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Analysing Theoretical Frameworks of Moral Education through Lakatos's Philosophy of
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Abstract

The structure of studies of moral education is basically interdisciplinary; it includes moral philosophy, psychology, and educational research. This essay systematically analyses the structure of studies of moral educational from the vantage points of philosophy of science. Among the various theoretical frameworks in the field of philosophy of science, this essay mainly utilizes the perspectives of Lakatos's research programme. In particular, this essay considers the relations and interactions between different fields, including moral philosophy, psychology, and educational research. Finally, the potential impacts of the new trends emerging from natural sciences that seem to be challenging to existing theoretical frameworks of moral education are examined using the vantage points of philosophy of science.

Keywords: moral education, moral psychology, moral philosophy, science of philosophy, systematic analysis

Introduction

Moral education is usually defined as a form of education that aims to promote students' moral development and character formation. Nucci and Narvaez (2008) suggest that there are three mainstream theoretical frameworks of moral education: virtue ethics, moral reasoning, and moral emotion-based education. Although there are several criticisms to this trichotomy of moral educational theories (e.g., Kristjánsson, 2010a), these three theoretical frameworks have become significantly influential in the study of moral education. These streams are seen to be based on moral philosophical and psychological theories, which entail their own educational methodologies, when we examine their theoretical and conceptual structure. In fact, moral education is really an interdisciplinary field that includes and interacts with moral philosophy and moral psychology (Berkowitz, 1997).

However, very few previous studies have examined the structure and mechanics of these three mainstream theoretical frameworks. Of course, all moral theorists and educationists are actively participating in the debates in their respective fields to advocate their own theoretical vantage points and criticize those of others; in this process, they naturally and inevitably analyse their own and their counterpart's theoretical frameworks to strengthen their arguments. For instance, Kohlberg and his school (e.g., Thoma, 1986), and Gilligan (1982; 1993), were involved in fierce debates regarding the nature of morality and the moral domain; meanwhile, they critically analysed all related theoretical frameworks to indirectly substantiate their contentions. Scholars, such as Gibbs (in press), who attempt to integrate conflicting vantage points should also analyse other scholars' works, which will constitute the basis of their integrative theories. In addition, as observable in introductory-level textbooks of moral philosophy, psychology, and education, scholars summarize and introduce the overall structure and history of studies of moral

education. For instance, Lapsley's (1996) book of moral psychology gives a thorough introduction of various theories regarding moral philosophical basis, moral development, and moral education. Although these two types of meta-analyses (1. analyses for debates. 2. analyses for summarization and introduction) seem to 'analyse' existing theories, their analyses could be limited. First, analyses for debates might be biased in favour of the author's own standpoint. Second, although introductory works could 'introduce' the stream of theories more objectively, they usually enumerate various theories without a 'lens' for more systematic analyses.

Thus, this essay will theoretically examine the structure of moral education by utilizing the vantage points of philosophy of science. Since philosophy of science can tell us about the nature of knowledge, research methodology, interactions between the knowledge and society, and what can be defined as a science (or discipline), it will provide us a useful means of systematically analysing the questions of this essay: 'what are studies of moral education, and its related fields?' and 'what are they doing' (Rosenberg, 2005; Chalmers, 2007). The vantage points of philosophy of science will enable a 'meta-analysis' of studies of moral education, which would be more objective and systematic than analyses involved in debates or introductions, respectively. In addition, this essay will discuss challenges to contemporary studies of moral education from other fields — in particular, natural sciences. For instance, Haidt's (2001) social intuitionist model, which is based on neuroscientific and evolutionary research, proposes an impactful criticism of contemporary theories of human morality. It has the potential to threaten the basis of existing moral education, philosophy, and psychology, because it seems to be 'incommensurable' (Kuhn, 1992) with these existing theoretical frameworks. Thus, this essay will consider one additional question, 'how can scholars studying human morality cope with challenges from other fields, such as neuroscience and evolutionary biology?' from the

perspective of philosophy of science. The area of moral educational studies has recently become significant in the field of moral studies. Thus, the first part of this essay will provide a new philosophical framework to define the nature of, the necessary components of and the mechanics of moral educational studies in order to deal with this issue in a logical manner. Among various theoretical standpoints in the field of philosophy of science, this essay will concentrate on Lakatos's (1978) research programme to systematically analyse the structure of studies of moral education. The nature of Lakatos's standpoint and the reason for its use in the present study are explained in the next section.

Theoretical background: Philosophy of science

What is the nature of scientific knowledge and work? This question has been one of the most important questions in humanities and social sciences due to the rapid, accelerating development of natural sciences and technology. In particular, a sub-field in philosophy, philosophy of science, is dedicated to answering this question. Philosophers in this field have studied the nature of science, which can be distinguished from other fields, such as humanities.

Among the various writings of philosophers who have studied philosophy of science, Popper's (1965) seminal work can provide us with a useful inspiration. He mentions that science should be testable, falsifiable, and refutable. For instance, metaphysics or theology cannot be regarded as sciences, because their assumptions cannot be logically and empirically refutable. On the other hand, theories in natural sciences can be tested and even discarded when counterexamples are discovered. For example, important tenets of Newtonian mechanics, determinism, and single-event predictability were able to be refuted and replaced with quantum mechanics because it can be empirically tested (Knudsen & Hjorth, 2000; Beiser, 2003). According to Popper the advance of scientific knowledge thus occurs through continual

refutations (Thornton, 2013), and through continual refutations, scientific knowledge can approximate the truth. However, there are some limitations in Popper's philosophy. In particular, scientists do not actually work as Popper proposed. In fact, they do not completely discard their previous theory even when confronted with a counterexample (Burke, 2002). At the practical level, scientists would not easily discard their previous theoretical framework completely; instead, they usually become suspicious about the validity and credibility of the counterexample. They would repeatedly reinvestigate whether they made any methodological mistake until they discover crucial evidence that can cause a complete replacement of the existing theoretical framework with a newer and better one.

Given these shortcomings, philosophers attempted to develop an alternative philosophy of science that can explain the nature of scientific works better. Among the various resulting theoretical frameworks, Kuhn and Lakatos's frameworks have become most influential in the field of philosophy of science. These two philosophers have dealt well with the structure of scientific knowledge, scientific inquiries, and how an existing mainstream science is being conducted (McGuire, 1992). Thus, they could provide us with useful vantage points from which to systematically examine the structure of moral education and its related fields, as well as how they will cope with incoming challenges.

Kuhn's (1992) idea is based on the concept of the paradigm. When he explains the revolutions that occurred in the field of natural science, he uses this term to explain the very nature of scientific knowledge and what scientists are doing. Roughly speaking, a paradigm could be defined as a set of exemplars, texts, questions, puzzle-solutions, and a world-view that are shared among a group of scientists who established a consensus (Bird, 2011). A widely supported paradigm dominates a field; for instance, these days, an integrated set of Einstein's

relativity and quantum mechanics, quantum general relativity, is the mainstream paradigm in the field of physics (Gambini & Pullin, 2005). It defines questions that scientists should solve as well as how they should be solved. If an existing paradigm cannot successfully cope with counterexamples (e.g., an inconsistency between a predicted black-body radiation based on classical Newtonian physics and an actual observation, which constituted one stimulus for quantum mechanics [Beiser, 2003]), then this paradigm could be replaced with a new one. However, this paradigm shift does not occur immediately after the appearance of a counterexample, as per Popper's perspective (Thornton, 2013). In order to replace the existing paradigm with a new one, the level of perceived crisis awareness among scientists should increase enough to establish a consensus among them. Again, the most important criterion for deciding whether a paradigm shift occurs is an internal agreement among scientists. The new paradigm is incommensurable with the previous paradigm, and completely substitutes the whole world-view of scientists in the field as support shifts in its favour. The emergent paradigm should be consistent with the presented counterexamples.

