

## **Decision-making during the “Tweede Fase”: to what extent does this educational method correspond to the cognitive abilities of a child in the modern society?**

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### **Abstract**

This article will discuss the conception of the modern child, and what society demands of him. Together, society’s conception and demands of children form the basis of the working model in an educational system. Specifically of interest in this article is a feature of the Dutch educational system, known as the “Tweede Fase”. In this system, children are expected to make important decisions about their future, at a relatively young age. These decisions will likely exercise a decisive influence on the decisions they can make later in life, such as their choice of field of study. But are they really capable decision-makers at this point in their lives? What decisions do they make, and what choices do they have? What factors do they base their decisions on? These questions will be investigated from cognitive and neuroscientific perspectives, keeping in mind the realities of the developing brain. The present discussion will be based on Claessen’s article in this volume (2010). Some research suggests that certain skills which people need in order to make good decisions are not fully developed until young adulthood. Such information raises the question of whether a method like the “Tweede Fase” can be expected to be effective, given the actual cognitive abilities of young people in modern society.

**Keywords:** Tweede Fase, decision-making, adolescent brain, cognitive abilities, modern image of the child, Dutch educational system.

### **Introduction**

Each individual has to continuously adjust to the demands of the society in which he or she lives. Ten Brinke & Kanters (2010) have said the following about this phenomenon: “Society changes and develops at a fast pace, ideas and purposes change constantly and adults have no certainty as to the kind of future they are raising their children for”. In previous eras, the role of each individual in Western society was more or less self-evident. In today’s world, this certainty has vanished into thin air. This change has led to certain other developments. The “new” human being has to be flexible (Ten Brinke & Kanters, 2010). He or she needs to have a wide range of interests, skills and qualities in order to perform well under changing circumstances. It is not longer possible to fulfil a single function in society. One has to keep up with constant changes and varied obligations in both the public and private environment. All these factors mean that the child lives in a very different world, and, that each child in today’s world is faced with different expectations and prospects on the part of the larger society. The modern image of the child differs from the old image that defined childhood as something “in opposition to adulthood”, or a “becoming adult” (Ten Brinke &

Kanters, this volume). More and more is expected of the modern child and this leads to an image of the child defined as a “little adult”. The child has to make important and difficult decisions early in life. There is a lot of pressure involved and each decision has far-reaching consequences. Moreover, the content and consequences of possible choices are often ambiguous. Sometimes the possible choices are not even known.

The central question relating to these developments is whether the modern child is able to adapt to these changed demands. In other words, to what extent is the child able to make important decisions? The cognitive abilities that are necessary for them to make choices and think about the future consequences of these choices will form the core of this article. In the Dutch educational system, young people have to make important choices fairly early in their lives. The present study will draw upon the latest information from the field of cognitive neuroscience (Claessen, this volume). In his article Claessen suggests that young people are not yet good decision-makers because of their cognitive limitations. Some other influences on choice making will be briefly discussed within the context of the main focus of this article. In particular, an educational method called ‘Tweede Fase’ will be

discussed here. The main question this article will try to answer is: "To what extent does an educational form like "Tweede Fase" work, keeping in mind the cognitive abilities of adolescents in the modern society?"

#### **"Tweede Fase" – content, demands and choices**

In August 1998, the Dutch educational system underwent a structural change with the incorporation of the "Tweede Fase". This method applies to the final school years, starting in the 4<sup>th</sup> year at the Senior General Secondary Education (In Dutch: Hoger Algemeen Voortgezet Onderwijs or HAVO) and the Pre-University Secondary Education (In Dutch: Voorbereidend Wetenschappelijk Onderwijs or VWO). The most important goal of the "Tweede Fase" is to teach students how to learn and work independently. The rationale of this method is that such abilities are needed at higher educational levels, like Universities or Higher Vocational Education (In Dutch: Hoger Beroeps Onderwijs or HBO). A second important aim of this method is to foster a wide range of interests and abilities among students. At the end of the third school year, students are confronted with an important choice: they have to choose an area of concentration for future study. This means that they will abandon certain courses, while continuing to pursue others. The four possible areas of concentration, or "profiles" that one can choose from are: Culture & Society (C&M), Economics & Society (E&M), Nature and Health (N&G) and Nature & Technology (N&T). The "Inspectie van Onderwijs" (a general policy manual for the Dutch primary and secondary educational system) states the following: *"The main goal of these profiles is to make students sensitive to their own abilities and possibilities.[...] Choosing a profile implies a choice to follow a certain direction in higher education and thus a choice to follow a future career."* (Inspectie van Onderwijs, 2003).

