selbstkonzepte bei Kindern zu fördern.

1. General Introduction

We have all noticed that people's words do not always match their actions. This can be seen in small everyday situations, such as when someone says they will go to the gym in the evening but then decides not to. However, it also applies to larger moral issues of our time. For instance, individuals may claim that it is crucial to care for the environment and reduce their ecological footprint, yet they still take several long-distance flights each year. What leads to the contradiction between the evaluation of a situation and the execution of an action? This question is socially relevant and interests philosophers, politicians, and scientists alike. Particularly in a moral context, this issue has received increasing attention in recent decades. In this regard, Blasi (1980, 1983, 1993) has brought the so-called "moral-judgment-action gap" into focus, and has suggested that the "gap" is filled by a *moral self*. This means that individuals have a self-concept that includes a moral dimension. According to Blasi's *model of self-consistency* (1983), individuals with a higher moral self are more likely to act morally because of the human striving for self-consistency. A growing body of research has been dedicated to investigating the structure of the moral self, its potential correlates, and its developmental trajectories (e.g., Aquino & Reed, 2002; Colby & Damon, 1992; Hardy & Carlo, 2005; Kingsford et al., 2018).

However, there is some disagreement about the definition of moral self and its associated terminology. Moral self, moral identity, moral self-identity, and moral selfhood are all terms that describe a similar construct (e.g., Aquino & Reed, 2002; Hardy & Carlo, 2005, 2011; Kingsford et al., 2018). Some terms are mostly used to describe the moral self in adulthood (e.g. moral identity), while others are used to describe the moral self in earlier stages of development (e.g. moral self-concept). In this thesis, I will use the term *moral self-concept*, or *moral self* for short, and define it as a construct that reflects the view of oneself in terms of prosocial behavioral preferences.

There is a consensus that the moral self is relevant for social functionality, by motivating moral behavior (e.g., Blasi, 1983; Colby & Damon, 1992; Hardy & Carlo, 2005; Hoffman, 2000; Lapsley, 2015). Empirical research supports this notion by demonstrating that the moral self is related positive to various behavioral aspects like for example volunteering behavior

(Aquino & Reed, 2002), social behaviors like regard for outgroup members (Reed & Aquino, 2003), community involvement (Pratt et al., 2003), and prosocial behavior (Gotowiec & van Mastrigt, 2019; Hardy et al., 2017; Winterich et al., 2013) which are all crucial components of our social life. Given the significance of this construct in human interaction, it is natural to ask how we can promote its development. In order to answer this question, we first need to clarify another question, namely *how* and *when* does the moral self arise in the first place and how does it develop in early childhood? No doubt this is a question for researchers in developmental psychology, and I am not the first to raise it. Nevertheless, this dissertation aims to provide a comprehensive picture of the early ontogeny of the moral self-concept by adding new insights and empirical evidence to existing theories.

This dissertation follows the notion that the moral self in childhood can be defined as "children's self-representations about their moral behavioral preferences" (Sengsavang & Krettenauer, 2015, p. 214), focusing on their representation of their *prosocial* behavioral tendencies. The development of the moral self-concept in early childhood is a crucial aspect of human psychological development, intertwining cognitive, emotional, and social aspects. Overall, this dissertation aims to provide a comprehensive understanding of the early development of moral self-concept by drawing upon diverse perspectives. The thesis will delve into different aspects in detail, presenting a nuanced view of how the moral self-concept evolves during childhood. The following provides a comprehensive overview of different theoretical approaches to the moral self-concept in childhood, including its structural nature and developmental trajectories.

1.1. Historical Background

In the context of research on the moral self, not only are a variety of terms associated with more or less the same construct in circulation, but representatives of a wide variety of theoretical approaches have dealt with the construct and its development throughout history. After Kohlberg's stage theory (1981, 1984) made moral development an important part of developmental psychology, researchers began to focus on various aspects of moral development, including moral reasoning, prosocial behavior, and moral emotions. As previously mentioned, Augusto Blasi was one of the first to emphasize the importance of the moral self. Blasi's (1983) *moral self model* was a reaction to the fact that, contrary to previous assumptions (e.g., Kohlberg & Candee, 1984), moral judgements and actual moral behavior are not always directly related. According to his moral self model, the greatest motivator for prosocial behavior is the human desire for self-consistency. Therefore, individuals who identify as moral are more likely to engage in prosocial behavior. Blasi's contribution to the field of moral psychology is notable for giving voice to the moral self. However, his theory lacks precision in describing the nature and development of the moral self. Subsequent models have built on his work to provide a more detailed understanding of the moral self. For instance, Colby and Damon (1992) introduced the concept of *moral characters* to describe individuals who are particularly committed to morality. They explained this commitment by stating that during adolescence, the self and morality merge. This fusion is considered a fundamental goal of development in late adolescence, which then leads to the development of the moral self. This approach has had a significant impact on the literature on moral development (e.g. on work by Damon, 1996; Hart, 2005). Furthermore, more recent research has emphasized the significance of schemas in shaping the moral self, suggesting that these mental structures, which encompass self-perceptions, relationships, and experiences, play a crucial role in moral self formation (Aquino et al., 2009; Fiske, 2000; Lapsley & Narvaez, 2004). These schemas, varying in individual importance and situational accessibility, underpin moral ideals and characteristics integral to a person's identity (Aquino et al., 2009; Bizer & Krosnick, 2001). The schema approach therefore points to the moral self as a state-like construct, whereas approaches such as those of Colby and Damon (1992) or Blasi (1983) are based more on the moral self as a trait-like construct.

Blasi's original moral self model (1983) and Colby and Damon's (1992) moral character approach have been criticized for neglecting childhood as an important developmental phase,

as pointed out by Nucci (2004a, 2004b). Later approaches focused on the developmental trajectories of the moral self. The resulting frameworks largely use a top-down logic[1], starting with a conception of a fully developed moral self and then describing earlier forms of the moral self by the absence of defined characteristics (for an overview, see Hardy & Carlo, 2011; Krettenauer, 2013). On the other hand, Krettenauer (2013) proposed a bottom-up model of moral self-development, to highlight developmental changes the moral self undergoes during early development. The author presents the theory that the emergence of the moral self in early development depends on certain cognitive prerequisites and developmental processes, on the basis of which the first signs of a moral self may emerge as early as in infancy, between the ages of 2 to 4. I will outline Krettenauer's developmental model in more detail in section ***1.2.3.***.

The view of the moral self, which has been primarily concerned with the already established construct and its development from adolescence onward, was challenged by work of Krettenauer's (2013) and other scholars, and new questions were put on the agenda: It raised questions about the predictors and factors related to the moral self in early childhood, as well as its structure and early development. Hardy and Carlo (2011) argued for the establishment of testable models and the support of theoretical assumptions about the development of the moral self through empirical research. In recent years, numerous studies have addressed this topic. The following section will discuss developmental approaches and their fundamental empirical findings. I will begin with a brief introduction to the general development of the self-concept from infancy.

[1] The statement refers for example to the reconciliation model of Frimer and Walker (2009), who assume a duality between agency (own goals) and communion (goals of others). In childhood, these coexist, but as one ages, tension arises between the two motivational systems, leading to disequilibrium. The solution is to decide in favor of one or reconcile the two, which can be the basis for moral exemplars to arise.

1.2. (Moral) Self Development

This thesis refers to the development of the moral self as part of the *explicit self*. William James (1890) a pioneering psychologist and philosopher, distinguished between the “I” and the “Me” in his work on the self. The “I” represents the immediate and active aspect of the self, the aspect that experiences and acts upon the world. In contrast, the “Me” represents the more reflective and self-aware aspect of the self. It is the self that is known, recognized, and reflected upon. James' concept of the “Me” aligns more closely with the notion of the explicit self. It includes an individual's self-concept, beliefs, values, and identity, as well as their perception of themselves in relation to others and the world.

One of the first indicators of an explicit self in children is their ability to recognize themselves in the mirror. Amsterdam's (1972) pivotal study demonstrated that around 18 months, infants begin to show self-recognition behaviors, such as touching a red spot on their nose while standing in front of a mirror. This milestone in self-recognition has been replicated in various studies (e.g., Brownell et al., 2010; Nielsen et al., 2006; Nielsen & Dissanayake, 2004). Around this time, children also begin to use their names and personal pronouns to describe themselves (Lewis & Ramsay, 2004). Therefore, by 18-24 months, children develop a new system for encoding information about themselves. Further, around 24 months of age, children begin to use self-descriptive statements such as "I do" and "I want" (Kagan, 1981). This early self-awareness lays the foundation for more complex self-concept developments in later stages (Damon & Hart, 1982; Povinelli, 1995; Rochat, 2010). By developing an autobiographical memory at the age of 3-4 years, children can also form a self-image that endures over time (Moore & Lemmon, 2001). These developmental processes establish the foundation for the development of a multidimensional self-concept, which reflects an individual's assessment of their past experiences and behaviors. Research suggests that children start developing a hierarchical and multifaceted self-concept during the late preschool period and early years of elementary school (e.g. Harter, 2006; Marsh et al., 2002). Therefore, the self evolves from a broad and indistinct concept into a well-organized, multifaceted perception of the self. In the following section, the hierarchical and multidimensional model of self-concept is described in more detail.

1.2.1. Multidimensional Model of the Self

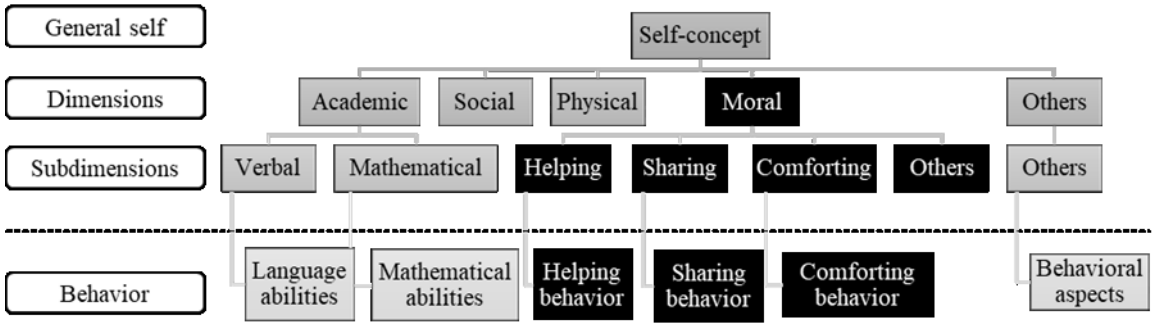
The hierarchical and multidimensional model of self-concept is a nuanced framework that elucidates the complex nature of the self-concept (Brunner et al., 2010; Harter & Leahy, 1999; Marsh & Shavelson, 1985). This model, which can be visualized as a pyramid or hierarchy, delineates the various levels at which individuals perceive and understand themselves. It is especially substantial in explaining how the self-concept develops and matures over time. At the top of this hierarchical structure lies the global self-concept. This is the most general level of self-perception, encompassing an overall sense of self-worth or self-value. It's a broad, encompassing view that colors the general tone of an individual's self-image. Beneath this top level, the model introduces more specific domains of self-concept. These domains are multifaceted and cover various aspects of a person's character. Common domains are the academic (like proficiency in different subjects), social (such as relationships with peers and family members), emotional, and physical (including athletic abilities and physical appearance) domain (e.g., Marsh et al., 1998, 2002). Each of these domains represents a significant part of an individual's self-concept and contributes to the overall picture of how they view themselves. The lowest level of the hierarchy breaks down these domains into even more specific facets. For example, within the academic domain, a child's self-concept may vary distinctly between subjects such as mathematics, science, or languages (Marsh et al., 1988). This level represents the most detailed and nuanced aspects of self-perception.

Focusing on childhood development, this model becomes particularly insightful. In early childhood, the self-concept is generally rudimentary and concrete. Young children's self-perceptions are primarily centered around easily observable characteristics like their physical capabilities, age, and simple preferences (e.g., Damon & Hart, 1988; Harter, 2015). They often describe themselves in very tangible terms without much differentiation between various aspects of their personalities or abilities. As children grow into middle childhood, their self-concept undergoes significant development (e.g., Rochat, 2003). It becomes more differentiated and complex, recognizing the distinctions between different domains like academic skills and social abilities (e.g., Marsh et al., 1998). Children start to understand that they might excel in certain areas while facing challenges in others. The environmental influence plays a crucial role in this developmental phase (e.g., Harter, 2015). The feedback that children receive from parents, teachers, and peers, combined with cultural norms and personal experiences, shapes their self-concept (e.g., Brummelman & Thomaes, 2017). Encouragement and positive reinforcement contribute to healthier self-perceptions, while negative feedback can lead to

issues in self-esteem. Another critical aspect in this developmental stage is the onset of self-comparison. Children begin to compare their abilities and characteristics with others, which significantly influences their self-concept (e.g., Molloy et al., 2011). This comparison can be based on their own past performance or with their peers, affecting how they view themselves in various domains. According to Marsh and Shavelson's (1985) model, despite certain aspects of self-concept being relatively stable, it remains fluid and responsive to new experiences and environments. Children's self-concept continues to evolve, becoming more intricate and nuanced as they progress through different stages of childhood. In summary, the hierarchical and multidimensional model of self-concept offers a comprehensive view of how individuals develop an understanding of themselves. It highlights the transition from a simple, action-based self-perception in early childhood to a more structured, complex, and layered self-concept as children grow and mature. This model underscores the dynamic nature of self-concept, shaped by both internal dispositions and external influences throughout childhood.

Integrating the moral self-concept into Marsh and Shavelson (1985) hierarchical, multidimensional self-concept model can significantly expand our understanding of the structure of the moral self and its developmental processes. The model organizes the self-concept into academic, social, emotional, and physical dimensions structured hierarchically, providing a suitable framework for integrating the moral dimension. Marsh et al. (1988) and Byrne and Shavelson (1996) conducted studies that validate the multifaceted and hierarchical nature of the self-concept model. This suggests that the model can be adapted to include additional dimensions, such as the moral self-concept. Byrne and Shavelson's (1996) study on the structure of social self-concept among adolescents supports the flexibility and potential of the model to include moral components. In conclusion, integrating the moral self-concept into the multidimensional and hierarchical model can enhance our understanding of self-concept by recognizing the significant role of morality and prosociality in shaping identity and behavior. **Figure *1*** display the hierarchical and multidimensional framework with an integrated moral dimension of the self.

Figure 1 - *Marsh and Shavelson's (1985) Hierarchical and Multidimensional Model of the Self-Concept with an Integrated Moral Self-Concept Dimension and Potential Subdimensions*



1.2.2. Kochanska's Internalization Model

Work by Kochanska and colleagues (1997b, 1997a, 2002; 2010; 2014) describe a multi-stage development process of the moral self that begins with early parent-child interaction. They propose that a *mutual responsive orientation* (MRO) of the relationship between parents and children leads to children being more likely to adhere to parental rules and expectations. MRO refers to the interaction between parent and child being characterized by positive affect and jointly coordinated routines. This then leads to increased committed compliance (adherence to parental guidance) on the part of the children, which in turn leads to children internalizing norms and standards. This "view [of] themselves as embracing the parent's values and rules" (Kochanska, 2002, p. 340) is the emerging moral self. The moral self then influences moral conduct in further development. Furthermore, according to Kochanska and Aksan (2006), inhibitory control, a temperament trait linked to executive functioning, is essential for the internalization of rules. In summary, the framework emphasizes that children's ability to control their impulses (inhibitory control) and their reactions to parental guidance (committed compliance) are critical in the internalization of moral standards and thus for the development of a moral self-concept. This *internalization model* is supported by several significant findings.

A longitudinal study was conducted to investigate the impact of mother-child MRO on children's positive developmental outcomes, specifically moral behavior at 56 months

(Kochanska et al., 2005). The study recorded MRO between 9 and 22 months. The study showed that early MRO had a positive effect on later moral behavior by increasing the child's enjoyment of interactions with their mother and encouraging the child's autonomous and dedicated compliance. Early MRO was found to be associated with a decrease in mothers' authoritative behaviors, which, in turn, appeared to result in more internalized conduct in children. Moreover, Kochanska (2002) proposed a mediational model in which the child's moral self with 56 months is shaped by committed compliance and opposition to rules at 14, 22, 33, and 45 months. This model was particularly supported in the context of prohibitive demands, especially for boys. Another study proposed a model that connects early parent-child MRO (at 25-30 months), children's temperament of effortful control (at 33-38 months), and their internalization of conduct rules (at 40-67 months) (Kochanska & Kim, 2014). Findings suggested that effortful control mediates the relation between MRO and children's rule internalization.

Overall, Kochanska and colleagues' research provides valuable insights into the development of the moral self in children by highlighting the role of internalization processes and children's committed compliance. The significance of early temperament and family dynamics in shaping the moral self is underscored by empirical findings. However, Kochanska's approach also leaves some open questions.

First, in line with Kochanska's theoretical assumptions, the internalization model focusses on the acquisition of rules and social norms and their relation to prosocial development. Accordingly, the motives for prosocial development are not necessarily other-oriented. However, this contradicts with *emotion-sharing theories* (Batson, 2011; Eisenberg, 1986) that propose that prosociality emerges through the development of concern for other. Proponents of these theories suggest that children's prosocial behavior is a result of their concern for the other person and not of their internalized rule compliance. A study conducted by Becher et al. (2023) found support for this notion: in their study, children's empathy, but not their committed compliance, was significantly related to emotional helping behavior. This may suggest that Kochanska's approach may not be sufficient to explain all types of prosociality, as some may require skills that go beyond the internalization of rules and norms. For example, as in Becher et al.'s (2023) study, emotional helping requires some kind of understanding of the emotional needs of others. This means that while committed compliance may be an important developmental factor, it is not sufficient to explain all facets of morality and prosociality in childhood development.

Second, on a methodological level, in accordance to Kochanska and colleagues' theoretical assumptions, their assessment of the moral self mostly focusses of different aspects of compliance and conscience, like confession, guilt, and preferences for internalized conduct. Given the relevance of the moral self to prosocial behavior, it makes sense to conceptualize the moral self as children's representations of their preferences for prosocial behavior.

Third, the internalization of parental rules lays the foundation stone for Kochanska's model of moral development. Influential developmental theories, on the other hand, suggest that breaking free from the rules of authority figures such as parents is an important developmental step in moral development, and that autonomy is crucial to the development of moral understanding (e.g., Piaget, 2015). This is supported by findings showing that children begin to protest against adult authorities when they transgress norms (Heyman et al., 2016) which is proposed to be an important step in the development of moral norms. Thus, the role of internalized compliance in children's moral development seems debatable.

1.2.3. Developmental Model by Krettenauer

Krettenauer (2013) proposes a different approach to explaining the development of the moral self-concept. According to his *developmental model*, the moral self emerges in three layers that build upon each other: moral self as *intentional*, *volitional*, and *identified agent*. These layers build on each other. This doesn't necessarily imply a stage theory. Rather, the different forms of the moral self levels exist side by side and can continue to change in the course of development.

The moral self as an *intentional agent* begins to develop at around 2 years of age when children first exhibit moral desires as an outgrowth of their first sympathetic reactions. This layer highlights the crucial role of intentions in moral actions. From a developmental perspective, a child demonstrates the characteristics of an intentional agent once capable of intentional actions, which are a combination of desire and belief.

Second, at around the age of 4, children develop an understanding that their self exists over time, which is associated with the moral self as a *volitional agent*. This aspect pertains to the ability to regulate selfish desires and resist anti-social impulses, which are necessary for moral actions. The volitional self reflects willpower and the ability to act in the face of conflicting desires, such as choosing between sharing treats with others or keeping them for

oneself. The delay of gratification paradigm[2] is often used to demonstrate a child's ability to postpone a desire into the future. This empirical paradigm can be applied to take up the concept of the volitional agent. Children's ability to delay gratification significantly increases during childhood (Mischel, 1974). Additionally, the volitional moral self encompasses the capacity to anticipate negative emotional self-evaluations in the context of moral transgressions. This developmental milestone typically occurs between the ages of 6-8 years (e.g., Arsenio & Lover, 1995). Therefore, the development of the volitional moral self is thought to occur first between the ages of 4 and 6 years.

Finally, during middle childhood, the self can develop as an *identified agent*, but only after the completion of the two preliminary layers. This layer pertains to the integration of moral values into the self-system, where moral actions are seen as a form of self-expression. It necessitates that individuals perceive the act of prioritizing a moral desire over an immoral one as a volition that originates from within themselves, rather than as a decision imposed by external factors.

Taken together, Krettenauer (2013) proposed a new developmental model of the moral self-concept. In addition to this theoretical approach, Krettenauer and colleagues investigated the structure and correlates of the moral self in early developmental phases in various empirical studies (e.g., Krettenauer et al., 2013; Sengsavang & Krettenauer, 2015, 2015). One study revealed that children as young as 5 years old possess a differentiated moral self-concept, which can be categorized into two scales: *preference for prosocial behavior* and *avoidance of antisocial behavior* (Krettenauer, Davis, et al., 2013). These findings align with the assumptions of the multidimensional self-concept model, which suggests that young children have already integrated meaningful and conscientious subdimensions into their self-concept (e.g., Eder, 1990; Marsh et al., 2002). Empirical findings showed a positive relation between preference for prosocial behavior and moral emotion attribution in children in late preschool age (Krettenauer, Davis, et al., 2013) as well as a significant negative relation between both, preference for prosocial behavior and avoidance of antisocial behavior, and child aggression (Sengsavang & Krettenauer, 2015).

[2] The delay of gratification paradigm refers to a psychological experiment, commonly associated with the Stanford marshmallow experiment (Mischel & Ebbesen, 1970), in which individuals are given the choice between receiving a smaller reward immediately or waiting for a larger reward. This paradigm assesses an individual's ability to resist the temptation of immediate gratification in favor of obtaining a more significant reward after a delay, providing insights into self-control and future-oriented decision-making.

In summary, Krettenauer and colleagues' (2013; 2015) findings align with the developmental model (Krettenauer, 2013b) and the hierarchical and multidimensional self model (Marsh & Shavelson, 1985). They provide the first evidence that preschool-aged children have a moral self expressed through various subdimensions and related to morally relevant behavior. Beyond the contribution that the studies of Krettenauer and his colleagues can make to the scientific discourse, there are also limitations, in particular of a methodological nature. On the one hand, children's aggressive behavior was assessed using parent questionnaires, which can lead to bias. In addition, the empirical studies are cross-sectional, which does not allow conclusions to be drawn about causal relations between the moral self and moral emotions or children's aggression. Importantly, the theoretical developmental model implies that higher levels can influence lower levels, which allows one to draw conclusions about for example the direction of influence between the moral self and prosocial behavior: Identifying with a morally relevant desire can influence one to prioritize a moral desire over an immoral one and therefore to act prosocially. Testing this requires further empirical studies that are characterized by a longitudinal design and the assessment of child behavior based on actual behavioral observations.

1.3. Relations with Prosocial Behaviors

The intertwined trajectory of moral self development and prosocial behavior has gained increasing attention in developmental psychology. Prosocial behaviors, ranging from sharing toys in childhood to engaging in acts of charity in adulthood, are central to the formation of social bonds and the cultivation of empathy within communities. Understanding the connection between the moral self and prosocial behavior is of paramount theoretical and practical importance. Prosocial behaviors are actions that benefit others without providing immediate personal advantages to the individual (Paulus, 2018). These behaviors have diverse effects at various levels, contributing to increased well-being in groups (Abrams et al., 2015; Anderson & Kilduff, 2009), individuals (Sallquist et al., 2012), and society at large (Tomasello, 2009).

Theories of the development of prosocial behavior differ in their assumptions about the underlying motives for prosocial behavior and the age of emergence. While some theorists suggest that some kind of tendency to act prosocially is innate (e.g., Davidov et al., 2013), most theories agree that prosocial behavior begins to develop in infancy (for an overview, see Spinrad

& Eisenberg, 2023). Children typically start helping and recognizing instrumental needs at 1 to 2 years of age (Hammond, 2014; Svetlova et al., 2010), progressing to fair sharing around 3 years (Olson & Spelke, 2008), and displaying comforting behavior in response to others' distress by the second year of life (Zahn-Waxler, Radke-Yarrow, et al., 1992a). Since it is suggested that helping, sharing and comforting develop relatively independently of each other, have different underlying motives, and correlate with different aspects (Dunfield, 2014; Paulus, 2018), it makes sense to look at the three behaviors and their relation to the moral self-concept in childhood separately. Furthermore, it seems reasonable to expect separate representations of the prosocial behaviors in the moral self-concept, especially, since, according to the multidimensional and hierarchical model (Marsh & Shavelson, 1985), the lower hierarchical levels are closely linked to behavior. In fact, Sticker et al. (2021) found distinct patterns of results for the separate prosocial dimensions: although sharing and comforting were found to be related to respective dimensions of the moral self-concept, no such relation was found for the helping dimension.

Various theories allow conclusions to be drawn about causal directness of the relation between the moral self and prosocial behavior. The directionality of this relation is unclear, particularly in early development. I will present different theoretical approaches in the following sections.

1.3.1. Self-Consistency Theory

Blasi's moral self model (e.g., 1983) postulates that the moral self is related to actual morally relevant behavior. Blasi argued that moral behavior is influenced by how central morality is to one's self-concept. When moral values are a core part of an individual's identity, they are more likely to engage in prosocial behaviors that align with these values. Actions consistent with one's moral self-concept are personally rewarding and meaningful (*Self-Consistency theory*). According to Blasi's model, moral motivation drives prosocial behavior. If a person views moral actions, such as helping others, being fair, or showing empathy, as essential to their identity, they are more motivated to act in ways that reflect these values. This intrinsic motivation differs from external motivations, such as seeking reward or avoiding punishment. Research indicates a significant relation between moral self-concept and moral behavior during adolescence and adulthood. To give some examples, the moral self-concept was found to be associated with moral cognitions and behaviors in adolescents, university students, and adults, as highlighted by Aquino and Reed (2002) in their study. Furthermore, Patrick et al. (2018) demonstrated that

moral identity predicts prosocial behavior in adolescents and mediates the relationship between moral judgment and specific types of prosocial behavior (e.g., emotional prosocial behavior and volunteering). Results of another study revealed a significant relation between adults explicit moral self-concept and their sharing behavior (Christner, Pletti, et al., 2022). These studies exemplify the significant role of the moral self in influencing prosocial behavior.

Blasi also theorized about the development of the moral self over time. He suggested that experiences, reflections, and social interactions play crucial roles in shaping one's moral self. As individuals mature, their experiences and reflections help them integrate moral values more deeply into their self-concept, thereby influencing their propensity for prosocial behavior. Blasi's approach suggests a causal relation between the moral self and morally relevant behavior: The moral self influences subsequent actual behavior through the pursuit of self-consistency. Applied to development in childhood, it can be hypothesized that the moral self influences prosocial behavior in this way even at earlier stages of development.

1.3.2. Self-Perception Theory

Furthermore, there are other theoretical models that could explain the directionality and the development of the relation between moral self and behavior in early childhood. For instance, Bem's (1972) *Self-Perception theory* posits that individuals develop their attitudes and beliefs by observing their own behavior and the circumstances in which this behavior occurs. Therefore, individuals may form their self-concept based on their observations of own actions. The development of moral self-concept and its relation to prosocial behavior can evolve over time. As individuals grow and experience different situations, they continuously interpret and reinterpret their actions and beliefs. This dynamic process can lead to a more nuanced understanding of oneself as a prosocial agent. For example, if a person frequently engages in helpful or charitable acts, they might begin to view themselves as a prosocial and morally good person. In sum, Bem's Self-Perception theory offers an intriguing lens by highlighting the significance of self-observation and the interpretation of one's own actions in shaping the moral self. Research on self-perception theory draws evidence primarily from studies that examine the development of the academic self-concept. Studies suggest that children's adjustment to school significantly influences their subsequent academic self-concept (Zafiropoulou et al., 2007), and that math ability correlates with math self-concept over a one-year period (Arens et al., 2016). In addition, recent longitudinal research has shown that preschoolers' sharing behaviors predict their later development of self-concept (Schiele et al., 2024).

1.3.3. Reciprocal Effects Model

Moreover, Marsh and Craven's (1997, 2006) model of *reciprocal effects* in the context of moral self-concept and prosocial behavior emphasizes a more dynamic and interactive relation between these two aspects. Their account suggests that the relation between moral self-concept and prosocial behavior is reciprocal. That is, not only does an individual's self-concept influence their behavior, but their behavior also influences their self-concept. In this framework, as an individual engages in prosocial behaviors, their self-concept as a moral individual strengthens. This enhanced self-concept then encourages further prosocial actions, creating a continuous feedback loop. Taken together, unlike theories that see the relation as primarily unidirectional, the reciprocal effects model emphasizes a bidirectional influence where self-concept and behavior continuously and mutually reinforce each other. Empirical evidence supports the reciprocal effects model. For example, Marsh and Yeung (1997) conducted a longitudinal study examining the relations between academic self-concept, school grades, and teacher ratings of achievement in English, mathematics, and science in grades 1-3. Both pathways were clearly confirmed, but with a more systematic and slightly larger path from prior performance to subsequent self-concept than from prior self-concept to subsequent performance.

Overall, each model provides a unique viewpoint on how an individual's self-concept as a prosocial being relates to their behavior. However, the directionality of this relation is open for discussion

1.4. Moral Emotions

Not only the relation between the moral self-concept and prosocial behavior like helping, sharing and comforting is of great interest, but also with moral emotions and associated behaviors. The notion of moral emotions includes feelings of guilt, shame and pride. A current line of research focuses on the development of guilt and subsequent behavior (Malti, 2016; Vaish, 2018; Vaish et al., 2016). Guilt is defined as an emotional experience characterized by feelings of responsibility for a perceived wrongdoing or moral transgression. It involves an internal acknowledgement of having violated standards or societal norms, often accompanied by a desire to make amends or seek forgiveness. Guilt-related behavior refers to actions taken in response to feelings of guilt, such as apologizing, making restitution, or engaging in efforts

to repair relationships or undo the harm caused by one's actions (Vaish et al., 2016; Zahn-Waxler & Kochanska, 1990). While at first glance it may seem undesirable to feel guilt, it is proposed to have several consequences that are beneficial for social coexistence: Experiencing guilt motivates individuals to be more compliant with social norms in the future, to try to repair relationships, to behave prosocial and to maintain cooperation. (Baumeister et al., 1994; Hoffman, 1982; Tangney & Dearing, 2003; Vaish et al., 2016). This makes guilt and guilt-related behaviors an important developmental achievement during the childhood years. Previous research has shown that children show guilt-related reactions as young as three years old (Barrett, 1995; Vaish et al., 2016; Zahn-Waxler & Kochanska, 1990). Since individuals experience guilt in childhood and this affects their behavior in social contexts, it is of great interest to find out what other psychological factors are involved. Moral self-concept may play a crucial role.

1.4.1. The Theory about Self-Conscious Emotions

Lewis (Lewis, 1995a) proposed a theory of self-conscious emotional development that revolves around the idea that emotions such as guilt, shame, and pride are closely tied to one's self and social understanding. According to Lewis, these emotions arise when individuals reflect on their own actions in relation to societal norms, values, and expectations. Self-conscious emotions require a degree of self-awareness and evaluation of one's behavior in a social context. In line with the theory, it can be proposed that the moral self-concept plays a crucial role in predicting feelings of guilt and subsequent guilt-related behaviors. When children engage in behaviors that violate their internalized moral standards, they may experience feelings of guilt as a result of the discrepancy between their actions and their moral self-image. Accordingly, a more positive moral self-concept will amplify the experience of guilt and therefore, guilt-related behavior.

In sum, Lewis's (1995) theory of self-conscious emotions provides a framework for understanding how children's moral self-concepts influence their experience of guilt and guilt-related behaviors. It is also consistent with other influential approaches that propose a link between self-concept development and the emergence of guilt (Barrett, 1995; Hoffman, 2000; Stipek et al., 1990). Comparing the own action with the moral view of oneself may influence children’s emotional responses to moral transgressions and ultimately contributes to their morally relevant behavior.

1.5. Role of Early Social Experiences

Proponents of various developmental theories emphasize the role of social interactions in the early years of life for the development of the self (e.g., Bowlby, 1979; Carpendale & Lewis, 2021; Cooley, 1983; Mead, 1934; Rochat, 2010). The social environment in which children grow up is proposed to be crucial for self-concept development. This raises the question of the extent to which children's self-image as prosocial agents can be predicted from early social interactions. Do positive interaction experiences also lead to a more positive moral self?

1.5.1. The Relational Developmental System Approach

As posited by Carpendale and Lewis, (2021) “a more complex understanding of having a self requires developing this awareness through experiencing how others react to us” (p.196). In their *Relational Developmental Systems* (RDS) approach, the authors integrate and extend various aspects of earlier theories (Carpendale et al., 2013; Carpendale & Lewis, 2021; Carpendale & Wallbridge, 2023). RDS theory posits that social interactions play a pivotal role in the development of a self-concept. Through interactions with caregivers, peers, and others, individuals learn about themselves and construct their self-identity. With this, the theory builds up on earlier traditions of constructivism, implying that children are rather actively involved in their own development than passively. It recognizes that individuals are not just passive recipients of social influence but actively engage in interpreting and integrating their experiences to form a sense of self. Therefore, the self-concept is co-constructed in relational contexts. This is in line with Piaget’s (2010) constructivist approach in explaining that children construct an understand the world through their actions and interactions. RDS theory also acknowledges the role of the child’s active engagement with the environment in development, but it places a greater emphasis on the continuous, bidirectional interactions between individuals and their environments, rather than discrete stages. Furthermore, RDS theory also aligns closely with Vygotsky’s (1978) emphasis on the social and cultural context of development. Both theories, RDS and Vygotsky’s approach, view cognitive development as deeply embedded in social interactions and cultural contexts, with learning and development being mediated by language and social interaction. The RDS approach suggests that self-understanding is developed through the process of relating to others and understanding their perspectives. This includes recognizing oneself as a distinct individual in relation to others. In summary, the Relational Developmental Systems theory by Carpendale and colleagues (2013;

2021; 2023) provides a nuanced and integrated framework for understanding development of self-concept, highlighting the role of social interactions.

1.5.2. Attachment theory

The RDS approach shares common ground with *Attachment theory* (Ainsworth et al., 1979; Bowlby, 1969, 1973, 1979; Main et al., 1985) in emphasizing the importance of early relationships and social interactions in development. Both theories recognize the significant influence of early caregiver-child interactions on the child's development, particularly in forming the basis for future social and emotional development. Attachment theory, developed by John Bowlby (e.g., 1969, 1973, 1979) and expanded by Mary Ainsworth (e.g., 2015) and others (e.g., Main et al., 1985; Meins, 1997), provides a significant perspective on the development of self-concept in early childhood. According to this theory, the bond formed between a child and their primary caregiver(s) shapes the child's emerging self. Caregiver responses, particularly during times of distress, significantly influence the child's self-perception. A child who has their needs consistently met in a sensitive and responsive manner is likely to develop a sense of worthiness and competence, forming the basis of a positive self-concept. Attachment theory introduces the concept of *internal working models* - mental representations of oneself, others, and relationships that a child forms based on their interactions with caregivers. It emphasizes the importance of reliable and trustworthy caregivers in creating safe and nurturing relationships. Taken together, attachment theory explains how early emotional bonds formed with caregivers shape a child's self-concept, views of others, and relationships. The quality of these bonds, whether they are secure or insecure, significantly impacts how children perceive themselves and their value, their capacity to manage emotions and behavior, and their outlook on others and relationships in general.

The *Emotional Availability* (EA) framework, developed by Biringen and colleagues (2014; 2012), is based on attachment theory concepts, including the significance of a secure base provided by caregivers, the role of internal working models in shaping relationships, and the importance of responsive interactions in promoting emotional security and socioemotional development. It operationalizes these concepts into observable dimensions of caregiver sensitivity and child responsiveness, providing a structured framework for assessing the quality of parent-child interactions and their impact on emotional development. EA focuses on the emotional aspects of these relationships and how they contribute to a child's development, including the development of self-concept. Just like attachment theory, the EA framework

recognizes that a child's expectations and perceptions of relationships and themselves are shaped by the emotional quality of their interactions with caregivers. Attachment theory primarily focuses on the security and pattern of attachment. However, the EA framework broadens this by looking at the overall emotional quality and health of the relationship. This includes factors such as sensitivity, emotional responsiveness, nonverbal emotional cues, and the child's emotional involvement and responsiveness. Therefore, children nurtured in emotionally available and secure relationships are more likely to develop a positive self-concept.