Lakatos (1978) argues that scientific works are more 'rational' than Kuhn proposes. His argument starts from defining the concept of the (scientific) research programme. The research programme seems to be similar to Kuhn's paradigm, but these two are not completely identical to each other. Similar to Kuhn's paradigm, Lakatos's research programme provides scientists with the basis of their scientific inquiries. As its name, 'research programme,' indicates, it provides scientists with a set of research questions that they should solve, the mode of scientific inquiries, and research methodology. This research programme consists of two components: a hard core and a protective belt of auxiliary hypotheses. The hard core is the most central element of a research programme (e.g., Newton's three laws of motion in Newtonian mechanics). The

protective belt consists of a set of auxiliary hypotheses that support and are supported by the main ideas of the hard core (e.g., additional assumptions, such as the motion of stellar objects that support Newton's three laws); this can be strengthened by scientists' findings. However, Lakatos criticizes Kuhn for not taking human rationality seriously; he mentions, 'For Popper scientific change is rational or at least rationally reconstructible and falls in the realm of the logic of discovery. For Kuhn scientific change—from one "paradigm" to another—is a mystical conversion which is not and cannot be governed by rules of reason and which falls totally within the realm of the (social) psychology of discovery' (Lakatos, 1978, p. 9). It could be interpreted that there is a better research programme than others, and the change of the mainstream science and the research programme does not occur without any rational reason, as shown in Kuhn's explanation of scientific revolution engendered by the emerging consensus among scientists. Scientific theory does not merely change, but advances, according to Lakatos. A research programme is being amended (e.g., added to ad-hoc, fixing a protective belt of auxiliary hypotheses) to explain more phenomena better. If a certain research programme encounters significantly threatening counterexamples and cannot cope with them by reinforcing its protective belt, then the hard core could be replaced with another, and the whole research programme could change. Unlike the paradigm shift in Kuhn's philosophy, the replacement of a research programme occurs gradually, with the corrosion of the protective belt and eventual supplanting of the hard core. The new research programme and hard core should explain more phenomena better; it is the direction of scientific advance, and is qualitatively different from Kuhn's scientific revolution, which emphasizes more subjective aspects of the society of scientists in the shift of paradigms.

In short, both Kuhn's paradigm and Lakatos's research programme propose the very basis of world-views, inquiries, and research methodologies among scientists. In addition, their theoretical frameworks demonstrate how scientists cope with a crisis generated by counterexamples and how a new trend could influence on an existing paradigm or research programme. These vantage points of philosophy of science can lead us in systematically and logically analyzing the existing theoretical frameworks of studies of moral education, as well as how to predict the future of the fields that are encountering challenges from new trends.

Between these two theoretical vantage points, this essay will more concentrate on Lakatos's philosophy of science. Although there have been some incidents that resemble changes in the theoretical trends in the field of studies of moral education, such as Piaget and Kohlberg's cognitive revolution (see Rest, 1994), these changes coexisted with, rather than supplanted, other theoretical frameworks, as revealed in the trichotomy of studies of moral education (Nucci & Narvaez, 2008). Thus, it could be inappropriate to explain the historical stream in the field of studies of moral education with Kuhn's idea of scientific revolution, which emphasizes the role of radical revolutions for the development of scientific theory. As will be explained in the next section, recent trends in the field of studies of moral education show that various existing theoretical frameworks, which have seemed to be in competition, are in fact integrating and, thus, filling one another's gaps. Moreover, the relativism underlying Kuhn's idea seem to limit the validity of his theory in the domain of studies of moral education. Although there have been continuous controversies, Kuhn's standpoint is usually regarded as relativistic (Harris, 1992). Thus, as Lakatos (1970) replied to Kuhn, we cannot test whether a theoretical framework is better at explaining existing phenomena and better to promote developmental changes among students without the 'rational reconstruction' of empirical theory. Since studies of moral

education mentioned in this essay are inevitably connected with a practice, moral education, moral educators should consider which theoretical framework that they would like to apply to their educational practice. In fact, in the field of studies of moral education, there is an actual goal that may determine whether a certain theoretical framework is better than others: the production of moral behavioural outcomes, as indicated by both Kohlberg (1975) and Durkheim (1961). The new framework should better explain the mechanism of moral behaviour, and should promote actual behavioural outcomes when applied. Therefore, this essay will value Lakatos's theory more than Kuhn's theory as a 'lens' for my analysis. The detail will be revisited towards the end of the next section.

Analysing moral education through the lens of philosophy of science

Existing frameworks of studies of moral education (virtue, moral reasoning, and moral emotion-based moral education) could also be analysed using the perspectives of philosophy of science. These three mainstream standpoints are dominating research programs in studies of moral education. Because each standpoint has its own objectives (or developmental goals), set of hypotheses, and research and educational methodology, they could be regarded as research programs in the field. Again, each theoretical framework guides scholars in defining morality, how to understand and interpret research findings, determining research questions that they should answer to, what they should investigate and pursue, and what they should teach to students; it constitutes the world-view of scholars in the field (Munzel & Power, 2008; Carr, 2008).

The existing theoretical sets are dynamic rather than static, similar to those at the frontier of natural sciences. The constituents of each framework, moral philosophy, psychology, and educational theory, are continuously interacting with and even constructing each other. Basically,

as the present essay proposes, moral philosophy provides moral psychology with the developmental ends (or ideals), and moral education with the goals of educational endeavours.

In the case of Kantian and Rawlsian moral philosophies, each has its own conception of the morally ideal person: a member of the Kingdom of Ends (Johnson, 2008) or a sympathetic impartial spectator (Rawls, 1971), which was originally suggested by Adam Smith (2009), respectively. These ideals could correspond to the developmental end in Kohlbergian moral psychology, and moral education: the acquisition of universal ethical principles (Kohlberg, 1981). Moral philosophers who assert the importance of moral emotion present an empathetic person as an exemplary moral person (e.g., Hoffman, 1982; Hume, 2006). Virtue ethics also proposes its own idea of an idealistic moral person. According to Aristotle (2009), a morally ideal person should possess moral virtues and practice the Golden mean in his or her life, with eudemonia resulting. In short, moral philosophy provides moral psychology with the 'Polaris' of the developmental course, and normatively justifies the psychological theory for moral education. Because moral philosophy is basically normative, it presents us with the morally ideal human that represents the exemplary morality that the theory contends. This moral ideal becomes the developmental end of a human being in moral psychology and education.

As a result, these philosophical theories also provide psychologies with a set of hypotheses and sketches of the developmental course. Moral psychology proposes an expected developmental course toward the developmental goal. The examples of the developmental courses are Kohlbergian stages (Kohlberg, 1981, 1984), as inspired by Kantian-Rawlsian moral philosophy; the developmental course of empathic distress (Hoffman, 2000) and care-giving (Gilligan, 1982) that are proposed by the proponents of moral emotion; and moral identity and moral character developmental models corresponding to virtue ethics (Higgins-D'Alessandro &

Power, 2005; Jeong & Han, 2013; Colby & Damon, 1992). In addition, based on these models of developmental courses, moral psychological theories can provide moral educators with the tools of moral education required to promote students' moral development. Dilemma discussion, the plus one strategy (Blatt & Kohlberg, 1975), and the just community approach (Kohlberg, Kauffman, Scharf, & Kickey, 1975) are the moral educational methods suggested by Kohlberg and colleagues.