In an overview of the "Tweede Fase", the Inspectie van Onderwijs (2003) states that every profile is tailored to one or more areas of concentration in higher education. This also means that each chosen profile corresponds to a limited number of possible areas of concentration for higher education that may be chosen after the student graduates from high school. This means that certain areas of concentration may forever be closed to an individual as a result of his or her choice of

profile. It can thus clearly be seen that choosing a profile is a very important decision in the life of a 14 or 15 year-old student.

Following this fundamentally important decision, there is another one that each child currently in the Dutch school system must make, either two (HAVO) or three (VWO) school years later. At that point, he or she must actually choose an area of concentration (or profile) for *higher* education. If the student has not previously taken the courses that are required for admission to a particular institute (because he or she has chosen a profile before that doesn't suit this area of concentration), he or she will have to complete these courses before he can apply for this direction. The problem is that such courses cannot be taken at his or her highschool. Instead, the Netherlands has special institutions that offer such courses, such as the James Boswell Institute ([ww.jbi.uu.nl](http://ww.jbi.uu.nl)). Although it is possible to enrol in such courses, many students and their families are unwilling to take this extra step, whether for financial reasons or because of other considerations. So, on the basis of his or her profile, cognitive abilities, experience in decision making and personal motivation, the contemporary Dutch adolescent is now faced with a second important life decision: choosing an area of concentration in higher education.

#### **The cognitive abilities of adolescents**

"To what extent does an educational method like the "Tweede Fase" work when we take into account the cognitive abilities of the children with whom it is used?" To answer this question, we need to know something about the cognitive abilities of adolescents. The specific information that is cited here is based on Claessen's (this volume) article about cognitive developments, which also appears in this volume.

Claessen draws a distinction between structural and functional developments in the brain, focusing on the prefrontal cortex. These brain structures are responsible for cognitive control, including the filtering of relevant information as well as planning and the inhibition of impulses (Blakemore & Choudhury, 2006, in Claessen). Structural changes are related to white and grey matter, whereas functional changes involve cognitive control that is exerted by certain brain regions (specifically the prefrontal cortex). An important process is called myelination. This process, which involves the development of a

protective layer on the axons of neurons, helps increase the speed at which neurons communicate, leading to a much higher speed of communication. This in turn leads to a higher cognitive complexity and the ability to combine information from different sources (Giedd, 2004 in Claessen). Research has shown that myelination in the prefrontal cortex is still developing in adolescents (Blakemore & Choudhury, 2006, in Claessen). This means that adolescents may have difficulties with selecting relevant information, planning their actions or inhibiting their impulses. Another important structural change noted by Claessen (this volume) involves “synaptic density”. This term refers to the fact that, during the early stages of life, a lot of useless communication patterns exist in the brain. Only when the process of “synaptic pruning” begins does the density of grey matter decrease, resulting in the gradual disappearance of such patterns. The outcome of this process is that the maturing individual can begin to think more clearly and select relevant information more effectively and efficiently. According to researchers, this process may continue well into adulthood (Claessen, this volume). These structural changes clearly illustrate that the adolescent brain is still developing, a fact which impacts upon the cognitive abilities of any given adolescent boy or girl. This phenomenon is illustrated by the following functional changes.