Attachment theory and the EA framework suggest that early social interactions between caregivers and children have a profound impact on various dimensions of self-development. However, these theories do not imply that all dimensions of the self are influenced similarly or to the same extent by early interaction experiences. Instead, they suggest that different aspects of early interactions can shape various dimensions of the self in distinct ways. Paulus et al. (2018) found evidence supporting this notion, as they examined the relation between the quality of mother-child interactions at 7 months and children's self-concept at 4 years. The results indicated that children's academic self-concept was predicted by their cognitive functioning, while their social self-concept was predicted by their mothers' early sensitivity and non-hostility. This research emphasizes the developmental connections between distinct aspects of mother-child interaction quality and different aspects of children's self-concept.

If we apply the theoretical assumptions to the moral dimension of the self-concept, we can anticipate an impact of early social interactions on its development. Accordingly, the moral dimension of the self, which involves aspects like understanding right and wrong, empathy, and preferences for prosocial behaviors, is also influenced by early social interactions. Emotionally available relationships during early childhood foster empathy (e.g., Stern & Cassidy, 2018), which is a cornerstone of moral development. Children who can understand and resonate with the feelings of others are more likely to develop moral sensibilities. Furthermore, children develop internal representations of what is acceptable or not, based on their interactions with caregivers (e.g., Kochanska et al., 2005; Kochanska & Kim, 2014). This forms the basis of their conscience and moral self development. Moreover, early positive interactions, especially those characterized by warmth, responsiveness, and sensitivity, are linked to the development of prosocial behavior (e.g., Becher et al., 2023) – actions intended to benefit others, which is a key aspect of the moral self as it in conceptualized in this thesis.

In summary, it can be concluded that the development of a positive moral self-concept in a child is influenced by their social interactions during early development. Classical theories emphasize (co-)constructions between children and other interaction partners as the driving factor for self-development (Piaget, 2010; Vygotskij, 1978). The RDS approach also focuses on dynamic interaction processes between children and their environment as crucial to their moral and self-concept development (Carpendale et al., 2013; Carpendale & Lewis, 2021; Carpendale & Wallbridge, 2023). The conceptual framework of emotional availability places emphasis on interactions with early caregivers (Biringen et al., 2014). It suggests that high-quality parent-child interactions can contribute to the development of a positive self-concept. It is therefore of great interest to investigate developmental pathways through which children's early experiences in social interactions can influence the development of their moral self. Finally, I want to emphasize the importance of this section containing Mead's (1934) words: "It is as social beings that we are moral beings" (p. 385).

1.6. The Question of Differentiating Between "How?" and "How Well?"

It is important to note that there are various ways to conceptualize the moral self. One aspect of interest is the characterization of the moral self, which refers to *how* a child perceives themselves in terms of prosociality. This type of conceptualization is typically measured on a scale ranging from immoral to moral or non-prosocial to prosocial. Most previous research has focused on this type of conceptualization (e.g., Gniewosz et al., 2022; Kochanska et al., 2010; Sengsavang & Krettenauer, 2015; Sticker et al., 2021). This conceptualization can provide answers to various research questions: What are the predictors for children to develop a positive or negative moral self? What are correlates? Can a child's moral self predict how he or she develops in the future? Do children with a more positive moral self-concept also tend to be more prosocial?

However, a question that cannot be answered with that kind of conceptualization is whether a child actually has a moral self at all, thus, *how well* is their self-image as a prosocial being developed? The concept of the moral self is complex and multifaceted, and this makes it challenging to answer that question. However, various developmental theories, such as those proposed by Erikson (1959, 1968) and Rogers (1959), highlight the importance of a consistent

response pattern in children for the development of a stable self-concept. Erikson suggested that a coherent self-view is essential for a healthy personality and Rogers highlighted the importance of coherency in self-perception for self-identity. This coherency should be observable across different contexts, indicating a generalized self-expectation (Rogers, 1959). For example, an individual who consistently perceives themselves as helpful will behave similarly in various helping situations. Conversely, incoherent responses, particularly in clinical groups, suggest a weak or absent sense of self-concept (e.g., Cicero et al., 2016; Vater et al., 2015). Previous research highlights the significance of a coherent self-perception in the development of self-concept and has investigated self-concept in children by examining the coherency of their self-views across different situations (e.g., Bird & Reese, 2006; Welch-Ross et al., 1999). They have linked self-concept coherency to emotional development and gender differences.

Taken together, it could be argued that to determine if a child truly has a moral self, one needs to investigate whether they have a *coherent* representation of being more or less prosocial. However, there is a lack of a widely accepted empirical method to assess self-concept coherency in children. The current work presents a novel method for conceptualizing the coherency of (moral) self-concepts in children (Study 2), and is the first to make a clear distinction between the two derived conceptualizations.

Taken together, on the one hand, to identify the predictors for early moral self and its associations with behavior in childhood, it is advisable to use the "classical" conceptualization, pointing to *how* a child perceives themselves in terms of morality. This will enable differentiation between children who are more likely to have a positive or negative moral self-concept. The moral self can then be interpreted in terms of its content. On the other hand, to determine *when* the self-concept emerges, it is important to consider coherency within the dimensions of the self-concept.

2. The Current Thesis

The aim of this thesis is to provide a comprehensive overview of the early ontogeny of the moral self-concept. The moral self has become a prominent topic in developmental science in recent years. Human morality is distinguished by the fact that individuals not only act prosocially, but also conceive of themselves as being more or less prosocial. In other words, they possess a moral self-concept. Developmental science has shown a keen interest in understanding the structure and the development of the moral self-concept (e.g., Kingsford et al., 2018; Kochanska et al., 2010; Sticker et al., 2021), as it's been found that a higher moral self leads to more prosocial behavior (Christner, Pletti, et al., 2022; Hertz & Krettenauer, 2016; Sticker et al., 2023; Winterich et al., 2013). Previous studies have explored some aspects of the development of the moral self, but have also raised new questions and left some theoretical issues unanswered. This thesis aims to provide additional insights to previous approaches, answering old questions and generating new ideas for future research. The following points will be addressed.

To begin with, what influences the development of a (positive) moral self-concept may be rooted in infancy. The quality of early social interactions with primary caregivers may play a crucial role in the development of a moral self-concept. The idea that the self develops mainly through social interactions in the early years of life stems from influential developmental theories (e.g., Carpendale & Lewis, 2021; Cooley, 1983; Mead, 1934). In particular, with the rise of attachment theory (e.g., Ainsworth et al., 1979; Bowlby, 1973), the importance of early social interaction experiences with caregivers has become a prominent subject in developmental science, including implications for the development of young children's mental representations of themselves. Accordingly, children develop internal working models through social interaction with significant others. Therefore, through sensitive and thoughtful caregiving, parents can provide an outline for children to develop a positive moral self-concept. The impact of early social experiences on a child's development is conceptually complex, as the effect can be both direct and indirect (for a review, see Sroufe et al., 2010). The current thesis examines

different developmental pathways through which early interaction experiences between children and their primary caregivers influence the development of a moral self-concept.

Next, while the foundation for the development of the moral self is presumably laid in infancy, most approaches do not speak of a moral self-concept in its explicit and verbal form until early to middle childhood (e.g., Christner et al., 2020; Kochanska et al., 2010; Krettenauer, 2013b). Several theoretical accounts make assumptions about the characteristics of the self-concept during childhood. First, influential accounts from different theoretical orientations share the opinion that some kind of coherency within different domains of the self is a central achievement in self-concept development (e.g., Baumeister, 1997; Erikson, 1959, 1968; Rogers, 1959). Second, in line with Marsh and Shavelson's (1985) multidimensional and hierarchical model, the moral self can be considered as a distinct sub-dimension of the self that differentiates into further sub-dimensions with age. And third, it has been suggested that the representation of moral features in a person's identity is a relatively stable characteristic and therefore a more trait-like construct (Blasi, 1983; Hardy & Carlo, 2011). Taken together, the aim of this thesis is to examine these key features of moral self-concept in childhood, because only if it is asserted that children have a *coherent* self-concept that is *distinct* from other dimensions of the self and relatively *stable* over time, can we interpret content (e.g., the extent to which children see themselves as prosocial persons) in a meaningful way.

Further, once children have a moral self-concept - including representations of other-oriented preferences as well as representations of other-oriented behaviors - it is of great interest what other factors important for children's moral development are associated with it. A current area of interest is the emergence of moral emotions during the preschool years, with a particular focus on the development of guilt and the behavior that follows from this moral emotion (e.g., Vaish, 2018). Influential theoretical accounts propose that guilt arises from the comparison of one's own behavior with a perception of oneself in terms of prosociality (e.g. Kagan, 1987; Lewis, 1995; Stipek et al., 1990), so experiencing guilt presupposes a prosocial view of oneself. Thus, the development of guilt and guilt-related behavior may be closely related to the emergence of a moral self-concept. Therefore, this thesis aims to investigate whether a stronger moral self in children amplifies their guilt-related behavior.

Looking back at why the moral self first became a prominent topic of interest in psychology (Blasi, 1980), a key feature of the moral self becomes apparent: It's potential association with actual morally relevant behavior. That people tend to behave in an altruistic and prosocial way is important for societal functioning. And therefore, if the moral self in fact

can promote actual prosocial behavior, this makes it a key developmental achievement itself. While many empirical findings support the assumption that there is a relation between the two constructs in adolescence and adulthood (e.g., Aquino et al., 2009; Christner, Pletti, et al., 2022; Hardy et al., 2015; Hertz & Krettenauer, 2016), it is still unclear how this relation develops in childhood. Different theoretical accounts make claims about the development of an interrelation between self-concept and actual behavior and the causal directionality of this relation. According to Blasi's (1983, 1993) model of self-consistency, individuals strive for consistency between their actions and their self-concept. When someone views themselves as a moral person, they are more likely to engage in prosocial behaviors that are consistent with this self-view. Therefore, this desire for self-consistency could also be a driving force behind the development of prosocial behavior in childhood. On the other hand, Bem's (1972) self-perception theory offers a different perspective on the development of the relation between the moral self and prosocial behavior. The theory posits that individuals understand their own attitudes, beliefs, and internal states by observing their own behavior. In the context of prosocial behavior, this means that individuals might infer their moral self-concept from observing their own prosocial actions. Third, another approach of Marsh and Craven (2006) regarding the reciprocal relationship between the moral self and prosocial behavior is grounded in the idea that these two aspects influence each other in a dynamic, ongoing interaction. By investigating the relation between the moral self-concept and prosocial behavior over the course of development from early preschool age to the beginning of elementary school, the current thesis addressed the different theoretical claims made about the development of this interrelation.

2.1. Research Questions

The current thesis addresses five key research questions with the above outlined aims in mind:

I. What are early *predictors* that influence the development of a moral self-concept? This question is based on the research gap regarding what actually contributes to the formation of the moral self-concept. This thesis focuses on ideas derived from influential theories that highlight the role of early social interactions, particularly with caregivers, as an important factor in developing a self-concept (e.g., Bowlby, 1969; Carpendale & Lewis, 2021; Mead, 1934).

II. *When* do children develop a coherent view of themselves as moral agents, that can be interpreted content wise? This question is based on theories that suggest that coherency is an essential aspect of one's self-concept (Baumeister, 1997; Erikson, 1959, 1968; Rogers, 1959). The self-concept involves expanding one's expectations of oneself in different situations. Similarly, a child who has not yet developed a self-concept lacks a coherent understanding of how he or she would behave in similar morally relevant situations, leading to inconsistent responses. Therefore, by investigating the coherency of children's moral self-concept, we can address the question whether or not the children actually have a moral self-concept yet.

III. *How* is the moral self-concept structured in early development? This question refers to Marsh and Shavelson's (1985) model of the self-concept as a multidimensional and hierarchically structured construct. Based on these premises, it can be assumed that the moral self develops as a dimension of the self-concept that is distinct from other dimensions (e.g., a verbal self-concept). Based on the notion that even within the separate dimensions of the self, they become more differentiated and concrete in the course of development, this is also expected for the moral dimension. In line with the three main aspects of prosocial behavior in early childhood - namely helping, sharing, and comforting- it is expected that these three dimensions will also be represented as subdimensions of moral self. This is in line with previous studies that have found

helping, sharing, and comforting to be distinct subdimensions of children's moral self (Sticker et al., 2021). However, the question of when this differentiation into subdimensions takes place remained open till now.

IV. Is children's moral self-concept related to guilt-related behavior? This question stems from the theoretical proposal that the development of guilt and related behavior is closely linked to the development of the self-concept (e.g., Hoffman, 2000; Lewis, 1995). The idea is that guilt arises from comparing one's behavior with a prosocial view of oneself, i.e. a moral self-concept. Since guilt is an important psychological factor that supports human cooperation by motivating individuals to engage in prosocial and reparative behavior to compensate for interpersonal harm that the transgressor may have caused, examining this relation in childhood is an important topic to address.

V. Is the moral self-concept related to prosocial behavior in early development and how does this *interrelation* develop? This question arises as a consequence of the theoretical debate about whether and how the moral self is related to actual prosocial behavior and how this relation develops during childhood. Theoretical approaches suggest that either (a) a more positive moral self leads to more prosocial behavior (self-consistency theory, Blasi, 1983, 1993), (b) prosocial behavior has a positive effect on the development of the moral self (self-perception theory, Bem, 1972), or (c) the two constructs influence each other during development (reciprocal influence, Marsh & Craven, 2006).

2.2. Outline of the Thesis and Author Contributions

Four studies were conducted to answer the previously derived research questions. The findings of the studies provide a comprehensive overview of the development of the moral self-concept during childhood, observing children aged 1-6.5 years. Various measures were assessed, including mother-child interaction quality, behavioral measures of morally relevant behavior such as helping, sharing, comforting, and guilt-related behavior, theory of mind, as well as verbal and cognitive abilities. Additionally, the study examined the self-concept, including

moral, verbal, and physical dimensions of the self. Study 1 aimed to investigate the developmental pathways through which early experiences in mother-child interactions influence the development of a positive moral self-concept. Study 2 aimed to determine at what age children develop a coherent view of themselves in terms of morality. Study 2 and Study 4 further examined the internal structure of the moral self-concept, as well as developmental changes in its structure and stability over time. Study 3 focused on measuring guilt-related behavior and its relation to the moral self-concept, as well as other measures. Study 4 examined the longitudinal interrelations between the three-dimensional moral self-concept and prosocial behaviors. In the following I will outline author contributions of each study. Further all conducted studies will be explained in greater detail. Moreover, **Figure 2** displays a process diagram categorizing the contents of studies 1-4 in relation to the development of the moral self-concept.

2.2.1. Author Contributions

In Study 1, I served as lead for conceptualization, data curation, formal analysis, validation, visualization, writing the original draft, and writing the review and editing, and I contributed to the methodology. Markus Paulus served as lead for funding acquisition and supervision and served in a supporting role for conceptualization, formal analysis, methodology, and writing - review and editing.

For Study 2, my responsibilities included conceptualizing, curating data, formally analyzing, validating, visualizing, drafting, reviewing, and revising the paper. Markus Paulus served as lead for obtaining and monitoring funding and served in a supporting role for conceptualization, formal analysis, methodology, and writing - reviewing and editing. Maria Mammen served in a supporting role for conceptualization, methodology, supervision, and writing-review and editing for Study 2.

In Study 3, I took on the primary responsibilities for conceptualization, data curation, formal analysis, validation, visualization, drafting the initial manuscript, and leading the review and editing process. Additionally, I played a role in shaping the methodology. Markus Paulus led the efforts in funding acquisition and supervision, and he provided support in conceptualization, formal analysis, methodology, and the writing review and editing phase.

In Study 4, I led the conceptualization, methodology, data curation, formal analysis, validation, visualization, original draft writing, and review/editing processes. Markus Paulus

took the lead in securing funding and providing supervision, while supporting roles were played in conceptualization, formal analysis, methodology, and the writing review/editing phase.

2.2.2. Study 1: Predictors for the Early Moral Self

Study 1 served to address the first research question. Maternal emotional availability as well as children's prosocial behaviors were implemented as potential predictors for developing a (positive) moral self-concept. For this purpose, a longitudinal study was conducted. The study tracked individuals at ages 1 (T1; *n*=120), 3 (T2; *n*= 139), and 4 (T3; *n*= 99) years. The study measured the maternal sensitivity at T1, children's prosocial behaviors, helping, sharing, and comforting, at T2, and the moral self-concept through a puppet-interview at T3 in a laboratory setting. With this, the study allowed to investigate the developmental routes that contribute to a positive moral self-concept in children and whether they can be traced back to infancy. Consideration was given to both direct and indirect pathways of influence.

2.2.3. Study 2: Coherency, Structure and Stability of the Early Moral Self

Study 2 aimed to answer research questions 2 and 3. Therefore, the study investigated the initial emergence and development of the moral self-concept in children by exploring three key elements: the emergence of coherency, stability, and a differentiated structure. The participants were preschoolers who took part in a longitudinal study at two measurement points (T1: 4 years; n=108; T2: 5 years, n=133). The self-concept measure included three moral self-concepts scales: helping, sharing, and comforting, as well as a physical and verbal self-concept scale. The study analyzed response patterns to determine if children had a self-concept, resulting in a coherency score. This study allowed for testing when children had a coherent picture of themselves as moral agents, whether the moral self was already distinct from other self-concept dimensions as expected, and whether it was already differentiated into the subscales of helping, sharing, and comforting. Additionally, the study examined the stability of these dimensions over time.

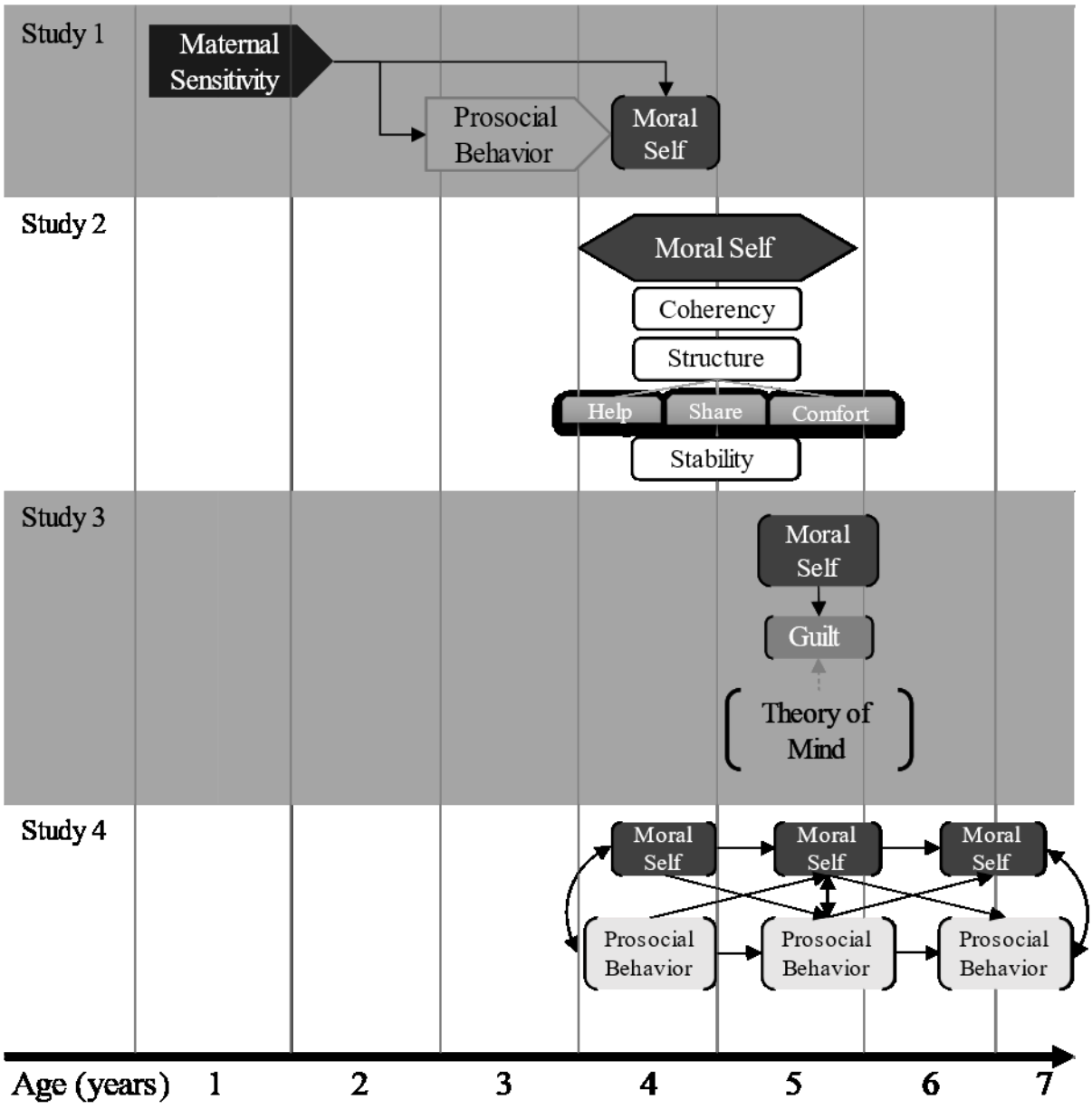
2.2.4. Study 3: Predictors for Guilt-Related Behavior

Study 3 refers to research question 4 by investigating the relation between the moral self and guilt. It examines an additional potential predictor for guilt-related behavior, since it is unclear what factors determine the degree to which children exhibit guilt-related behavior. Consequently, the third study examined two factors that have been suggested to promote the development of guilt in children: their moral self-concept and their theory of mind abilities. The study included 133 children aged 5-6 years. The study therefore allowed to investigate relations between children's guilt-related behavior, moral self-concept and theory of mind.

2.2.5. Study 4: Longitudinal Interrelations of Moral Self and Prosocial Behaviors

Study 4 addresses research question 2 and 5, by first, investigating the longitudinal development of the moral self-concept over a time span of 2.5 years in terms of internal structure and stability, and second, focusing on the relation with different prosocial behaviors, namely helping, sharing and comforting. To this end, a longitudinal study with 3 consecutive measurement points was conducted at ages 4 (N=99), 5 (N= 133), and 6.5 (N=104). Therefore, children's moral self-concept, as well as helping, sharing, and comforting behavior was assessed at each measurement point. The study allowed to shed light on when and how the interrelations between the prosocial subdimensions of the moral self-concept and respective prosocial behaviors emerge and develop in childhood.

Figure 2 - *Development of the Moral Self-Concept: Process Diagram of Studies 1 to 4*



3. Study 1

The Moral Self in Formation: The Impact of Mother-Infant Interaction Quality and Prosocial Behavior on the Early Moral Self-Concept

Söldner, L., & Paulus, M. (2024). The moral self in formation: The impact of mother-infant interaction quality and prosocial behavior on the early moral self-concept [Manuscript submitted for publication].

Abstract

During early childhood, children develop a moral self-concept (MSC), reflecting their perception of moral behavioral preferences. Little is known on the developmental processes that support the emergence of the MSC. This longitudinal study investigated the impact of early social interactions and prosocial behaviors on the development of the MSC, following participants from infancy to preschool age (n= 99-139; 50-55% girls, mostly Caucasian). Maternal sensitivity was assessed at 1, children's prosocial behaviors at 3, and their MSC at 4 years. Maternal sensitivity and children's comforting behavior predicted later MSC. Moreover, maternal sensitivity's impact on MSC was mediated by children's comforting behavior. The study emphasizes developmental trajectories from early social interactions to MSC, either directly or indirectly through promoting children's reaction to others' needs.

3.1. Introduction and Theoretical Background

Moral behavior is fundamental to societal functioning: People offer to help their friends when moving, to share cookies with their siblings, or to comfort someone who was hurt. Recent developmental work highlighted that the various forms of prosociality emerge

in early childhood (Dunfield, 2014). Importantly, people do not simply act morally, they also view themselves as more or less "moral individuals". The extent to which individuals prioritize morality in their character is reflected in the so-called *moral identity* or *moral self* (Aquino & Reed, 2002). In recent decades, the concept of the moral identity, originally introduced by Blasi (1980), has received increasing attention (for an overview, see Hardy & Carlo, 2011). Moral identity builds on the integration of moral principles into an individual's sense of self that reflects a personal commitment to consistent moral values and is thought to guide actual moral behavior. Recent studies provide evidence of the relevance of a moral identity for prosocial and charitable behavior in adults (Hardy et al., 2015; Hertz & Krettenauer, 2016; Krettenauer, 2020; Winterich et al., 2013), moral emotions (e.g., Lefebvre & Krettenauer, 2019; Stets & Carter, 2011) and interpersonal relationships (e.g., Miller & Schlenker, 2011; Strohminger & Nichols, 2014). For instance, Stets and Carter (2011) showed that moral identity enhances self-evaluative emotions (for example, guilt after a moral transgression), which in turn has been shown to predict moral behaviors (Johnston & Krettenauer, 2011). This illustrates the relevance of this construct for humans' tendency to care about others. These findings tie in with philosophical proposals that humans' view on their self is fundamental for human morality (Korsgaard, 2009).

Given its relevance for understanding the nature of human prosociality, there has been a recent resurgence of interest in studying the developmental precursors and early emergence of moral identity (Christner et al., 2020; Kochanska, 2002; Krettenauer, Davis, et al., 2013; Söldner et al., 2024). Early manifestations of moral identity, which generally describe children's representations of their moral behavioral preferences, are typically referred to as a *moral self-concept (MSC*; short: *moral self*) (e.g., Christner et al., 2020; Krettenauer, 2013). This raises an

important question: What are the developmental processes that lead children to develop an initial perception of their own moral character?

3.1.1. Structure and Development of the Moral Self

Influential developmental theories suggest that a multidimensional self develops during childhood (Harter, 1982; Marsh & Shavelson, 1985; Shavelson et al., 1976). In other words, the self-concept is differentiated into separate sub-dimensions (including for example academic and social self-concepts). These sub-dimensions further differentiate with age, e.g. the academic self-concept differentiates into a verbal and a mathematical self-concept (Brunner et al., 2010; Cvencek et al., 2023; Marsh, 1986). Subsequent studies have built on the multidimensional and hierarchical self-model by examining additional dimensions of the developing self-concept. Most relevant for the current study, they provided evidence for the existence of a distinct moral or prosocial dimension of the self-concept (Christner et al., 2020; Krettenauer, Davis, et al., 2013; Söldner et al., 2024). That is, in accordance with the multidimensional and hierarchical self-concept model, the self-concept contains a distinct dimension related to self in prosocial and moral contexts, the moral self-concept (MSC).

Theoretical approaches suggest that children develop an "emerging view of themselves on moral dimensions" (Kochanska, 2002, p. 339) as early as the age of 4 (e.g., Kochanska, 2002; Kochanska et al., 2010). Children aged 5 begin to behave more in accordance with their self-image, as previously indicated by Kochanska and colleagues (Kochanska, 2002; Kochanska et al., 2010). In a similar vein, recent studies highlight preschool age to the first school years as a crucial phase for the development of the moral dimension of the self-concept (Sengsavang & Krettenauer, 2015; Söldner et al., 2024; Sticker et al., 2021, 2023). For example, empirical work showed that the MSC of 4-6-year-old children is independent of other self-concept dimensions such as verbal and physical self-concept dimensions (Sticker et al., 2021). Further, findings support the notion that the MSC is divided into separate prosocial subdimensions, namely helping, sharing, and comforting, and that these subdimensions are also related to children's actual prosocial behavior (Sticker et al., 2021, 2023). A recent longitudinal study suggests that the MSC is an independent dimension of the self from the age of 4 and complements these findings with the insight that further differentiation into sub-dimensions takes place only in the course of the preschool period: the three sub-dimensions could not be found before the age of 5 (Söldner et al., 2024). This fits in well with theoretical accounts that posit a development of the self from a more global character (Cimpian et al., 2017) to a

differentiation with age into more subdimensions (Marsh & Shavelson, 1985; Shavelson et al., 1976).

Taken together, following theoretical assumptions and previous empirical research, the MSC emerges around 4-5 years of age as a distinct dimension of the self (Kochanska, 2002; Söldner et al., 2024; Sticker et al., 2021). This prosocial aspect of the self-concept has been shown to be differentiated from other self-concept dimensions and has an impact on children's moral functioning. Yet, so far there is little known on the developmental factors that relate to the early emergence of the MSC. In the following, we will introduce two theoretical frameworks that could explain individual differences in children's moral self.

3.1.2. The Importance of Early Social Relationships

Classical psychological theorists, most notably Cooley (1983) and Mead (1934), proposed that the self-concept arises from social interactions. In a similar vein, attachment theory (Bowlby, 1969, 1973) posits that young children develop an internal working model through interactions with significant others, particularly with their caregivers. This leads to a mental representation of themselves (Main et al., 1985). Therefore, the self-concept does not develop in isolation but is instead influenced by the social environment in which the child grows up. Taken together, according to influential theories, children develop specific expectations and perceptions of themselves through social interactions where caregivers provide feedback and validation of children's behavior. It is proposed that children who experience more positive and high-quality interactions, are more likely to develop a positive perception of themselves, thus, a more positive self-concept. Empirical findings support the notion of a connection between attachment security and a positive self-concept in young children (Cassidy, 1988; Verschueren et al., 1996) as well as in adolescents (Laible et al., 2004). Taken together, influential theories emphasize the role of children's early experiences in social interactions, mainly with their caregivers. Thus, the quality of early social interactions may play a vital role in the development of the MSC.

A suitable framework that measures the interaction quality in the caregiver-child dyads is the *Emotional Availability* (EA) framework, which expands upon concepts from attachment theory (Biringen et al., 2014; Biringen & Easterbrooks, 20 12). The EA framework emphasizes the bidirectional nature of parent-child-relationships, recognizing that both the caregiver and child contribute to the emotional connection within the relationship. Going back to the work of Ainsworth and colleagues (1979), sensitivity to infants' cues is a key aspect of early care. Thus, maternal *sensitivity* is also a key dimension in the EA framework, which involves the caregiver's

ability to perceive and interpret the child's emotional cues and to respond appropriately to even subtle expressions. The EA framework presents a comprehensive portrayal of parent-child interaction in the early stages. This makes it a valuable approach for examining the impact of early interaction quality on children's development. For instance, a study by Paulus et al. (2018) revealed that different aspects of maternal EA predict different aspects in children's self-concept development: While the social self-concept was predicted by early maternal sensitivity and non-hostility, the academic self-concept was predicted by cognitive abilities.

One model that specified developmental pathways to a moral self was provided by Kochanska and colleagues (Kochanska, 2002; 2005; 2014). The model proposes that high quality parent child interactions during infancy foster children's development of committed compliance which in turn leads to the internalization of rules and standards into children's self. The self includes their identity as (im)moral individuals who adhere to rules and standards, refrain from misbehavior, and show empathy and compassion towards others. According to Kochanska et al. (2010), children's recollections of adhering to parental standards become embedded in their self-perceptions. Such recollections are primarily a result of *positive and mutually responsive orientations (MRO)* in parent-child relationships. MRO means that the parent-child relationship is marked by positive affect and joint coordination of activities. Empirically, the authors have shown that early MRO influences moral behavior by increasing children's committed compliance (Kochanska et al., 2005), which in turn has been shown to be associated with children's moral self (Kochanska, 2002). In sum, work by Kochanska and colleagues (2002, 2005, 2014) focus on the positive impact of high-quality maternal interactions (sensitive and adequate interaction) on the development of rule compliance and internalization of moral norms. This line of research has fruitfully contributed to our understanding of the development of the moral self. At the same time, it leaves a number of questions unanswered, as the operationalization of MSC mostly focuses on different dimensions of compliance, such as the tendency to internalize behavior, confession, or guilt.

A different theoretical perspective on the nature of human prosociality and morality stresses the difference between other-oriented concerns and mere compliance to rules (e.g., Dahl, 2023; Killen, 2018). That is, following rules should not be equated with prosociality and morality given that rules imposed by others are not per se indicative of other-oriented concerns. Indeed, merely following rules can also lead to immoral behavior. Rather, prosocial and altruistic behavior is based on an appreciation of others' needs (Dahl & Paulus, 2019). This leads to the question whether there are alternative developmental pathways to a moral self-

concept when one prioritizes other-oriented concerns. The current study starts from these considerations and focuses on children's representations of their prosocial tendencies. It investigates the hypothesis that it is children's other-oriented prosocial behaviors that relate early social experiences to children's self-concept. We will expand on this developmental pathway in the following paragraphs.

However, there is a significant research gap regarding the developmental pathways from early parent-child interactions in infancy to the developing prosocial MSC in early childhood. There is limited empirical evidence from longitudinal studies that either focus on dimensions of self-concept other than the moral dimension (Paulus et al., 2018) or other conceptualizations of the moral self focusing on rule compliance and emphasizing an indirect developmental pathway through committed compliance (Kochanska et al., 2005; Kochanska & Kim, 2014). The key research question is therefore whether maternal sensitivity to their infants, as conceptualized in the EA framework, is predictive of the development of a positive MSC.

3.2.3. The Role of Early Prosocial Behavior

It can be argued that how children actually behave prosocially influences how they perceive themselves as more or less prosocial individuals - thus, actual prosocial behavior may be aninfluential factor in developing a more positive MSC. Prosocial behaviors – often differentiated into helping, sharing, and comforting (e.g., Dunfield & Kuhlmeier, 2013) – are defined as behaviors that benefit another person without providing an immediate reward to the actor. Based on established theories, we hypothesize that the extent to which children engage in prosocial behaviors has implications for the development of the MCS.

The self-perception theory for example suggests that individuals come to understand their own attitudes and emotions by observing their own behavior and the context in which it occurs (Bem, 1972). According to self-perception theory, when individuals engage in prosocial behaviors, they become aware of their own behavior and represent this in their self-concept. In the context of early prosocial behavior, this means that children who consistently engage in acts of kindness, cooperation, and helping others are likely to represent their behavior as a prosocial orientation. Over time, as they acknowledge themselves consistently behaving in morally positive ways, they develop a self-concept that aligns with these behaviors. For example, if a child frequently shares toys with their peers or comforts a friend who is upset, they might come to see themselves as a helpful and caring person. This self-perception then contributes to the development of their MSC – they start to view themselves as someone who values and

embodies qualities like kindness, empathy, and cooperation. The more often an individual engages in prosocial behaviors, the more likely they are to identify themselves with positive prosocial qualities.

Evidence for the self-perception theory mostly comes from research on academic self-concept development. Findings showed that children's school achievements predicts later academic self-concept (Zafiropoulou et al., 2007) and math achievement predicts math self-concept over an interval of one year (Arens et al., 2016). Moreover, a recent longitudinal study, restricted to children's sharing, has found support that children's generosity is predictive for preschoolers' subsequent MSC (Schiele et al., 2024). Notwithstanding this first insight, there is a lack of empirical evidence to support theories indicating that early prosocial behavior can *predict* the MSC when it is just forming.

3.2.4. Developmental Pathways to a Positive Moral Self

While social interactional approaches (e.g., Cooley, 1983; Mead, 1934) and attachment theory (e.g., Ainsworth et al., 1979; Bowlby, 1969) concur that the quality of early interactions between child and caregiver influences children's self-concept development, various developmental pathways are possible. On one hand, maternal sensitivity towards infants may *directly* influence their children's later MSC by promoting the development of positive internal working models regarding children's view of themselves as prosocial beings. On the other hand, the influence of early interaction experiences with primary caregivers could have an *indirect* effect on the development of the MSC.

Applied to the question of developmental processes that influence the emergence of a (positive) MSC, theoretical approaches focus on the influence of parental behavior on the development of children's ability to show empathic behavior (*emotion-sharing theories*, e.g., Hoffman, 2000). In line with attachment theory considerations, Gross at al. (2017) assume a positive relation between secure and sensitive attachment experiences in early childhood and the development of prosocial behavior in their theoretical model. Recent studies investigated the influence of mother-child interaction quality on empathy and prosocial behavior, such as comforting behavior or emotional helping (e.g. Becher et al., 2023; Ferreira et al., 2016; Newton et al., 2014). Higher quality mother-child interactions are associated with greater empathy in children (Boele et al., 2019; Gross et al., 2017). Becher et al. (2023) conducted a study with 18-month-old infants to test whether the positive influence of sensitive mothers on infant's emotional helping is rather mediated through compliance (e.g. Kochanksa, 1997) or children's

empathy (e.g., Hoffman, 2000). Results showed a significant indirect effect of maternal sensitivity on children's emotional helping through empathy. This highlights the role of sensitive caregiving for children's prosocial development.