Scholars who emphasize the importance of moral emotion also suggest methods to promote the development of moral emotion, such as authoritative parenting during early childhood (Damon, 1990) and the application of social-emotional learning theory to moral education in schools (Elias, Parker, Kash, & Dunkeblau, 2007). Moral education through habituation, which involves the training of moral perception, ethical decision making, and cooperative communal life, is a moral educational method proposed by virtue theorists (Silverstein & Trombetti, 2013).

Finally, each theoretical standpoint develops its own measurement to confirm its developmental hypotheses and the effect of educational programs. In the case of Kohlbergian theory, there are the Moral Judgment Interview method (Colby & Kohlberg, 1987), Neo-Kohlbergian's Defining Issues Test (Rest, Narvaez, Bebeau, & Thoma, 1999a), and dilemma-free Sociomoral Reflection Measure-Short Form developed by Gibbs and his colleagues (Gibbs, Basinger, Grime, & Snarey, 2007). Psychologists who propose the importance of emotional aspects of moral functioning also develop their own test methods, such as Real-Life Conflict and Choice Interview, to measure the development of care ethics (Brown, Tappan, & Gilligan, 1995). Lastly, Aquino and Reed (2002) invent a measurement for the self-importance of morality; and Colby and Damon (1992) and Damon (2008) suggest case-study and interview methods for

moral identity assessment. These psychological measurements are based on virtue theory and character development. Scholars working in each party use these measurements to confirm the effect of their educational programs and the developmental hypotheses; this is similar to the features of research programs, as proposed by Lakatos, which provide scholars with all necessary components for scientific inquiries.

On the other hand, empirical findings also reinforce their theoretical bases. First, findings of moral educational research support the theoretical frameworks of moral psychology. Moral educational methods that were presented above have theoretical and conceptual groundings in moral psychology: moral psychology suggests possible educational methods that would produce developmental changes toward its developmental goal, and provides measurement to assess the changes. For instance, Neo-Kohlbergians develop and test the effects of various educational programs for the improvement of each moral component — e.g., moral judgement of nursing (Duckett & Ryden, 1994), moral sensibility and judgement of dental practice (Bebeau, 1994) — for professions. In the field of moral education based on the idea of moral emotion, Stepien and Baernstein (2006) report that there have been more than ten empirical studies that developed educational programs to improve empathy and evaluated the effects of the programs in the field of general internal medicine. In the realm of virtue theory, some scholars propose that educational activities promote students' moral identity and moral self-development (Narvaez & Lapsley, 2009; e.g., service learning [Hart, Matsuba, & Atkins, 2008]); they also measure the effects of these programs. These findings that show the effects of educational interventions or programs would support and consolidate their psychological theoretical bases.

The influence of the empirical findings of moral psychology on moral philosophy seems to be relatively less clear than the influence of the findings of moral education on moral

psychology. However, some scholars contend that moral psychology could contribute to the development of the theory of moral philosophy. Scholars who emphasize the concept of the ‘psychologized morality’ or ‘naturalized morality’ argue that psychological inquiries into human moral functioning could validate theories of moral philosophy, and help us to understand moral philosophy better (e.g., Doris & Stich, 2005, 2006; Johnson, 1996; Lapsley & Narvaez, 2005; McKinnon, 1999). Finally, the present essay concludes that the layers (moral philosophy, psychology, and educational methods) in a research programme are continuously influencing and co-constructing each other. Again, it should be noted that a research programme should have all necessary theoretical components and provide scholars and practitioners with research and educational methodologies in order to be a well-constructed research programme of human morality.

The recent trend in the fields seems to be towards ‘integration.’ Although Kohlbergian theory has been challenged by virtue and moral emotion theories, these relatively new theories do not seem to completely replace the existing Kohlbergian standpoint; instead, they work with Kohlbergian theory to cope with the weak points of traditional standpoints. For instance, Gibbs (in press) suggests an integrative theoretical framework that entails both moral reasoning and moral emotion. Rest and colleagues (1999b) propose a four-component model that includes moral sensibility, judgement, motivation, and character, to develop a more sophisticated and plausible theoretical framework that explains the pathway toward moral behaviour. All of these trials take place to cope with the unresolved problems of the previous theory, such as a gap between moral judgement and actual moral behaviour.

At a more philosophical and ontological level, a virtue theorist, Kristjánsson (2010a) argues that the traditional trichotomy of studies of moral education (e.g., Nucci & Narvaez,

2008) should be rejected, and virtue ethics actually embraces the aspects of both moral reasoning and emotion-based moral philosophy. According to his argument, virtue ethics could be soft rationalism, which does not deny the role of both moral reasoning and emotion in moral functioning. In addition, for a better understanding of studies of moral education and educational programs, he suggests a more integrative framework of moral education, which is based on the trends in the domain of values education (Kristjánsson, 2006). In addition, he tries to embrace positive psychology, which is slightly distinct from the traditional moral psychological studies, from the perspective of virtue ethics (Kristjánsson, 2010b). In short, there have been various trials to integrate different theoretical frameworks in the fields to develop a better theory. These constitute an aspect of recent theoretical trends in the fields.

These trials are not intended to completely replace previous theories. Thus, the contemporary trend in the fields would not be a complete shift of paradigm that occurs between incommensurable paradigms, which is contended by Kuhn (1992). Rather, this trend would be similar to the expansion of a protective belt and the reinforcement of an existing hard core. For instance, in the case of Kohlbergian psychology, the core of the traditional Kohlbergian research programme has not been completely rejected yet; it still coexists with newer research programs, such as the Neo-Kohlbergian research programme, which is an integrative research programme (Rest, Narvaez, Thoma, & Bebeau, 2000). Previous theoretical frameworks were not completely eliminated in the fields; instead, they have usually become a constituent or component in a more integrative, novel theoretical framework (e.g., moral judgement component in the four-component model, which originated from Kohlberg's developmental theory).

At the practical level, the integration seems to occur more vigorously. Lickona (1996) contends that moral education should comprehensively include trainings for moral thinking,

feeling, and behaviour. In addition, Berkowitz (2002) and Berkowitz, Battistich, and Bier (2008) suggest that a character educational programme should include various educational components, from the practice of moral reasoning to the acquisition of moral virtues. These studies attempt to integrate all of the three vantage points (moral reasoning and cognition, moral emotion, and moral virtues) at the practical, educational level. In addition, at the national curricular level, moral education curriculum in Korea can be an example of a moral education curriculum that emphasizes all three domains. For instance, subjects related to moral education and ethics in Korea present a total of twenty moral virtues; meanwhile, they provide students with chances to practice their moral reasoning and moral emotional skills (Roh, 2004). In short, moral educators endeavour to utilise all of three vantage points in the field of moral education to promote students' holistic moral development. They are continuously and vigorously integrating all standpoints in their teaching and school activities.

Moreover, given these trends at both theoretical and practical levels, Lakatos's research programme seems to better explain actual situations that are occurring in the fields than Kuhn's theory does. Since existing frameworks of studies of moral education have not been completely replaced with a newer one, and did not seem to be incommensurable with their counterparts, the mechanics in the field undermine Kuhn's idea. In fact, according to Lakatos's standpoint, a new, more developed research programme T2 'should have corroborated excess content relative to T1 and T2 should contain all the unrefuted content of T1' (Niiniluoto, 2011). In other words, 'T2 should have (in the sense of set-theoretical inclusion) more empirical successes, but fewer counter-exemplars than T1' (Niiniluoto, 2011). This represents Lakatos's philosophical account of how a research programme and contrary evidence conflict with each other and how to explain the actual occurrence of scientific progress. This is more plausible than Kuhn's idea of a

complete paradigm shift that occurs between two conflicting, incommensurable paradigms. Given the recent trend of theoretical progress in the field of moral studies—that is, integration rather than the complete replacement of a theoretical framework—Lakatos’s account of scientific progress is more appropriate to depict the nature and mechanics of the fields than Kuhn’s philosophical standpoint. Finally, it is expected that by learning from Lakatos’s philosophy of science, scholars in the field will be able to better understand exactly what they are doing and even what they will do in the future. This point will be considered further in a discussion in the next section on how to cope with new trends.

However, there are some concerns about whether a philosophy of science can be utilised to explain the structure of moral studies, because there are significant qualitative differences between the two fields. The most significant concern is that the targets of a philosophy of science, natural sciences, are basically descriptive, while there are normative aspects involved in the works of moral studies, including moral educational practices (see Hunter, 2008). In particular, moral philosophy is the most problematic in the concerns because of its normative nature and method. However, although the aim of moral educational studies is norm driven, the research activities occurring in the field do not differ significantly from those in the sciences (Damon & Colby, in press). From the current perspective, moral philosophy provides an overarching goal and conceptual guidance to educational practices, and it is understood as an *a priori* value that is embedded in *a posteriori* research activities, as was previously proposed. Moral psychologists and educators set a desirable hypothetical developmental course based on the theoretical groundwork of moral philosophy and attempt to examine the effects of educational practices on the developmental course using various psychological, scientific and statistical methodologies (see Doris & Stich, 2005; Schlaefli, Rest, & Thoma, 1985). In fact, the philosophy of science

after Kuhn and Lakatos has also taken into account this value-laden aspect of the natural sciences, even in the philosophy of psychology as a subdivision of the philosophy of science (Howard, 1985). These philosophers have recognised the fact that value-related and normative aspects can be involved in experimental activities and that it is an important feature of scientific theory-building processes (Bogen, 2013). Thus, the framework of philosophy of science would be used to investigate ‘what is actually going on’ in the field of moral educational studies from the vantage point of this essay, which perceives moral educational studies as not only normative, but also scientific interdisciplinary fields.

Challenges from new trends

As proposed in the introduction, in the current essay, the influences of the recent trends in the field of natural science on the theoretical framework of moral educational studies are considered based on the theoretical structure and mechanism of moral educational studies suggested in the previous section. The standpoint presented here is that the complete theoretical framework of moral educational studies should be supported by all three theoretical components: moral philosophy, moral psychology and moral educational practices. If the new trends from natural science replace existing mainstream moral theories, they should provide substitutes for all three of those components, from philosophical accounts to educational practices; otherwise, they would merely partially supplement existing theories as an attachment to an auxiliary belt in Lakatos’s (1978) model. Indeed, some scientists (particularly sociobiologists, such as Wilson (1999)) have argued that all fields dealing with human nature—including ethics, psychology and other humanities and social sciences—would eventually follow the trend of ‘consilience’ and be explained by natural scientific accounts. Will existing moral theories be completely explained by and integrated into natural sciences in the end as Wilson contended? Thanks to the rapid

development of scientific methodologies to investigate human nature, the challenges from the natural sciences have become more serious, so this issue shall be discussed using the philosophical groundwork presented in the previous section.

Recently, new findings in the field of evolutionary psychology, neuropsychology, and other natural sciences show us some new aspects of human morality and moral functioning. Some of them are now challenging existing mainstream theoretical frameworks of moral philosophy, psychology, and education by questioning their theoretical basis. Haidt's (2001) social-intuitionist model can be considered one of the most striking new models that challenge existing thoughts. According to his model, our moral decision-making occurs intuitively, and our moral reasoning ability works epiphenomenally, to provide self-serving pseudo justifications for the result of the previous intuitive process. In addition, sociobiological and evolutionary approaches to human morality also propose a novel concept of the origin of human morality and moral functioning. For instance, sociobiologists and evolutionary psychologists argue that human altruism and prosociality have emerged over a long history of human evolution: direct and indirect reciprocities to punish free riders and antisocial persons have generated our inclination to altruistic and prosocial behaviour, and they have constituted the basis of human morality (e.g., Axelrod & Hamilton, 1981; Hawkes, 1993; Alexander, 1987). Similar to Haidt's social intuitionist model, this evolutionary psychological perspective also contends that human moral functioning is based on unconscious, intuitive processes that originated from the biological substrate (e.g., Wilson, 1982). As a result, reasoning and deliberation in moral functioning would become less important in this perspective. The concept of moral functioning in these new trends has something in common with the explanation of one of the mainstream moral psychological theories, such as the concept of Hoffman's (2000) moral emotion. In fact, new findings from

evolutionary psychology suggest that our morality can exist in a form of emotions that provoke people to care for others' welfare, to cooperate, to follow social norms, and deter them from cheating and other moral transgressions (Greene & Haidt, 2002).

However, the mainstream moral psychology based on moral education is fundamentally different from these new trends. Moreover, the present essay contends that although the new trends are scientifically sound and interesting, they cannot totally substitute the existing research programs in the field of studies of moral education given the fundamental difference between these two vantage points. First, the new trends do not seriously consider their philosophical or normative grounds. Unlike traditional mainstream moral psychologists, who have attempted to justify their developmental model and objective with moral philosophy, the scholars in evolutionary psychology and sociobiology try to build moral norms based on scientific findings (e.g., Krebs & Janicki, 2004). Thus, they are not very interested in building a developmental model or developmental goal, or in what should be pursued in moral education. Second, although some of them are studying innate human morality through investigating early childhood subjects (e.g., LoBue, Nishida, Chiong, DeLoache, & Haidt, 2011), they are not strongly interested in how environmental factors — in particular, social and educational factors — influence the development of human morality and moral functioning. Because of these two reasons, the new trends do not seem to provide rich educational implications as manifested to date.

In the previous section, this essay contended that contemporary mainstream standpoints should have philosophical grounds (to justify developmental goal and direction), developmental psychological theory and methodology, and educational methods; these components are necessary to constitute a well-established paradigm or research programme in the field of studies of moral education. However, the new trends from natural science do not provide scholars with

the sum of these necessary components. As philosophers, such as Kuhn and Lakatos, contend, a novel paradigm or research programme cannot completely replace an existing one unless it provides scientists with a composition of a new world view, research question(s), methodology, exemplar, and other components of scientific inquiries. Thus, the new scientific studies of human moral functioning, as they are at present, would not totally substitute existing vantage points in the field of studies of moral education.

The new trends cannot completely substitute the hard cores of existing vantage points, or provide a complete set of theoretical and practical framework, from a moral philosophical justification to educational method. They would strengthen the auxiliary belts of the existing perspectives, rather than replace them. In fact, there have been several trials to utilise new scientific findings to improve existing moral psychological and educational theories. For instance, Narvaez and Lapsley (2005) propose moral expertise, and Narvaez (2008) suggests Triune Ethics. Although the former imports some aspects of the intuitionist model, it has a firm developmental goal and model based on existing moral philosophical and psychological theories: the moral expertise model pursues the integration of moral deliberation and moral intuition and pursues internalized moral expertise that can enable us to solve moral problems intuitively (and correctly). In addition, Narvaez (2008) tries to apply neuroscience and evolutionary psychology, but grounded on existing theoretical frameworks; she asserts three different domains of morality — the ethics of security, engagement, and imagination — based on existing moral philosophy and psychology, and suggests the overarching developmental goal, building a full moral personality, and how to induce appropriate developmental changes. Thus, the new trends could support and strengthen existing vantage points, rather than completely substitute them.