Taken together, we suggest the following pathway: from sensitive caregiving through prosocial behavior to MSC. This offers a different perspective, namely, prosocial behavior as a mediator. Indeed, from self-perception theory we can hypothesize that early prosocial behavior has an effect on the development of the MSC. From a theoretical perspective, it is also reasonable to consider a link between early parent-child interaction and the development of prosocial behavior. Overall, this opens up a new perspective on a possible pathway through which early interaction quality might influence the development of MSC: indirectly through the development of prosocial behavior.

3.2.5. Current Study and Hypotheses

The current study aims to investigate the ontogenetic factors that predict 4-year-old children's moral self-concept (MSC). This study highlights the role of two fundamental factors influencing children's early MSC development: (1) their experiences in interactions with their primary caregivers during their first years of life and (2) their own prosocial behavior in early childhood. It also investigates the proposal of a developmental pathway in which the two factors relate to each other in fostering children's moral self-concept.

First, theoretical approaches underscore the importance of early social interactions with significant others in the development of self-concept (e.g., Bowlby, 1969; Mead, 1934). Therefore, high-quality mother-child interactions in infancy can be expected to positively influence the development of MSC. Considering the conceptual framework of emotional availability (e.g., Biringen & Easterbrooks, 2012), we hypothesize that 4-year-old children have a higher MSC when their mothers exhibited greater sensitivity during the child's first year of life (hypothesis 1). Previous research has indicated that not all aspects of the self are similarly impacted by early interaction quality (e.g. Paulus et al., 2018). We expect that this relation is particularly true for the *moral* dimension of the self, but not for the verbal or physical self-concept dimension. That is, we propose that maternal emotional availability predicts children's moral self-concept, but not the development of the, for example, physical self-concept.

Second, proponents of self-perception theory would suggest that children construct their own moral selves through self-reflection on their own past prosocial behavior (e.g., Bem, 1972). We therefore hypothesize that children's early prosocial behavior (helping, sharing, comforting)

influences the extent to which children see themselves as more or less prosocial agents. More precisely, toddlers exhibiting greater prosocial tendencies at the age of three tend to possess a higher MSC at the age of four (hypothesis 2).

Third, we hypothesize that the quality of mother-child interaction not only directly affects children's later MSC but also indirectly impacts MSC development by influencing children's prosocial behavior. The ability of mothers to respond sensitively and appropriately to their children early in life has a significant impact on how well children can recognize emotional or instrumental distress in others (e.g., Fonagy, 2005; Kammermeier & Paulus, 2022). Taken together, it is hypothesized that children with more sensitive mothers show more prosocial behavior in infancy and thus develop a higher MSC. Therefore, the third hypothesis posits that maternal sensitivity in the first year of life exerts an effect on the development of children's MSC at the age of 4, which is mediated by their prosocial behavior at the age of 3 (hypothesis 3).

In order to test these hypotheses, a longitudinal study with three measurement points was conducted. Children and their mothers were first invited to the laboratory with 1 year (T1), again with 3 years (T2) and last with 4 years (T3). Maternal sensitivity was recorded at T1. This was captured by videotaping a play situation between mother and child, after which emotional availability was coded following Biringen (2008). This study only recorded the quality of interaction with the mothers, as they were predominantly primary caregivers. Second, three different types of prosocial behavior, namely helping, sharing, and comforting (e.g., Dunfield et al., 2011; Dunfield & Kuhlmeier, 2013), were assessed separately through behavioral observation in an experimental setting in the laboratory at T2. The outcome variable, children's MSC was assessed at T3 using a puppet-interview, a widely used method for assessing children's self-concept (e.g., Sengsavang & Krettenauer, 2015; Sticker et al., 2021). We also assessed two additional self-concept dimensions (verbal and physical) within the puppet-interview to test whether the predictors are specific to the moral dimension or predict the self-concept in general.

3.2. Methods

3.2.1. Participants

The sample consisted of 120 children at T1 (Mean (Age): 12.64 months; 55% girls), 139 children at T2 (Mean (Age): 36.41 months; 49% girls), and 99 children at T3 (Mean (Age): 51.89; 52% girls). For a multiple linear regression with 3 predictors (e.g., helping, sharing, and comforting as predictors for the MSC), alpha = 0.05 and the statistical power of .95, a sample of *n*=85 would be required to detect a medium effect ($f^2 = 0.15$) (calculated with G*Power). Fritz and MacKinnon (2007) suggest a required sample size of n=115 to detect an indirect effect in a mediation model with low to medium expected effect sizes for path a and b, and a power of .8 in a simple mediation model computed using the bootstrapping method. The study initially started with a sample size of *n*=126; when children were 3 years old, an additional sample of *n*=50 children was recruited, and was included in the ongoing study to deal with attrition. This resulted in a final sample of *n*=176 participants from T2 onwards. The number of participants at T3 was lower than at the two previous measurement points due to contact restrictions during the COVID-19 pandemic, which resulted in temporary laboratory closures during data collection for T3. The children were typically developing children growing up in a large European city. For each measurement point, mothers gave written informed consent for themselves and their children to participate. The study was approved by the faculty's ethics committee.

3.2.2. Procedure and Design

Participants were tested in a longitudinal study design with three measurement points: At 1 year (T1), at 3 years (T2), and at 4 years (T3). At T1, mother and child dyads were tested together in the university laboratory. At T2 and T3, children performed the respective tasks individually in the laboratory. All sessions were videotaped for later coding. The current study is part of a larger ongoing longitudinal project that includes more tasks than those covered here. The measures relevant to this study are described in detail below.

3.2.3. Measures

3.2.3.1. (Moral) Self-Concept

Children's self-concept was recorded at T3 using a version of the widely established puppet-interview to assess children's self-concept (Gniewosz et al., 2022; Marsh et al., 2002; Reese et al., 2007; Sengsavang & Krettenauer, 2015). The current version was adapted from Christner et al. (2020). The puppet-interview consists of a total of 16 items, 9 of which are related to the moral self-concept (MSC). Of these, a total of three items relate to helping behavior, three to sharing behavior and the remaining three to comforting behavior. Of the remaining seven items, four are related to the physical self-concept (PSC) and three to verbal self-concept (VSC). The supplemental material contains a detailed presentation of all items (**Table *13***). In the following, the puppet-interview is explained using an example from the assessment of the MSC. In each trial, the experimenter presented the child with two identical puppets. The gender of these puppets corresponded to the gender of the participant. One of the two puppets expressed a preference for prosocial behavior, while the other puppet denied it (e.g. "I like to share my pencils." "I don't like to share my pencils."). Next, the experimenter asked the child: "And you? Which puppet are you more alike to?". Finally, the child could indicate which of the two puppets he/she can identify with more. As soon as the child has given his/her answer, the experimenter asks: "Are you a little or a lot like him/her?"

Scales and Coding. The range of answers was from 1 (very much like the non-prosocial puppet) to 5 (very much like the prosocial puppet) on a 5-point Likert-scale. A score of 3 was assigned when the child saw themselves between the two puppets. Scale means are calculated to represent MSC, VSC, and PSC.

3.2.3.2. Mother-Child Interaction Quality

Mother-child interaction was evaluated during a 10-minute free play session at the first measurement point. The procedure followed previous studies (e.g. Bornstein, 2009; Kammermeier & Paulus, 2022; Taylor-Colls & Pasco Fearon, 2015). Mothers and infants were seated on a blanket on the floor in the laboratory. Children were provided with a box of age-appropriate toys, including a xylophone, storybooks, and wooden building blocks. The mothers were directed to play with their infants in the same manner as they would typically do at home.

Scales and Coding. As a measure of maternal interaction quality, EA of mothers was assessed. The EA scales (Biringen et al., 2014) measure caregiver EA along four dimensions: sensitivity,

structuring, non-intrusiveness and non-hostility. Each dimension is rated on a scale of 1 to 7. The recent study focuses on sensitivity as the key dimension, which assesses a range of qualities related to mothers' ability to show genuine warmth and emotional connection with their infants, and to respond to their infants' cues. Twenty percent of the sample was coded by a second independent coder who was blind to the coding of the main coder. Both coders had completed training and obtained reliability by Zeynep Biringen. The interrater reliability was good as the interclass-coefficient (ICC) was >.80.

3.2.3.3. Prosocial Behavior

Three distinct forms of prosocial behavior, namely helping, sharing, and comforting, were evaluated in separate experimental conditions.

3.2.3.3.1. Helping Behavior

To capture children's helping behavior we used a procedure inspired by Kenward et al. (2015). It assesses how children react when the experimenter accidentally dropped something. In the following, we describe the protocol in greater detail.

The experimenter and the child were sitting on the play mat, the child was playing. After a knock at the door, the experimenter said to the child: "Oh, there was a knock. I have to go out quickly to make a phone call. I'll be right back. I'm going to leave my box of pens here because I'm going to need them in a minute". The experimenter got up, hurried to the door and, as she passed, putted the box of pens on the edge of the small table in a way so that it “accidentally” fell on the floor. The experimenter pretended not to notice (no verbalization), opened the door and went out without looking back. The child was left alone for 1 minute. The experimenter came back after 1 minute and said: "I'm back!”. The task was videotaped. The recordings were then used to examine the child's reaction to the experimenter’s mishap.

Coding. The coding scheme for helping behavior was an adapted version of the scale for prosocial behavior coding from Vaish et al. (2009). Children’s helping behavior was coded on a scale from “0” (child showed no reaction) to “3” (strong helping behavior, e.g., the child picks up immediately after the experimenter throws the pens.). A detailed coding description and examples of behavior are shown in the attached coding scheme under supplemental material (**Table *15***). Two trained coders who rated the behavior independently coded children’s helping behavior. Cohen's kappa was good (k = .90).

3.2.3.3.2. Sharing Behavior.

Subjects' sharing behavior was recorded using an established mini dictator game (cf. Gummerum et al., 2010; Smith et al., 2013). At the beginning of the task, the experimenter and the child sat opposite each other at a table. Four stickers were given to the child and it was clarified that the stickers now belong to the child ("These four stickers are now yours, they belong to you"). The experimenter explained: “If you like, you can share them [the stickers] with another child. We are collecting stickers for Nina/ Niko [gender matched], who has no toys or stickers and cannot come here today". Simultaneously, the experimenter positioned a donation box in front of the participant on the table and presented them with a photograph of a child who was present to be the recipient of the donation. Next, the experimenter placed the photograph in front of the donation box, removed an envelope, and instructed the participant: "Now you can share 1, 2, 3, 4 or no stickers with Nina/ Niko and you can put the rest in this envelope and take it home. What would you like to do? Just put the stickers in the box or the envelope and tell me when you've done it”. The child then distributed the stickers.

Coding. The number of stickers that the child shared with the other child was coded.

3.2.3.3.3. Comforting Behavior.

The children's comforting behavior was assessed through an established pain simulation procedure (cf., Dunfield & Kuhlmeier, 2013; Zahn-Waxler et al., 1992). The experimenter displayed emotional distress when experiencing a minor injury. The experimenter walked to the door to place an item outside of the room. On her way back to the table, she accidentally hit her knee on the edge of the table. The experimenter then sat down while visibly in pain, rubbing her knee and verbalizing discomfort (e.g. saying “Oh! My knee, I bumped it!”). The experimenter initially focused on her knee for five seconds and subsequently alternated her gaze between the child and her knee. Following the first ten seconds, the experimenter exclaimed "Ouch, that really hurts" and proceeded to rub her knee for an additional ten seconds. In the final stage, the experimenter imitated that the pain is decreasing, leading to a much milder expression compared to the initial stage of the experiment. She articulated, "It is getting better now."

Coding. Reactions and behavior of the children were coded based on the video recordings (cf. Zahn-Waxler et al., 1992). Coding of comforting behavior combined information on both the expressed concern and the actual prosocial behavior. The child's general involvement was assessed using a seven-point scale, ranging from no involvement (1) to strong expression of

concern and helping/caretaking behavior (7), with intermediate levels of mild or moderate concern and varying degrees of prosocial behavior. Comforting behavior was coded twice by two trained coders who rated the behavior independently. Cohen's Kappa was good at k= .86.

3.2.4. Statistical Analysis

Statistical analyses were calculated with RStudio (RStudio Team, 2019). The raw data is available online (https://osf.io/yrp5t/?view_only=9a0146d88e424a43acea61f20f1ef100, Söldner, 2024). Pearson correlation coefficients were computed to test whether the measures are correlated. To test the hypotheses that maternal sensitivity at T1 and prosocial behavior at T2 can predict children's MSC at T3, multiple linear regression analyses were computed with MSC as the outcome variable. To test hypothesis 1, maternal sensitivity was included as a predictor in a regression model (model 1). Second, to test hypothesis 2, the three prosocial behaviors (helping, sharing, and comforting) were included as predictors in a separate model (model 2). In order to investigate whether the relations apply exclusively to the moral dimension of the self-concept, we additionally computed all regression analyses with the verbal and the physical dimensions of the self-concept as the outcome variable separately. Further, to test the question whether the impact of mother's sensitivity on children's later MSC is mediated by children's prosocial behavior (hypothesis 3), mediation analyses were calculated separately for each type of prosocial behavior using PROCESS for R by Hayes (2023). To avoid bias and decreased reduced statistical power due to missing data, we used the mice -package in R to impute missing data via predictive mean matching (Enders et al., 2016; van Buuren & Groothuis-Oudshoorn, 2011) We selected the number of imputations (m = 50) and maximum iterations (maxit = 50) based on previous literature on similar sample sizes and study parameters (e.g., Essler et al., 2023).

3.3. Results

3.3.1. Descriptive and Correlational Statistics

Descriptive statistics including mean values, standard deviations and ranges of children's self-concept (moral (MSC), verbal (VSC), and physical (PSC)) with 4 years of age, as well as the maternal sensitivity with their children at 1 year of age and prosocial behaviors (helping, sharing, and comforting) at 3 years of age are displayed in **Table *1***.

Table 1 - *Means, Standard Deviations, and Ranges of all Variables.*

	N	*M* *[Min; Max]*	SD
Emotional Availability (T1)			
Sensitivity	120	5.23 [3;7]	0.87
Prosocial behavior (T2)			
Helping	120	0.94 [0;3]	1.15
Sharing	139	1.33 [0;4]	1.45
Comforting	114	2.77 [1;7)	1.12
Self-concept (T3)			
MSC	99	3.35 [1;5]	.86
VSC	99	4.33 [1;5]	.78
PSC	99	4.14 [1;5]	.69

Note. MSC = Moral self-concept; VSC= Verbal self-concept; PSC= Physical self-concept; *M* and SD are used to represent mean and standard deviation, respectively; Ages: T1: 1 year old, T2: 3 years old; T3: 4 years old

Correlational statistics show that maternal sensitivity at T1 (r=.25; p=.024) relates significantly positive with children's MSC (T3). Further, children's sharing (r=.25; p= .008) and comforting behavior (r=.26; p= .013), but not helping behavior (T2) are significantly correlated with their MSC at T3. Importantly, none of the potential predictors are significantly related with children's VSC (T3). Children's PSC correlates significantly negative with comforting behavior (r=-.20; p= .048), but not with the two other prosocial behaviors nor with sensitivity. A complete overview of the correlational statistics can be found in the **Table *2***.

Table 2 - *Zero-Order Correlations of all Variables*

	Self-Concept			Emotional Availability	Prosocial Behavior		
	1	2	3	4	5	6	7
Self-Concept							
1. MSC	--						
2. VSC	.25**	--					
3. PSC	.22*	.19*	--				
Emotional Availability							
4. Sensitivity	.25*	.16	.14	--			
Prosocial Behavior							
5. Helping	.05	.15†	-.07	-.13	--		
6. Sharing	.25**	.07	.06	-.09	.06	--	
7. Comforting	.26*	-.18†	-.20*	.17†	-.04	.03	--

Note. † indicates $p < .1$; * indicates $p < .05$., ** indicates $p < .01$

3.3.2. Main Results

All further analyses were computed with a dataset including imputed data. This resulted in analyses covering 176 data points.

3.3.2.1. Predictors for the Early Moral Self-Concept

The present study employed multiple linear regression analyses to explore the relation between the dependent variable (MSC) and sensitivity as a predictor in model 1 (hypothesis 1) and prosocial behaviors (helping, sharing, comforting) as predictors in model 2 (hypothesis 2). The purpose was to uncover the extent to which these predictors contribute to the variability in the dependent variable. In model 1 (F (1,174) = 6.25, p=.013), sensitivity is a significant predictor for the MSC. In model 2 (F (3,172) = 9.20, p<.001), comforting behavior makes a significant contribution to explaining the variance of the MSC. For further test statistics see **Table *3***. To determine if the relations apply solely to the moral dimension of the self-concept or if they are similar for other self-dimensions, we conducted additional regression analyses with the verbal (VSC) and physical (PSC) dimensions of the self-concept as separate outcome variables. Neither prosocial behaviors nor sensitivity significantly contributed to explaining the variance of the VSC or the PSC. All test statistics can be found in the supplemental material (**Table *16***, **Table *17***).

Table 3 - *Regression Coefficients of Predictors on Children's Moral Self-Concept (MSC) With 4 Years*

		B	ß	SE	*p*
Model 1: Maternal Sensitivity (T1) as predictor					
Intercept		**2.43**	6.40	.38	<.001
	Sensitivity	.18	2.50	.07	.013
Model 2: Prosocial behaviors (T2) as predictor					
Intercept		**2.63**	15.89	.17	<.001
	Helping	-.01	-.09	.05	.929
	Sharing	*.08*	1.77	.04	.079
	Comforting	**.23**	4.55	.05	<.001

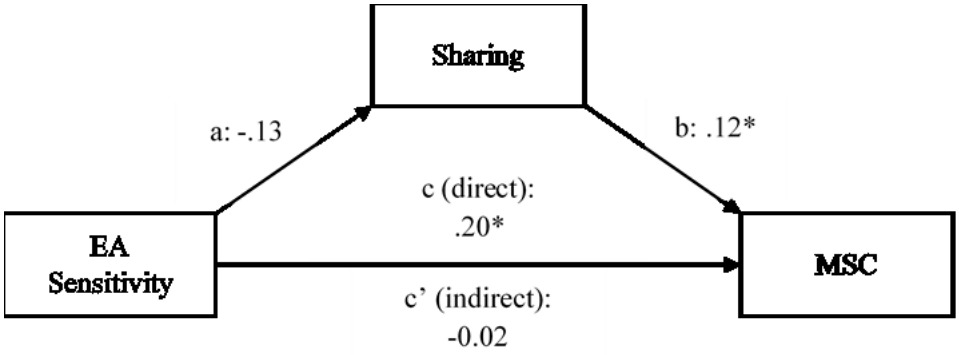
Note. Multiple linear Regression model with imputed data

3.3.2.2. Prosocial Behaviors as Mediators Between Mother's Sensitivity and Children's Moral Self-Concept

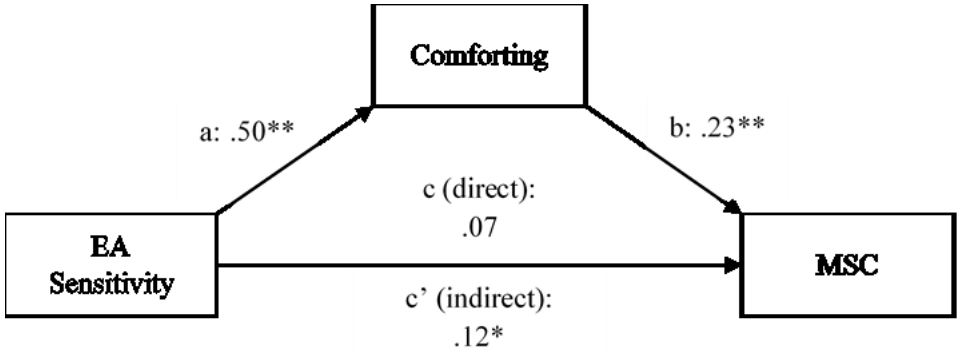
In order to explore the potential mediating role of different types of prosocial behaviors in the relation between mother's sensitivity with their 1-year-olds and children's moral self-concept with 4 years, mediation analyses were conducted using the PROCESS macro for R (Hayes, 2018). This approach allowed us to examine the indirect effect of mother's sensitivity on children's MSC through prosocial behavior (hypothesis 3). In the previous analyses, we found no relation between helping behavior and MSC. Therefore, we excluded helping from the mediation analyses. Although sharing was not a significant predictor in the regression model, it still had a marginal effect and the beta value is high enough to explore it further in a mediation model. These decisions resulted in two mediation models: sensitivity as a predictor combined with the two forms of prosocial behavior (sharing and comforting) as a mediator, separately. MSC was the outcome variable in all models. **Figure 3** displays plots of the mediation analysis results, including all paths.

Figure 3 - *Mediation Models of the Relation Between Maternal Sensitivity and Children's MSC, with Sharing and Comforting Behavior as Mediator Variables Separately*

A



B



Note: This figure illustrates the mediation models depicting the hypothesized relations between maternal EA (emotional availability) Sensitivity at T1, children's prosocial behavior at T2(A: sharing; B: comforting), and moral self-concept at T3 (MSC)- The regression coefficients for each path are displayed.

* indicates $p < .05$., ** indicates $p < .001$

The relation between sensitivity and MSC was not mediated by sharing behavior. In the mediation model, sensitivity directly influenced MSC, and sharing behavior predicted MSC. However, comforting behavior played a significant mediating role in the association between sensitivity and MSC. In the mediation model, sensitivity at T1 predicted comforting behavior at T2, and comforting behavior at T2 predicted MSC at T3. See **Table *4*** for test-statistics.

Taken together, results showed that the impact of maternal sensitivity on the MSC was mediated by children's comforting behavior. That is, the more sensitive the mother was at 1 years, the more comforting behavior 3-year-old children showed towards someone else in pain.

Their comforting behavior, in turn, predicted their MSC at 4 years. Children's sharing behavior had a direct effect on their MSC that was not related to maternal sensitivity.

Table 4 - *Results of Mediation Analysis With Moral Self-Concept With 4 Years as the Outcome Variable Separately for Sharing and Comforting Behaviors as Mediators*

	Sensitivity (T1) as predictor			
Mediator	Path	*ß*	*p*	95% CI
Sharing behavior (T2)	a	-.13	.308	[-.37;.12]
	b	.12*	.006	[.03;.20]
	c	.20*	.007	[.06;.34]
	c'	-.02		[-.05;.01]
Comforting behavior (T2)	a	.50**	<.001	[.31;.69]
	b	.23**	<.001	[.12;.34]
	c	.07	.378	[-.08;.21]
	c'	.12*		[.06;.18]

Note. If the confidence interval of path c'does not include zero, it indicates that the **indirect effect** is significantly different from zero at the chosen confidence level (95%). Path a: effect of the predictor on the mediator; path b: effect of the mediator on the outcome variable; path c: *direct* effect of the predictor on the outcome variable; c': *indirect* effect of the predictor on the outcome variable

3.3.2.3. Explorative Analyses With Other EA Dimensions

To test whether the results of the mediation analyses were specific to maternal sensitivity or also applied to other aspects of early mother-child interaction quality, we recalculated the mediation models on an exploratory basis using the three further EA scales in addition to sensitivity; including maternal structuring, non-intrusiveness, and non-hostility. The various EA scales were used as predictor variables in the mediation models instead of sensitivity. This resulted in a consistent pattern of findings: comforting was identified as a mediator between EA and later MSC in all mediation models - similar to results with sensitivity as predictor. A detailed description of exploratory results can be found in the supplemental material (**Table *18***).

3.4. Discussion

Human morality is distinguished in that humans not only act prosocially, but also conceive of themselves as being more or less prosocial and moral. It has even been claimed that a moral view of oneself is the essential feature of human morality (Korsgaard, 2009). In psychology, empirical research has focused on moral identity and the moral self-concept (MSC; Hardy & Carlo, 2011). Studies have confirmed that a higher MSC leads to more prosocial behavior (Christner, Pletti, et al., 2022; Hardy et al., 2015; Hertz & Krettenauer, 2016; Winterich et al., 2013) and developmental science has thus been interested in exploring the structure and ontogeny of the MSC (Baker & Woodward, 2023; Gniewosz et al., 2022; Krettenauer, Davis, et al., 2013; Söldner et al., 2024). The current longitudinal study extends this line of research to the early ontogenetic origins of the MSC. It aimed at revealing the developmental pathway that leads young children to have a positive MSC. One key finding suggests that maternal emotional availability towards their 1-year-old infants is related to children's MSC three years later. The influence is partly mediated by children's own comforting behavior at age 3. Overall, the study highlights the developmental dynamics that lead to the development of a positive moral self-concept.

Findings of the current study provide valuable insights into different developmental pathways leading to a higher MSC when it is just forming. First, results of a regression analysis support the first hypothesis, that children with a more sensitive mother at age 1 develop a higher MSC at age 4. The results support theoretical assumptions derived from attachment theory and particularly theories on caregiver sensitivity (Biringen et al., 2014; Mesman et al., 2018)suggesting that early experiences in interactions with significant others have a profound influence on the development of the self-concept. More precisely, attachment theory posits that early interactions between young children and their primary caregivers shape children's internal working models. These internal representations are rooted in the nature of the child-caregiver relationship (Main, 1985). These relationships provide important models that help children form their perceptions and evaluations of themselves in prosocial terms. Therefore, sensitive mothers who perceive and interpret the child's emotional cues and respond appropriately to even subtle expressions support their children in developing a positive MSC.

In order to go beyond the identification of single factors and in order to deepen our understanding of developmental dynamics, we investigated the interrelation between caregiver sensitivity, children's own prosocial behaviors, and their emerging moral self-concept.

Mediation analyses revealed an intriguing pattern: Comforting behavior emerged as a significant mediator, highlighting its importance in shaping children's MSC. Going beyond previous work by Kochanska and colleagues (Kochanska, 2002; 2005; 2014) that focused on the pathway from parent-child interaction quality to children's moral selves mainly via compliance to parental rules, the present study reveals the impact through children's early comforting behavior. It highlights a developmental pathway that stresses the agentic nature of the moral self-concept – a pathway that is rather in line with theoretical views that highlight children's activity as central factor for their character development (Brandtstädter, 1999; Lerner et al., 2021).

Previous research demonstrated that maternal sensitivity is positively linked with children's prosociality (Ferreira et al., 2016; Newton et al., 2014) and empathy (Stern & Cassidy, 2018). Empathy, in turn, relates to emotional helping and comforting others in need (Becher et al., 2023; Eisenberg et al., 2006). Our results extend this well-established developmental pathway by showing that comforting behaviors, in turn, support the emergence of a more positive MSC. Overall, the picture across the set of studies suggest developmental dynamics leading from early caregiver-infant interactions to a self-concept that includes concern for others as a central element. Interestingly, sharing behavior did not mediate the relation between maternal sensitivity and later MSC. In the mediation model that incorporates sensitivity with sharing behavior, the *direct* paths from sharing and sensitivity to the MSC are meaningful. Accordingly, sharing also has an influence on the development of a positive MSC, but without sharing being related to maternal sensitivity. This suggests another developmental pathway that might be related to the social practices and normative considerations that are key for the emergence of sharing behavior.

Additional exploratory analyses indicate that the mediation pathway is not only applicable to sensitivity as a component of EA, but also to other maternal EA scales: Children with mothers who excel in providing appropriate structure, exhibit less intrusive interactions, and display less hostility, tend to demonstrate more comforting behavior. Consequently, they develop a higher MSC. Therefore, the discovered pathway applies not only to sensitivity but also to high-quality mother-child interactions in general.

It has to be noted that helping behavior did not predict the MSC. Noteworthy, there is ongoing discussion regarding the underlying motives for young children's helping behavior (e.g. Carpendale et al., 2015; Dahl, 2019; Pletti et al., 2017; Warneken, 2015). It is possible that helping behavior might be less conceived by children as a prosocial act, and thus less relevant

for their self-concept. It remains for future studies to examine whether other forms of early helping behavior, such as empathic helping, impact the development of MSC.

Importantly, none of the variables were significantly predictive to children's verbal self-concept or physical self-concept. This implies that the predictors are of specific importance for children's MSC development, and that the associations identified relate exclusively positive to the moral dimension of the self. This suggests that the developmental pathways revealed in the current study are specific for the emergence of the moral self-concept.

3.4.1. Limitations and Future Studies

While this study enters novel grounds in highlighting the developmental dynamics that support the emergence of a positive moral self-concept, some limitations should be acknowledged. First, it should be noted that the findings were obtained in a classic WEIRD (Western, educated, industrialized, rich, and democratic) sample, with families mostly belonging to the higher education class. Previous research has demonstrated that socio-ecological and cultural background can influence the parent-child interaction (e.g. Bornstein, 2009; Rothenberg et al., 2020) and moral self development (e.g. Jia et al., 2019). Further examination of the relations between parent-child interactions and moral self in different contexts should be conducted in future studies.

Second, the current study solely examined the early interaction quality of mothers and their children, not including other potential primary caregivers during children's first year of life. This approach was reasonable for the current sample, as mothers were mostly the primary caregivers. Future studies could test whether the same developmental trajectories are observed for other potential caregivers, such as fathers.

3.4.2. Conclusion

Taken together, our longitudinal study reveals the complex factors that determine the MSC of 4-year-olds. This study emphasizes that there are several developmental pathways that lead to a positive MSC in childhood, one of which can be traced back to infancy. Maternal sensitivity during infancy emerges as a key predictor that influences MSC development directly as well as indirectly through fostering comforting behaviors. Prosocial behaviors, namely comforting and sharing, also directly influence the formation of children's MSCs, underscoring the importance of encouraging such behaviors early. These findings contribute significantly to our understanding of the multifaceted nature of moral development (Carpendale et al., 2013) and

offer practical insights for parents, caregivers, and educators. Recognizing the lasting effects of maternal emotional availability and promoting prosocial behaviors in early childhood can guide interventions to raise a more empathetic and morally aware generation. In essence, our study underscores the central role of early experiences in shaping a child's MSC and provides valuable insights for navigating the complexities of MSC development.

4. Study 2

The Emergence of a Coherent Self-Concept: A Longitudinal Study on the Development of the Moral Self

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Abstract

The moral self-concept (MSC) is an early indicator of how children view themselves as moral agents. It has been proposed that an important feature of an established self-concept is sufficient coherency in how one views oneself. Furthermore, the MSC is expected to develop into a multidimensional, hierarchical construct which is stable over time. Investigating these theoretical hypotheses, this study aims to take three aspects into account to get a deeper insight into *when* and *how* the MSC first emerges: Emergence of coherency, stability, and a differentiated structure. Preschoolers were presented with a puppet-interview at two measurement points (T1: M= 4.21 years, T2: M=5.43 years, N= 108-133; 51-57% female, largely Caucasian). The interview comprises three moral (helping, sharing, comforting), a physical and a verbal self-concept scale. To investigate whether children had an established self-concept and therefore answered coherently, we analyzed children's response patterns resulting in a coherency-score: The greater answers vary within scales, the lower children score. Coherency of the MSC rose significantly across preschool period: At age 5, children answered largely coherently. Coherency of children's MSC related to its stability, meaning that the MSC was mostly stable for children with high coherency at T1. Factor analysis confirmed a multidimensional structure of the MSC at age 5, but not at age 4. The results demonstrate that a coherent and differentiated MSC is acquired within preschool period. This offers a new approach to investigate the emergence of the self-concept in early development by integrating the important aspect of coherency into the area of self-concept research.

4.1. Introduction and Theoretical Background

The self-concept (SC) can be described as a structured, multidimensional, hierarchical, and coherent representation of oneself that is supposed to be relatively stable over time (Harter, 2006; Shavelson et al., 1976). Indeed, developing a coherent and stable view of oneself (that is, a self-concept) is a major developmental task (Erikson, 1959; Harter, 2015b; Havighurst, 1972). How children conceive of themselves is related to a variety of domains, most notably academic performances and social behavior (Harter, 2006), and difficulties in acquiring a SC have been related to difficulties in social functioning (e.g., Hawes et al., 2013). Thus, it is of high interest to understand when children develop such a coherent view of themselves.

Developmental theories propose that during the first two years of life, the self-concept is rather undifferentiated and around age 3 children start to regard themselves in more evaluative and multidimensional ways (for a review see Thompson, 2006). An established line of research supports this view (Harter, 2015). Developmental studies have thereby largely focused on the development of the academic SC (e.g., Marsh et al., 1998, 2002) and self-evaluations (e.g., Cassidy, 1988; Goodvin et al., 2008) in 4-to 6-year-old children. For example, it has been shown that in the course of the elementary school period, children develop distinct SCs for different school subjects (Marsh et al., 1988) that distinctively impact their school performances (Marsh & Martin, 2011). While there is thus ample evidence on the development of the academic SC, a more recent line of developmental theorizing has highlighted another dimension of children's SC. It has been suggested that preschoolers also conceive of themselves with respect to their inclination to engage in morally-relevant behaviors, that is, they develop a moral SC (Hardy & Carlo, 2005, 2011).

Building on seminal work by Blasi (1983) as well as Colby and Damon (1993), moral identity in adults has been defined as „the degree to which being a moral person is important to an individual's identity" (Aquino & Reed, 2002; Hardy & Carlo, 2005, 2011). More recent work has extended developmental theorizing and empirical research to younger ages. The moral SC – defined as "children`s self-representations about their moral behavioral preferences" (Sengsavang & Krettenauer, 2015, p. 214) – has been identified as an early indicator of how

children view themselves as moral and prosocial agents (e.g., Krettenauer, 2013a; Sticker et al., 2021). The moral SC, in turn, was associated with preschool children's tendency towards prosocial behavior (e.g., Kochanska, 2002; Kochanska et al., 2010). It has been suggested that an enhanced moral SC (that is, viewing oneself as a helpful, generous and empathic person) is an important factor in motivating other-oriented and moral behavior (Hardy & Carlo, 2011; L. Young et al., 2012), and could therefore play a role in the constitution of human moral agency (Thompson, 2012). Empirical evidence supports this point. For example, Sengsavang and Krettenauer (2015) showed that in a combined sample of 4- to 12-year-olds, the children's moral self-concept (MSC) relates negatively to parental reports of children's peer aggression. Moreover, Kochanska (2002) reported that the moral SC at 4-5 years relates to behavior, such as compliance to parental rules. Investigating the structure of the MSC, Sticker et al. (2021) found that in 4- to 6-year-old children, the moral SC is differentiated along three domains of prosocial behavior, namely, helping, sharing, and comforting. Crucially, the MSC is meaningfully related to actual prosocial behavior in these three domains – e.g. a child who pictures themself as someone who really likes to share, is also more likely to actually share more stickers with another child (Sticker et al., 2021). These findings suggest that the MSC (once it has emerged) relates to prosocial behavior by the late preschool period. Yet, there is little known on when and how the MSC emerges in the preschool years. In other words, a more precise developmental perspective on the emergence of the MSC is still lacking. The current study therefore investigates *when* the moral SC emerges and *how* it develops in the preschool period.

4.1.1. The Emergence of the Self-Concept

Toddlers possess a rudimentary understanding of the self (Kagan, 1981), for example by representing their own body topography (Slaughter & Brownell, 2011). When and how does this largely body-focused form of self-understanding evolve into a distinct (moral) SC? It has been proposed that the early forms of self-understanding (i.e., starting to recognize oneself in a mirror and using personal pronouns) function as a cognitive basis for a more explicit and propositional SC (Damon & Hart, 1982; Rochat, 2010). In the following, we give a short overview over this developmental path.

In their first year of life, infants develop a rudimentary representation of their own body (Rochat, 2010). Thereby, interactions with caregivers (Montirosso & McGlone, 2020) as well as learning about the effects of one's own actions (Verschoor & Hommel, 2017) play an

important role. In the course of the second year, toddlers show first signs of self-recognition as they become able to recognize themselves in the mirror (Brownell et al., 2010; Nielsen et al., 2006). Around the same time, children start to use their own name and personal pronouns (I, me, my) when talking about themselves (Lewis & Ramsay, 2004). Around the age of 24 months children increasingly use self-descriptive statements, e.g. “I want this”, “I do”, which reflects children’s raising self-awareness (Kagan, 1981). Around 3-4 years of age, an autobiographical memory emerges that allows children to build a temporally invariant picture of themselves (e.g. Moore & Lemmon, 2001).