Scholars in the field of evolutionary psychology and natural science could suggest a novel model of human moral functioning based on their own scientific findings; these could be logically sound and scientifically valid. However, moral philosophers, psychologists, and, in particular, educators might respond: ‘so what?’ Because pure scientific theories cannot provide us with the ultimate goal and developmental endpoint that should be pursued in our educational endeavours, the new theories will not be able to replace existing perspectives unless they provide us with all necessary theoretical and practical components. In fact, as Kristjánsson (2012) argues, psychological investigations of moral development could not be appropriately conducted without any moral philosophical consideration, because the epistemological nature of moral developmental studies could not be completely value-neutral; rather, it should deal with an issue of normative justification. Moreover, Kristjánsson (2007) contends that psychological inquiries on human morality could not be successful, if they are not firmly based on moral philosophical ground. To support this idea, this essay shall propose several reasons why the new trends based on the natural sciences of human morality, particularly evolutionary and brain studies, cannot completely substitute for an existing research programme of moral educational studies that includes normative, prescriptive and irreducible aspects.

First, the gap between description and prescription can be problematic. Although one of the most important sources of natural scientific investigations on morality, the history of human evolution, can tell us what is ‘good’, in terms of evolutionary fitness (Flanagan, Sarkissian, & Wong, 2008), it does not necessarily imply that we ‘ought’ or ‘should’ do that which is deemed good. In other words, a fact originating from evolutionary history would produce a value judgement about what is ‘good’, however, it does not necessarily mean that we must do it in that way (see Carr, 2002). Again, as Kristjánsson (2013) argued, although a descriptive fact would

produce a result of a value judgement about goodness, it has not necessarily resulted in a certain moral prescription, and consequently, there is a qualitatively distinctive gap between 'is' and 'ought'. In addition, the problem of 'overdetermination' can also be a problem. For instance, although our behaviour could be determined by our inherited instinct, which has been constructed through the history of evolution, this instinct cannot make us speculate about the certain reasons for our behaviour at the moment, and instinct cannot fully explain why this sort of reasons are being speculated upon by us. In other words, if we suppose that our evolutionary history or instinct also determines the reasons for our behaviour in our mind, then we could make the error of overdetermination (FitzPatrick, 2008). Thus, although we can get a hint about what is 'good' to do from the scientific investigations of morality, and they do not show us 'how' and 'why' we act in a certain manner, then will it be fine to teach only what is good to do or what we should do for students in moral education? This cannot be. In fact, it has been widely accepted by scholars in the field of education that, in addition to the facts about what to do, we, as moral educators, should also teach why we do what we should do and then speculate and reflect on the reasons for our decision regarding our students (e.g., Berkowitz & Grych, 1998; Schuitema, Dam, & Veugelers, 2008). In addition, we should appreciate that this aspect of moral education, which cannot be fully explained by natural scientific accounts of morality, is closely related to an ability to solve significant and complicated social problems (e.g., Dukerich, Elm, & Vollrath, 1990; Kennedy, Felner, Cauce, & Primavera, 1988).

Second, evolutionary adaptability, which is the source of goodness in naturalized ethics, cannot always be an acceptable standard in our lives. Moral philosophers who support the vantage point of naturalized ethics argue that a certain naturalized moral rule is justifiable when it can serve for the enhancement of the biological adaptability of humankind as a species in a

society or community; it is then perceived as a categorical imperative by each individual human and provides a motivational force for him/her (Flanagan et al., 2008). However, here we can discover what this basic proposition of evolutionary ethics and psychology does not tell about moral educational studies. For instance, if a certain moral norm in a community, which has contributed significantly to the maintenance of social order and enhanced the evolutionary adaptability of the community, has also forced a minority of community members to sacrifice their welfare to a significant degree for the sake of the community as a whole, then is this norm acceptable given its contribution to social order maintenance and evolutionary adaptability? If it is not, then how can we teach our students that this is morally wrong and that they should endeavour to correct this problem, particularly if we rely only on the normative ethics originated from evolutionary studies? This extreme example would show why moral philosophical considerations, such as Kohlberg's moral philosophical accounts (Kohlberg, 1981), in addition to naturalized ethics, are needed to conduct moral education and finally to enhance general human rights and welfare.

Third, a qualitative difference between the academic nature of the natural sciences of morality and educational studies would also be problematic. As Kohlberg and Mayer (1972) contended, not only moral education, but also education in general, pursue development, set a rational developmental end, and are progressive. Of course, the findings of natural scientific inquires, particularly those of sociobiology and evolutionary psychology of human morality, would provide scholars in related fields with invaluable supporting data for their practical decision-making processes about what should be pursued in moral education and how educators should teach their students. However, the natural sciences cannot completely conduct these practical judgements on behalf of the existing research programmes in the field of moral

educational studies, as proposed by this essay. As a result, the fields in the realm of natural science cannot completely be a substitute for the current research programmes of moral educational studies. Why can they not do so? It is because of the difference in the nature of the fields. Basically, natural scientific investigations on morality, which utilise the naturalistic approach to ethics, are retrospective rather than proactive; they investigate the tendency and form of our moral behaviour, which has been established and carved on our genes through the history of evolution, from the evolutionary, historical, and experimental facts (Richerson & Boyd, 2004). Thus, although they can 'advise' what would be 'good', given the findings from the historic background of human evolution and brain formulation, they cannot decide what we 'should' pursue and how we 'should' teach to our children to be prepared for the future by themselves; this task of practical decision-making processes is the job of moral philosophers, moral psychologists and moral educators, none of whom relies solely on natural scientific methods and findings.

Consequently, given these reasons, evolutionary ethics, neuroethics and other natural scientific investigations will not be able to explain all aspects of human morality, particularly the aspects associated with what should be taught and how teachers should teach during moral education. In other words, they will not be able to completely provide scholars in the field of moral educational studies with moral philosophical, psychological and educational accounts that are necessary to establish the foundation of moral educational studies, and finally to build a new and complete research programme. Thus, the new trends as they are cannot completely replace the current research programme in the field of moral educational studies.

However, given the arguments of moral philosophers who have supported the idea of naturalised ethics, it would be inappropriate to contend that moral studies are completely

normative, so natural, descriptive and empirical aspects should be eradicated from them. For instance, Flanagan et al. (2008) argued ‘naturalistic ethics ... will tell us what people are doing when they make normative judgments ... try to explain what goes on when people try to educate the young, improve the moral climate, propose moral theories, and so on’ (p. 12). Moreover, Doris and Stich (2005) contended that the results of scientific, empirical inquiries on human morality would provide moral philosophers with some hints to cope with most controversial issues in the field of moral philosophy, such as character, moral motivation, moral disagreement and thought experiments. Given these points, there is no reason to shun natural scientific accounts of human morality, and these accounts may even inspire moral philosophical debates, as proposed in this section (e.g., Jeong & Han, 2013). Although the natural sciences cannot completely substitute existing moral studies, they can at least support the studies. In short, moral philosophy, psychology and education cannot be separated from each other when they are implemented into real educational endeavours. In short, Moral philosophy, psychology, and education cannot be separated from each other when they are implemented into real educational endeavours.

The new trends could provide moral philosophers, psychologists, and educators, with useful inspirations about how to study human morality and moral functioning more systematically and scientifically, and how to improve existing educational methods based on the new scientific findings (Jeong & Han, 2010). For instance, the new trends could provide existing research programs with new, scientific investigational methodologies, such as neuroimaging, to better understand less studied aspects of human morality. In addition, by investigating more biological aspects of moral development, scholars will be able to examine which educational method is more effective to promote students’ moral development at the neural and biological

levels. Therefore, the new trends, which seem to lack of other philosophical, psychological, and educational elements, will work as a part of the auxiliary belts of existing perspectives, instead of a complete substitute of existing paradigms or hard cores. To maximize their utility in the domain of moral education, scholars in related fields should have a sound understanding of the meanings of scientific findings, and continuously try to apply their methodologies and implications.

Concluding Remarks

This essay examined the structure and mechanics of studies of moral education, which include moral philosophy, psychology, and educational methods, from the perspective of philosophy of science. To systematically analyse the nature of intellectual works in the fields, this essay applied Lakatos's theoretical framework, involving the research programme, in particular. Given the explanations of Lakatos's philosophy of science, various theoretical frameworks in the fields, such as the schools of moral reasoning, moral emotion, and virtue ethics, could be understood as established research programs, which consist of both hard cores and auxiliary supportive belts. Moreover, recent trends in the fields, such as modification and integration, could also be explained effectively with Lakatos's vantage point. These endeavours could be interpreted as the modifications and amendments of auxiliary belts to improve the explanatory power of a given theoretical framework. Kuhn's idea could not explain these situations very well, because these are not radical and complete changes of existing paradigms without any rational evaluation; instead, scholars modify and integrate existing research programs after examining whether a modified or integrated framework better explains the mechanism of moral behaviour and development.

Finally, this essay considered the influences of new trends, which are generated by natural sciences. As proposed above, because new scientific findings could not provide scholars with a full set of research programs, they would not substitute existing research programs in the fields. The new trends should provide scholars with moral philosophy, psychology, and educational methods if they aim to completely replace existing theories in the fields; however, they fail to do so. Thus, the new trends would contribute to the improvement of existing theoretical frameworks, by strengthening the auxiliary belts with their scientific findings and investigational methodologies. Moral philosophers, psychologists, and educationists should be aware of this aspect to appropriately adopt and cope with findings of related scientific endeavours.

Some scholars in the field of studies of moral education would be suspicious about why they should learn from the philosophical consideration on the structure and mechanics of the fields that is presented in this essay. In fact, scientists may also be dubious about whether they should learn philosophy of science, and whether philosophy of science can help their scientific inquiries. A famous physicist and Nobel laureate, Richard Feynman, mentioned, 'Philosophy of science is about as useful to scientists as ornithology is to birds.' ('Philosophy of science', 2013) However, birds do not have to know anything about ornithology to fly. Similarly, ordinary scientists, who are working in 'a' field, and only utilizing fairly routinized methodologies, might not have to know anything about philosophy of science. However, in the case of interdisciplinary research and a field at the frontier that is experiencing the shift of emergent scientific paradigms, the role of a philosophical consideration on fields becomes crucial. Pernu (2008) argues that philosophy of science can enable scientists to gain a proper overview of the fields. Again, he contends, 'gazing at things from a distance and getting a view of the big picture can provide us

with understating about science, just as ornithology provides understating about birds, even though the objects themselves are oblivious to it' (Pernu, 2008, p. 31).

Since studies of moral education are basically an interdisciplinary affair between moral philosophy, psychology, and educational methods, to be successful to do this affair, we should draw a 'big picture' that shows the relationship and interaction between the fields. In this process, the philosophical and systematic analysis that was conducted in this essay would enable scholars to step back and to see what is going on in the fields from a macroscopic perspective. Without this vantage point, it would be very hard to consider how to get useful ideas from a field to inspire research in another field. Although birds can fly without any knowledge about ornithology, they will not be able to develop a better theory of flying unless they carefully study ornithology, which will present the big picture of birds, and theories directly related to the matter of flying, such as anatomy, kinetics, and fluid mechanics. Moreover, the context of the present essay is more complicated: moral theorists and educationist should consider how to answer to the challenges from new trends of natural sciences, and how to apply the finding of the scientific inquiries of human morality and moral functioning to their academic and educational affairs. An engineer cannot insert a newly developed part to an electric device to improve its performance without a blueprint or circuit diagram that provides her with information about how the device is working. Analogously, without a sophisticated big picture that shows the structure and mechanics of existing theoretical components in the field of interdisciplinary studies of moral education, we cannot predict the potential impacts of the new trends, and, finally, cannot consider how to properly utilise the new trends to improve the field. This is the reason why this essay attempted to systematically analyse and present the structure and mechanics of

interdisciplinary studies of moral education. It is hoped that this essay will contribute to the development of both theoretical and practical aspects of moral education.

References

- Alexander, R. D. (1987). *The Biology of Moral Systems*. Hawthorne, NY: Aldine de Gruyter.
- Aquino, K., & Reed, II, A. (2002). The Self-Importance of Moral Identity. *Journal of Personality and Social Psychology*, 83(6), 1423-1440. doi: 10.1037//0022-3514.83.6.1423
- Aristotle (2009). *Nicomachean Ethics*. (W. D. Ross Trans.). Retrieved from <http://classics.mit.edu/Aristotle/nicomachaen.html>
- Axelrod, R. & Hamilton, W. D. (1981). The evolution of cooperation. *Science*, 211, 1390-1396.
- Bebeau, M. J. (1994). Influencing the Moral Dimensions of Dental Practice. In J. R. Rest & D. Narvaez (Eds.), *Moral Development in the Professions: Psychology and Applied Ethics* (pp. 121-146). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Beiser, A. (2003). *Concepts of Modern Physics 6th ed.* Boston, MA: McGraw Hill.
- Berkowitz, M. W. (1997, March). *Integrating Structure and Content in Moral Education*. Paper presented at the American Educational Research Association, Chicago, IL.
- Berkowitz, M. W. (2002). The Science of Character Education. In W. Damon (Ed.), *Bringing in a New Era in Character Education* (pp.43-63). Stanford, CA: Hoover Institution Press.
- Berkowitz, M. W., Battistich, V. A., & Bier, M. C. (2008). What Works in Character Education: What is Known and What Needs to be Known. In L. P. Nucci & D. Narvaez (Eds.), *Handbook of Moral and Character Education* (pp. 414-431). New York, NY: Routledge.
- Berkowitz, M., & Grych, J. (1998). Fostering Goodness: teaching parents to facilitate children's moral development. *Journal of Moral Education*, 27(3), 371–391. doi:10.1080/0305724980270307

- Bird, A. (2011). Thomas Kuhn. In Zalta, E. N. (Ed.), *The Stanford Encyclopedia of Philosophy*. Retrieved from <http://plato.stanford.edu/entries/thomas-kuhn/>
- Blatt, M. M., & Kohlberg, L. (1975). The Effects of Classroom Moral Discuss upon Children's Level of Moral Judgment. *Journal of Moral Education*, 4(2), 129-161.
- Bogen, J. (2013). Theory and Observation in Science. In Zalta, E. N. (Ed.), *The Stanford Encyclopedia of Philosophy*. <http://plato.stanford.edu/entries/science-theory-observation/>
- Brown, L. M., Tappan, M. B., & Gilligan, C. (1995). Listening to Different Voices. In W. M. Kurtines & J. L. Gewirtz (Eds.), *Moral Development: An Introduction* (pp. 311-335). Boston, MA: Allyn and Bacon.
- Burke, T. E. (2002). Conjecture and Refutation. In G. H. R. Parkinson (Ed.), *An Encyclopedia of Philosophy* (pp. 205-223). London: Routledge.
- Carr, D. (2002). Moral Education and the Perils of Developmentalism. *Journal of Moral Education*, 31(1), 5-19. doi:10.1080/03057240120111409
- Carr, D. (2008). Virtue Ethics and the Influence of Aristotle. In D. Fasko, Jr. & W. Willis (Eds.), *Contemporary Philosophical and Psychological Perspectives on Moral Development and Education* (pp. 41-59). Cresskill, NJ: Hampton Press.
- Chalmers, A. F. (2007). *What is this thing called science? 3rd ed.* Open University Press.
- Colby, A. & Damon, W. (1992). *Some Do Care*. New York, NY: Free Press.
- Colby, A., & Kohlberg, L. (1987). *The Measurement of Moral Judgment Vol. 2: Standard Issue Scoring Manual*. Cambridge, UK: Cambridge University Press.
- Damon, W. (1990). *The Moral Child: Nurturing children's natural moral growth*. New York, NY: The Free Press.