These abilities set the stage for the further development of the SC. Studies suggest that a hierarchical and multi-dimensional concept of the self develops in the late preschool and early school years (e.g., Harter, 2006; Marsh et al., 2002). Thus, the SC evolves from a more general and undifferentiated concept into a structured, multidimensional, and hierarchical concept which is relatively stable on higher hierarchy levels and becomes more differentiated with age (e.g. academic self vs. physical self). In summary, this suggests a developmental progression from a largely action-and-perception based self to a conceptual and multidimensional self-understanding in the course from toddlerhood to early school age.

4.1.2. Coherency as a Central Characteristic of a Self-Concept

Developmental research has investigated how children’s view of themselves differ (e.g., as being more or less academically talented, or as being more or less helpful towards others in need) and how the structure of these self-views changes in development (Harter, 2006; Thompson, 2006). Importantly, this line of research presupposes that children already have a SC and explores individual differences in how children conceive of themselves along the dimensions of different SC domains (Marsh et al., 2002). However, this approach does not address the question of whether or not children actually have a SC at all.

The question then arises: how can we assess whether children have developed a SC? This question is notoriously difficult to address given that the SC is a multifaceted and rich theoretical construct. Nevertheless, influential developmental theories from a variety of theoretical backgrounds agree that coherency of the children’s responses within one domain constitutes a central feature of an established SC (e.g., Baumeister, 1997; Erikson, 1959, 1968; Rogers, 1959). For example, Erikson (Erikson, 1959, 1968) proposed that a unified self-image is the goal of SC development and that a healthy personality entails having a certain amount of consistency in one’s self-view. From a different perspective, Rogers (1959) speaks of a

consistent pattern of the SC as being a central characteristic of having a self. Indeed, one could argue that the very notion of a *concept* implicates some consistency and coherency across different contexts (cf. Carey, 2009). Similarly, incoherent responses in clinical populations are seen as an indicator of a lack of or a weakened SC (e.g., Cicero et al., 2016; Vater et al., 2015). A SC entails thus generalization of expectations towards oneself across different situations. For example, someone who has a coherent concept of themselves as a person who likes to help others, would not only respond in such a way with respect to one specific context, but view this part of themselves as prevalent in different helping situations. Likewise, a child who does not have an established SC yet, will not have a coherent idea of how they would act in comparable helping situations and will rather respond incoherently. Indeed, early studies highlighted a coherent representation of one's own personal qualities to be an important goal of SC development (e.g., Welch-Ross et al., 1999). As noted by Bird & Reese (2006) "the outcome measurement of most interest is not *how* a child sees him- or herself, but *how well*" (p. 614). Thereby, former studies conceptualized children's SC as the coherency of their self-views across several contexts and therefore calculated coherency scores for different dimensions of the self (Bird & Reese, 2006; Buckner & Fivush, 1998; Welch-Ross et al., 1999). These studies supported the role of SC coherency for children's development by showing relations with emotional reminiscing, contents of mother-child-conversations, and gender. Yet, to date, this notion has not turned into a common empirically assessable approach that allows to investigate the development of coherency in children's SC.

Taken together, to investigate the emergence of the SC, it is important to assess at which age children have a *coherent* picture of themselves. Only after asserting that children have a coherent SC, we can interpret the content of their SC (e.g., to which extent they view themselves as a moral person) in a meaningful way.

4.1.3. The Development of the Moral Self-Concept

Developmental research has shown that by the late preschool period, children have developed a moral SC and identify themselves as individuals who prefer prosocial or antisocial behaviors to a certain extent (Kochanska et al., 2010; Krettenauer, Davis, et al., 2013). Thereby, children develop a representation of their actual behavior and behavioral preferences. Following the assumptions of Marsh & Shavelson's (1985) multidimensional model, one can propose that the moral SC is a dimension of the self that is distinct from other dimensions, for example, the academic SC. The emergence of a moral SC is interesting as it predicts future prosocial behavior (Sticker et al., 2023) and may thus constitute a central foundation of moral development (Thompson, 2012).

However, little is known about when in childhood the moral SC - including representations of other-oriented preferences as well as representations of other-oriented behaviors - emerges and how it develops. Research in other domains of the self indicates that the SC develops in the context of own behavior, and by noting similarities and differences between own performances and the performance of others (Ehm et al., 2019; Marsh & Martin, 2011). Indeed, relating to theoretical frameworks that highlighted three independent forms of early prosocial behaviors, namely, helping, sharing and comforting (Dunfield, 2014; Paulus, 2018), recent work suggested that the moral SC in preschool children consists of three corresponding subdimensions of helping, sharing, and comforting (Sticker et al., 2021). Yet, it is unclear whether the moral SC consists of these three dimensions from early on or whether the three dimensions are the result of a developmental process, potentially based on the emergence of coherency in children's self-views.

Notably, most accounts assume that once acquired, stability over time is a further characteristic of the SC. Indeed, for Shavelson et al. (1976), stability was central for their model of the SC. Previous work reported stability over time for the physical, the social and the scholastic domains of the SC (e.g., Klomsten et al., 2004; Putnick et al., 2020). Also, in the context of the moral SC, it has been suggested that the importance of morality to a person's identity is relatively stable characteristic and therefore a more trait-like construct (Blasi, 1993; Hardy & Carlo, 2011). Stability seems to a be prerequisite for moral functioning and a developed moral personality (Thompson, 2012). Taken together, gaining deeper insights into the early development of the moral SC requires to take three aspects into account: the emergence of coherency, the development of its internal structure, and stability over time.

4.1.4. The Current Study

To address these questions, we conducted a longitudinal study on SC development in the preschool years. To this end, we presented children with a puppet-interview, a common measure of the SC in young children (Krettenauer, Davis, et al., 2013; Measelle et al., 1998), at two measurement points (T1: 4 years; T2: 5 years). We decided to investigate 4-year-olds as the youngest age because previous studies suggested that at this age children start to meaningfully respond to questions pertaining to the moral self (Sengsavang & Krettenauer, 2015; Sticker et al., 2021). Our SC interview assessed five dimensions: Three moral SC dimensions (helping, sharing, comforting), the verbal SC, and the physical SC. **Figure 4** (see Method section) displays the model of the SC that guides this investigation. Our study explored the early ontogeny of the moral SC. It included additional scales on other SC dimensions (verbal SC, physical SC) to assess when in development and to which extent the MSC is differentiated from those other SC domains. This would support the claim that the MSC is a distinct dimension of the SC. Overall, the study aimed at answering the following questions:

(1) When in the preschool years do children develop a coherent moral SC?
(2) How does the internal structure of the moral SC change during the preschool years?
(3) Is the moral SC of preschool children stable over time?

First, we aimed to investigate at which age children have acquired a coherent moral SC. We expected children to develop an established moral SC between 4 to 5 years of age. Since coherency of the children's responses within one domain seems to be an important feature of an established and stable SC, we investigated the data of the puppet-interview with a novel evaluation method: we inspected the variability in children's answering patterns across different items. The greater the answers vary across items within each scale, the lower the children's score. This method allows us to conclude whether and at which age children develop a meaningful, coherent concept of themselves as an (im)morally acting person.

Second, the current study aimed at testing the proposal of a hierarchical and differentiated structure of the SC (e.g., Marsh et al., 2002) which implies that the SC evolves from a more general and undifferentiated concept into a structured, multidimensional, and hierarchical one. Therefore, we hypothesized that a) the moral SC first differentiates from the two other SC domains (verbal SC, physical SC) into a standalone domain of the self and b) that it further differentiates itself into more concrete subdomains (helping, sharing and comforting)

on a lower level with increasing age. To this end, we examined the factorial structure of the SC at 4 years and 5 years. Commonalities or differences in the factorial structure at these ages clarify changes in the structure of children's SC.

Third, this study aimed at examining the longitudinal stability of the early moral SC during preschool age. Influential accounts assume stability over time to be a further characteristic of an established SC (e.g. Blasi, 1993; Shavelson et al., 1976). Therefore, we investigated to which extent the SC correlates longitudinally between the two measurement points.

Additionally, we included a measure of verbal abilities to inspect to which extent our prospective results are related to verbal abilities. Since the SC is usually assessed through methods that capitalize on language – and since one could argue that language is a prerequisite for acquiring an abstract SC, it would be interesting to explore to which extent language competencies relate to the emergence of a SC. Therefore, we implemented the Peabody Picture Vocabulary Test, Version 4 (PPVT-4), which is a commonly used measure to assess children's language understanding (Campbell & Dommestrup, 2010).

4.2. Methods

4.2.1. Participants

The final sample consisted of 108 children (Mean (Age): 4.21 years; 52% girls) at the first measurement point (T1) and 133 children (Mean (Age): 5.43 years, 57% girls) at the second measurement point (T2). Participant number at T1 was lower than at T2 due to contact restrictions during the COVID-19 pandemic that resulted in temporary lab closures while collecting data for T1. At T1, 9 participants and at T2, 12 participants were tested but excluded as they gave the same response to all questions ("straighliners"; see Kim et al., 2019; Lavrakas, 2008). Furthermore, participants were excluded for the respective scale, when one or more items were missing (e.g. Child's answer was not to be understood acoustically or child refused to answer the question), resulting in different sample sizes at T1. Participants were typically developing children living in a large European city. Children's caregivers provided informed written consent for participation. The local ethics commission approved the study. Parents were reimbursed for travel costs and children received a small present for their participation.

4.2.2. Procedure and Design

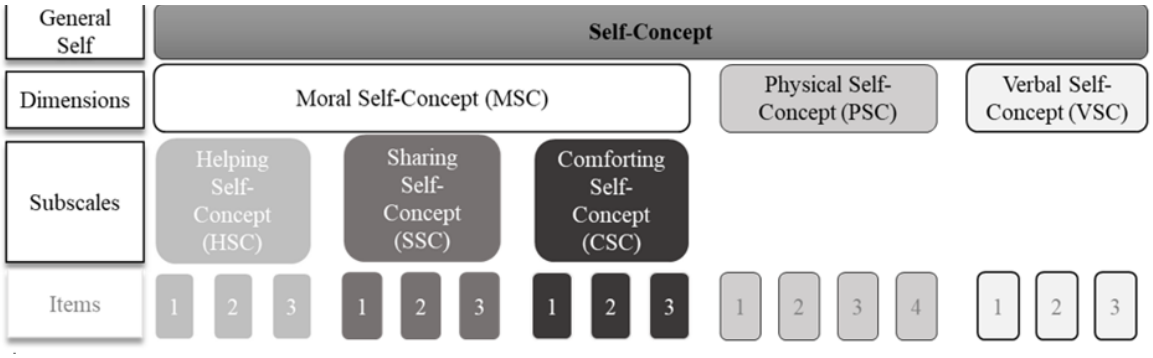
Participants were tested individually in the university laboratory. Sessions were videotaped. The tasks considered in this study were part of a larger ongoing longitudinal project. They are described in more detail below.

4.2.2.1. Puppet-Interview

A puppet-interview was used to assess children's SC at T1 and T2. Puppet-interviews are a well-established method to examine the SC in young children (e.g., Reese et al., 2007; Sengsavang & Krettenauer, 2015). We relied on an approach following Marsh et al. (2002), addressing the three moral dimensions as well as two additional dimensions: Verbal SC and physical SC. To assess the three dimensions of the moral SC, we used the interview by Christner et al. (2020, validated by Sticker et al., 2021), who created a child-friendly moral-self interview based on the Children's Moral Self Puppet Scale (CMSPS) by Sengsavang and Krettenauer (2015). An earlier study by Sticker et al. (2021) found that helping, sharing, and comforting are subcategories of the moral SC (MSC) through computing exploratory factor analysis including items about *representations of preferences* as well as *representations of behaviors* – which led to these three homogenous factors. Verbal and physical items were adapted from Marsh et al. (2002). See supplemental material for all items of the puppet-interview (**Table *13***; **Table *14***).

In the following, the puppet-interview will be explained using an example from the assessment of the MSC. For the interview, the experimenter held up two identical puppets side by side. One of the puppets expressed a prosocial statement and the other puppet expressed the opposite – a non-prosocial statement (e.g., "I like to share my toys" vs. "I don't like to share my toys"). Then the puppets turned to the child and the experimenter asked: "What about you?". The child answered if they were more like the puppet who expressed the prosocial self-evaluation or more like the puppet with the opposite view. When the child has decided for one of the puppets, the experimenter then asked if they were, "a lot like this puppet or a little bit like this puppet".

Figure 4 - *Hierarchical and Multidimensional Model of the Self-Concept as it is Presented Within the Puppet-Interview*



Coding. Replies ranged on 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 (see Christner et al., 2020; Krettenauer et al., 2013; Reese et al., 2007; Sengsavang & Krettenauer, 2015). Our puppet-interview consisted of 16 items which are distributed over five scales (see **Figure 4**): The three moral scales of *helping (HSC)*, *sharing (SSC)* and *comforting (CSC)* (3 items each), and two other scales, a *verbal SC (VSC)* scale (3 items) and a *physical SC (PSC)* scale (4 items).

Scoring. The puppet-interview was analyzed in two different ways: First, to investigate whether children have established a SC and therefore answered coherently, children's answer patterns were scored for coherency. Second, SC scores were built. SC scores were calculated separately for each scale (HSC, SSC, CSC, VSC, PSC). Taken together, the two scores allow for different information: Coherency scores refer to how coherent children are concerning their (moral) picture about themselves, whereas SC scores refer to the extent, children see themselves as a (im)moral person.

Coherency Score. The coherency score assessed the extent to which children's picture of themselves is coherent and consistent. As a first step, a dichotomous variable was built for each scale (HSC, SSC, CSC) separately: "0" indicates that the values of the single items within the scale differed by more than 2 points; "1" indicates no variations greater than two points between the items of a scale. A mean value was calculated across the scales HSC, SSC and CSC. This resulted in a MSC coherency score ranging from "0" (high variation within the scales, indicating no coherent SC) to "1" (low variation within the scales; coherent SC) indicating how coherent children's moral SC is. For example, a child whose answers vary for more than two points within HSC ("0") and SSC ("0") scales but has no variations greater than two points between the items of the CSC ("1") scale, would receive a MSC coherency score of 0.33. Thus, the greater the answers varied within the scales, the lower the children scored in coherency. Importantly, the coherency score indicates children's answer patterns on an individual level. It offers an instrument to assess individual differences in the coherency of children's self-representation. For control and comparison, a coherency score for the other SC (OSC) dimensions VSC and PSC was built in the same manner.

SC Scales. The dimensional SC scores resulted from the mean value of all items of a scale (cf. Marsh et al., 2002; Sengsavang & Krettenauer, 2015; Sticker et al., 2021). A higher score indicates higher importance of the respective SC domain, based on behavioral preferences for the associated behaviors. Low scores indicate that the respective aspect is not central for the child's SC. This was the approach for the three moral SC scales as well as for the two additional scales, the verbal and physical SC.

4.2.2.2. Verbal Abilities

Children completed the German version of the Peabody Picture Vocabulary Test, 4th edition (PPVT-4), to assess receptive vocabulary (Campbell & Dommestrup, 2010). It contains 228 items, each consisting of one spoken word and four colored pictures. The child's task is to select the picture that corresponds to the word they heard. The items are ranked in ascending difficulty so that the sets appropriate for a child's level of ability can be applied. Children completed the PPVT-4 digitally at T1. The survey was hosted on Qualtrics.

4.2.3. Statistical Analyses

Statistical analyses were computed with SPSS (IBM SPSS Statistics 28) and RStudio (RStudio Team, 2019). The raw data and R codes for computed factor analysis are available online (https://osf.io/xrh7n/?view_only=d282fc73ca18430690785935384bc1ee). Paired *t*-tests were conducted to investigate whether the coherency scores differed significantly between T1 and T2. To test whether verbal abilities relate to interindividual differences in coherency, PPVT scores were correlated with respective variables. Further, multiple confirmatory factor analyses (CFA) were computed to investigate whether the moral SC is differentiated from other SC dimensions. Furthermore, CFAs were used to test the three-dimensional structure of the moral SC. Finally, to investigate longitudinal relations, we computed Pearson correlation coefficients.

4.3. Results

4.3.1. SC Scores of all Scales

Means and standard deviations of the SC domains are displayed in **Table *5***. 81 children participated in both measurement points and were therefore included in all analysis concerning both T1 and T2. Means of SSC, HSC, PSC and VSC did not differ significantly between T1 and T2 (see **Table *5***). The increase on the CSC scale from T1 to T2 is significant.

Table 5 - *Self-Concept Scores of all Scales of the Puppet-Interview*

			T1			T2		Paired *t*-test
Dimensions		n	M (SD)	Range Min; Max	n	Range Min; Max	M(SD)	*t* (*p*-value)
MSC	HSC	99	3.42 (1.09)	1; 5	121	1; 5	3.20 (1.13)	-1.51 (.135)
	SCS	97	3.77 (1.00)	1; 5	121	1.33; 5	3.97 (0.91)	.81 (.422)
	CSC	97	2.84 (1.25)	1; 5	121	1; 5	3.32 (1.17)	2.19* (.031)
OSC	PSC	96	4.15 (0.70)	2; 5	121	1.25; 5	3.94 (0.76)	-1.93† (.057)
	VSC	99	4.33 (0.78)	1; 5	121	2; 5	4.26 (0.75)	-.44 (.659)

Note. All measures ranged from 1-5. Participants were excluded for the respective scale, when one or more items were missing, resulting in different sample sizes at T1. HSC= Helping self-concept; SSC= Sharing self-concept; CSC= Comforting self-concept; PSC= Physical self-concept; VSC= Verbal self-concept

† $p<.1$ *$p < .05$.

4.3.2. Coherency of the SC

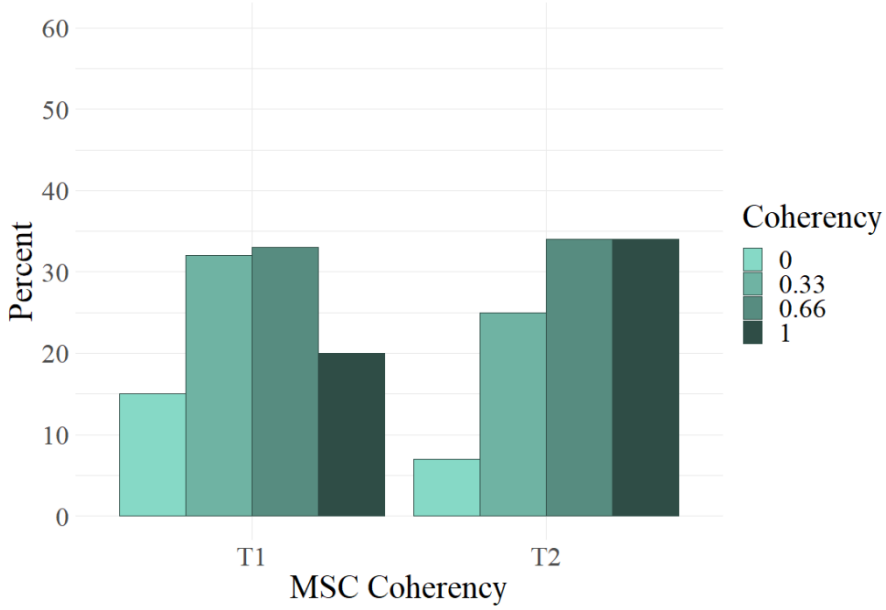
Our first analysis examined the development of a coherent moral SC (MSC). The mean coherency score of the MSC rose from .52 (T1) to .65 (T2), which is a significant increase in coherency (t= -3.10 (82); p= .003). Moreover, from T1 to T2, we found a clear shift in the response patterns: significantly more children responded in a coherent way to the MSC items in the puppet-interview at T2 than at T1: At 4 years, 48% of the children scored in the lower range on the MSC coherency scale (coherency score < .50), at age 5, only 32% did. The percentage of children with low coherency on the MSC scales was significantly lower at T2 (Chi^2 difference-test: p =.01). Furthermore, at T1, only 20% of all children showed full coherency in their answers and scored a "1" on the coherency scale of the MSC. At T2, 34% of children did so. This difference was significant (Chi^2 difference-test: p=.01).

For comparison, a coherency score for the other SC dimensions (OSC) was calculated by combining VSC and PSC. The mean of coherency of other SCs (OSC) rose from .63 (T1) to .70 (T2) (t=-2.04 (82); p = .045). This indicates a significant increase of coherency in the non-moral SC scales.

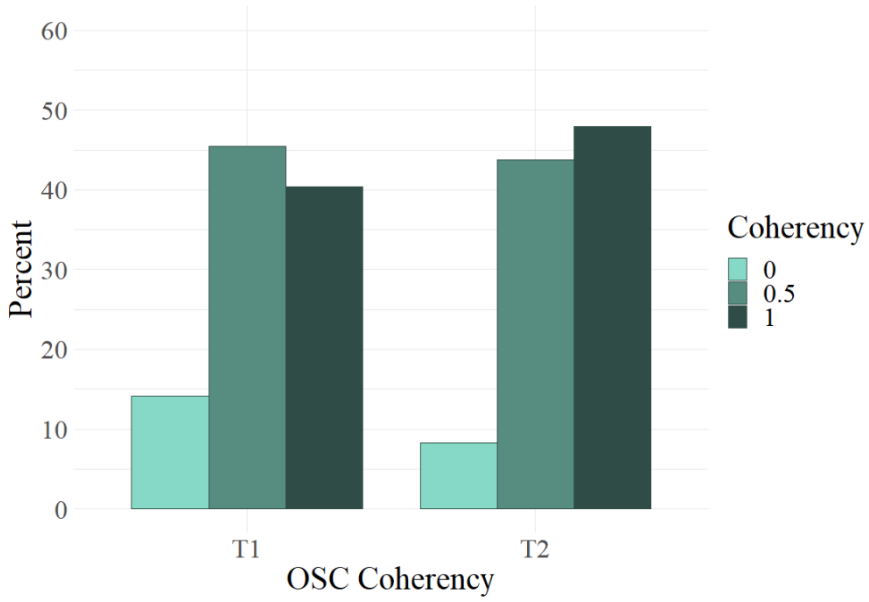
On average, at T1 children achieved considerably higher values on the OSC scale than on the MSC scale. At T1, the mean coherency score of the MSC was significantly lower than of the OSC domains (t=-2,62 (98); p=.01). Interestingly, there was no significant difference at T2 (t=-1.36 (120); p=.18). See **Figure 5** for an overview on the MSC scores and the OSC scores.

Figure 5 - *Panel A: Graphs Show the Distribution of Coherency Scores of the Moral Scales at T1 and at T2 in Percent; Panel B: Graphs Show the Distribution of Coherency Scores of the Non-Moral Scales at T1 and at T2 in Percent.*

A - Moral



B – Non-Moral



4.3.3. Factorial Structure of the Developing Moral Self-Concept

4.3.3.1. Global vs. Multifaceted Model of Self-Concept (SC) Scales

We conducted multiple confirmatory factor analyses (CFA) to analyze the internal structure of the general SC including the three scales MSC, PSC and VSC. That is, we tested whether the MSC is distinct from the PSC and VSC. Two models for the structure of the SC scales were tested: First, we tested a single factor model, which would imply that there is one general SC factor with no separate domains. Second, we tested a differentiated model (three factorial model) with three main factors of the puppet-interview: moral (MSC), physical (PSC) and verbal (VSC).

For T1, neither of the two models fit well (see **Table *6***). Nonetheless, the three-factorial model showed significant better fit compared to a single factor model. For T2, the three-factorial model with a differentiated SC fits significantly better to the data, whereas the fit-indices indicate a bad model fit for the single factor model (Test statistics, see **Table *6***).

Table 6 - *Goodness-of-Fit Indicators for the Confirmatory Factor Analyses of Models for the Self-Concept*

Model	$\chi 2$	*df*	$p(\chi^2)$	χ^2 *diff*	CFI	*RMSEA*	*SRMR*
			4-year-olds (N=99)				
Single Factor	172.891**	104	<.001		.596	.082	.091
Three Factors	161.297**	101	<.001	11.594**	.647	.078	.090
			5-year-olds (N=121)				
Single Factor	157.416**	104	<.001		.685	.065	.079
Three Factors	128.41*	101	.034	29.007***	.838	.047	.069

Note. Single Factor= No differentiated self-concept; Three Factors = Moral self-concept is differentiated from physical self-concept and verbal self-concept.
*$p < .05$. ** $p < .01$. *** $p < .001$

4.3.3.2. One Factorial vs. Three Factorial Model of Moral Self-Concept (MSC)

In a next step, CFAs were conducted to analyze the internal structure of the moral self-concept (MSC). The single-factor model implies a general moral SC without separable domains of *helping*, *sharing*, and *comforting*. The three-factorial model stands for a differentiated MSC. Neither the single-factor model nor the three-factorial model shows appropriate fit at T1 (**Table 7**). At T2, the three-factorial model fits well to the data and fits significantly better than the single-factor model (Test statistics, see **Table 7**). In other words, the MSC is differentiated at age 5, but not at age 4.

Table 7 - *Goodness-of-Fit Indicators for the Confirmatory Factor Analyses of Models for the Moral Self-Concept*

Model	$\chi 2$	*df*	$p\,(\chi^2)$	χ^2 *diff*	CFI	*RMSEA*	*SRMR*
			T1 (4-year-olds, N=99)				
Single Factor	49.63*	27	.005		.791	.092	.078
Three Factors	42.358*	24	.012	7.272	.831	.088	.075
			T2 (5-year-olds, N=121)				
Single Factor	39.893	27	.052		.876	.063	.063
Three Factors	24.147	24	.432	15.746**	.999	.007	.047

Note. Single Factor= No differentiated moral self-concept; Three Factors = Moral self-concept is differentiated into the three factors: helping self-concept, sharing self-concept, and comforting self-concept.
*$p < .05$. ** $p < .01$.

4.3.4. Longitudinal Relations

Table *8* gives an overview over the longitudinal relations between the SC dimensions at T1 and T2. PSC as well as VSC were correlated across the two measurement points, and thus showed longitudinal stability. In contrast, there were no significant correlations regarding the moral SC scales HSC, SSC or CSC.

4.3.4.1. Explorative Analysis on Longitudinal Relations

Importantly, our previous analyses show that children differ in the coherency of their SC. One could argue that it is unlikely to find longitudinal stability of a SC that has not yet been coherently developed. To empirically assess this hypothesis, we run an explorative analysis. We divided the sample into two groups: Children who scored in the lower range on the coherency MSC scale (<1) at T1 were assigned to the low-coherency group (n=80) and children with a coherency score of "1" to the high-coherency group (n=19). As shown in **Figure *6***, there is no

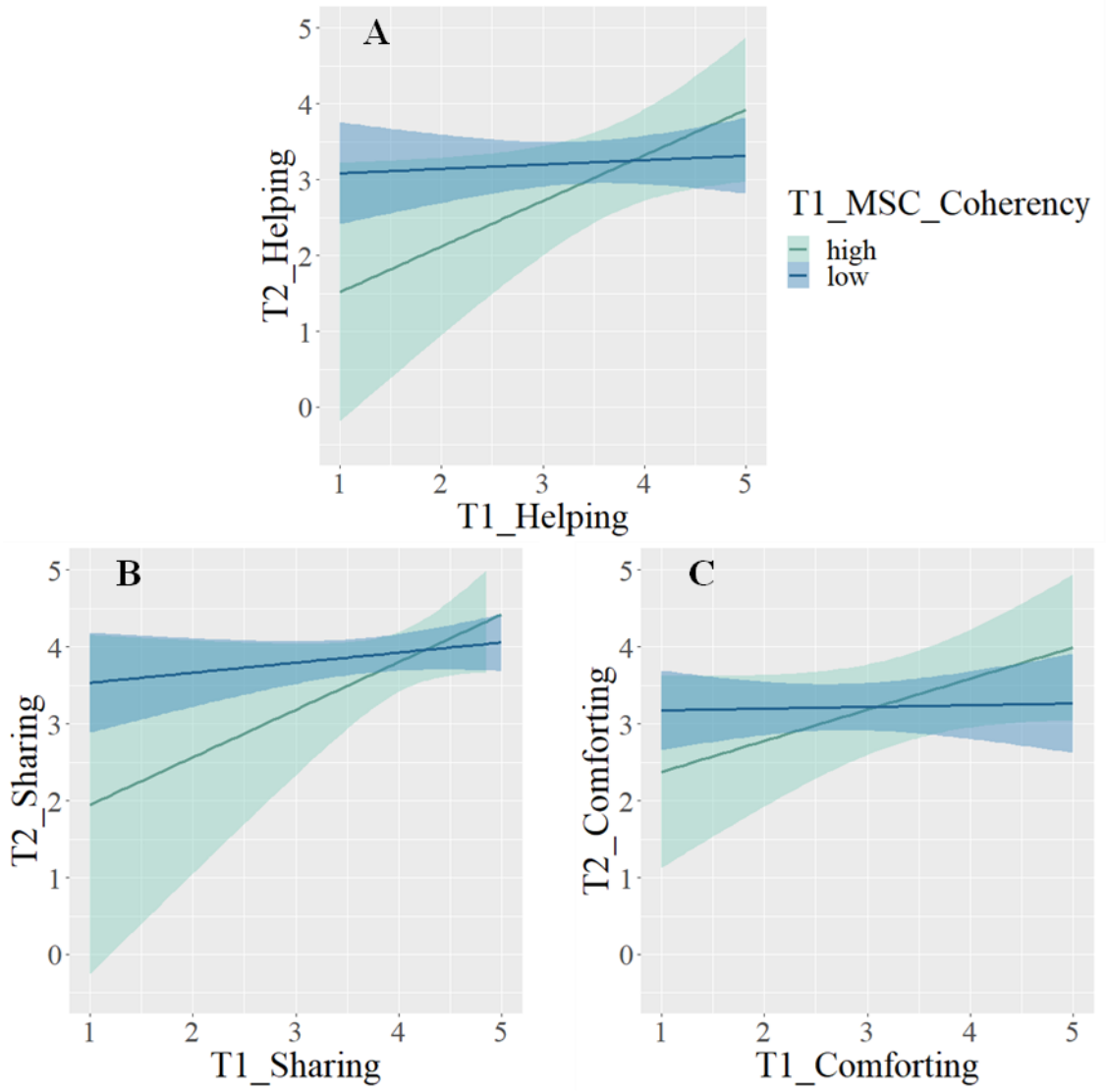
Table 8 - *Longitudinal Relations of all Scales of the Puppet-Interview Between T1 and T2 Comparing Correlations Within the Whole Sample, the low Coherency Group and the High Coherency Group*

	Observed longitudinal correlations with respective scales between T1 and T2		
Group T1 / Scales	Whole sample N=99	Low coherency group N=80	High coherency group N=19
HSC	.14	.06	.49*
SSC	.17	.01	.45†
CSC	.11	.02	.43†
PSC	.31**		
VSC	.30**		

Note. Table shows Pearson correlation coefficients of all scales between T1 and T2. Low coherency group: coherency score <1; High coherency group: coherency score =1. HSC= Helping self-concept; SSC= Sharing self-concept; CSC= Comforting self-concept; PSC= Physical self-concept; VSC= Verbal self-concept
† p<.1 *p < .05. ** p < .01.

stability for the low-coherency group, neither for the HSC scale, nor for the SSC scale or the CSC scale. Most noteworthy, the high-coherency group shows positive correlation for each MSC subscale (see **Figure *6*** and **Table *8***). However, this analysis has to be taken with care, as it was explorative and as sample size was small.

Figure 6 - *Longitudinal Relations Between the Moral Self-Concept Dimensions at T1 and T2, Grouped via Coherency at T1.*



Note. Low coherency group: coherency score < 1; High coherency group: coherency score =1. Panel A: Correlation of HSC T1 and HSC T2; Panel B: Correlation of SSC T1 and SSC T2; Panel C: Correlation of CSC T1 and CSC T2.

4.3.5. Relations With Verbal Abilities

To examine the role of verbal abilities for coherency, we correlated the PPVT-4 score with children's coherency scores in T1 and T2. PPVT-4 scores neither correlate with MSC coherency nor with OSC coherency at T1 or T2. Furthermore, none of the other scales within the puppet-interview correlates significantly with the verbal measure. For an overview of all correlations see supplemental material (**Table *19***).

4.4. Discussion

The current study investigated the emergence of the self-concept in early development by exploring the early development of the moral self-concept in the preschool years. It explored developmental changes in the coherency of the moral self-concept, its factorial structure as well as its longitudinal stability. Overall, our results provide novel empirical evidence for when and how the moral self-concept emerges in early childhood. Most notably, it demonstrates that the coherency of children's self-concept increases in the preschool period; that the moral self-concept undergoes a process of differentiation in the preschool years; and there is preliminary evidence that, once the MSC has gained sufficient coherence, it shows longitudinal stability. The descriptive results for the MSC domains indicate that children used the full range of response options. Furthermore, although the children on average scored in the upper half of the range, there was no ceiling effect. Interestingly, analyses indicated that the mean level of comforting scale of the MSC increased over time. That is, older preschool children perceived themselves as being more comforting than the younger preschool children. Given that the ability to show adequate comforting increases over early childhood (Sticker et al., 2023; Taylor et al., 2013), children might experience their growing abilities and reflect it in their representations about themselves.

First, we investigated to which extent children show a coherent concept of themselves as moral persons. A key finding of our study is that during the preschool period, children's moral self-concept becomes more coherent. Influential developmental theories proposed that a certain amount of coherency is constitutive for a self-concept (Baumeister, 1997; Erikson, 1959, 1968; Rogers, 1959). Yet, to our knowledge, the emergence of a coherent self-concept has not been systematically examined in developmental science. Assessing response patterns across the items of the different scales, our results demonstrate developmental changes in the coherency

of the moral self-concept and show thus how the self-concept emerges in the preschool years. Second, analyses of the factorial structure of the moral self-concept indicate that a three-dimensional structure (helping, sharing, and comforting) was not developed at age 4, but was present at age 5. This finding provides further evidence of how the moral self-concept emerges and, most interesting, differentiates in the course of the preschool years. Third, while an analysis of all participants indicated a lack of longitudinal stability of the moral self-concept, separate explorative analyses of the participants with high and with low coherency scores respectively indicate that once the self-concept has consolidated, it seems to be relatively stable over time. Even though the significance of this analysis is limited by sample size, in relation with our other findings, the results contribute to a larger picture. Taken together, across three different types of analyses we find converging evidence that the moral self-concept develops in the late preschool years. The development comprises the emergence of an internal structure and coherency that is associated with an emerging stability of children's conceptions of themselves as moral agents. We will discuss the findings in the subsequent paragraphs.

4.4.1. Coherency of the Moral Self-Concept

One key question concerns at which age children's moral self-concept emerges. Whereas previous developmental research on the self-concept focused on the characteristic of the self-concept, that is, to which extent children ascribe themselves particular abilities or tendencies (Harter, 2006; Marsh et al., 2002; Marsh & Shavelson, 1985), little research has explored when children develop a coherent view of themselves at all. Influential theories suggest that a certain amount of coherency is one important (potentially even definitional) aspect of a self-concept (Baumeister, 1997; Erikson, 1959, 1968; Rogers, 1959). To this end, we analyzed the coherency of children's responses to the moral self-concept scales by examining to which extent children show pronounced differences in their responses to the single items of each scale. The results show that at 4 years, nearly half of the children scored in the lower range on the coherency scale indicating rather incoherent views of themselves. At age 5, only about one third did so and, on mean level analyses, we found increased coherency. This suggests that when taking coherency as a central criterion for having a self-concept, our study demonstrates that it emerges during the preschool years. Furthermore, our approach opens novel avenues for research on early self-concept development, by highlighting the importance of coherency as a central characteristic of the self.

Crucially, the puppet-interview is a verbal measure. It was thus important to explore whether individual differences in coherency were related to language abilities. Our assessment of language did not correlate with the coherency score. These results suggest that differences on the coherence scale cannot be solely explained by children's language abilities. Therefore, we assume, that differences in coherency actually are due to developmental changes in the conceptual understanding of the self.

4.4.2. Factorial Structure of the (Moral) Self-Concept

The second finding concerns developmental changes in the structure of the moral self-concept. More specifically, we examined the emergence of a three-dimensional structure of the moral self-concept comprising the dimensions of helping, comforting, and sharing – following the corresponding behavioral domains (cf. Dunfield, 2014; Dunfield & Kuhlmeier, 2013; Paulus, 2018). Our findings suggest that the structure of the moral self-concept undergoes profound developmental changes during preschool age. While at age 4, the three-dimensional structure within the moral self-concept is not yet present, at age 5, the differentiated model fit well to the data. This support previous findings of a differentiated moral self-concept (Sticker et al., 2021). Crucially, our study is the first to show that the three separate dimensions of helping, sharing, and comforting within the moral self-concept are not present from early on, but that it differentiates between the ages of 4 to 5 years.