Damon, W. (2008). *The Path to Purpose*. New York, NY: Free Press.

Damon, W., & Colby, A. (in press). Why a true account of human development requires exemplar research. In M. K. Matsuba, P. E. King, & K. C. Bronk (Eds.), *Exemplar methods and research: Quantitative and qualitative strategies for investigation New Directions in Child and Adolescent Development*. San Francisco, CA: Jossey-Bass.

Doris, J., & Stich, S. (2005). As a matter of fact: Empirical perspectives on ethics. In F. Jackson & M. Smith (Eds.), *The Oxford handbook of contemporary philosophy* (pp.114-152). Oxford: Oxford University Press.

Doris, J., & Stich, S. (2006). Moral psychology: Empirical approaches. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of philosophy*. Retrieved from <http://plato.stanford.edu/entries/moral-psych-emp/>

Duckett, L. J., & Ryden, M. B. (1994). Education for Ethical Nursing Practice. In J. R. Rest & D. Narvaez (Eds.), *Moral Development in the Professions: Psychology and Applied Ethics* (pp. 51-69). Hillsdale, NJ: Lawrence Erlbaum Associates.

Dukerich, J. M., L., N. M., Elm, D. R., & Vollrath, D. A. (1990). Moral Reasoning in Groups: Leaders Make a Difference. *Human Relations*, 43(5), 473–493. doi:10.1177/001872679004300505

Durkheim, E. (1961). *Moral Education*. New York, NY: Free Press.

Elias, M. J., Parker, S. J., Kash, V. M., & Dunkeblau, E. (2007). Social-Emotional Learning and Character and moral Education in Children. *Journal of Research in Character Education*, 5(2), 2007, 167-181.

FitzPatrick, W. (2008). Morality and Evolutionary Biology. In Zalta, E. N. (Ed.), *The Stanford Encyclopedia of Philosophy*. Retrieved from <http://plato.stanford.edu/entries/morality-biology/>

- Flanagan, W., Sarkissian, H., & Wong, D. (2008). Naturalizing Ethics. In Sinnott-Armstrong, W. (Ed.), *Moral Psychology Volume 1: The Evolution of Morality: Adaptations and Innateness*. Cambridge, MA: The MIT Press.
- Gambini, R., & Pullin, J. (2005). Classical and Quantum General Relativity: a New Paradigm. *International Journal of Modern Physics D*, 14(12), 2355-2360. doi: 10.1142/S0218271805007917
- Gibbs, J. C. (in press). *Moral Development & Reality: Beyond the Theories of Kohlberg, Hoffman, and Haidt*. New York, NY: Oxford University Press.
- Gibbs, J. C., Basinger, K. S., Grime, R. L., & Snarey, J. R. (2007). Moral judgment development across cultures: Revisiting Kohlberg's universality claims. *Developmental Review*, 27, 443-500.
- Gilligan, C. (1982). *In a Different Voice: Psychological Theory and Women's Development*. Cambridge, MA: Harvard University Press.
- Gilligan, C. (1993). Adolescent Development Reconsidered. In Garrod, A. (Ed.), *Approaches to Moral Development: New research and emerging themes* (pp. 103-132). New York, NY: Teachers College Press.
- Greene, J., & Haidt, J. (2002). How (and where) does moral judgment work?. *Trends in Cognitive Sciences*, 6(12), 517-523.
- Haidt, J. (2001). The Emotional Dog and Its Rational Tail: a Social Intuitionist Approach to Moral Judgment. *Psychological Review*, 108(4), 814-834. doi:10.1037/0033-295X.108.4.814
- Hart, D., Matsuba, M. K., & Atkins, R. (2008). The Moral and Civic Effects of Learning to Serve. In L. P. Nucci & D. Narvaez (Eds.), *Handbook of Moral and Character Education* (pp. 484-499). New York, NY: Routledge.

- Hawkes, K. (1993). Why hunter-gatherers work: an ancient version of the problem of public good. *Current Anthropology*, 34(4), 341-361.
- Harris, J. F. (1992). *Against Relativism: A Philosophical Defense of Methods*. Chicago, IL: Open Court.
- Higgins-D'Alessandro, A., & Power, F. C. (2005). Character, Responsibility, and the Moral Self. In D. K. Lapsley & F. C. Power (Eds.), *Character Psychology and Character Education* (pp. 101-120). Notre Dame, IN: University of Notre Dame Press.
- Hoffman, M. L. (1982). Affect and Moral Development. *New Directions for Child and Adolescent Development*, 16, 83-103.
- Hoffman, M. L. (2000). *Empathy*. New York, NY: Cambridge University Press.
- Howard, G. S. (1985). The role of values in the science of psychology. *American Psychologist*, 40(3), 255-265.
- Hume, D. (2006). *An Enquiry Concerning the Principles of Morals*. Retrieved from <http://www.anselm.edu/homepage/dbanach/hume-enquiry%20concerning%20morals.htm>
- Hunter, J. D. (2000). *The Death of Character: Moral Education in an Age without Good or Evil*. New York, NY: Basic Books.
- Jeong, C., & Han, H. (2010). Some potential contributions of sociobiology to moral psychology and moral education. *SNU Journal of Education Research*, 19, 167-188.
- Jeong, C., & Han, H. (2013). Exploring the Relationship Between Virtue Ethics and Moral Identity. *Ethics & Behavior*, 23(1), 44-56. doi: 10.1080/10508422.2012.714245
- Johnson, M. L. (1996). How moral psychology changes moral theory. In L. May, M. Friedman & A. Clark (Eds.), *Mind and morals: Essays on cognitive science and ethics* (pp. 45-68). Cambridge, MA: MIT Press.

- Johnson, R. (2008). Kant's Moral Philosophy. In Zalta, E. N. (Ed.), *The Stanford Encyclopedia of Philosophy*. Retrieved from <http://plato.stanford.edu/entries/kant-moral/>
- Kennedy, M. G., Felner, R. D., Cauce, A., & Primavera, J. (1988). Social Problem Solving and Adjustment in Adolescence: The Influence of Moral Reasoning Level, Scoring Alternatives, and Family Climate. *Journal of Clinical Child Psychology, 17*(1), 73–83.
- Kohlberg, L. (1975). The Cognitive-Developmental Approach to Moral Education. *The Phi Delta Kappan, 56*(1), 670-677.
- Kohlberg, L. (1981). *Essays on Moral Development, Vol. I: The Philosophy of Moral Development*. San Francisco, CA: Harper & Row.
- Kohlberg, L. (1984). *Essays on Moral Development, Vol. II: The Psychology of Moral Development*. San Francisco, CA: Harper & Row.
- Kohlberg, L., Kauffman, K., Scharf, P., & Hickey, J. (1975). The Just Community Approach to Corrections: A Theory. *Journal of Moral Education, 4*(3), 243-260.
- Kohlberg, Lawrence, & Mayer, R. (1972). Development as the Aim of Education. *Harvard Educational Review, 42*(4), 449–496.
- Knudsen, J. M., & Hjorth, P. G. (2000). *Elements of Newtonian Mechanics: Including Nonlinear Dynamics*, 3rd ed. New York, NY: Springer.
- Krebs, D., & Janicki, M. (2004). Biological Foundations of Moral Norms. In M. Schaller & C. S. Crandall (Eds.), *The Psychological Foundations of Culture* (pp. 125-148). Mahwah, NJ: Lawrence Erlbaum Associates.
- Kristjánsson, K. (2006). *Justice and Desert-Based Emotions*. Burlington, VT: Ashgate Publishing.