Additionally, on a higher hierarchical level of the self-concept, our results are indicative of an early independency of the moral self from other self-concept domains. A model with separated dimensions (moral self-concept, verbal self-concept, and physical self-concept) fit significantly better to the data compared to a one-factorial model of a general self-concept. This was true for the 4-years-olds as well as for the 5-year-olds. However, when interpreting the results, it should be considered that both at 4 and at 5 years, the model fit was not perfect for the three-dimensional model either. Nevertheless, our data show that a differentiated model fits significantly better than a global one, which should be treated as the central statement of analyzes here.

These results provide novel empirical support for theoretical models that propose that the self-concept is multifaceted and hierarchical (Marsh et al., 2002). While other influential accounts of moral self-concept development (e.g. Hardy & Carlo, 2005; 2011; Krettenauer et al., 2013) did not apply the hierarchical model on the moral self-concept, our results demonstrate that the development of the moral self-concept can be understood within the

hierarchical model: The self-concept differentiates on a higher level early in life and differentiates even further at lower hierarchical levels with increasing age.

4.4.3. Developmental Stability of the Moral Self-Concept

Third, our study explored developmental stability of the moral self-concept, that is, stability by means of a longitudinal assessment. Interestingly, analyses showed that the verbal and the physical self-concept scales, but not the moral self-concept were stable. That is, children who scored higher on the verbal or physical scales at T1 also did so at T2 and vice versa. This was not the case for the three moral scales: Neither the helping, sharing and comforting self-concept correlated between T1 and T2. However, a separate assessment of those children who already hold a coherent moral self-concept at age 4 showed that for them, the moral self-concept was stable over time. For these children, the moral self-concept scale of helping in fact correlated significantly between the two measurement points. Furthermore, also the sub-scales for the sharing moral self-concept and the comforting moral self-concept showed positive relations, albeit not significant, probably due to the small remaining sample size. The results should thus be treated with caution and require further confirmatory tests. Still, our results suggest an interpretable tendency: Once children have built a coherent concept of themselves as more or less morally acting persons, this concept remains relatively stable over time. Our results therefore extend an established line of research that found the self-concept to be a stable and trait-like construct (Cimpian et al., 2017; Damon & Hart, 1982; Hardy & Carlo, 2011; Kihlstrom & Klein, 1994) by the insight that coherency may be an essential precondition for stability.

4.4.4. Limitations & Future Directions

Our study also has limitations and leaves us with open questions. First, it should be noted that this study relied on sampling a WEIRD (Western, educated, industrialized, rich, and democratic) population (Henrich et al., 2010). Interestingly, Jia et al. (2019) compared Western (Canadian) and Eastern (Chinese) cultures in different contexts. Their results support the idea of cultural similarities regarding moral identity but in dependence of contexts. The moral self-concept develops in the setting of social interactions and cognitive precursors, which differ obviously between different cultures and social backgrounds. It remains to be seen how the moral self-concept emerges in samples with different cultural background.

Further, due to our decision to exclude children who gave the exact same response to all items (“straight-line” responding), we excluded 20 children. All excluded children solely answered on the higher end of the scale. A consistent orientation to one extreme end of a scale is usual for "straight-lining" (e.g., Vriesema & Gehlbach, 2021). This can nevertheless be seen as problematic since we cannot make any statements about the reasons for such response behavior. Future studies may include control items to check for systematic response strategies.

Third, the investigated factors of helping, sharing, and comforting are representing prosocial aspects of the moral self-concept. Since these three dimensions are assumed to be central in the development of prosociality in early childhood (e.g., Dunfield, 2014; Paulus, 2018), we put these into the focus of our research. Given that instrumental helping and supportive behaviors are the first manifestations of other-oriented behavior early in life (Dunfield, 2014; Svetlova et al., 2010), our study included items related to children’s helping behavior in our measure of moral self-concept (e.g., “I like to help with the dishes”). One could argue that instrumental helping is not indicative of a genuine moral orientation. Yet, given that other-oriented concerns emerge in these contexts and social interactions, we deemed it justified to include this dimension in our approach. This does not rule out the possibility that there may also be other dimensions that can be assigned to this dimension of the self-concept. For example, others highlight the tendency to cooperate as an important factor in moral development (Malti, 2016; Tomasello & Vaish, 2013), which makes it a potential dimension of the moral self. Respect for others and inclusive behaviors towards peers play a role for the development of prosociality (Peplak et al., 2017; Peplak & Malti, 2017), which speaks for the relevance of these aspects for the moral self-concept. Moreover, Krettenauer et al. (2013) also identified aversion of antisocial behavior as an aspect of the self-concept. In future studies, further dimensions that contribute to the moral self-concept could be combined in a model and their hierarchical structure and differentiation could be examined more closely. In addition, it would be interesting to study in greater detail the consequences of increased coherency in the moral self-concept. For example, one could hypothesize that a certain level of coherence supports the experience and/or appreciation of guilt when transgressing moral and prosocial norms. Interestingly, it has been reported that an understanding of guilt increases in the preschool period (Vaish, 2018; Vaish et al., 2016), opening avenues for future research. This study aimed to answer the questions of *when* and *how* the moral self-concept emerges during early childhood. To address the question *why* some children already have formed a picture of themselves as a (im)moral person with 4 years of age and some children only develop this

concept of themselves during preschool age remains the chore of future studies. There are good reasons to assume that the foundation for the development of the moral self-concept is laid in infancy. Theoretical frameworks on the development of the moral self-concept propose that it develops, among other things, from the morally relevant experiences children make in early social interactions (e.g., positive responses to sharing, negative responses to aggressive behavior; Emde, 1991; Hardy et al., 2020; Kochanska, 2002). Early predictors such as children's experiences of compliance with parental rules or empathy with others should be considered in this context (e.g., Kochanska, 2002; Reese et al., 2007). Advocates of attachment theory also assume that early attachment experiences to significant others have an important influence on the development of both, early prosocial behavior (Deneault et al., 2023; Gross et al., 2017) and the self-concept (Paulus et al., 2018). Thus, children's emergent moral self-concept may relate to their attachment experiences. For other domains of the self-concept – e.g., the academic self-concept - actual behavior seems to operate as a predictor for the manifestation of a self-concept (Marsh & Craven, 2006). Results of the study of Sticker et al. (2021) also indicate this behavior–self-concept relation to be present in the moral domain. Yet, the directionality of this relation remains unclear. Therefore, it seems to be reasonable to further investigate the role of prosocial behavior in the context of moral self-concept development in future studies.

Lastly, the results of some of our analyses are limited by a small sample size. However, they are meaningful as they tie in with the other findings that complement each other well. Based on our results, it seems that coherency plays a crucial role for our other findings: Increase of coherency goes hand in hand with the differentiation of the moral self-concept and it seems to be an important factor for stability over time. In previous research, coherency of the self-concept was mostly not considered when examining the development of the moral self-concept. Nevertheless, influential accounts (e.g., Hardy & Carlo, 2005; Kochanska, 2002; Krettenauer, 2013b) paved the way towards a better understanding of the moral self-concept development and brought the topic into the center of interest (Hardy & Carlo, 2011). Our results add to these approaches by integrating the important aspect of coherency into the area of moral self-concept research.

4.4.5. Conclusion

In summary, this study uses a new approach to investigate the emergence of the self-concept in early development and shows that at age 5, most children have developed a coherent moral self-

concept which is structured according to the three prosocial domains of helping, sharing and comforting. Furthermore, our results provide a first indication that once children have developed a coherent moral self-concept, it is also stable over time. Taken together, these results provide first empirical insight into the early developmental timeline of children's concept of themselves as moral agents.

5. Study 3

Preschool Children's Moral Self-Concept Predicts Their Guilt-Related Behavior

Söldner, L., & Paulus, M. (2023). Preschool children's moral self-concept predicts their guilt-related behavior [Manuscript submitted for publication].

Abstract

It has been proposed that early prosocial and moral development is related to the emergence of moral emotions such as guilt. Guilt is an important psychological factor, which motivates prosocial behavior and is credited for multiple social functions. Importantly, it remains unclear what determines the extent to which children show guilt. The current study examined two factors that have been proposed to support the emergence of guilt: children's moral self-concept (MSC), and Theory of Mind (ToM). To this end, guilt-related behavior and the two potentially explanatory factors were assessed in 5-6-year-old children (Mean age: 5.43 years, N=133, 51% female). Most relevant, MSC predicted children's guilt-related behavior. Children's ToM was not predictive for guilt-related behavior. These findings support theoretical approaches proposing that the emergence of guilt is based on children's developing self-concept.

5.1. Introduction and Theoretical Background

Recent years have seen an increased interest in early moral development (e.g., Carpendale & Hammond, 2016; Paulus et al., 2020). Moreover, research demonstrated that moral emotions emerge during the preschool years. One current area of interest focuses on the development of guilt and guilt-related behavior (e.g., Vaish, 2018).

At first glance, feeling guilty may not seem desirable. However, guilt is recognized as serving numerous social functions and is therefore regarded as a crucial developmental accomplishment (Baumeister et al., 1994; Tangney & Dearing, 2003). Guilt is defined as a moral emotion that follows the realization that one has harmed someone. The consequences of experiencing guilt include repairing social relationships, future compliance with social norms, and maintaining cooperation (Baumeister et al., 1994; Tangney & Dearing, 2003; Vaish, 2018). Importantly, guilt can lead to actual prosocial behavior (Hoffman, 1982; Nikolić et al., 2023). As such, it is considered a socially and morally relevant emotion in our everyday lives and a key outcome of children's moral development.

The emergence of guilt starts early in life. Children show guilt-relevant responses from 3 years of age (e.g., Barrett, 1995; Zahn-Waxler & Kochanska, 1990). In addition, children at this age also show greater reparative behavior when they are a transgressor themselves compared to a situation where children are only observers of a transgression, and when the transgression has harmed someone compared to when the transgression has not resulted in serious consequences (Vaish et al., 2016). Guilt can be expressed through *guilt-related behavior* including speech and action (e.g., Zahn-Waxler & Kochanska, 1990). Therefore, guilt-related behavior includes, for example, expressing remorse and explaining that what happened was an accident and not intentional, apologizing, or communicating a desire to repair the potential damage (e.g., Vaish et al., 2016; Zahn-Waxler & Kochanska, 1990). Furthermore, guilt motivates the transgressor for actual reparative behavior and making amends (Hoffman, 1982). Accordingly, this type of behavior is also considered to be guilt-related behavior.

While recent research has explored the development of guilt (Vaish, 2018), still little is known about the factors that relate to guilt and the behavioral expressions that follows guilt in

young children. The current study aims at widening our understanding of the development of guilt in early childhood by exploring associated psychological factors. In the following, we outline different processes that could relate to early guilt-related behavior.

5.1.1. Theoretical Approaches to Explain Guilt-Related Behavior in Children

One proposal is that the development of guilt is closely related with self-concept development (Barrett, 1995; Hoffman, 2000; Stipek et al., 1990). Lewis et al. (1995b) proposed a relationship between self-development and the emergence of guilt and embarrassment. When children develop awareness of being distinct from others they also learn that their actions have an impact on others, what therefore supports the emergence of guilt (Hoffman, 1982). Furthermore, Barrett (1995) proposed that self-conscious emotions, including guilt and shame, are interrelated with the development of self. Guilt proceeds from comparing one's own behavior to expectations towards oneself (e.g. Kagan, 1987; Rosenberg, 1979; Stipek et al., 1990), therefore, a *prosocial* view on oneself amplifies experiencing guilt. This highlights the importance of the *moral* domain of the self, namely, in children, a *moral self-concept* – including representations of other-oriented preferences as well as representations of other-oriented behaviors (Söldner et al., 2024; Sticker et al., 2021). Following this approach, one could hypothesize that someone who considers being a prosocial person to be an important characteristic of themselves is likely to display more guilt-related behavior. Recent studies found evidence for the relation between the moral self and other kinds of prosocial behavior in adults (e.g., Aquino et al., 2009; Hertz & Krettenauer, 2016) as well as in children (e.g. Sticker et al., 2021). Findings by Christner et al. (Christner et al., 2020) point out a relation of the moral self-concept of 5-9-year-olds and anticipating negative feelings when not-sharing. Furthermore, Kochanska et al. (2002) found first evidence that children's moral self is connected to guilt-related prosocial behavior. Taking all into account, it can be hypothesized that children who come to view themselves as more prosocial, also respond more strongly to their wrongdoing and therefore display more guilt-related behavior.

The second approach to explain guilt-related behavior arises from the theoretical proposal that to understand and experience self-conscious emotions like guilt children must be able to take the perspective of another person (e.g., Lagattuta & Thompson, 2007; Malti, 2016; Misailidi, 2018). More specifically, it has been proposed that the development of guilt is closely related to Theory of Mind (ToM). ToM is the ability to understand that other people have

thoughts, beliefs, desires, and perspectives that may differ from one's own (Hoffman, 1982; Lagattuta & Thompson, 2007; Malti, 2016). Guilt arises when individuals recognize that they have caused harm or violated social norms (Baumeister et al., 1994; Tangney & Dearing, 2003). This recognition is dependent on their ability to understand the thoughts and feelings of others, which is a key aspect of ToM (e.g., Perner et al., 2002).

Recent studies found evidence for a relation between children's ToM and guilt development. A study has demonstrated that children aged 7- to 11-years with more advanced ToM abilities are more likely to have higher levels of guilt proneness (Misailidi & Kapsali, 2022). Experimental studies, such as those by Dunn et al. (1995) and Ratcliffe (2005), further support this relation by showing that children's understanding of others' perspectives and emotions is associated with their propensity to express guilt and remorse for their actions. Collectively, findings indicate that ToM plays a role in shaping the development of guilt in children, highlighting the interplay between cognitive and socio-emotional processes in moral development.

However, it is important to note that most empirical studies to date have focused on guilt proneness, reporting past events, or evaluating the actions of third parties. It is important to note that verbally reporting on and reasoning about guilt and the verbal ToM measure both pertain to the same skill: thinking about one's own mental states. Therefore, it would be of great interest to investigate if ToM actually relates to children's guilt-based behavior. This behavior hinges upon several key aspects of ToM. Firstly, individuals must grasp the impact of their actions on others, demonstrating an awareness of the consequences of their behavior (Hoffman, 2000). Secondly, they need to attribute responsibility for their actions, recognizing their own agency and understanding the moral implications of their behavior (Kohlberg, 1984). Additionally, engaging in guilt-related behavior necessitates the capacity to anticipate and comprehend the reactions and emotions of others, demonstrating empathy and remorse for any harm caused (Decety & Jackson, 2004). These components of empathy and remorse are closely tied to ToM, as they rely on the ability to understand and attribute emotions to oneself and others (Davis, 1983). Therefore, it can be hypothesized, that as individuals develop greater ToM skills, they show more guilt-related behavior, reflecting a deeper understanding of moral responsibility and social norms. Thus, the development of guilt-related behavior could be associated with the maturation of ToM.

In summary, the current study focuses on two factors that have been proposed to support the development of guilt. One emphasizes the connection between moral self-concept

development and guilt-related behavior, while the other highlights the role of ToM in understanding and experiencing guilt. The two perspectives propose that guilt is closely related to children's developing sense of moral self and ability to understand and empathize with others' perspectives and emotions. Therefore, it can be hypothesized, that children with a more positive moral self-concept and greater perspective taking abilities, are more capable of experiencing guilt and expressing guilt-related behaviors, such as apologizing and seeking forgiveness. Therefore, the current study aims to gain a complete understanding of the extent to which MSC and ToM directly influences the guilt-related behavior of children.

5.1.2. Current Study

Taken all together, guilt is proposed to be an important psychological factor supporting human cooperation. The experience of guilt motivates transgressors for prosocial and guilt-related behavior to repair the interpersonal damage they may have caused. It remains unclear what determines the extent to which children show guilt-related behavior. The aim of the present study is to answer this question.

More precisely, we investigated how different psychological factors relate to the development of guilt-related behavior. Some views have proposed that guilt emerges from comparing one's own behavior to a moral view on oneself (e.g., Rosenberg, 1979). We, therefore, first, investigated whether 5-6-year-old's moral self-concept (MSC) predicted their guilt-related behavior. Another consideration starts from the assumption that guilt is linked to children's ToM development (Lagattuta & Thompson, 2007; Malti, 2016). Accordingly, second, we assessed if children's ToM abilities are predictive for guilt-related behavior. Therefore, the following hypotheses are derived from our theoretical assumptions:

H1: The more positive children's MSC is, the more guilt-related behaviour they show.
H2: The higher children's ToM skills are, the more guilt-related behaviour they display.

To this end, the current study examined guilt-related behavior, MSC and ToM of 5-6-year-old children in a cross-sectional within-subject study design. Children's behavioral responses following a minor transgression were assessed in an experimental setting in the laboratory (cf. Kochanska, 2002). Children's MSC was assessed through a puppet-interview (Christner et al., 2020). ToM was assessed through the Theory-of-Mind Scale from Wellman and Liu (2004). Finally, to account for the influence of children's domain-general cognitive

abilities, we included a measure of cognitive functioning in preschool children to control for whether potential relations between predictors and guilt-related behavior were due to differences in children's cognitive abilities.

5.2. Methods

5.2.1. Participants

In total, a sample of *n*=133 children (age range: 5.3 – 6.2 years; mean(age)= 5.6 years, 51% girls) was tested. To achieve a statistically significant overall model with 4 predictors, a sample size of $n = 93$ would be necessary to detect a small effect ($f^2 = 0.15$) with a statistical power of .9, and a significance level of $\alpha = .05$ (calculated with G*Power). Participants were typically developing children living in a large European city. Children's caregivers provided informed written consent for participation. The local ethics commission approved the study. Parents were reimbursed for travel costs and children received a small present for their participation.

5.2.2. Study Design

Participants were tested individually in the university laboratory. Sessions were videotaped. The tasks considered in this study were part of a larger ongoing longitudinal project.

5.2.3. Measures

5.2.3.1. Guilt-Related Behavior

The guilt-related behavior task was adapted from a study by Kochanska et al. (2002). It consisted of a colorful and attractive 'self-drawn' picture which belongs to the experimenter and a wooden marble track. The marble track was manipulated to place children in a situation where they believed they had destroyed a significant item belonging to the experimenter. 41 participants had to be excluded due to procedural errors ($n = 34$) or experimenter errors ($n = 7$). This resulted in a sample of $n = 92$ for this task. Coding focused on children's behavioral response following the mishap. This resulted in a score ranging from 0-3 displaying how much guilt-related behavior the child showed. A detailed explanation of the procedure and coding scheme is included in the supplemental material (**iv Procedure and Coding: Guilt-Related Behavior**).

5.2.3.2. Puppet-Interview

A puppet-interview was used to assess children's MSC. Puppet-interviews are a well-established method to examine the self-concept in children (e.g., Reese et al., 2007; Sengsavang & Krettenauer, 2015). In order to assess the MSC, we followed the procedure of Christner et al. (2020) which is adapted version of the Children's Moral Self Puppet Scale (CMSPS) by Sengsavang and Krettenauer (2015). 13 participants had to be excluded as they gave the same response to all questions ("straightliners"; see e.g., Kim et al., 2019). This resulted in a sample of n = 120 for this task. The MSC score raged from 1-5: A higher score indicates higher importance of the MSC domain, based on behavioral preferences for the associated behaviors. Low scores indicate that the respective aspect is not central for the child's self-concept. For the detailed procedure and coding, please refer to the supplemental material **(i Procedure and Coding of the Puppet-Interview**).

5.2.3.3. Theory of Mind (ToM)

To assess ToM, an adapted version of Wellman and Liu's (2004) Theory-of-Mind-Scale was utilized. The task was administered via a tablet, presenting stories as videos followed by direct questions. The scale included six tasks, progressively increasing in difficulty, validated for scale fit. Tasks covered understanding desires, beliefs, knowledge access, explicit false beliefs about location and content, and distinguishing apparent and real emotions. Each task was scored 0 or 1 based on correctness, with total scores ranging from 0 to 6, indicating ToM ability. One participant had to be excluded due to an experimenter error resulting in a sample of n = 132.

5.2.3.4. Cognitive Functions

To control for cognitive functions, we computed a subtest out of the *Vienna developmental test* batterie (WET) by Kastner-Koller & Deimann (2002). We relied on the subtest *Analogue Thinking*, which is supposed to assess cognitive development. The test contains 15 items, a sum score ranging from 0-15 is possible. According to the manual, test-retest-reliability is .86 (Kastner-Koller & Deimann, 2002). 7 participants had to be excluded due to experimenter errors resulting in a sample of n = 126 for this task. For further details, please refer to the supplemental material (**v Procedure and Coding of Cognitive functions**).

5.2.4. Statistical Analyses

Statistical analyses were calculated with RStudio (RStudio Team, 2019). Raw data and r codes are available online (https://osf.io/ekra9/?view_only=42bc1fa405284b0883a3f09036ff443b; Söldner, 2024). In order to mitigate bias and prevent a reduction in statistical power arising from missing data, we employed the "mice"-package in R for the purpose of imputing missing values through predictive mean matching (van Buuren & Groothuis-Oudshoorn, 2011). This method preserves the integrity of relations between variables that are critical to regression modelling, while accounting for the randomness of missing data. The mice package offers a reliable method for imputation through predictive mean matching, which maintains accuracy and validity of the analysis even with missing data. The use of multiple imputation techniques from the mice package can help reduce the impact of imputation uncertainty in smaller datasets, ensuring the analysis is robust (van Buuren & Groothuis-Oudshoorn, 2011). Pearson correlations were computed to test whether the measures are correlated. To answer the question, whether MSC and/or ToM can predict guilt-related behavior, linear regression analyses were computed.

5.3. Results

5.3.1. Descriptive and Correlational Statistics

Table 1 displays means and standard deviations of all variables. As a first test of our hypotheses, we calculated correlational statistics (**Table *9***). Results show that guilt-related behavior relates significantly to MSC, as well as to the MSC subdimensions sharing self-concept (SSC) and comforting self-concept (CSC). Neither ToM, nor cognitive abilities correlates with guilt-related behavior. Notably, ToM is significantly correlated with cognitive abilities. Children's age (in months) is only related meaningfully to cognitive abilities.

Table 9 - *Means, Standard Deviations, and Pearson Correlations of all Variables*

Variable	*M* *[Min; Max]*	SD	1	2	3	4	5	6	7
1.Guilt-Related Behavior *n* = 92	.55 *[0;3]*	.78	-						
2. MSC *n* = 120	3.59 *[1.92;5]*	.75	**.20***	-					
3. HSC *n* = 120	3.57 *[1.67;5]*	.86	.11	**.85****	-				
4. SSC *n* = 120	3.97 *[1.33;5]*	.91	**.15***	**.66****	**39****	-			
5. CSC *n*= 120	3.32 *[1;5]*	1.17	**.21***	**.70****	**33****	**.26****	-		
6. ToM *n*= 132	4.53 *[1;6]*	1.38	-.11	.08	.07	.07	.04	-	
7. WET *n* = 126	13.31 *[9;15]*	1.40	-.11	.11	.05	.12	.11	**.36****	-
8. Age (months) *n* = 133	67.30 *[64;77]*	2.35	.04	.12	.09	.11	.08	.11	**.20***

Note. M and SD are used to represent mean and standard deviation, respectively. MSC=Moral self-concept; HSC=Helping self-concept; SSC=Sharing self-concept; CSC=Comforting self-concept; ToM=Theory of mind score; WET=Cognitive abilities; * $p < .05$., ** $p < .001$

5.3.2. Multiple Linear Regression Analysis

The regression model 1 included guilt-related behavior as the outcome variable and MSC and ToM as predictors. This resulted in a model, where children's MSC is the only significant predictor. To consider cognitive abilities and children's age, another model (model 2) including WET scores as well as age in months was computed. Model 2, again, revealed MSC to be the only significant predictor for guilt-related behavior. For further test statistics see **Table *10***. **Figure *7*** displays scatter plots between the two predictors and guilt-related behavior.

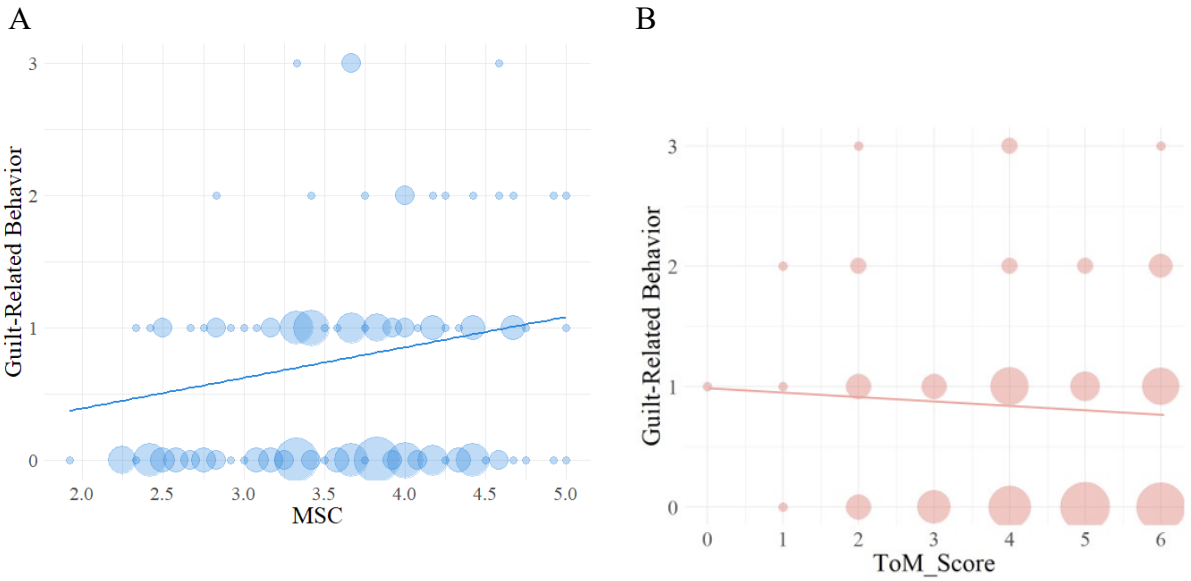
Table 10 - *Test Statistics for Regression Models 1 and 2 With Guilt-Related Behavior as Dependent Variable*

Variable	Model 1			Model 2		
	B	*SE*	*p*	*B*	*SE*	*p*
Constant	.05	.32	.887	-.22	1.57	.891
MSC	**.22***	.08	.005	**.22***	.08	.004
ToM	-.07	.04	.08	-.05	.04	.212
Age (month)				.01	.02	.568
WET				-.06	.04	.186

Note. MSC=Moral self-concept; ToM=Theory of mind score; WET=Cognitive abilities

*p <.05; ** p <.001

Figure 7 - *Scatter Plots between Predictors and Guilt-Related Behavior*



Note. A: Scatter plot with trendlines between moral self-concept (MSC) and guilt-related behavior; B: Scatter plot with trendlines between Theory of Mind (ToM) and guilt-related behavior

5.3.3. Explorative Analyses with MSC Subdimensions

For exploratory purposes, we included the separate MSC subdimensions (HSC, SSC, CSC) into our analyses. Therefore, we computed separate regression analyses with the differentiated MSC subdimensions as separate predictors within two models. As in Model 3, with HSC, SSC, and CSC and ToM as predictors, and in Model 4, with the additional control variables WET and age, CSC was the only significant predictor of guilt-related behavior. This means that the CSC is the strongest predictor for guilt-related behavior in a model including all three subdimensions as separate predictors. Additional test statistics can be found in the supplemental material (**Table *20*** - Test Statistics for Regression Models 3 and 4 with Guilt-Related Behavior as Dependent Variable).

5.4. Discussion

The emotion of guilt and associated behavior are important developmental achievements during childhood. They form an integral aspect in the early ontogeny of morality (e.g. Carpendale & Hammond, 2016; Paulus, 2020). Yet, little is known on the psychological factors that relate to young children's guilt reactions. For this reason, we addressed two accounts, which are theoretical approaches to explain guilt-related behavior. Our findings suggest that only children's moral self-concept (MSC), but not theory of mind (ToM) determines the extent to which children show guilt-related behavior. This study complements recent research exploring the development of guilt (e.g., Vaish, 2018) by adding new insights into what factors relate to guilt in young children.

There is broad agreement that the development of guilt is associated with self-development (Barrett, 1995; Hoffman, 2000; Lewis, 1995). For instance, Stipek at al. (1990) stated a certain self-understanding to be important for the early emergence of moral emotions namely remorse, guilt or shame. More precisely, the *moral or prosocial* domain of children's self-concept is supposed to be central to children's guilt development (Bear et al., 2003; Kagan, 1981; Stipek et al., 1990). Our findings support this view. To our knowledge, the current study is the first to explore the relation between children's moral self and guilt-related behavior in young children. Results indicate the moral self-concept to have a significant relation to the extent to which children display guilt-related behavior: The more children perceive themselves as a prosocial person, the more guilt-related behavior followed a transgression. By implementing children's cognitive abilities and age as control variables, we ruled out the possibility that effects can solely be explained through cognitive competence or children's age differences.

It is important to note that 5-year-old's MSC has shown to be divided into separate subdimensions (Krettenauer, Asendorpf, et al., 2013; Sticker et al., 2021). In this study, we focus on the prosocial aspects of the MSC, specifically helping, sharing, and comforting, in line with previous research (e.g., Söldner et al., 2024; Sticker et al., 2021). Interestingly, exploratory analyses showed that the comforting and sharing subdimension, but not helping, were significantly related with guilt-related behavior. In a regression analysis with the three subdimensions of the MSC as separate predictors, only the comforting dimension was significant, making children's comforting self-concept the strongest predictor for guilt-related behavior. In fact, guilt-related behavior, e.g., reparative behavior, has a similar motivation to

comforting someone who is in pain, that is, giving comfort to someone to make them feel better after they have experienced emotional or physical damage. These findings fit well with the theoretical consideration that guilt arises from comparing one's own behavior with expectations of oneself (Kagan, 1981; Rosenberg, 1979; Stipek et al., 1990). Furthermore, this can also be well connected with theoretical views (Bear et al., 2003), proposing that feelings of guilt arise when one's own actions deviate from one's own moral or prosocial view of oneself. Guilt, in turn, leads to responsible behavior which is a primary aim of education (Bear et al., 2003). Therefore, this opens up new ways for intervention programs which see moral emotions like guilt as central to enhance children's socioemotional competence and prevent the emergence of maladaptive behaviors (Izard, 2002). Our findings have an implication for our understanding of the development of guilt by demonstrating that children's moral view of themselves has a significant impact on their guilt-related behavior. This highlights the importance of children's moral self-concept for their moral development.

One theoretical perspective proposes children's ability to take the perspective of others as a prerequisite for the development of guilt (Lagattuta & Thompson, 2007; Malti, 2016). From these considerations we derived hypothesis 2 stating that children with higher levels of ToM skills would also show more guilt-related behaviors. However, the results of our study did not support hypothesis 2: ToM was not related to guilt-related behavior in 5-6-year-old children. This finding differs from previous studies that have found a relation between children's ToM skills and their feelings of guilt (Misailidi, 2018; Misailidi & Kapsali, 2022; Ratcliffe, 2005). Importantly, previous work focused almost exclusively on children's guilt proneness (Misailidi & Kapsali, 2022) and understanding of guilt (Misailidi, 2018) usually assessed through vignette stories and reports on past events. This may indicate that while ToM skills are related to children's reasoning about guilt, this association may not be reflected in children's actual behavior following feelings of guilt.

Alternatively, it is possible that the development of ToM is a prerequisite for the emergence of guilt-related behavior (Lagattuta & Thompson, 2007; Malti, 2016; Misailidi, 2018). However, since by this age the majority of children already have sufficient levels of ToM to be able understand and experience self-conscious emotions, differences in ToM in by 5-6 years are no longer predictive for guilt-related behavior.

Notably, the ToM skills of the children were significantly related to their cognitive abilities. Children with higher levels of cognitive abilities had higher levels of ToM. This result highlights the validity of the ToM measure used. It suggests that the lack of relation between

ToM and guilt-related behavior is not due to the measure, but rather reflects an actual absence of relation between the two constructs underlying the measures. Taken together with the findings regarding the relation with the MSC, our results suggest that it may not be the ability to take perspective, but rather children's preference for prosocial behavior, that amplifies children's guilt-related behavior.

5.4.1. Limitations and Conclusion

While the current study extends our understanding of the processes relating to guilt in 5-6-year-old children, it also comes with some limitations and open questions. First, one possibility for further research concerns the limitations coming from the study's cross-sectional design. It would be valuable to further investigate the extent to which children's moral self predicts *future* guilt-related behavior. Additionally, from a relational system perspective (Carpendale, 2013), it would be intriguing to explore how the relation between these two aspects of moral development arises, potentially within the social interactions with caregivers (e.g., Carpendale & Hammond, 2016). To this end, implementing the current research question into a longitudinal design remains the goal for future studies.

Second, our study examines the prosocial dimensions of the moral self-concept. We focus on three dimensions that are thought to be fundamental in children's prosocial development (Dunfield, 2014). Notwithstanding our findings, it is important to recognize that a more comprehensive assessment of all aspects of the moral self-concept would be valuable. For example, Krettenauer and colleagues (2013) had identified aversion to antisocial behavior as another aspect of the moral self-concept. Furthermore, some researchers have emphasized the propensity to cooperate as an important factor in moral development (Malti, 2016), suggesting it as a potential dimension of the moral self. Future research could explore additional dimensions that contribute to the moral self-concept and their role in the development of guilt.

Third, the current study focuses only on guilt as part of self-conscious emotions, not including shame. However, both emotions are thought to be important in children's moral development. Previous scholars suggested that guilt and shame motivate different behavioural tendencies (Tangney, 1998). Therefore, it may be an intriguing topic for future studies to assess shame-related behaviour and its potential relation with MSC.

Overall, these findings suggest that children's moral self-concept, but not their Theory of Mind abilities, relates to guilt-related behavior. From a theoretical point of view, this adds on the idea, that guilt arises from comparing one's own behavior with expectations of oneself

(Kagan, 1981; Rosenberg, 1979; Stipek et al., 1990). This makes children's moral self-concept an indispensable predictor for early guilt. Since the emergence of guilt is a key achievement for children, these findings broaden our understanding of processes in moral development. To our knowledge, this study is the first to link early indicators of guilt with children's moral self-concept in preschool age.

6. Study 4

I Help, Therefore, I am? - A Registered Report on Longitudinal Interrelations of the Three-Dimensional Moral Self-Concept and Prosocial Behaviors in Preschool Children

Söldner, L., & Paulus, M. (in press). I help, therefore, I am? - A registered report on longitudinal interrelations of the three-dimensional moral self-concept and prosocial behaviors in preschool children. *British Journal of Developmental Psychology.*

Abstract

Children's moral self-concept (MSC) has been proposed to relate to prosocial behavior. However, systematic assessments of their interrelations are scarce. Therefore, this longitudinal study investigated the development, structure, and interrelation of prosocial behaviors and the MSC in childhood, using three measurement points at ages 4, 5, and 6. We assessed children's MSC and helping, sharing, and comforting behavior in a laboratory setting. Confirmatory factor analyses revealed a three-dimensional MSC structure at 5 and 6 years, but not at 4 years. There was inconsistent stability across timepoints regarding prosocial behavior and MSC. For the comforting domain, but not the other domains, cross-lagged relations between self-concept and behavior were present. Moreover, helping behavior and self-concept were interrelated at 6 years. Results provide support for reciprocal associations between MSC and prosocial behavior, albeit only in the comforting domain. They highlight the importance of distinguishing between types of prosocial behavior and corresponding dimensions of the self-concept, as different developmental trajectories and associations emerge.

6.1. Introduction and Theoretical Background

As one of the key aspects of the self, the moral self-concept refers to the beliefs and representations that individuals hold about their own prosociality (Kochanska et al., 2010; Krettenauer, 2013b). Prosocial behavior refers to actions that benefit others, such as helping, sharing, and comforting (Dunfield, 2014). Because prosocial behaviors play an important role in human development (Caputi et al., 2012; Carpendale, 2013), gaining deeper insight into the emergence of children's understanding of themselves as prosocial agents and its relation to actual prosocial behavior is a topic of great interest in developmental science (Carpendale & Wallbridge, 2023; Krettenauer, 2013a). In particular, by examining the early development of the moral self-concept and prosocial behavior simultaneously, we can gain insight into a potential mechanism driving early prosociality and the extent to which our beliefs about ourselves influence our actual behavior.