- Kristjánsson, K. (2007). Measuring Self-Respect. *Journal of the Theory of Social Behaviour*, 37(3), 225-242.
- Kristjánsson, K. (2010a). Emotion Education without Ontological Commitment?. *Studies in Philosophy and Education*, 23(1), 41-60.
- Kristjánsson, K. (2010b). Positive Psychology, Happiness, and Virtue: The Troublesome Conceptual Issues. *Review of General Psychology*, 14(4), 296-310.
- Kristjánsson, K. (2012). Virtue Development and Psychology's Fear of Normativity. *Journal of Theoretical and Philosophical Psychology*, 32(2), 103-118.
- Kuhn, T. S. (1992). *The Structure of Scientific Revolutions 3rd ed.* Chicago, IL: University of Chicago Press.
- Lakatos, I. (1970). History of Science and Its Rational Reconstruction. *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association, 1970*, 91-136.
- Lakatos, I. (1978). *The Methodology of Scientific Research Programmes: Volume 1.* Cambridge: Cambridge University Press.
- Lapsley, D. K. (1996). *Moral Psychology.* Boulder, CO: Westview Press.
- Lapsley, D. K., & Narvaez, D. (2005). Moral psychology at the crossroads. In D. K. Lapsley & F. C. Power (Eds.), *Character psychology and character education* (pp. 18-35). Notre Dame, IN: University of Notre Dame Press.
- Lickona, T. (1996). Eleven principles of effective character education. *Journal of Moral Education*, 25(1), 93-100.
- LoBue, V., Nishida, T., Chiong, C., DeLoache, J. S., & Haidt, J. (2011). When Getting Something Good is Bad: Even Three-year-olds React to Inequality. *Social Development*, 20(1), 154-170.

- McGuire, J. E. (1992). Scientific Change: Perspectives and Proposals. In M. H. Salmon, J. Earman, C. Glymour, J. G. Lennox, P. Machamer, J. E. McGuire ... K. F. Schaffner (Eds.), *Introduction to the Philosophy of Science* (pp. 132-178). Indianapolis, IN: Hackett Publishing.
- McKinnon, C. (1999). *Character, virtue theories, and the vices*. Peterborough, ON: Broadview Press.
- Munzel, G. F., & Power, F. C. (2008). Immanuel Kant's Influence on Jean Piaget and Lawrence Kohlberg's Approaches to Moral Education. In D. Fasko, Jr. & W. Willis (Eds.), *Contemporary Philosophical and Psychological Perspectives on Moral Development and Education* (pp. 19-39). Cresskill, NJ: Hampton Press.
- Narvaez, D. (2008). Triune ethics: The neurobiological roots of our multiple moralities. *New Ideas in Psychology*, 26(1), 95-119.
- Narvaez, D., & Lapsley, D. K. (2005). The Psychological Foundations of Everyday Morality and Moral Expertise. In D. K. Lapsley & F. C. Power (Eds.), *Character Psychology and Character Education* (pp. 140-165). Notre Dame, IN: University of Notre Dame Press.
- Narvaez, D., & Lapsley, D. K. (2009). Moral Identity, Moral Functioning, and the Development of Moral Character. In D. M. Bartels, C. W. Baumann, L. J. Skitka, & D. L. Medin (Eds.), *The Psychology of Learning and Motivation Vol. 50* (pp. 237-274). Burlington, MA: Academic Press.
- Niiniluoto, I. (2011). Scientific Progress. In Zalta, E. N. (Ed.), *The Stanford Encyclopedia of Philosophy*. <http://plato.stanford.edu/entries/scientific-progress/>
- Nucci, L. P., & Narvaez, D. (2008). Introduction and Overview. In L. P. Nucci & D. Narvaez (Eds.), *Handbook of Moral and Character Education* (pp. 1-7). New York, NY: Routledge.
- Pernu, T. K. (2008). Philosophy and the Front Line of Science. *The Quarterly Review of Biology*, 83(1), 29-36.

Philosophy of science. (2013, May 21). In *Wikipedia, The Free Encyclopedia*. Retrieved May 26, 2013, from http://en.wikipedia.org/wiki/Philosophy_of_science

Popper, K. R. (1965). *Conjectures and Refutations: The Growth of Scientific Knowledge*. New York, NY: Harper & Row.

Rawls, J. (1971). *A Theory of Justice*. Cambridge, MA: Belknap Press of Harvard University Press.

Rest, J. R. (1994). Background: Theory and research. Moral development in the professions: Psychology and applied ethics. In J. R. Rest & D. Narvaez (Eds.), *Moral development in the professions: Psychology and applied ethics* (pp. 1-26). Hillsdale, NJ: Lawrence Erlbaum Associates.

Rest, J., Narvaez, D., Bebeau, M., & Thoma, S. (1999a). A Neo-Kohlbergian Approach: The DIT and Scheme Theory. *Educational Psychology Review*, 11(4), 291-324.

Rest, J., Narvaez, D., Bebeau, M., & Thoma, S. (1999b). *Postconventional Moral Thinking: A Neo-Kohlbergian Approach*. Mahwah, NJ: Lawrence Erlbaum Associates.

Rest, J., Narvaez, D., Bebeau, M., & Thoma, S. (2000). A Neo-Kohlbergian Approach to Morality Research. *Journal of Moral Education*, 29, 318-396.

Richerson, P. J., & Boyd, R. (2004). Darwinian Evolutionary Ethics: Between Patriotism and Sympathy. In P. Clayton & J. Schloss (Eds.), *Evolution and Ethics: Human Morality in Biological and Religious Perspective* (pp. 50-77). Cambridge, UK: Wm. B. Eerdmans Publishing.

Roh, Y-R. (2004). Democratic Citizenship Education in the Information Age: A Comparative Study of South Korea and Australia. *Asia Pacific Education Review*, 5(2), 167-177.

Rosenberg, A. (2005). *The Philosophy of Science: a Contemporary Introduction 2nd ed.* New York, NY: Routledge.

- Schlaefli, A., Rest, J. R., & Thoma, S. J. (1985). Does Moral Education Improve Moral Judgment? A Meta-Analysis of Intervention Studies Using the Defining Issues Test. *Review of Educational Research, 55*(3), 318-352.
- Schuitema, J., Dam, G. ten, & Veugelers, W. (2008). Teaching strategies for moral education: a review. *Journal of Curriculum Studies, 40*(1), 69–89. doi:10.1080/00220270701294210
- Silverstein, A. & Trombetti, I. (2013). Aristotle's Account of Moral Development. *Journal of Theoretical and Philosophical Psychology*. Advance online publication. doi: 10.1037/a0031013
- Smith, A. (2009). *The Theory of Moral Sentiments*. New York, NY: Penguin Books.
- Stepien, K. A., & Baernstein, A. (2006). Educating for Empathy. *Journal of General Internal Medicine, 21*(5), 524-530.
- Thoma, S. J. (1986). Estimating Gender Differences in the Comprehension and Preference of Moral Issues. *Developmental Review, 6*, 165-180.
- Thornton, S. (2013). Karl Popper. In Zalta, E. N. (Ed.), *The Stanford Encyclopedia of Philosophy*. <http://plato.stanford.edu/entries/popper/>
- Wilson, E. O. (1982). *Sociobiology: the New Synthesis*. Cambridge, MA: The Belknap Press of Harvard University Press.
- Wilson, E. O. (1999). *Consilience: the unity of knowledge*. Vancouver, Canada: Vintage Books.