Most notably, Blasi (1980), who emphasized the role of the moral self in prosocial action, brought the moral self-concept to the centre of interest in developmental research. The developing moral self-concept in childhood is thought to fill the so-called *moral-judgement-action gap.* Specifically, the discussion of the moral-judgment-action gap refers to the observation that, contrary to the assumptions of earlier accounts (for an overview, see, Hardy & Carlo, 2011), moral judgment and actual behavior are often not directly related. If the moral self-concept plays a role in prosocial behavior in such a way that it enhances individuals' inclination to engage in prosocial behavior and vice versa, it would be interesting to investigate how and when this relationship emerges. To date, however, little is known on how the moral self-concept develops, what its structural nature is, and in what way it is related to actual prosocial behavior.

6.1.1. Emergence of the Moral Self-Concept (MSC)

The moral self-concept refers to an individual's beliefs and representations about their own prosocial behaviors. It includes their perceptions of themselves as prosocial beings, and their overall evaluation of their own moral character (Aquino & Reed, 2002; Hart, 2005; Krettenauer, 2013b). The moral self-concept is considered a key aspect of the self and is thought to play a role in shaping individuals' behavior and decision making.

As noted above, the moral self-concept is thought to be a distinct dimension of the self. Influential approaches define the self as a multidimensional and hierarchically structured construct (Marsh et al., 2002; Marsh & Shavelson, 1985). Marsh and Shavelson's self-concept model - also known as the multidimensional self-concept model- is a theoretical framework that describes the structure and organization of the self-concept. According to this model, the self-concept consists of several self-domains, each of which represents a specific aspect of the self, such as academic ability, physical appearance, or moral character. Marsh and Shavelson's self-concept model has been widely adopted and had a significant impact on the study of the self, as well as on educational and developmental psychology (Trautwein et al., 2006). It provides a useful framework for understanding the complex and dynamic nature of the self-concept and has been applied in a variety of settings to examine the development of self-concept and its impact on individual outcomes (Marsh & Yeung, 1997; Niepel et al., 2019; Perez et al., 2014). Methodologically, numerous studies have demonstrated the validity and reliability of the model in different populations and contexts (Brunner et al., 2010; Marsh et al., 2002). These studies have provided further empirical support for the model’s basic premises, demonstrating evidence that individuals tend to have different self-concept domains, such as academic, athletic, and moral domains. These self-concepts can be measured and distinguished from each other, and they have been found to have distinct antecedents and consequences. For example, a longitudinal study by Marsh et al. (2018) found positive effects of children's mathematics school grades at the end of primary school on their mathematics self-concept 5 years later, while their language school grades were negatively related to their mathematics self-concept. In another study, Marsh et al. (2002) measured the self-concept of 4-5-year-old children’s using the Self-Description-Questionnaire for Preschoolers (SDQP), which measures six self-concept factors: Physical, Appearance, Peers, Parents, Verbal and Mathematics. The study found support for the multidimensional structure of the self even at younger ages. In summary, there is considerable empirical support for the Marsh and Shavelson’s model of the multidimensional self.

Consistent with a multidimensional approach to the self-concept, it has been proposed that the moral self-concept consists of different dimensions. For example, Krettenauer (Krettenauer, 2013b) proposed a differentiation into preference for prosocial behavior and avoidance of antisocial behavior. Further work has differentiated the prosocial domain into different subdomains analogous to prosocial behavior: Helping, sharing, and comforting (Gniewosz et al., 2022; Söldner et al., 2024; Sticker et al., 2021). Results of the study by Sticker et al. (2021) confirmed the three-dimensional structure of the moral self-concept consisting of helping, sharing, and comforting through confirmatory factor analysis for 4- 6-year-old children in a cross-sectional design.

Following the hierarchical framework (Marsh & Shavelson, 1985; Shavelson et al., 1976), it is proposed that moral self-concept becomes more differentiated with age and more stable over the course of development, at least at a higher hierarchical level. Another study of 3-7-year-old children reported moderate stability over a 1-month interval, examining individual differences on various self-concept scales (Eder, 1990). In addition, a longitudinal study by Putnick et al. (2020) confirmed moderate stability for a scholastic, social, and physical self-concept from 4 to 14 years of age. Furthermore, other studies have assessed the stability of children's academic and non-academic self-concepts, with results showing high stability in 5-7 and 7-12-year-olds (Guay et al., 2003; Marsh et al., 1998). A longitudinal study by Gniewosz et al. (2022)examined the stability of the three-dimensional structured moral self-concept (helping, sharing, comforting). Factor analysis confirmed a stable three-dimensional model of moral self-concept between 4 and 6 years of age across three measurement points, 18 months (T1-T2) and 3 months (T2-T3) apart, for the helping and comforting dimensions of moral self-concept in terms of invariance, reliability, and correlational structure. The sharing dimensions of the moral self-concept also showed invariance and reliability and short-term stability (3 months). Yet, age was confounded with the length of the measurement intervals, which limits the significance of these results. Overall, in line with Marsh and Shavelson’s (1985) model, previous findings support the idea of an increasing stability of the self-concept during early development. Evidence for the long-term stability of the moral self-concept dimension during early childhood is still scarce and requires further investigation.

In summary, the moral self-concept is a distinct dimension of the self-concept, which itself consists of different moral dimensions. It is expected to emerge during the preschool years and to be stable over time.

6.1.2. Prosocial Behavior and its Early Development

Prosocial behaviors can be defined as actions that benefit others without providing immediate personal benefits to the actor (Paulus, 2018). They are thought to have multiple effects at different levels, including increased well-being at the group (Abrams et al., 2015; Anderson & Kilduff, 2009), individual (Sallquist et al., 2012), and societal level (Tomasello, 2009). Prosocial behavior can take many forms, including sharing resources, cooperating with others, providing emotional support, and engaging in altruistic acts. In this study, we focus on three types of prosocial behavior, namely helping, sharing, and comforting behavior. These behaviors are not thought to emerge and develop simultaneously and are not necessarily correlated (Dunfield, 2014; Dunfield & Kuhlmeier, 2013; Hay & Cook, 2007; Kärtner et al., 2014; Paulus, 2018; Paulus et al., 2013; Svetlova et al., 2010). Dunfield (2014) suggests that the nature of prosocial acts varies depending on the circumstances that give rise to such behaviors. First, helping behavior refers to the recognition of an instrumental need of another person. Someone recognizes the goal-directed behavior and tries to help the other person achieve the goal. Second, sharing behavior follows the recognition of an unmet material need. The recognition of an unequal access to resources leads to sharing behavior. Last, recognizing emotional distress in another person leads to comforting behavior. Paulus (2018) explains the lack of correlations between the different types of prosocial behaviors by invoking different socio-cognitive and underlying motivations in children.

Taken together, different kinds of prosocial behaviors differ in their goals, emotional components, and age of emergence. Children from 1 to2 years of age begin to help and recognize the instrumental needs of others (Hammond, 2014; Svetlova et al., 2010). Children tend to help others to achieve an action goal (Warneken & Tomasello, 2007). They begin to share “fairly” and equally at a later age, from around 3 years (Olson & Spelke, 2008). In addition, children show comforting behavior as a response to another person's distress. By comforting another individual, children aim to reduce other person’s negative emotions (Malti et al., 2009; Sierksma et al., 2014). First signs of comforting behavior emerge around the second year of life (Zahn-Waxler et al., 1992).

Once established, different aspects of prosociality show stability over time. Kärtner et al. (2014) found longitudinal relations within helping and comforting behaviors in toddlers aged 15 and 18. Another longitudinal study by Radke-Yarrow and Zahn-Waxler (1984) examines how 1-2-year old infants responded to the distress of others. Children who responded

emotionally, with avoidance, or with a cognitive, non-emotional response at the age of 1-to-2 years were more likely to do so at the age of 7 years.

In conclusion, prosocial behaviors such as helping, sharing, and comforting are important for social interactions and are essential for healthy human relationships These behaviors begin to develop early in life, often in infancy, and continue to develop throughout childhood and adolescence. Research has shown that the different types of prosocial behavior develop relatively independently early in life.

6.1.3. Relation of the Moral Self-Concept and Prosocial Behavior

The way in which the moral self-concept and prosocial behavior interact is unclear. While children behave prosocial from an early age (Hammond, 2014; Malti et al., 2009; Svetlova et al., 2010), this is not sufficient to build a moral self-concept. The development of the self-concept as a verbal and explicit construct relies on a number of other prerequisites (Damon & Hart, 1982; Harter, 2015a). On the one hand, it has been proposed that children must first develop some kind of self-awareness, which occurs around the age of 24 months when children increasingly use self-descriptive statements, for example “I want this”, “I do” (Kagan, 1981). In addition, the moral self-concept is a linguistic concept. The ability to develop an autobiographical picture of oneself on a linguistic level does not develop until the age of 3-4 years (Lemmon & Moore, 2001). Furthermore, the frequency of social interactions in which children experience themselves as morally acting agents increases immensely as they enter kindergarten. This creates a 'gap' because linguistic, reflexive processes develop later than behavior. From a theoretical perspective, children’s inclination to engage in prosocial behavior could be one factor influencing the development of the moral self-concept. Following the self-perception theory (Bem, 1972), one would expect that prosocial behavior would influence the extent to which children see themselves as more or less prosocial agents. This would imply that the moral self-concept is formed by analysing one's own past prosocial behavior. Other theoretical accounts, such as constructivism, also imply this direction of causality, especially in early development. According to constructivists (Carpendale, 2013; Kohlberg, 1971; Piaget, 1969), individuals construct their own moral self-concept through a process of self-reflection and social comparison. Through this process, individuals come to define themselves in terms of their moral values and principles and develop a sense of a moral self that, conversely, guides their subsequent behavior (Kohlberg, 1971). According to Kohlberg (1971), the moral self-concept is a person's internalized sense of what is right and wrong. Kohlberg argued that

prosocial behavior, or actions that benefit others, is related to a person's moral self-concept. He believed that as individuals progress through the stages of moral development, their sense of moral self-concept becomes stronger and more integrated with their sense of self.

On the other hand, according to the idea of self-consistency, a moral self-concept leads to prosocial behavior (Blasi, 1980). This position suggests that someone who cares about being a moral person will behave prosocially in order to avoid inconsistency with the demands they place on themselves. Conversely, when individuals engage in behaviors that are inconsistent with their moral self-concept, they may experience cognitive dissonance or a sense of discomfort and tension that motivates them to resolve the inconsistency. Therefore, the moral self-concept in children should shape and strengthen their prosocial behavior, regardless of the fact that the MSC develops *after* first prosocial behaviors have already appeared.

Integrating different approaches, Marsh and Craven (2006) suggest that both directions apply (reciprocal effects).Their research evidenced a positive correlation between the two constructs, meaning that individuals who have a stronger moral self-concept are more likely to engage in prosocial behavior such that volunteering, donating money to charity, and helping others in need. They argue that individuals who have a strong moral self-concept are more likely to engage in prosocial behavior because they see themselves as someone who values helping others and promoting the common good. Furthermore, this relationship was mediated by empathy, meaning that individuals with a strong moral self-concept were more likely to feel empathy towards others and therefore more motivated to engage in prosocial behavior. Marsh and Craven (2006) also suggest that prosocial behavior can influence the development and strengthening of moral self-concept. Engaging in prosocial behavior can lead individuals to see themselves as caring, compassionate, and altruistic, which can enhance their sense of moral identity. The sense of personal satisfaction and self-worth resulted from prosocial behaviors can, in turn, strengthen a person's moral self-concept. Overall, Marsh and Craven argue that prosocial behavior can have a reciprocal relationship with moral self-concept, with each influencing and reinforcing the other over time.

Studies with adults confirmed these relations between adult’s moral identity and prosocial actions (Aquino & Reed, 2002; Hardy et al., 2015; Hertz & Krettenauer, 2016). A study by Sengsavang & Krettenauer (2015) found negative correlation between the moral self-concept and antisocial behavior in children. Christner et al. (2020) confirmed the positive relation between 5 and 9-year-old children’s moral self-concept and prosocial behavior. Even if these studies give first indications of relations between the moral self-concept and prosocial

behaviors in children, no directional interpretations are possible. Most studies which recently assessed the relation between prosocial behavior and the moral self-concept in children are cross-sectional (Christner et al., 2020; Sengsavang & Krettenauer, 2015; Sticker et al., 2021). In summary, the question of how the interrelation of the moral self-concept and prosocial behavior develops has become a focus of attention in the scientific community. However, the direction and causality of the relation is still unclear, especially in the early stages of moral self-concept development. Evidence to date suggests a positive relationship between the two constructs from a very early stage of development.

Understanding the relationship between prosocial behavior and the moral self-concept is important for promoting positive social and emotional development, and for cultivating a strong sense of social responsibility and empathy towards others. However, how the relation between prosocial behavior and the moral self-concept develops early in life remains an open question.

6.1.4. Current Study

The aim of the present study is to examine the early emergence, longitudinal stability, and interrelations of children's moral self-concept and prosocial behavior. Influential theoretical accounts have addressed the question of the intercorrelation between the two constructs (Bem, 1972; Blasi, 1980; Marsh & Craven, 2006). To date, however, there has been little empirical research on how and when the interplay between the moral self-concept and prosocial behavior develops during childhood (see Hardy & Carlo, 2011).

While previous studies have mostly focused on cross-sectional relations between the moral self-concept and prosocial behavior (Christner et al., 2020; Sengsavang & Krettenauer, 2015; Sticker et al., 2021), the current study measures children’s moral self-concept as well as helping, sharing, and comforting behavior within three consecutive measurement time points starting at age 4. Thus, the present work aims to be the first to empirically and longitudinally test whether and, if so, how the two measures influence each other during their early development. In addition, we aim to make a valuable contribution to the empirical testing of theoretical assumptions regarding the interplay between moral self-concept and prosocial behavior. This will involve examining at what age the two constructs become related, which one predicts the other, and how they develop in relation to each other.

First, we hypothesize to provide further evidence of the dimensional nature of the moral self-concept (i.e., helping, sharing, and comforting dimensions) and prosocial behaviors (i.e.,

helping, sharing, and comforting, respectively). Second, we aim to replicate the findings suggesting an alignment between different dimensions of the moral self-concept and the corresponding prosocial behaviors. Previous studies (Kärtner et al., 2014; Radke-Yarrow & Zahn-Waxler, 1984) have reported stability across different kinds of prosocial behaviors from very early on in development. Consistently, we hypothesize that stability in the use of prosocial behaviors will be observed in children at all three measurement points. Following theoretical assumption of Marsh and Shavelson's (2010) hierarchical model of the self-concept, we expect to observe stability of the moral self-concept on a global level as well as within the moral self-concept dimensions in our sample across measurement points.

In particular, the main aim and novel contribution of this study is to systematically elucidate the links between the moral self-concept dimensions and different forms of prosocial behaviors. By assessing both longitudinally, we aim to uncover the developmental interrelations and directional effects between them. However, based on different theoretical accounts, various forms of results are conceivable: First, following a constructivist approach and the self-perception theory, we would expect the moral self-concept to be the result of early prosocial behavior (Bem, 1972; Kohlberg, 1971). Conversely, if the pursuit of self-consistency leads to prosocial behavior, the moral self-concept should precede prosocial behavior (Blasi, 1980). For children, their internalized moral norms would then form the basis of their actual behavior (Kochanska, 2002). Accordingly, an early MSC can be expected to influence prosocial behavior. That is, once the MSC is formed, it has a causal effect on prosocial behavior. Third, a reciprocal relation between the two constructs is conceivable (Marsh & Craven, 2006). As these three are theoretical accounts that are open to further investigation and have received little or no empirical support, we will test these three options in separate hypotheses. This study explores the possible causal relationships between the moral self-concept dimensions and prosocial behaviors during development.

We conducted a longitudinal study to address the above research questions. Children visited our laboratory at age 4 (T1) and 5 (T2) and 6.5 years (T3). We chose to assess at this age because developmental accounts suggest that children's moral self-concept becomes a coherent representation of themselves over the course of the preschool years (Kochanska et al., 2010). The measurement points bridge the period between 4 and 6.5 years of age in order to have the possibility to observe the long-term development during the preschool years and the beginning of primary school.

Children's moral self-concept was measured using a puppet-interview, which is an adjusted version of the Children's Moral Self Puppet Scale (CMSPS) by Sengsavang and Krettenauer (2015), and the self-concept measures by Marsh et al. (2002). This approach has been used in several studies of the early moral self (Baker & Woodward, 2023; Sticker et al., 2021). Prosocial behavior was measured in three experimental setups that separately elicit helping, sharing and comforting behavior, comparable to previous work (Dunfield & Kuhlmeier, 2013). The procedures are described in more detail within the *Methods* section.

6.1.4.1. Hypotheses

Accordingly, based on theoretical considerations and previous empirical findings, the following hypotheses are made:

(1) Following Marsh and Shavelson's (2010) model of a multifaceted self-concept, the moral self-concept (MSC) is three-dimensionally structured into $MSC_{helping}$ (HSC), $MSC_{Sharing}$ (SSC), and $MSC_{Comforting}$ (CSC).

(2) Furthermore, following the hierarchical framework (Marsh & Shavelson, 2010; Shavelson et al., 1976), we propose that the moral self-concept is stable over time.
   a. The MSC at the global level, including all three sub-dimensions, is positively correlated between all three measurement points from 4 to 6.5 years.
   b. HSC, SSC and CSC are positively correlated between all three measurement points from 4 to 6.5 years.
   c. At the higher, global level, the MSC will show greater stability than the three sub-dimensions.

(3) All three prosocial behaviors (helping, sharing, comforting) are stable across the three measurement points from 4 to 6.5 years.

(4) The three MSC dimensions, HSC, SSC, and CSC, are associated with respective behaviors, both cross-sectionally and longitudinally.
   a. According to self-perception theorists, earlier prosocial behavior will influence later MSC (Bem, 1972).
   b. According to theorists who support the idea of self-consistency, children's MSC will lead to prosocial behavior (Blasi, 1980).

c. However, Marsh and Craven (2006) argue that prosocial behavior may have a reciprocal relationship with MSC, with each influencing and reinforcing the other over time. Therefore, with H4.3 tests for reciprocal effects of MSC and respective behaviors.

6.2. Methods

This is a Stage 2 registered report. The procedures and statistical analyses were established prior to conducting any analyses, as described in the accepted and published Stage 1 report available at https://onlinelibrary.wiley.com/doi/abs/10.1111/bjdp.12464.

6.2.1. Planned Sample and Exclusion Criteria

The longitudinal study included three measurement points: T1 (Mean (Age): 4.21 years, *n*=108, 52% girls), T2 (Mean (Age): 5.43 years, *n*=133, 57% girls), and T3 (Mean (Age): 6.99 years, *n*=104, 51% girls). The time interval between T1 and T2 was on average 14.29 months, while the interval between T2 and T3 was on average 17.96 months. The target sample size of *n*=130 was determined using a power analysis for a Pearson correlation test, as our main question focused on the relationships between children's moral self-concept and prosocial behavior. For a moderate correlation of $r = 0.25$ (Cohen, 2009), a statistical power of 0.9 and a significance level of $\alpha = 0.05$, a sample size of $n = 130$ would be required for a significant result. Furthermore, a rule of thumb for structural equation modelling suggests that the ratio of cases to free parameters is between 10:1 and 20:1 (Jackson, 2003; Kline, 2023; Schumacker & Lomax, 2004). Using T1 as an example, the model with the three-dimensional structure of the MSC has a number of 9 free parameters. This suggests a sample size between *n*=90 and *n*=180. Finally, the sample size was justified by previous studies that had approximately the same sample size for comparable statistical analyses (Gniewosz et al., 2022a; Sticker et al., 2021, 2023). To recruit mother-child pairs, contact details of families with children of the appropriate age were requested from the district administration before the start of the study. The families were invited by letter. In the invitation letter, parents were informed about the content and organizational aspects of the study, as well as about the expense allowance. If they were interested, they could contact the laboratory by e-mail or telephone to make an appointment.

Children were included if they were developing normally, were the right age at the time of the test, and had sufficient language knowledge to understand the instructions. The ethical background of most families is Caucasian. Eighty-three per cent of mothers and 79% of fathers reported to have accomplished the highest level of education. The number of participants in T1 was lower than in T2 due to contact restrictions during the COVID-19 pandemic, which resulted in temporary laboratory closures during data collection for T1. No data of this study or parts of it have been published elsewhere. The study follows ethical guidelines and was approved by the Ethics Committee of the Department of Psychology [university affiliation masked for review]. A separate consent form was completed by the mothers for each measurement point. We excluded children if any of the following criteria apply: (1) if participants give the same response to all questions within the puppet-interview ("straighliners"; see Kim et al., 2019; Lavrakas, 2008), (2) experimenter errors, or (3) procedural errors occur.

6.2.2. Procedure and Design

Participants were tested individually in the laboratory LMU Munich, a larger European university. Sessions were videotaped. The current study is part of a larger assessment that includes a number of different tasks beyond those covered here. In order to avoid spill-over effects, it was warranted that there were no consecutive tasks that could potentially influence each other. Therefore, it was ensured that the prosocial behavior tasks and the puppet-interview do not directly follow each other.

6.2.3. Measures

6.2.3.1. MSC – Puppet-Interview

The puppet-interview was used to assess children's self-concept at T1, T2, and T3. We draw on measures developed by Christner et al. (2020) and Marsh et al. (2002). The puppet-interview is a well-established method to examine young children's self-concept (Reese et al., 2007; Sengsavang & Krettenauer, 2015). Previous studies had provided ample statistical evidence that the items form consistent and coherent factors (Gniewosz et al., 2022; Sticker et al., 2021). Items that were not related well to the other items were removed. In particular, we assessed the three previously mentioned prosocial dimensions (i.e., helping, sharing, comforting) as well as two additional dimensions: verbal self-concept and physical self-concept. To capture the moral self-concept dimensions, we used an interview by Christner et al. (2020), who created a child-

friendly moral self-interview based on the Children's Moral Self Puppet Scale (CMSPS) by Sengsavang and Krettenauer (2015). The verbal and physical items were adapted from Marsh et al. (2002). See Appendix, Table A for all items in the puppet-interview. We checked for a good model-fit of the puppet-interview with the respective scales on group level through calculating confirmatory factor analysis (CFAs).

In the following, the puppet-interview is explained using an example from the assessment of the moral self-concept. For the interview, the experimenter holds two identical puppets side by side. One of the puppets expresses a prosocial statement and the other puppet expresses the opposite - a non-prosocial statement (for example "I like to share my toys" vs. "I don't like to share my toys"). Then the puppets turn to the child and the experimenter asks, "What about you?". The child answers whether he or she is more like the puppet that expressed a prosocial statement or more like the puppet with the opposite view. When the child has chosen one of the puppets, the experimenter asks whether he or she is "a lot like this puppet or a little like this puppet.". Our puppet-interview consists of 16 items which are distributed over five scales: The three moral scales of helping (HSC), sharing (SSC) and comforting CSC) (three items each), and two other scales, a verbal self-concept (VSC) scale (three items) and a physical self-concept (PSC) scale (four items). From T2 onwards, further helping items focusing on the peer-context were included, but will not be considered in this study in order to keep the instrument the same across measurement points.

Coding. Responses are on a 5-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; and 5 = a lot like the affirmative puppet. Dimensional self-concept scores are derived from the mean value of all items on a scale (cf. Marsh et al., 2002; Sengsavang & Krettenauer, 2015; Sticker et al., 2021).

6.2.3.2. Prosocial Behavior (PB)

Prosocial behavior was measured in three experimental setups, which separately elicited helping, sharing, and comforting behavior. All three types of prosocial behavior were assessed in T1, T2, and T3.

6.2.3.2.1. Sharing Tasks (Public and Anonymous)

Both sharing tasks are based on a mini-dictator game (Gummerum et al., 2010) and modelled on a procedure developed by Smith et al. (2013). In these behavioral tasks children could decide

how many of their four valuable goods (stickers at T1; rubbers at T2; stamps at T3) they want to share with an absent child. The types of resources were varied to maintain their worth to the children. In the following, the procedure is described in detail using stickers as an example. The experimenter explains to the child: “Look, these are 4 stickers. They are yours now. You can share them with another child. This is [experimenter places picture of other gender-matched child] Nina/Niko [exemplary names]. You can share one, two, three, four, or none of your stickers with Nina/ Niko. You can decide, how many stickers you want to give to the other child. Whatever you want to share with Nina/ Niko goes in this box [experimenter places a box next to the picture of the other child]. What you want to keep for yourself goes in this envelope [experimenter places an envelope on the other side of the table]. Let me know when you’ve finished.” In the public task, the experimenter watches the child distribute the goods. In the anonymous sharing scenario, the experimenter feigns searching for items in the cupboard behind her until the child declares that they have completed their task.

Coding. Children's sharing behavior for each task is represented by the number of items in the box (0-4 items). To evaluate the sharing task, we calculated a sharing score by averaging the results of the public and anonymous sharing tasks.

6.2.3.2.2. Helping Task

We assessed children’s helping behavior using a slightly modified version of Kenward et al.’s (2015) spontaneous helping procedure. The task varied between measurement points by using different objects for the procedure in order to avoid transfer effects. Pencils were used in T1, cloth marbles were used in T2, and colouring pictures were used in T3. In T1, the experimenter left the room under false pretences. When she leaves, she placed an open box with pencils on the edge of a table next to the door, so that the box fell directly to the floor. The experimenter pretends not to notice and leaves the room without further comment. The child is then left alone in the room for 1min. The procedure is the same for T2 and T3: The experimenter and the child sit at a table. The experimenter says, "Now let me think about what we need for our next game..." The experimenter stands up with a clipboard in the hand, looks thoughtfully in the air, then turns to the cabinet. As she does so, she knocks over the cloth marbles/colouring pictures with the clipboard. The experimenter pretends not to notice what happened. She rummages through the documents in the cupboard for 30s as if she is looking for something and does not react to the child. When the experimenter turns around again, she waits to see if the child says

anything. Only after 10s does she say: "Oh the cup/ box fell over." She then kneels down to collect the objects (slowly, so that the child has the opportunity to help).

Coding. Different aspects of helping behavior were scored from the videos. First, we coded whether the child informed the experimenter about the mishap from "0"- "Experimenter was not informed at all" to "4" – "Child immediately informs the experimenter about the mishap". Actual helping behavior was coded on a global helping scale. Children score a "0" for "no reaction", "1" for "low-key helping behavior", "2" for "moderate helping behavior" and "3" for "strong helping behavior". For the current study, we relied on the global helping score because this score captures the child's actual helping behavior. For the detailed coding scheme see supplemental material (**Table *15***). The coding was conducted twice to check for reliability of the task for each measurement code. The interrater-reliability of Cohen's-kappa was good at all measurement points (κ=.87 at T1, κ=.85 at T2, and κ=.92 at T3).

6.2.3.2.3. Comforting Task

The procedure for assessing children's comforting behavior is an adapted version of Young et al.'s (1999) pain simulation task. The setting involved the experimenter pretending to accidentally injure herself. In T1, the experimenter hammers her knee on the leg of a table, in T2, the experimenter pinches her finger in a clipboard, and in T3, the experimenter trips over her chair and injures her shin. This was done in order to avoid transfer effects. The rest of the procedure remains identical for all three measurement points. The accident is followed by an "ouch!" from the experimenter. In addition, the experimenter demonstrates her pain by making a face, rubbing her foot and verbalizing what happened (after 10 seconds: "I banged my foot.", after another 10 seconds: "That hurts really badly"). The pain is strongly expressed at the beginning and slowly diminishes within a minute. The experimenter ends the task by saying: "Now it's better. It doesn't hurt anymore".

Coding. Following previous research (Robinson et al., 1994; S. K. Young et al., 1999; Zahn-Waxler, Radke-Yarrow, et al., 1992a), we relied on a global comforting score, as this score covers a variety of comforting behaviors and tendencies. The coding scheme was the same for all three measures. The global score for comforting behavior ranges from 1 to 7. See Appendix C for the detailed coding scheme. The coding was done twice to check the reliability of the task for each measurement code. The interrater-reliability of Cohen's-kappa was good at all measurement points (κ=.81 at T1, κ=.8 at T2 and κ=.79 at T3).

6.2.4 Statistical Analyses

Statistical analyses were performed using RStudio (RStudio Team, 2019). The raw data and R codes for the analyses are available online (https://osf.io/qc3xb/?view_only=75fc9d0c624e4c1bb6866c5f24e7862f, Söldner, 2024).

6.2.4.1. Factorial Structure and Stability of the MSC

First, to test hypothesis 1, multiple confirmatory factor analyses (CFAs) were computed to test the three-dimensional structure of the moral self-concept. Thus, we tested whether a three-factorial model fits the data better compared to a one-factorial model separately for each measurement point. If the results of the factor analysis would have supported the one-dimensional structure instead of the three-dimensional structure, further analyses including the MSC would have been computed with a global MSC.

To calculate a global MSC score (MSC_{Global}), following previous studies (Sticker et al., 2023), means were built for each scale (HSC, SSC, and CSC) and the scale means were z-standardized. The mean of these z-standardized scale scores gave the global MSC score.

Furthermore, to test hypothesis 2, we computed Pearson Correlations for the MSC_{Global} as well as separately for HSC, SSC, and CSC across all three measurement points to check for stability over time. To statistically test whether the stability is stronger for MSC_{Global} than for the subdimension, we used Fisher's Z transformation and conducted paired *t*-tests on the transformed correlation coefficients.

6.2.4.2. Stability of Prosocial Behaviors

To test hypothesis 3, we examined the stability of prosocial behaviors over time. We used simple Pearson correlation coefficients to compare the scores of each measurement point with each other separately for helping, sharing, and comforting.

6.2.4.3. Cross-Lagged Panel Model of MSC and PB

As the main analysis, to test hypothesis 4 and to identify relations between moral self-concept dimensions and corresponding prosocial behaviors over time, we computed cross-lagged-panel analyses by using structural equation modelling. The cross-lagged panel model (CLPM) is advantageous for the current study due to its ability to capture temporal relationships between variables over time. It provides insights into the directionality, causal pathways, and lagged effects, allowing for a comprehensive understanding of the dynamic nature of the relationship

between the MSC and prosocial behaviors. All relations were implemented in a model per measurement point and per helping, sharing, and comforting separately. We implemented children's age as a control variable.

6.2.4.4. Missing Data

To avoid bias and decreased reduced statistical power due to missing data, we used the mice-package in R to impute missing data via predictive mean matching (Enders et al., 2016; van Buuren & Groothuis-Oudshoorn, 2011). The predictive mean matching (PMM) procedure, implemented in the mice package in R, is a tool for imputing missing data in research studies. PMM works by utilizing a regression model to predict the missing values based on observed data and other variables in the dataset. It is particularly useful when dealing with incomplete datasets, as it helps preserve the distributional properties of the original data. By incorporating the PMM procedure in the analysis, we obtained more accurate and reliable results by accounting for missing values appropriately. The mice package simplifies the implementation of PMM in R.

To make sure, that missing data is at random, we analysed the imputed datasets and compared the results with the complete cases analysis. If the results are consistent across imputed datasets, it suggests that the missingness is likely at random. If we would have encountered missing data that are not at random (MNAR), we would have still utilized the 'mice' package in R. By employing multiple imputation with chained equations, we would have imputed missing values, generated multiple imputed datasets, and performed subsequent analyses to ensure valid statistical inferences in our research study.

6.3. Results

6.3.1. Descriptive Statistics

Means and standard deviations of the three self-concept scales as well as helping, sharing, and comforting behavior of all measurement points are displayed in **Table *11***. As can be seen, children's responses in the puppet-interview varied across all three measurement points. Furthermore, in terms of prosocial behavior, children exhibited a range of possible behavioral options, ranging from exceedingly prosocial to no reaction at all. For all subsequent statistical analysis, we utilized a dataset imputed with the PMM-procedure to enhance statistical power for our intricate analyses.

Table 11 - *Means, Standard Deviations, and Ranges of all Variables*

	N			*M* [Min; Max]			SD		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Self-concept									
HSC	98	121	97	3.41 [1;5]	3.2 [1;5]	3.38 [1;5]	1.08	1.13	.73
SSC	96	121	97	3.75 [1;5]	3.97 [1.33;5]	4.22 [1.67;5]	.99	.91	.73
CSC	96	121	97	2.82 [1;5]	3.32 [1;5]	3.89 [1.33;5]	1.24	1.17	.88
Prosocial behavior									
Helping	83	130	93	.94 [0;3]	1.88 [0;3]	1.33 [0;3]	1.02	1.09	1.32
Sharing	80	133	95	.98 [0;4]	1.28 [0;4]	2.11 [0.5;4]	1.02	.77	.76
Comforting	84	114	104	3.12 [1;7]	3.48 [1;7]	3.21 [1;7]	1.79	1.57	1.76

Note. HSC= Helping self-concept (scale: 1-5); SSC= Sharing self-concept (scale: 1-5); CSC= Comforting self-concept (scale: 1-5); Helping: Scale 0-3; Sharing: Scale 0-4; Comforting: Scale 1-7; *M* and SD are used to represent mean and standard deviation, respectively.

6.3.2. Factorial Structure and Stability of the MSC

6.3.2.1. Factorial Structure

To test whether the moral self-concept is three-dimensionally structured into helping (HSC), sharing (SSC), and comforting (CSC) we computed several confirmatory factor analyses (CFAs) (hypothesis 1). Therefore, we tested whether HSC, SSC, and CSC are distinct dimensions of the moral self-concept. Two models for the MSC structure were tested at each measurement point: One single factor model which would imply a general moral self-concept without separable domains and one three-factor model, which stands for the differentiated MSC. Neither the one-factor nor the three-factor model showed an acceptable fit at T1 (**Table *12***). Although the three-factor model seems to fit better than the single-factor model (looking at the comparison of the $\chi 2$-values in **Table *12***), the difference is not significant. At T2, the three-factorial model fits well to the data and the model fit is significantly better compared to the fit-indices of the single factorial model. The fit of the three-factor model at the third measurement point is acceptable, looking at the fit-indices CFI and *SRMR*. It fits significantly better than the one-factor model. For test statistics, see **Table *12***. Overall, these findings indicate that neither of the two models demonstrated adequate fit at T1. However, at T2 and T3, the three-dimensional model exhibited better fit to the data compared to the single-factor model.

Table 12 - *Goodness-of-Fit Indicators for the Confirmatory Factor Analyses of Models for the Moral Self-Concept with all Helping Items*

Model	$\chi 2$	*df*	*p* (χ^2)	X^2 *diff*	CFI	*RMSEA*	*SRMR*
			T1 (4-year-olds)				
Single Factor	74.880***	27	<.001		.641	.100	.074
Three Factors	69.045***	24	<.001	5.835	.664	.103	.071
			T2 (5-year-olds)				
Single Factor	51.263*	27	.003		.823	.071	.059
Three Factors	34.582	24	.075	16.681***	.923	.050	.047
			T3 (6.5-year-olds)				
Single Factor	106.846***	27	<.001		.431	.130	.931
Three Factors	59.560***	24	<.001	47.286***	.746	.092	.071

Note. Single Factor= No differentiated moral self-concept; Three Factors = Moral self-concept is differentiated into the three factors helping self-concept, sharing self-concept and comforting self-concept.
*$p < .05$. ** $p < .01$. *** $p < .001$.

6.3.2.2. Stability of the MSC

To test hypotheses 2, we calculated Pearson correlation coefficients for the global MSC as well as for each subdimension (HSC, SSC, and CSC) across all three measurement points. All *p*-values are adjusted for correlations within each dimension according to the Bonferroni Holm (1979) method. The global MSC correlated significantly between T1 and T2 (r =.22, p =.012), but not between T1 and T3 (r =-.01, p =.897) or T2 and T3 (r =.12, p=.209). HSC T1 and T2 (r =.05, p =.992), as well as HSC T1 and T3 did not correlate (r =-.01, p =.992), while HSC T2 and T3 significantly correlated (r =.25, p =.003). SSC T1 and T2 were significantly correlated (r =.24, p=.004), but not SSC T1 and T3 (r =.11, p =.284) and SSC T2 and T3 (r =.09, p =.284). CSC was not related across the measurement points (all rs<.09, all ps>.725).

To statistically test whether the stability across measurement points is stronger for the global MSC than for the subdimension, we conducted paired *t* -tests on the z-transformed correlation coefficients (H 2.3). We compared all correlation coefficients of the global MSC between all measurement points (T1~T2, T2~T3, T1~T3) with the corresponding correlation coefficients of each subdimension. Coefficients of the global MSC did not differ significantly from the ones of its subdimensions (all *p*s>.053).

6.3.3. Stability of Prosocial Behavior

To address hypothesis 3, we further conducted Pearson correlations within the three prosocial behaviors across measurement points. All *p*-values are adjusted for correlations within each dimension according to the Bonferroni Holm (1979) method. Helping behavior was not related across the measurement points (all *r*s<.07, all *p*s>.497). Sharing behavior was relatively stable over time for T1 and T2 (*r* =.15, *p*=.047), as well as for T1 and T3 (*r* =.13, *p*=.047) and for T2 and T3 (*r* =.24, *p*=.002). Comforting behavior was not significantly correlated across the measurement points (all *r*s<.13, all *p*s>.140).

6.3.4. Longitudinal Interrelations Between MSC and Prosocial Behavior

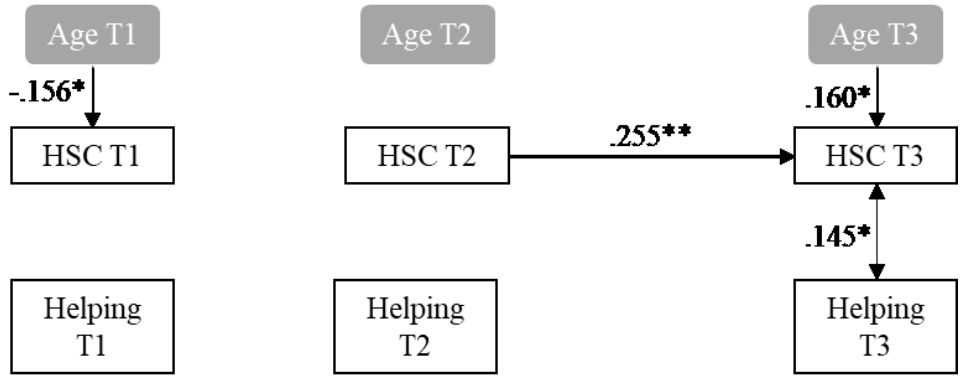
The fourth hypothesis pertained to the cross-sectional and longitudinal interactions among the moral self-concept and prosocial behavior. Separate cross-lagged panel analyses were carried out for helping, sharing, and comforting. MSC and prosocial behavior at each measurement point were controlled for age at the time point of measurement. We utilized the moral self-concept's subdimensions (HSC, SSC, CSC) since the factor analyses indicated that the three-factor model was more suitable for the data at all three measurement points. This was clearly the case at T2 an T3. Even though at the first measurement point there was no significant difference between the one-factor and the three-factor solutions, there was a slightly better fit for the three-factor model. For the test statistics of all three cross-lagged models, refer to supplemental material (**Table *21***).

6.3.4.1. Helping

Figure *8* illustrates the analysis results for the relation between helping behavior and the corresponding HSC. The overall model fit for the helping model was inadequate ($\chi 2 = 58.788$, df = 16, $p < .001$; CFI= .272; *RMSEA*= .123; *SRMR*= .069). Notably, the stability coefficient for the HSC was significant between T2 to T3: $\beta = .255$, SE = .073, $p = .001$, but not between T1

and T2. Helping behavior was found to be unstable. Results indicate a relation between HSC and helping behavior within T3 (β = .145, SE = .066, p = .027). Additionally, negative correlations were observed between age at T1 and HSC T1 with β = -.156, SE = .059, and p = .008. Age at T3 was positively associated with HSC T3 (β = .16, SE = .058, p =.006). Most important, there were no cross-lagged relations between self-concept and helping behavior.

Figure 8 - *Cross-Lagged-Panel Model for Helping*

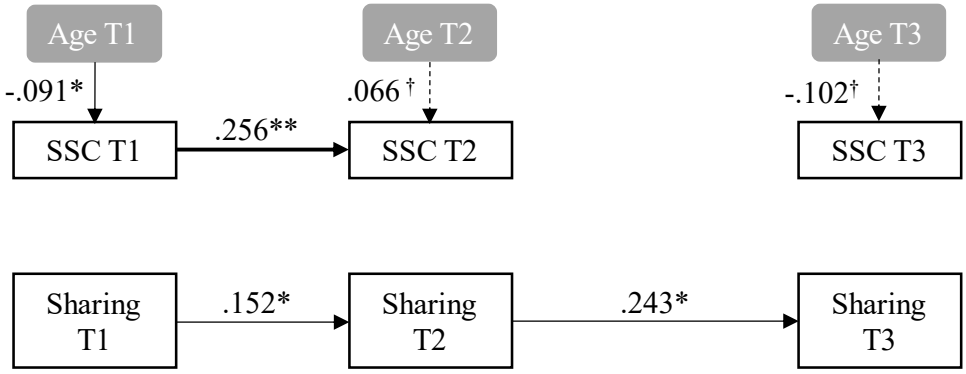


Note. † p<.1 *p < .05. ** p < .001.; No lines indicate that the relations are not statistically significant. T1: Mean (Age): 4.21 years; T2: Mean (Age): 5.43 years; T3: Mean (Age): 6.99 years

6.3.4.2. Sharing

The result pattern for sharing self-concept and sharing behavior is depicted in **Figure *9***. The model fit for the overall model was good (χ2 = 22.259, df = 16, p =.135; CFI= .768; *RMSEA*= .047; *SRMR*= .050). SSC appears to be stable between T1 and T2 (β = .256, SE = .082, p <.001), but not between T2 and T3. Sharing behavior was stable between T1 and T2 (β = .152, SE = .071, p =.033), as well as between T2 and T3 (β = .243, SE = .09, p =.007). Age at T1 negatively correlated with SSC T1 (β =-.091, SE = .041, p =.027). Importantly, no cross-lagged path was significant.

Figure 9 - *Cross-Lagged-Panel Model for Sharing.*

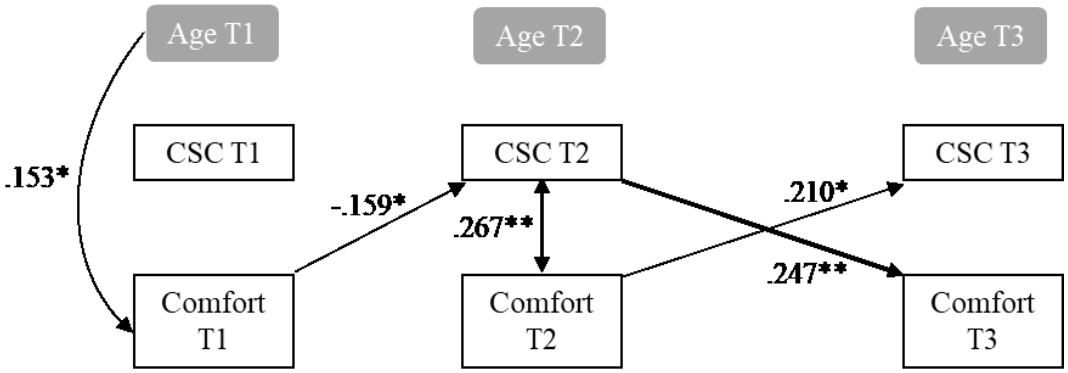


Note. † p<.1 *p < .05. ** p < .001.; No lines indicate that the relations are not statistically significant. T1: Mean (Age): 4.21 years; T2: Mean (Age): 5.43 years; T3: Mean (Age): 6.99 years

6.3.4.3. Comforting

Figure *10* shows the pattern of results for comforting self-concept and comforting behavior. Overall model fit was acceptable ($\chi 2$ = 30.223, df = 16, p =.017; CFI= .698; *RMSEA*= .071; *SRMR*= .043). Neither CSC, nor comforting behavior showed stability across the measurement points. Comforting behavior and CSC were strongly correlated with each other at T2, β = .267, SE = .068, p <.001. Comforting behavior at T1 was negatively associated with CSC at T2 β = -.159, SE = .077, p =.038. However, comforting behavior at T2 positively predicted CSC at T3 β = .210, SE = .072, p =.003. Furthermore, CSC T2 correlated positively with comforting behavior at T3 (β =.247, SE = .081, p =.001). Children's age at T1was positively related to comforting behavior at T1 (β =.153, SE = .050, p =.002). In sum, against our hypotheses, comforting behavior at T1 negatively predicted comforting self-concept at T2, while in line with hypothesis H4.3 comforting behavior and comforting self-concept showed reciprocal relations between T2 and T3.

Figure 10 - *Cross-Lagged-Panel Model for Comforting*



Note. † $p<.1$ *$p < .05$. ** $p < .001$.; No lines indicate that the relations are not statistically significant. T1: Mean (Age): 4.21 years; T2: Mean (Age): 5.43 years; T3: Mean (Age): 6.99 years

6.4. Discussion

The study of children's moral self-concept and its association with prosocial behavior is a crucial research area in developmental psychology as it helps to clarify how humans come to understand themselves as good or moral persons – a central aspect of human prosociality and morality (Korsgaard, 2009). While prior inquiries have demonstrated relations between moral self-concept and prosocial behavior (Aquino et al., 2009; Krettenauer, 2020; Sticker et al., 2021; Winterich et al., 2013), the field lacks an understanding of their interplay in early development. Therefore, the current study examined the factorial structure and the stability of the moral self-concept, the stability of prosocial behaviors - helping, sharing, and comforting-, and the cross-lagged relations between self-concept and behavior during early development.

Confirmatory factor analyses revealed that the factorial structure of moral self-concept changes between 4 and 6.5 years. In particular, the three prosocial dimensions of the moral self-concept- helping, sharing, and comforting self-concept- differentiate during this time span demonstrating that these three subdimensions emerge distinctly from age 5. Findings of the study question the longitudinal stability in prosocial behavior and MSC. Importantly, cross-lagged analyses revealed distinct patterns for each of the three prosocial dimensions. In the comforting domain, cross-lagged relations between self-concept and behavior were observed, unlike in the two other domains. Additionally, at the age of 6, there was an interrelation between helping behavior and self-concept. The findings offer evidence for bidirectional connections between self-concept and prosocial behavior, specifically in the comforting domain. All findings are discussed in greater detail in the following sections.

6.4.1. Structure of the Moral Self-Concept

To address the first hypothesis, we examined the internal structure of the moral self-concept. Based on the model of a multidimensional self-concept (Marsh & Shavelson, 1985), we hypothesized that the moral self-concept would be divided into separate subdimensions - namely helping, sharing, and comforting - corresponding to the three forms of prosocial behavior (Dunfield, 2014; Paulus, 2018). Results from confirmatory factor analysis indicated that the moral self-concept of 4-year-old children does not consist of three subdimensions whereas the moral self-concept comprises the three dimensions at 5 and 6 years.

The present results therefore support theories of a multidimensional structured self-concept (Marsh & Shavelson, 1985; Shavelson et al., 1976). Previous cross-sectional research has demonstrated support for the three-dimensional structure of the moral self-concept in a mixed group of 4-6 year-old children (Gniewosz et al., 2022; Söldner et al., 2024; Sticker et al., 2021). The current findings expand upon earlier research by acknowledging that the three-dimensional structure of the self-concept emerges during preschool age, rather than being present from the beginning. This aligns with theoretical assumptions that the self-concept develops from a general to a more specific model, which includes various dimensions and sub-dimensions that become more concrete over time (Marsh & Shavelson, 1985; Shavelson et al., 1976).

6.4.2. Longitudinal Stability of the Moral Self-Concept

An inconsistent picture of the stability of the moral self-concept over time emerged from our analysis. The overall impression is that there is no consistent stability in the moral self-concept at the age of 4 to 6.5 years, neither at the global level nor at the level of the subdimensions. Therefore, hypothesis 2 was not confirmed. On closer inspection, the picture is rather jagged. There are some significant correlations between measurement times. For instance, the moral self-concept exhibited stability at a global level between the ages of 4 and 5, however, this stability was not maintained between the ages of 5 and 6.5 years. The discovery that stability lessens at the global level does not align with Marsh and Shavelson's (2010) theoretical model that the self-concept is stable on higher hierarchical levels. However, the moral self-concept is itself a subdimension of the general self-concept. It is possible that the self-concept at the hierarchical level of the moral dimension is not yet consistently stable at this age, even if the general self-concept could be stable. The stability of the subdimensions varied from one another and do not show a uniform picture of stability. There are significant relations between some ages, and the correlations are consistently in the positive range, meaning that children's rankings do not change fundamentally between the ages of 4 and 6.5. Previous studies have shown that various self-concept dimensions remain stable during childhood (Eder, 1990; Gniewosz et al., 2022; Guay et al., 2003; Putnick et al., 2020). Regarding the sharing dimension, the results concur with prior research from Gniewosz et al. (2022) which also reported a lack of long-term stability for a sharing self-concept. However, results of their study also supported stability and invariance in an age group of 4-6 years for both, the helping dimension and the comforting dimension, which is different from our findings.

In summary, we cannot conclude from our results that the moral self-concept is consistently stable across the age range between 4 and 6.5 years. It is possible that the images that young children have of themselves as prosocial agents are not yet coherent enough to be stable across situations and over longer periods of time. Furthermore, the different developmental trajectories of the subdimensions' stabilities emphasize the importance of considering subdomains of the self-concept and possible correlates in a differentiated manner.

6.4.3. Stability of Prosocial Behavior

We hypothesized that the three prosocial behaviors of helping, sharing and comforting are stable across the three measurement time points (H3). The three behaviors exhibited varying levels of stability over time and therefore require differentiated consideration. While neither helping behavior nor comforting behavior showed significant correlations between measurement points, sharing behavior was correlated between all measurement points. One possible explanation for the lack of stability is that social expectations regarding helping and comforting behaviors may differ across various situations and contexts. Children may be more affected by these external factors when deciding when and how to help or comfort, leading to variability. Sharing, on the other hand, might be perceived as a more cross-context applicable behavior. Children may try to adhere to rules and standards they learn when they enter school (for example to sit still at a table, unless instructed otherwise). This may conflict with their desire to provide help.

It is important to note, that we made minor adjustments between measurement points to the procedures of the different prosocial behavior tasks to avoid transfer effect. Note that our behavioral tests assume that they test underlying constructs. The same underlying constructs were tested in all three measurement times for all three prosocial behaviors. Therefore, the findings should not be attributed to any modifications made to the measurement method. However, the lack of correlations between time points observed in helping and comforting behavior contradicts prior theoretical accounts and is different from other findings (Kärtner et al., 2014; Radke-Yarrow & Zahn-Waxler, 1984). There is great body of research concentrating on investigating the longitudinal stability of prosocial behavior among infants (Kärtner et al., 2014; Zahn-Waxler, Radke-Yarrow, et al., 1992a; Zahn-Waxler, Robinson, et al., 1992). The findings obtained from studies in infancy demonstrate a general increase in stability over time. Further studies extended the investigated age range: For example, a longitudinal study examined the development of prosocial behavior between the ages of 2 and 5 and suggested

stability for altruistic prosocial behavior, but not for non-altruistic and requested prosocial behavior (Persson, 2005). Findings by Eisenberg et al. (1999) indicated that spontaneous -but not compliant- prosocial behavior in preschool predicted different forms of prosocial behavior in later childhood and adulthood. Knafo-Noam and Plomin's (2006) findings suggest stability in parents' ratings of their children's prosocial behavior between the ages of 2 and 7, but they did not distinguish between different types of prosocial behavior. Taken together, although research suggests stability during infancy, stability in later development may depend more on the form of prosocial behavior observed.

It is noteworthy that helping behavior also exhibited a positive correlation between time points, albeit not statistically significant. Similarly, comforting behavior displayed a positive correlation between time points, although not significant. This indicates that, despite the lack of significance, it can be assumed that the ranking of the children in terms of their prosocial behavior has not fundamentally changed.

In summary, it should be noted that hypothesis 3 was only confirmed in relation to sharing behavior. Although some correlations were also observed between individual measurement points for helping and comforting behavior, it is the responsibility of future studies to determine the factors for longitudinal stability in these behaviors.

6.4.4. Cross-Lagged Relations of the Moral Self-Concept and Prosocial Behaviors

Hypothesis 4 aimed to examine the early interaction between children's moral self-concept and prosocial behavior. In order to test different theoretical approaches, we proposed three different hypotheses: (1) prosocial behavior influences later moral self-concept (self-perception theory, Bem, 1972, H4.1), (2) the moral self-concept leads to prosocial behavior (self-consistency theory, Blasi, 1983, H4.2) and (3) prosocial behavior has a reciprocal relationship with the moral self-concept (reciprocal effects, Marsh & Craven, 2006; H4.3). Overall, the present study's results suggest that there is a bidirectional relation between moral self-concept and comforting behavior. This fits well to the proposal of reciprocal effects between the moral self-concept and prosocial behavior (H4.3). Yet, the results concerning the other two dimensions do not support either of the hypotheses. Thus, the structure of the models clearly differs between helping, sharing and comforting.

Regarding comforting, there were notable relations between self-concept and behavior. One finding was unexpected: Comforting behavior at age 4 negatively predicted self-concept

at age 5. Consequently, at age 5, children who demonstrated less comforting behavior at 4 perceived themselves as having a greater comforting self-concept. This finding is not in line with any of our hypotheses. In fact, it speaks for an association between the two constructs, but in a different way than expected. One factor to be considered is the potential impact of the Covid-19 pandemic on the comforting aspect at T1. During the period of assessment of T1, there were contact restrictions and heightened concerns about infection due to the pandemic. While the helping and sharing behaviors of the children in the test situation were minimally impacted by this intervention, as these behaviors do not typically involve physical contact, it is possible that children were less likely to engage in more intense comforting behaviors, such as blowing on an injured finger or stroking a sore knee, which are typically associated with physical touch. In adults, so-called “social distancing” has been associated with an increased concern for others and a high moral self-concept (Christner, Sticker, et al., 2022). In this unique circumstance, maintaining a physical distance and avoiding contact was considered a "moral" action. Applied to our findings, it is possible that children who prioritized "social distance" to protect others, and thus showed little active comforting behavior, internalized this as moral behavior and consequently developed a higher moral self-concept. Yet, this interpretation is speculative. Future work is needed to distinguish cohort effects due to the COVID-19 pandemic from age-related changes.

However, when examining the pathways between comforting self-concept and behavior from age 5 onward, the results are in line with hypothesis 4.3. Children's comforting self-concept and actual comforting behavior reciprocally affect each other, both cross-sectionally and longitudinally. Children who exhibited a high level of comforting behavior at the age of 5 developed a stronger comforting self-concept by the age of 6.5. Furthermore, a stronger self-concept of comforting at age 5 led to more comforting behavior a year and a half later. Cross-sectionally, there was a positive correlation between self-concept and behavior at age 5. This provides support for Marsh and Craven’s (2006) account. Children with a high comforting self-concept were more likely to engage in prosocial behavior as they see themselves as someone who values comforting others. On the other hand, providing comfort influenced the development and strengthening of a comforting self-concept. This could provide the basis for a cascading developmental trajectory (virtuous circle) in which positive behaviors stabilize themselves through a respective positive self-concept.

Results did not support the hypothesis regarding cross-lagged relations within the helping domain. Neither earlier helping behavior could predict later helping self-concept nor

vice versa. A correlation between self-concept and behavior was only found at the last measurement point, at 6.5 years. Previous studies noted a lack of correlations between instrumental helping and self-concept (for example, Sticker et al., 2021). The debate on whether instrumental helping is truly altruistic includes arguments by Dahl (2019) and Pletti et al. (2017), suggesting it may be more of a social routine than genuinely other-oriented prosocial behavior. This raises questions about connections with moral self-concept, prompting the need for future studies to explore associations with other dimensions, like the social self-concept.

Across all three measurement time points, there was no evidence of a significant relation between sharing behavior and the sharing dimension of moral self-concept. Therefore, we did not find support for H4 concerning sharing. One reason for the lack of relation between sharing behavior and moral self-concept could be that sharing is a cognitively less demanding action. Perhaps it is performed on a more normative level. As a result, the moral self-concept may not be activated at all. Instead, children follow a learned behavior and decide whether to share or not, independent of their moral self-concept.

Overall, however, a complex picture emerges, since earlier studies found relations concerning sharing: Findings by Sticker at al. (2021), 4-6-year olds, as well as Christner et al. (2020), 5-9-year olds, confirmed a relation between sharing behavior and the sharing self-concept. However, these studies did not make any statements regarding longitudinal development over an extended period of time in successive measuring points. Future studies should examine sharing behavior in depth to understand the mixed findings regarding the links between sharing behavior and sharing self-concepts, taking into account factors such as the type of sharing behavior and the identity of the recipient of the shared good.

In summary, the analyses of cross-lagged panel models fail to support the unidirectional hypotheses H4.1 and H4.2. The results do not suggest that prosocial behavior unidirectionally predicts later MSC, nor that higher MSC unidirectionally leads to increased prosocial behavior. Instead, we found support for mutual influence between both the comforting self-concept and comforting behavior, both correlatively and predictively, at least from 5 years of age. Yet, this was not the case for the other two domains.

6.4.5. Limitations and Future Studies

Despite its novel contribution to the literature, the study has limitations. First, the problems caused by the Covid-19 pandemic that have just been mentioned should also be addressed here again as a general limitation. For safety reasons, all tests conducted at T1 required the use of a

face mask. Facial expressions play an important role in providing cues for children during social interactions (Denham et al., 2014; Kammermeier & Paulus, 2023; Kleef, 2009). It cannot be excluded that the experimenter's use of a face mask influenced the prosocial behavior of children. On the other hand, earlier studies have indicated that children learn to use eye expressions as social cues at a young age (Grossmann, 2017; Pons et al., 2019), which were not impeded by the use of masks. In addition, children typically comprehend not just emotional information conveyed through facial expressions, but also contextual and emotional cues like body language, vocal tone, or facial gestures during changes in expression (Ichikawa et al., 2014; Ruba & Pollak, 2020). We can therefore assume that the majority of the children were able to correctly interpret and react to the situations in which prosocial behavior was tested despite wearing a mask. Future studies will be able to examine the extent to which the development of prosocial behavior in the cohort of children affected by the corona pandemic differs from other cohorts.

Furthermore, the outcomes of our study prompt theoretical inquiries. Results from the comforting dimension indicate that children's comforting behavior affects the comforting dimension of the emerging MSC. Nevertheless, it is unclear what causes the early development of the MSC. There are potential avenues of investigation that could be of great interest for future studies. One possible explanation is that interactions with caregivers during the early years of life can shape the development of MSC. Approaches stemming from attachment theory underscore the significance of early experiences between children and caregivers (Ainsworth, 2015; Bowlby, 1979). For instance, a study by Paulus et al. (2018) found that different facets of maternal emotional availability predicted different aspects of children's self-concept development. For example, maternal sensitivity and non-hostility predicted the social self-concept, but not the academic self-concept. Previous research suggested that maternal sensitivity is positively linked with children's empathy, which subsequently results in more emotional helping or comforting (Becher et al., 2023; Stern & Cassidy, 2018). Based on this, one could hypothesize that the comforting dimension of the MSC is particularly influenced by early parent-child interaction. Furthermore, based on the self-perception theory, prosocial behavior can influence MSC not only after it is established but also prior to its establishment (Bem, 1972): During the early years of life, children who engage in more prosocial behaviors may perceive themselves to be more prosocial individuals, leading to the development of a more pronounced MSC. It is reasonable to assume that various forms of prosocial behavior have a distinct impact on specific sub-dimensions. Further research is necessary to examine the

impact of parent-child interaction quality and prosocial behavior during infancy on the development of children's moral dimension.

6.4.6. Conclusion

This study's results hold the potential to significantly contribute to research on the development of moral self-concept and prosocial behavior in children. Key findings include the multidimensional nature of the moral self-concept from the age of 5 (helping, sharing and comforting) and an early developmental interaction between children's self-concept and behavior, particularly in comforting. The study extends previous approaches by emphasizing the need for a differentiated view of the development of helping, sharing, and comforting behaviors and their corresponding subdimensions in the moral self-concept. Notably, the findings highlight a mutual influence between a child's comforting behavior and their self-concept from at least five years old. Specifically, children with a higher comforting self-concept exhibit more comforting behavior and vice versa. This study sheds light on how children form a sense of themselves as moral agents from a young age and how this impacts their behavior in morally relevant situations and thus their social functioning.

7. General Discussion

In a comprehensive exploration of the early ontogeny of the moral self-concept, this dissertation delves into the intricate dynamics of moral self development from infancy through middle childhood. Based on the proposal that the moral self-concept not only reflects, but also significantly contributes to prosocial behavior, research on the moral self is an important part of moral developmental research.

One of the central themes of this thesis is the interplay between early social interactions and the formation of a moral self-concept. Drawing on influential developmental theories (e.g., Bowlby, 1969; Carpendale & Lewis, 2021; Mead, 1934) and contemporary research (e.g., Becher et al., 2023; Kochanska & Kim, 2014; Stern & Cassidy, 2018), the thesis posits that the quality of early interactions, particularly with primary caregivers, lays the groundwork for the emergence of a moral self-concept (Study 1). This hypothesis was examined through the lens of attachment theory and relational developmental system models suggesting that supportive and sensitive caregiving can effectively shape a child's moral self-concept.

In addition, the thesis explores the developmental trajectory of the moral self-concept, tracing its emergence from a more general and undifferentiated form in early preschool age to a more coherent and differentiated construct in middle childhood, tested in Study 2. It examined the multidimensional nature of the moral self, as proposed by Marsh and Shavelson (1985), and explored its stability and differentiation with age. This analysis is central to understanding how children's perceptions of themselves as prosocial beings evolve and consolidate over time. The thesis further opens new avenues for research on early self-concept development by highlighting the importance of coherency as a central feature of the self.

Furthermore, the relation between moral emotions, particularly guilt, and moral self-concept received significant attention in Study 3. Focusing on the preschool years, the study examined predictors of guilt-related behavior, particularly the moral self-concept. This investigation is critical to understanding how children's representations of themselves as prosocial agents manifest in their guilt-related behavior. The developmental interplay between

guilt, a key moral emotion, and the moral self was examined to understand how children reconcile their actions with their evolving prosocial perception of themselves.

A pivotal aspect of this research is the exploration of the development of the association between the moral self-concept and prosocial behavior. This relation is crucial for understanding the implications of moral self-concept on societal functioning and how this interplay develops early in life. Study 4 examined various theoretical perspectives on this relation, including Blasi's (1980) model of self-consistency, Bem's (1972) self-perception theory, and Marsh and Craven's (2006) account on reciprocal effects, to understand the directionality and nature of this association. By investigating the development of this relation from early preschool age to the onset of elementary school, the thesis sheds light on how children's self-concept as prosocial beings influences, and is influenced by, their prosocial behaviors.

In summary, this thesis offers a multifaceted analysis of the early development of the moral self-concept, examining its origins, emergence, and impact on child's moral development. By integrating theoretical perspectives with empirical findings, this research contributes to a deeper understanding of how the moral self is constructed and how it functions as a pivotal component of moral development. The insights gained from this thesis not only answer existing questions but also pave the way for future research. I will discuss the unique contributions of each study, revisit existing theoretical models in light of new findings, and consider implications for future research.

7.1. Revisiting Existing Models in Light of Current Findings

The following section highlights the unique contributions of the four conducted studies. The research questions formulated in the introduction are based on various theoretical models, and the findings contribute to these models, which will be outlined and discussed.

7.1.1. Developmental Pathways From Early Social Interactions to the Moral Self

The moral self-concept is mostly viewed as an explicit verbal construct - focusing on representations about preferences for morally relevant behavior- that emerges during the preschool years (e.g., Krettenauer et al., 2013; Schiele et al., 2024; Sticker et al., 2021). But what happens before that? What influences a child to develop a more positive or a more negative representation of the self in the context of prosociality? To address these questions, Study 1 examined early predictors of a moral self-concept, beginning in infancy.

The findings of this longitudinal study highlight the central role of maternal emotional availability during infancy: a mother's sensitivity when her child was just 1 year old predicted child's moral self-concept by age 4. Moreover, Study 1 revealed that comforting behavior at the age of 3 acts as a critical mediator in this interplay between maternal sensitivity and moral self-concept. This finding marks a significant departure from the existing literature by Kochanska and colleagues (2005; 2014), which focused primarily on compliance with parental rules as a mediating factor between parent-child-interaction quality and moral self development. Our research narrative suggests another nuanced pathway: early comforting behaviors, supported by maternal sensitivity, foster a more positive moral self-concept through self-perception processes. Intriguingly, sharing behavior, while also important for later moral self-concept, did not mediate the relation between maternal sensitivity and moral self-concept. Furthermore, helping behavior at the age of 3 did not predict later moral self-concept. The existence of distinct developmental trajectories for different prosocial behaviors in children indicates the multidimensionality of such prosocial behaviors. Therefore, it is crucial to consider these behaviors and their associated developmental processes separately.

Our exploration further revealed that other facets of maternal emotional availability, such as providing a structured environment and minimizing intrusive or hostile interactions, are equally as instrumental in supporting a higher moral self-concept in children. This finding amplifies that the quality of broader mother-child interactions, extending beyond mere sensitivity, is crucial for moral self-concept development. Furthermore, these findings are uniquely tied to the moral self-concept, without extending to other self-concept dimensions like verbal or physical self-concept. This specificity underscores the unique impact of early mother-child interactions on the moral dimension of the self.

This pivotal finding fits well with the process-relational developmental system (RDS) approach (Carpendale et al., 2013; Carpendale & Lewis, 2021; Carpendale & Wallbridge, 2023)

and the tenets of attachment theory (e.g., Ainsworth et al., 1979; Bowlby, 1969, 1973, 1979) and it underscores the profound impact of early social experiences with caregivers in shaping a child's emerging self-concept. Process-relational approaches are in contrast to nativist claims, which propose that infants are born with some kind of innate morality (Bloom, 2012; Warneken, 2016). Following the RDS approach, social relationships are the starting point for child development and not the other way around. Carpendale and Wallbridge (2023) argue that "addressing the question of how children become active prosocial agents requires beginning with action and interaction with others" (p.1). Accordingly, they follow up on the classical view of Mead (1934) that indicates that communication, thinking and mind emerge from interactions. The RDS approach highlights that development occurs within a system, and the system that is predominantly present early in life is the infant-caregiver-relationship. This in turn is consistent with attachment theory approaches, which emphasize that children whose early social experiences are characterized by responsive and respectful interactions with caregivers also develop secure attachment representations and positive self-perceptions through internal working models (e.g., Bowlby, 1979).

In summary, the current thesis illuminates the developmental pathway from early parent-child interactions to a (positive) moral self-concept, contributing to influential theoretical models. Both, the RDS approach and attachment theory assert that early social interactions play a crucial role in fostering the development of prosocial behavior. Through repeated engagement in prosocial activities, children learn more about the social context and emotional consequences, which in turn may lead to a change in motivation for prosocial behavior over the course of development. In my view, this is where the moral self-concept comes into play, which arises through self-perception processes and the repeated experience of one's own prosocial activities - and can then in turn motivate later morally relevant behavior (see Studies 3 and 4).

7.1.2. Key Characteristics of the Moral Self-Concept

Study 2 investigated three crucial characteristics of the moral self-concept: Coherency, multidimensional structure, and stability over time. It was derived from theoretical considerations that the presence of these three characterizations is a prerequisite for interpreting the moral self-concept and its prosocial subdimensions - helping, sharing, and comforting - at all. Study 2 aimed to find out *when* children had developed a moral self in terms of these three aspects.

7.1.2.1. Coherency

Findings revealed that during the preschool years, there is a notable increase in the coherency of children's moral self-concept from 4-5 years of age. This is an important developmental achievement, as aligned with influential developmental theories, coherency is essential for a well-defined self-concept (Baumeister, 1997; Erikson, 1959; Rogers, 1959). This finding is significant as it systematically demonstrates the emergence of a coherent moral self-concept during early childhood, a topic not explored in prior developmental science. While research on the self in adults has addressed the topic of coherency, predominantly in clinical contexts (e.g., Cicero et al., 2016; Vater et al., 2015), it has only been included in a few studies in relation to self-concept development (e.g., Bird & Reese, 2006; Welch-Ross et al., 1999) and has not yet been considered in the context of the moral self-concept. Existing theoretical models of the moral self should incorporate coherency as a crucial aspect, given the increase in coherency during preschool age presented in this thesis and the importance of coherency to a healthy self-concept according to various theoretical perspectives (Baumeister, 1997; Erikson, 1959; Rogers, 1959). One theoretical model to be considered in this context is the developmental model of the moral self by Krettenauer (2013b). The author's theory posits that the moral self is constructed through a progression of intentional, volitional, and identified agent layers. Coherency may develop as part of the volitional moral self. The moral self as volitional agent is thought to occur between the ages 4-6 as children learn to understand that their self exists over time, which can be seen as a prerequisite to develop a coherent moral self-concept.

In summary, considering coherency as one aspect of the self-concept development can make a highly profitable contribution to existing theoretical models. Future research into the moral self and its development, as well as other self-concept dimensions, will undoubtedly contribute to new insights in this area by considering coherency as an important feature.

7.1.2.2. Internal Structure

Furthermore, our investigation revealed developmental changes in the factorial structure of the moral self-concept. We found that while a three-dimensional structure of moral self-concept (encompassing helping, sharing, and comforting) is not developed at age 4, these subdimensions become distinct by age 5. This differentiation process is critical, indicating substantial maturation in children's conceptual representation of themselves as prosocial beings. Our study is the first to show that these separate dimensions of the moral self-concept (helping, sharing, and comforting) are not inherent from the onset but emerge between the ages of 4 and

5 years. Marsh and Shavelson's (1985) theoretical model concludes that the self-concept has initially a rather global character, and only becomes more differentiated and explicit in its subdimensions as development progresses. This thesis' findings align with the theoretical model. The moral self-concept is a distinct subdimension in the multidimensional hierarchical self-concept model. Study 1 emphasizes its three prosocial dimensions of helping, sharing, and comforting. It is possible that there are additional subdimensions within the moral self-concept, such as the avoidance of antisocial behavior proposed by Krettenauer and colleagues (2013). Future studies should investigate how to integrate other subdimensions into the structural multidimensional model of moral self-concepts and determine when they can be differentiated from other subdimensions.

7.1.2.3. Stability Over Time

Additionally, Study 2 delves into the developmental stability of the moral self-concept. It was observed that while the verbal and physical self-concept scales show stability over time, the moral self-concept scales (helping, sharing, and comforting) do not exhibit the same stability. However, an intriguing pattern emerged when focusing on children who already possess a coherent moral self-concept at age 4. For these children, the results showed that their moral self-concept was stable over time, particularly evident in the helping scale. Although caution is warranted due to the limited sample size, this trend suggests that once children form a coherent view of themselves as moral beings, this self-view tends to remain stable. This insight extends existing research on the self-concept being a stable and trait-like construct (Colby & Damon, 1992; Hardy & Carlo, 2011; Moshman, 2011) by adding that coherency may be a crucial precondition for this stability. Further considerations on this topic will be outlined in section 7.4.1.

Taken together, the findings of Study 2 contribute to the understanding of the key characteristics of the moral self-concept during childhood. The aspects of coherency, structural differentiation, and stability seem to be crucial for moral self-development and should therefore be integrated into existing models.

7.1.3. Relations Between the Moral Self and Morally Relevant Behavior

Finding out how the moral self relates to actual morally relevant behavior - since this is the aspect that actually affects the social functioning of our everyday lives - is a major focus of

research on the moral self-concept. Studies 3 and 4 focused on whether this relation already exists in childhood, which morally relevant behaviors are involved, and how this interrelation develops.

In Study 3, the relation between the moral self-concept and guilt-related behavior in 5-year-old children was explored. The study stands out as a significant contribution to understanding how children's self-perception as prosocial beings influences their experience of guilt and subsequent behavior. Findings revealed that children's moral self-concept, rather than their theory of mind abilities, amplifies the extent to which they display guilt-related behavior. This suggests that it's not a general understanding of other person's perspective, but rather the integration of prosocial standards into their self-concept that is crucial for guilt-related behavior. The relation between the moral self-concept and guilt-related behavior aligns with theoretical perspectives that posit guilt arises from self-reflection and comparison of one's behavior against expectations of oneself (e.g., Lewis, 1995). Therefore, children who view themselves as more prosocial, experience greater feeling of guilt after a transgression and are therefore more likely to exhibit guilt-related behaviors, e.g., reparative behavior. This underscores the importance of a well-developed moral self-concept in the emergence of guilt. This adds on existing theories by providing support for the relation between the moral self-concept and guilt on a behavioral level in early development (Barrett, 1995; Hoffman, 2000; Lewis, 1995a). The inclusion of guilt-related behavior in developmental models is crucial as it encompasses behaviors that are significant in children's social competence, such as expressing remorse, explaining that the incident was accidental, apologizing, and engaging in reparative behavior to mitigate possible negative consequences (e.g., Vaish et al., 2016; Zahn-Waxler & Kochanska, 1990). These insights broaden our understanding of moral development, highlighting the moral self-concept as a pivotal factor in guilt emergence. They suggest that interventions aiming to foster socioemotional competence should focus on enhancing children's moral self-concept. However, when it comes to guilt, excessive feelings can also lead to fear of punishment and aggressive behavior (Tani & Ponti, 2018), as well as higher levels of self-blame (Ferguson et al., 1991). Although guilt can promote healthy levels of prosocial and profitable behavior, it is important to avoid an overabundance of it. It is still unclear whether a higher moral self-concept also promotes this (unhealthy) type of guilt-related behavior, and this remains a topic for future studies. Furthermore, theories about the development of self-conscious emotions focus not only on guilt but also on shame and pride (Lewis, 1995a). Different self-conscious emotions motivate different behaviors (Tangney, 1998). Guilt can promote interpersonal repair and

maintain social relationships, while behaviors motivated by shame may include withdrawal, avoidance, or hiding perceived inadequacies or mistakes. Guilt is generally considered more adaptive than shame (Baumeister et al., 1994; Tangney & Dearing, 2003), as shame often leads to self-destructive behaviors and impairs psychological well-being (Lewis, 1995b; Tangney, 1998). It is possible that the moral self-concept may also influence behavior following experiences of shame. It could be hypothesized, the moral self-concept amplifies guilt feelings rather than constituting them. Children can experience guilt simply by focusing on the harm they caused to others, while shame likely requires a moral self. Therefore, without a moral self, children will not experience shame. To test these hypotheses, it requires further empirical studies, to assess further relations between behavior related to self-conscious emotions and the developing moral self-concept.

Despite its contributions, Study 3 acknowledges limitations, including its cross-sectional design. Study 4, on the other hand, was a longitudinal study including three consecutive measurement points from 4-6.5 years of age, focusing on the association between children's moral self-concept and prosocial behaviors - namely helping, sharing and comforting.

The findings revealed a nuanced and domain-specific picture of these relations. In the comforting domain, a bidirectional relation between self-concept and behavior was evident from the age of 5 onwards, aligning with the hypothesis of reciprocal effects between the self-concept and behavior (Marsh & Craven, 1997, 2006). Marsh and Craven based their work on a multidimensional model of self-concept and proposed causal relations between specific components of self-concept (e.g., academic self-concept) and performance in a related domain (e.g., academic achievement). The authors anticipate that this relation is dynamic and reciprocal (reciprocal effects model, Marsh et al., 1999; Marsh & Craven, 1997, 2006). Align with this notion, our findings suggest that children's comforting behavior and their comforting self-concept mutually influence each other over time. For instance, at age 5, children who exhibited higher levels of comforting behavior developed a stronger comforting self-concept by age 6.5, and vice versa. This interaction illustrates a potential cascading developmental trajectory, where positive behaviors and self-concepts reinforce each other. However, this bidirectional influence was not observed in the helping and sharing domains. In the helping domain, the study did not find support for cross-lagged relations. This lack of longitudinal relations challenges existing theories and raises questions about the nature of instrumental helping as either a social norm or a genuine prosocial behavior (for arguments in this debate, see Dahl, 2019; Pletti et al., 2017).

In the sharing domain, the study found no significant relation between sharing behavior and the sharing dimension of the moral self-concept, suggesting that sharing might operate on a more normative level at this age, not strongly linked to moral self-concept. When applying these considerations to the reciprocal effects model, which suggests that the links between behavior and self-concept are most noticeable when they come from related areas (Marsh & Craven, 2006), one could infer, that, for instance, instrumental helping or sharing behavior at this age may rather be more closely linked for example to a social self-concept than to a moral one. To test these considerations, further empirical studies are needed, where the self-concept is conceptualized assessing social and normative aspects.

Taken together, the findings of this thesis contribute to theoretical considerations regarding the development of the relation between moral self-concept and actual morally relevant behavior. As early as 5 years of age, children's moral self-concept is associated with guilt-related behaviors and comforting behavior.

7.2. Integrative Perspective on Moral Self-Concept Development

Overall, the current thesis provides an integrative overview on the development of the moral self-concept. Thanks to this thesis, we can trace the detailed ontogeny of the moral self-concept over a period of more than 5 years, starting at the age of only 12 months. By doing so, new insights are integrated into existing influential theories, and suggestions for further research are offered.

The findings of this dissertation show that a foundation stone for the development of a positive moral self is laid in the first year of life through the sensitive interaction of mothers with their children (Study 1). When mothers respond sensitively and appropriately to their infants, this fosters their children’s development of comforting behavior at 3 years of age. If successful, this process leads to a more positive moral self-concept through self-perception processes when children reach the age of 4 years. These findings align with theories that highlight the significance of social interaction for children's self-development (Bowlby, 1969; Carpendale & Lewis, 2021; Main et al., 1985). The study expands on these approaches by acknowledging that the developmental pathway is not only direct from mother-child interaction

to moral self, but also indirect, mediated through children's comforting behavior. Further, this effect is limited to the moral self-concept dimension and does not apply to all aspects of the self (e.g. verbal or physical). Taken together, there are different developmental pathways that influence 4-year-old children's moral self-concept.

The moral self-concept, which is predicted by early mother-infant interaction quality and comforting behavior, has not yet differentiated into its three-dimensional structure. A differentiation into separate subdimensions occurs during further development. Structural changes indicate that by the age of 5, children possess a three-dimensional moral self-concept with subdimensions of helping, sharing, and comforting, which are equivalent to the three forms of prosocial behavior. In this phase, the coherency of the moral self-concept increases significantly. Therefore, most 5-year-olds have attained two key developmental achievements concerning moral self-concept development. By the age of 5, children have developed a moral self-concept that can be interpreted not only on a global level but also on the level of its prosocial subdimensions.

At this age, we can also observe correlations between their moral self-concept and their actual behavior. The moral self-concept is associated with different morally relevant behaviors in various ways - and different theoretical explanations apply to these relations. On a global level, the moral self-concept in 5-years-olds, is significantly positively related with behavior following transgressions also known as guilt-related behavior. Regarding the prosocial subdimensions of the moral self, Study 4 suggests different patterns in the interrelation between the moral self and actual prosocial behavior during childhood development. The comforting subdimension of the moral self-concept was meaningfully related to comforting behavior at 5 years and onwards. Children who had a higher self-concept of comforting at age 5 also showed more comforting behavior 1.5 years later. This relation could also be observed in reverse: More comforting behavior at age 5 leads to a higher comforting self-concept at age 6.5. These finding speak for a reciprocal influence between self-concept and actual behavior, as proposed by Marsh and Craven (2006). However, no such relation appeared to be present in the sharing or helping domain. A crucial insight can be drawn from these different findings on the connection between moral self and morally relevant behavior: that when examining the moral self, it is important to consider which hierarchy level and which of the various subdimensions are being considered. The reason for this is that different correlates, predictors, and developmental trajectories may emerge depending on the aspect of the moral self being considered.

The collective findings from the four studies paint a cohesive picture of the development of a moral self-concept in children. The research indicates that a moral self-concept in children is actively shaped through interactions between children and their environment, starting in early childhood. As children grow, their perception of themselves as prosocial actors becomes more coherent and differentiated, especially during the preschool years. The moral self-concept of children continues to develop and has a significant impact on their tendency towards morally relevant behavior. Empirical evidence and theoretical frameworks converge to support the idea that children are active agents in their own moral development. Adding on seminal work by Carpendale & Lewis (2021), Piaget (2010), and Vygotsky (1978), it becomes evident that the moral self-concept of a child is closely linked to their social environment and interactive experiences. These theoretical perspectives underscore the reciprocal nature between child and environment, wherein children engage in reciprocal interactions and in morally relevant behavior, thereby charting a course towards a mature moral self-concept. Therefore, the developmental process of moral self-concept highlights the complex relation between behavioral, social, and emotional factors, emphasizing the crucial role of interactions as drivers of moral self-concept development.

The thesis findings may also be applicable to general self-concept research models. For instance, coherency as a crucial developmental factor in self-concept research has not gained much attention, not only with regard to the moral dimension of the self. Due to its significant role in characterizing the self-concept, self-concept coherency deserves more attention, especially when it comes to the question of when in early childhood one can speak of a self-concept at all. Using this as an example, it is shown that the present work can not only contribute to a more complete picture of the ontogeny of the moral self-concept, but that its findings are also relevant to self-concept research in general.

7.3. Limitations

Although this thesis provides valuable insights, it is important to acknowledge its limitations. One limitation is the homogeneity of the sample, which consisted mostly of WEIRD (Western, Educated, Industrialized, Rich, and Democratic) participants who were predominantly Caucasian and had parents with high educational status. This may limit the generalizability of the findings to more diverse populations with varying socio-economic and cultural

backgrounds. In particular, since the findings of this dissertation suggest that the development of the moral self is closely related to children's interactions with their environment and social experiences, one might expect that the cultural background and social structure in which a child grows up would have an influence on its development. Previous work had demonstrated that parenting styles as well as socialization goals vary between different cultures (e.g., Keller et al., 2006; Lansford, 2022). However, the current work focused on the prosocial aspect of moral self-concept development. It has been suggested that there is some kind of universality in prosocial development - despite differences in parenting styles and cultural influences - highlighting human's tendency to cooperate and care about each other (Batson, 2011; Kaplan et al., 2009). For example, a large study of children from 13 different individualistic and collectivistic cultures revealed a universal age-related shift across cultures from an equality-based distributive motivation to an equity-based distributive motivation (Huppert et al., 2019). The debate surrounding the universality of moral development remains unresolved and requires further empirical research for clarification. Therefore, to ensure the robustness and applicability of the thesis' results across different demographic groups, it is important to replicate the study with more diverse samples.

Second, the variability in the ages of the children included in the studies presents a challenge for developmental comparisons. Study 2 revealed important developmental changes between the ages 4-5 years. However, the age of children varied among test subjects during the measurement period. Therefore, developmental changes cannot be determined with more precision based on age. Early ontogeny is marked by rapid developmental changes. To avoid obscuring age-related trends or developmental trajectories, future research could benefit from narrowing the age range. This would provide a more focused examination of age-specific patterns of moral self-concept development.

Additionally, conducting assessments in laboratory settings may not fully capture the complexities of real-world prosocial development. Although laboratory settings provide control over extraneous variables, the artificial environment may influence children's behavior and responses, potentially leading to results that do not accurately reflect their natural prosocial behavior and reactions in everyday life contexts. Therefore, future studies could consider incorporating more ecologically valid methodologies, such as naturalistic observations or field experiments, to enhance the ecological validity of findings.

In conclusion, this study provides valuable insights into the early ontogeny of the moral self. However, it is important to acknowledge and address the aforementioned limitations in

future research. By doing so, we can advance our understanding of moral self-concept development and its implications for child development and socialization in a more comprehensive and nuanced manner.

7.4. Open Questions and Future Research

Within the four studies, we were able to answer crucial research questions and provide support for influential theoretical accounts. However, it also raises new questions for future research and opens up new avenues for further studies.

7.4.1. The Role of Coherency for (Moral) Self-Concept Development

First, a new possible perspective on the moral self-concept development is opened up by the inclusion of coherency as a key factor. While previous developmental research on self-concept development has focused primarily on the extent to which children ascribe themselves particular abilities and preferences (e.g., Brunner et al., 2010; Harter, 2006; Marsh et al., 1998), part of the current dissertation aimed to explore when children develop a coherent view of themselves at all. Findings can be seen as a first indication that moral self-concept coherency increases with age during childhood development. If we take influential theoretical models of the self as a guide, this can certainly be seen as a milestone in development: Representatives of different strands of self-concept research agree that a certain coherency within self-concept domains is fundamental (Baumeister, 1997; Erikson, 1959; Rogers, 1959). This new insight raises new research questions. One is what leads children between the ages of 4 and 5 to develop a coherent image of themselves as a prosocial individual. An explanation may come from the autobiographical memory theorists (e.g., Bird & Reese, 2006; Fivush, 1993, 2001; K. Nelson, 1993; Welch-Ross et al., 1999). They argue that conversations about past events have an important influence on the development of the coherent self-concept. Through these conversations, which include evaluative and emotional aspects of past events, children learn why certain experiences are meaningful and can make connections that lead to a coherent autobiography. The more connections they can make, the more coherent their self-image becomes (Welch-Ross et al., 1999). Applied to the development of a moral self-concept, this would mean that a child who learns through talking about past events that sharing crayons, sharing candy, and playing with the same ball together are all fun experiences can link these

different events and develop an understanding of what they like to do. The more events the child can connect, the more coherent their image of themselves becomes - in this case, as someone who likes to share. It remains for future research to test this approach and to answer the question of whether conversations about past events in morally relevant contexts can indeed enhance the development of a coherent moral self-concept. The impact of this claim is even greater, because of course it applies not only to the moral dimension of the self, but to other dimensions of the self as well. The inclusion of coherency as a key developmental achievement in self-concept development can make a valuable contribution to this area of research.

7.4.2. The Moral Self - State or Trait?

In several accounts, once a self-concept is acquired, its stability over time is assumed to be another characteristic of the self – comparable to a personality trait (Blasi, 2004; Colby & Damon, 1992; Hardy & Carlo, 2011). Indeed, stability was also central to Shavelson and colleagues' (1976) model of a multidimensional and hierarchical self-concept. Consequently, we hypothesized stability within the moral self-concept at the global level as well as at the level of subdimensions over time. However, the results of Studies 2 and 4 showed mixed results regarding the rank-order-stability of the self-concept. While stability was moderate for both physical and verbal self-concepts over a one-year period between ages 4 and 5, stability of moral self-concept at the subdimension level was low. However, a separate assessment of those children who already had a coherent moral self-concept at age 4 showed that the subdimensions of the moral self-concept were stable over time. This finding suggests that coherency may be a prerequisite for self-concept stability. Since coherency is expected to increase with age, stability may also increase as children grow older. In fact, Marsh and Shavelson (1985) hypothesized that self-concepts become more stable with age. Furthermore, their model suggests that stability also depends on hierarchical level, with higher hierarchical levels predicted to have greater stability. Surprisingly, the results of Study 4 did not support this notion: We found no evidence of persistent stability at the level of the global moral self-concept nor at the level of the subdimensions over the developmental period between ages 4, 5, and 6.5. This was contrary to expectations. There may be several explanations for this: First, the reason for the lack of stability may lie in ongoing developmental processes. It is possible that the moral self-concept is still undergoing too much change in terms of internal structure and coherency during the observed period. If this is the case, stability will increase as development continues. In fact, previous studies have found support for increasing stability in other self-concept dimensions,

such as academic, social, athletic, and physical appearance. (Klomsten et al., 2004; Putnick et al., 2020). Second, if the reason for the lack of stability is not age-related, the moral self-concept may be less trait-like than expected. Recent social cognitive approaches suggest that the moral self may be more or less activated in different situations, even though the importance of morality to a person's identity may be fairly stable (Aquino et al., 2009; Monin & Jordan, 2009; Stets & Carter, 2011). Testing of these hypotheses is a matter for future studies.

Overall, the (moral) self-concept is generally considered to be a multidimensional and dynamic construct, that may include both state and trait components. The moral self-concept can be influenced by situational factors, resulting in temporary states, but it also has stable elements that persist over time, representing trait-like aspects. In other words, the moral self-concept may not just be a state *or* a trait; rather, it may include both temporary and enduring aspects of one's self-perception. Situational factors, emotions, and experiences may influence the current state of the self-concept, while underlying beliefs and stable characteristics contribute to its trait-like nature.

7.4.3. What Comes Next? - Speculations About Further Development

Third, the focus of this work is on the development of the moral self-concept up to the age of 6.5 years. In the present studies, it was shown that children at this stage of development have a moral self-concept that is hierarchically structured and multidimensional. It is currently unclear how the moral self-concept will develop from this point forward. It is worth noting that the moral self-concept of children differs from that of adolescents and adults, as it is typically conceptualized. The moral self-concept of children aged 4-6.5 years, as conceptualized in this thesis, includes their behavioral representations and preferences in the context of prosocial behavior. It is therefore concrete and closely related to behavior. In contrast, the moral self or moral identity in adolescents and adults is more abstract and includes how central morality is to someone's self-identity (e.g., Aquino & Reed, 2002; Damon, 1984). Aquino and Reed (2002) conceptualized moral identity as a two-dimensional construct consisting of private internalization and public symbolization, rather than differentiated prosocial dimensions. For now, it remains an open question how children's moral self-concepts, as conceptualized here, develop into their moral identities as adolescents and adults. There are varying understandings of how children's moral selves relate to the moral identity of adults (see Kingsford et al., 2018 for an overview). While some accounts refer to the moral self-concept as kind of a precursor for later moral identity (Hardy & Carlo, 2011; Lapsley, 2015), others suggest that the moral self

is an “earlier and less mature form” (Krettenauer & Hertz, 2015, p. 143), and yet others propose that these two are rather separate constructs not necessarily related to each other (Kingsford et al., 2018).

Middle to late childhood is a crucial period for future research in this area due to the significant disagreement and lack of scientific studies and theories. The results of this thesis indicate dynamic developmental processes concerning the internal structure, by showing that the moral self-concept undergoes structural changes during the developmental phase between 4-6.5 years, with a differentiation into the prosocial subscales occurring at the age of 5 and beyond. One hypothesis could be that the dynamic developmental processes are not complete at this age, but continue throughout development. It is therefore quite conceivable that the internal structure of the moral self will be different in adolescents, given how much it has changed in the period under consideration in the current thesis. Especially since the period from middle childhood to early adolescence is characterized by major changes and new experiences, all of which can influence children's self-concept, such as increased experience in the social context with peers due to starting school, altered self-perception due to physical changes during puberty, and first sexual experiences. Thus, a difference in internal structure between children's moral self-concept and adults' moral identity need not be interpreted as evidence of different constructs. Instead, I propose, that, as in the 4- 6.5-year period observed in this thesis, structural changes in the moral self continue to occur as development continues in middle and later childhood through adolescence. Future studies should examine these developmental changes within the moral self and answer questions about the development of the moral self-concept in middle to late childhood.

7.5. Conclusion

In summary, this thesis provides a nuanced and comprehensive exploration of the early ontogeny of moral self-concept across a critical developmental period from the first year of life to age 6.5 years. On the one hand, the findings contribute significantly to our understanding of the intricate interplay between early mother-infant interactions, children's comforting behaviors, and the emergence of moral self-concept. The first study underscores the central role of sensitive maternal responsiveness in laying the foundation for positive moral self-development by shaping children's ability to recognize and respond to emotional distress in others. Furthermore, the thesis shows that the moral self-concept undergoes a process of differentiation and structural refinement over time, culminating in a three-dimensional framework by age 5, includes subdimensions of helping, sharing, and comforting. The thesis also highlights the importance of coherency as a key characteristic of the (moral) self-concept and reveals an increase in moral self-concept coherency during preschool age. Importantly, the thesis demonstrates correlations between moral self-concept and actual behavior, underscoring the importance of considering both global and subdimensional levels. In particular, guilt-related behavior is associated with global moral self-concept, whereas specific prosocial subdimensions show distinct patterns of association with actual prosocial behavior. The reciprocal influence between moral self-concept and behavior, as identified in the comforting subdimension, suggests a dynamic interplay between self-perception and action.

Overall, this thesis advances our understanding of early moral development and self-concept development by integrating diverse theoretical perspectives, unraveling the internal structure of the moral self-concept, and shedding light on the multifaceted relations between moral self-concept and behavior during early to middle childhood. The findings from this dissertation pave the way for further investigation into the complexities of moral self-concept development and provide a foundation for future research and interventions aimed at fostering positive moral self-concepts in children.

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Supplemental Material

I. Procedures and Coding Schemes

i. Procedure and Coding of the Puppet-Interview

For the interview, the experimenter held up two identical puppets side by side. One of the puppets expressed a prosocial statement and the other puppet expressed the opposite – a non-prosocial statement (e.g., "I like to share my toys" vs. "I don't like to share my toys"). Then the puppets turned to the child and the experimenter asked: "What about you?". The child answered if they are more like the puppet who expressed prosocial self-evaluation or more like the puppet with the opposite view. When the child decided for one of the puppets, the experimenter then asked if they are, "a lot like this puppet or a little bit like this puppet."

Coding and Scoring. Replies ranged on 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 (see Christner et al., 2020; Sengsavang & Krettenauer, 2015). Our puppet-interview consisted of 19 items which are distributed over five scales: Three moral scales (helping, sharing and comforting) and two additional scales (physical and verbal self-concept). The moral self-concept score resulted from the mean value of all items of the three moral scales.

Table 13 - *Items of the Puppet-Interview – English Translation*

Scale	Item	
HSC	1	I like to help to fold the laundry.
	2	I like to help to set the table at home.
	3	I like to help with the dishes.
SSC	1	I like to share my crayons.
	2	I make sure everyone gets the same amount.
	3	I like letting other children play with my toys.
CSC	1	I like to comfort a child even if they have been mean to me once before.
	2	I stop playing my favorite game to comfort a crying child.
	3	I comfort a child even when they had started a fight.
VSC	1	I like looking at books.
	2	I like it when someone reads me a story.
	3	I like listening to stories.
PSC	1	I like to play with the ball
	2	I would like to be strong.
	3	I can jump really far.
	4	I can run really fast.

Note. Table only displays items from the positive end of the scale. HSC= Helping self-concept; SSC= Sharing self-concept; CSC= Comforting self-concept; VSC= Verbal self-concept; PSC= Physical self-concept

Table 14 - *Items of the Puppet-Interview – Original German Version*

Scale	Item	
HSC	1	Ich helfe gerne die Wäsche zusammen zu legen
	2	Ich helfe gerne den Tisch zu decken.
	3	Ich helfe gerne beim Abwasch
SSC	1	Ich teile gerne meine Buntstifte
	2	Ich achte darauf, dass jeder gleich viel bekommt
	3	Ich lasse andere Kinder gerne mit meinen Spielsachen spielen.
CSC	1	Ich tröste ein Kind, auch wenn es vorher gemein zu mir war.
	2	Ich höre mit meinem Lieblingsspiel auf, um ein weinendes Kind zu trösten.
	3	Ich tröste ein Kind, auch wenn es selbst mit dem Streit angefangen hat.
VSC	1	Ich schaue mir gerne Bücher an.
	2	Ich mag es, wenn mir jemand eine Geschichte vorliest.
	3	Ich höre mir gerne Geschichten an.
PSC	1	Ich spiele gerne mit dem Ball.
	2	Ich würde gerne stark sein.
	3	Ich kann sehr hoch springen.
	4	Ich kann ganz schnell rennen.

Note. Table only displays items from the positive end of the scale.
HSC= Helping self-concept; SSC= Sharing self-concept; CSC= Comforting self-concept; VSC= Verbal self-concept; PSC= Physical self-concept

ii. Coding of the Helping Task

Table 15 - *Coding Scheme of the Helping Task in Study 1 and Study 4*

Code	Category	Behaviour
99	Not evaluable	• Cannot be evaluated because the child is crying, for example, or the helping task is aborted
0	No reaction	• Child does not pay attention to the pencils/ marbles/ pictures on the floor • Child does not comment on the marbles • Child looks around the room • Child playing with something else
1	Low help	• When the experimenter turns back to the table/child, the child informs her that the marbles have fallen **and/or** points to the pencils/ marbles/ pictures on the floor and looks at experimenter • Child informs experimenter while she is still at the shelf, but does not help pick it up • The child goes to the pencils/ marbles/ pictures, sits down next to them, but does not pick them up. • Child picks up marbles after experimenter has turned around again after 30s/helps experimenter to pick up or • Child does not pick up the marbles himself, but helps by pointing to missing pencils/ marbles/ pictures and thus helps to find the pencils/ marbles/ pictures
2	Moderate help	• 11s to about 30s after the pencils/marbles/pictures fall down, the child runs to the pencils/marbles/pictures, and collects them (This score is given regardless of whether the child has finished picking up all the pencils/ marbles/ pictures when experimenter turns back.) • Child informs experimenter while she is still at the shelf and then helps to pick it up
3	Strong help	• Immediately (0s) or 10s after the pencils/marbles/pictures fall down, the child runs to the marbles and picks them up (This score is given regardless of whether the child has finished picking up all the pencils/ marbles/ pictures when experimenter turns back.)

iii. Coding Scheme: Comforting Task

Combined information about the expression of concern and caring; general involvement of the child should be assessed; qualitative assessment about the general quality and strength of the empathic response (overall impression)

7-point scale:

1 = no involvement (child laughs)

3 = mild concern (no prosocial behavior)

5 = moderate concern (some prosocial behavior).

7 = strong expression of concern and helping/ caring behavior

iv. Procedure and Coding: Guilt-Related Behavior

The guilt-related behavior task was adapted from Kochanska et al. (2002). It consisted of a colorful and attractive picture, self-drawn by the experimenter and a wooden marble track. At a bend in the marble track there was a gate that could be removed, causing the marble to fall out of the track.

First, the experimenter showed the child a supposedly self-drawn picture of a popular character from a children's film. The experimenter explained that she really liked the picture and wanted to give it to a friend. She then put the picture on the back of the table and told the child that they could play with the marble run, which was also on the table. The experimenter and the child played with the marble run a few times. The experimenter then drew the child's attention to other marbles placed in another corner of the room. While the child was deciding which marble to play with next, the experimenter secretly unlocked the gate. When the child returned to the marble run, the experimenter said that she had to do some work outside the room and that the child could continue to play with the marbles while she was gone. She then left the room. When the child resumed playing, the marble rolled into a glass of water placed behind the gate. When the marble knocked over the glass of water, the water spilled over the self-drawn picture, destroying it. After the accident, the experimenter returned to the room and noticed the wet painting. She then said: "Oh no". The experimenter then asked the child three questions: Q1: "What happened?" Q2: "Who did it?" Q3: "Did you do it?". After each question, the experimenter waited approximately 5 s to allow the child to respond.

Coding. The primary coding focused on children's behavioral response following the minor transgression through the mishap. Guilt-related behavior was coded within two sequences:

1. While the experimenter had left the room (S1) and
2. after the experimenter reentered the room (S2).

Children could get one point within each sequence for displaying reparative behavior (e.g. child tried to fix the marble run) (0-1 points in S1 + 0-1 points in S2) and one point for verbalizing guilt within S2 (e.g. "I am sorry, that was my fault", "I'm sorry, I didn't mean to do that", "It's on me, I can fix it") (0-1 points in S2). This resulted in a score ranging from 0-3 displaying how much guilt-related behavior the child showed, composed of two possible achievable points for reparative behavior in S1 and S2 and one for verbalization in S2. Forty percent of all children were coded again by another trained blinded coder, resulting in a good interrater reliability of Cohens $k = .84$.

v. Procedure and Coding of Cognitive functions

To control for cognitive functions, we computed a subtest out of the *Vienna developmental test* batterie (WET) by Kastner-Koller & Deimann (2002). The test can be used to diagnose the general level of development of children aged 3 to 6 years. All relevant functional areas of development in this age group (motor skills, visual perception, memory, cognitive, linguistic, and social-emotional skills) can be recorded. For the purpose of this study, we relied on the subtest *Analogue Thinking*. This specific subset is supposed to assess cognitive development. The test contains 15 items. Each item consists of one sentence that is read out by the experimenter and should be completed by the child. All items contain pairs of opposites, e.g., the sentence "The oven is hot, the fridge is…" should be supplemented with the word "cold" by the child. Children score with one point for each correct answer, which means a sum score ranging from 0-15 is possible. According to the manual, test-retest-reliability is .86 (Kastner-Koller & Deimann, 2002).

II. Further Test Statistics

i. Study 1

Table 16 - *Regression Coefficients of Predictors on Children's Verbal Self-Concept (VSC) with 4 Years*

	B	*β*	SE	*p*
Model 1: Maternal Sensitivity (T1) as predictor				
Intercept	4.00**	12.70	.32	<.001
Sensitivity	.08	1.37	.06	.173
Model 2: Prosocial behaviors (T2) as predictor				
Intercept	4.24**	29.94	.14	<.001
Helping	.08†	1.78	.05	.077
Sharing	.01	.33	.04	.955
Comforting	.00	-.06	.04	.742

Note. Multiple linear Regression model with imputed data
† indicates p <.1; * indicates p < .05., ** indicates p < .001

Table 17 - *Regression Coefficients of Predictors on Children's Physical Self-Concept (PSC) with 4 Years*

	B	*β*	SE	*p*
Model 1: Maternal Sensitivity (T1) as predictor				
Intercept	3.70**	10.45	.35	<.001
Sensitivity	.07	1.00	.07	.320
Model 2: Prosocial behaviors (T2) as predictor				
Intercept	4.16**	25.61	.16	<.001
Helping	-.03	-.64	.05	.522
Sharing	.07	1.35	.04	.178
Comforting	-.06	-1.11	.05	.269

Note. Multiple linear Regression model with imputed data
† indicates p <.1; * indicates p < .05., ** indicates p < .001

Table 18 - *Results of Mediation Analysis with Moral Self-Concept with 4 Years as the Outcome Variable Separately for the four EA Scales*

Sensitivity (T1)				
Mediator	Path	*ß*	*p*	95% CI
Sharing behavior (T2)	a	-.13	.308	[-.37;.12]
	b	.12*	.006	[.03;.20]
	c	.20*	.007	[.06;.34]
	c'	-.02		[-.05;.01]
Comforting behavior (T2)	a	.50**	<.001	[.31;.69]
	b	.23**	<.001	[.12;.34]
	c	.07	.378	[-.08;.21]
	c'	.12*		[.06;.18]
Structuring (T1)				
Mediator	Path	*ß*	*p*	95% CI
Sharing behavior (T2)	a	-.08	.450	[-.32; .16]
	b	.12*	.008	[.03;.20]
	c	.20*	.004	[.07;.34]
	c'	-.01		[-.05;.02]
Comforting behavior (T2)	a	.35**	<.001	[.15;.54]
	b	.23**	<.001	[.12;.33]
	c	.11	.100	[-.02;.25]
	c'	.08*		[.03;.14]
Non-intrusiveness (T1)				
Mediator	Path	*ß*	*p*	95% CI
Sharing behavior (T2)	a	-.18	.077	[-.38;.02]
	b	.12*	.010	[.03;.20]
	c	.07	.269	[-.05;.19]
	c'	-.02		[-.05;.00]
Comforting behavior (T2)	a	.32**	<.001	[.16;.49]
	b	.26**	<.001	[.15;.36]
	c	-.04	.543	[-.16;.08]
	c'	.08*		[.04;.13]
Non-hostility (T1)				
Mediator	Path	*ß*	*p*	95% CI
Sharing behavior (T2)	a	-.23	.091	[-.56;.04]
	b	.13*	.004	[.04;.21]
	c	.29*	.001	[.11;.46]
	c'	-.03		[-.09;.01]
Comforting behavior (T2)	a	.38*	.003	[.13;.63]
	b	.23**	<.001	[.12;.33]
	c	.17	.058	[-.01;.34]
	c'	.09*		[.03;.15]

Note. If the confidence interval of path c' does not include zero, it indicates that the **indirect effect** is significantly different from zero at the chosen confidence level (95%). Path a: effect of the predictor on the mediator; path b: effect of the mediator on the outcome variable; path c: *direct* effect of the predictor on the outcome variable; c': *indirect* effect of the predictor on the outcome variable

ii. Study 2

Table 19 - *Correlations of all Variables in Study 2*

		HSC		SSC		CSC		VSC		PSC		Coherency MSC		Coherency OSC	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
HSC	T1	--													
	T2	.14	--												
SSC	T1	.41**	.05	--											
	T2	.05	.20*	.17	--										
CSC	T1	.48**	.05	.23*	.00	--									
	T2	.18	.28**	.07	.38**	.11	--								
VSC	T1	.29**	.24*	.13	.10	.13	.02	--							
	T2	.95	.28**	-.06	.23*	.03	.26**	.30**	--						
PSC	T1	.22*	-.06	.21*	.09	.10	.14	.18†	.03	--					
	T2	.00	-.06	.07	.04	-.06	.05	-0.16	.09	.31**	--				
Coherency MSC	T1	.11	.00	.26**	.05	.18	-.04	-.08	.11	-.11	.08	--			
	T2	.00	.26**	.13	.28**	.03	.30**	.17	.06	.08	-.01	.26*	--		
Coherency OSC	T1	.07	-.02	.05	-.06	.06	-.01	.32**	.18	.41**	-.01	.23*	.30**	--	
	T2	.11	.05	.03	.03	-.08	.05	.08	.26**	.12	.38**	.24*	.23*	.12	--
PPVT	T1	.01	-.1	-.04	-.02	-.08	-.19	.03	.08	-.07	-.19	.19	-.16	.06	.07

Note. † $p < .1$ * $p < .05$ ** $p < .01$. HSC= Helping self-concept; SSC= Sharing self-concept; CSC= Comforting self-concept; PSC= Physical self-concept; VSC= Verbal self-concept; OSC = Other self-concepts (verbal & physical); PPVT: Peabody Picture Vocabulary Test

iii. Study 3

Table 20 - *Test Statistics for Regression Models 3 and 4 with Guilt-Related Behavior as Dependent Variable*

Variable	Model 3			Model 4		
	B	SE	p	B	SE	p
Constant	.07	.33	.820	-.10	1.57	.948
HSC	.02	.07	.807	.01	.07	.863
SSC	.08	.07	.216	.09	.07	.186
CSC	.11*	.05	.021	.11*	.05	.017
ToM	-.07	.04	.078	-.05	.04	.234
Age(month)				.01	.02	.575
WET				-.06	.04	.144

Note. HSC=Helping self-concept; SSC=Sharing self-concept; CSC=Comforting self-concept; ToM=Theory of mind score; WET=Cognitive abilities
*p <.05; ** p <.001

iv. Study 4

Table 21 - *Domain-Specific Cross-Lagged Models*

	Helping			Sharing			Comforting		
Relation	B	*SE*	*p*	B	*SE*	*p*	B	*SE*	*p*
Stability (autoregressive paths)									
Self-Concept T1 → Self-Concept T2	.039	.073	.601	**.256**	.082	<.001	.093	.070	.184
Self-Concept T2 → Self-Concept T3	**.255**	.073	<.001	.089	.082	.277	-.047	.075	.529
Behavior T1 → Behavior T2	.069	.085	.416	**.152**	.071	.033	.082	.081	.312
Behavior T2 → Behavior T3	.048	.073	.51	**.243**	.09	.007	.060	.083	.468
Cross-Lagged Paths									
Self-Concept T1 → Behavior T2	-.001	.077	.990	.025	.071	.727	.039	.081	.628
Self-Concept T2 → Behavior T3	.031	.071	.664	-.096	.065	.144	**.247**	.081	.001
Behavior T1 → Self-Concept T2	-.072	.074	.329	.100	.067	.137	**-.159**	.077	.038
Behavior T2 → Self-Concept T3	-.027	.071	.709	.000	.079	.997	**.210**	.072	.003
Regression by Age									
Age T1 → Self-Concept T1	**-.156**	.059	.008	**-.091**	.041	.027	-.001	.107	.995
Age T1 → Behavior T1	-.082	.072	.260	-.029	.066	.655	**.153**	.050	.002
Age T2 → Self-Concept T2	-.037	.031	.234	*.066*	.04	.098	.015	.048	.753
Age T2 → Behavior T2	-.052	.037	.155	-.005	.03	.873	.02	.032	.530
Age T3 → Self-Concept T3	**.160**	.058	.006	*-.102*	.058	.078	-.092	.061	.134
Age T3 → Behavior T3	.012	.075	.877	-.036	.055	.508	-.083	.063	.19
Correlations									
Behavior T1 – Self-Concept T1	-.101	.075	.177	-.097	.076	.204	.036	.068	.601
Behavior T2 – Self-Concept T2	.106	.072	.140	.067	.077	.384	**.267**	.068	<.001
Behavior T3 – Self-Concept T3	**.145**	.066	.027	.068	.073	.350	-.005	.068	.944

Note. Bold B-values indicate significant paths (p <.05), italics indicate a p-value <.1.