Researchers have demonstrated that certain developments in the brain continue until adulthood is reached (Sowell et al., 2001, in Claessen). This has implications for the cognitive abilities related to specific brain regions involved: mostly the prefrontal cortex. These regions are responsible for cognitive abilities like “response inhibition”, “working memory” and “prospective memory”. These are also the most important components of our cognitive control system, or the “executive function”. As noted earlier, these abilities play an important role in controlling thoughts and behaviour. Research on “response inhibition” (Yurgelun-Todd, 2007, in Claessen) has revealed that irrelevant activation in the prefrontal lobes diminishes as people get older. Working memory “is considered the ability to actively maintain information in order to use it in further processing” (Nelson et al., 2000, in Claessen). According to fMRI studies, some parts of working memory are still developing during puberty, a process that continues well into adulthood (Claessen, this

volume). “Prospective memory is a term that refers to the ability to keep in mind the intention to perform some action at a later point in time” (Blakemore & Choudhury, 2006, in Claessen). This particular category of memory is also dependent on the prefrontal cortex. MacInlay, Charman and Karmiloff-Smith (2003, in Claessen) have found that adults have a better prospective memory than children. This finding implies that younger people have more difficulty with planning. These results also mean that adolescents have limited cognitive abilities to foresee the consequences of their behaviour and of the choices that they make.

### **Other factors that may influence decision-making**

Other factors that may influence the process of making good choices are experience, information, an idea of the “real” world and motivation. The discussion of these factors below is mainly based on Stokking (2004).

The more experience one has with doing something, the easier doing that thing becomes. This is also true for making choices and understanding their consequences. In this way, a person learns how to cope with making decisions, and how to make the best possible choice when faced with such situations. It goes without saying that, in the vast majority of instances, a typical 14- or 15-year old in modern Western societies does not have much experience with making important choices. Until that point in their lives, most choices have probably been made for them by other people, and they did not feel like they had any say in these decisions. This lack of experience contributes to the difficulties young people encounter when they have to make important choices, like choosing a profile in highschool or deciding on their area of concentration for higher education (Stokking, 2004).

Being well informed about the content of various options is a crucial part of making a good choice. This is made clear by the demands of the “Tweede Fase”, where students have to make decisions quite early, but often do not have enough information about the different outcomes of the possible options they can choose. We have seen that children have difficulties with planning and foreseeing the long-term consequences of their behaviour (Claessen, this volume). Therefore, it is important to assure that all available information is provided to them, so that they do not have to search

for it themselves. In addition, it is important to check that these youth actually understand the information that has been given to them. If these crucial steps are not taken, the decision-making process for these teenagers can become very difficult indeed. These two factors contribute to the third point that influences decision-making, namely having a realistic idea about what “real world” is like. Partly because adolescents do not have enough information about their choices and partly because they lack experience in decision-making, they do not have a proper idea of how things work in the “real world” (Stokking, 2004). The future is not yet “alive” in their minds and they do not know what certain jobs or living circumstances actually involve (Stokking, 2004). This is also true for young people during the “Tweede Fase”, when they have to choose a profile that will strongly influence their future career path. At the point, that they are called upon to make such a decision, they are not fully aware of the practical future consequences of the choice that they are making, because the future is “still far away” in their minds.

A final point is motivation. If a person does not have enough information about possible options, lacks experience in making important choices, and thus does not foresee future consequences of different decisions, he or she will not be very motivated to make a choice at all. If a given individual does not know what a certain decision involves, then that decision has no real meaning for that individual. All of the aforementioned factors are important, and all of them influence the degree to which an individual knows what he or she actually wants (Stokking, 2004).

### **Where do we go from here?**

It is very important to be aware of the cognitive limitations of adolescents in order to know how they function. However, it is not enough to just know that they have trouble with planning and decision-making, and to foresee the consequences of these things. Something has to be done with this knowledge. Ansari and Coch (2006) offer three important practical recommendations on the basis of this information. First of all, they say that teachers have to be better educated about the cognitive abilities of children, so that they can understand the cognitive abilities and limitations of their students. Second, researchers have to display

the same awareness of these limitations. The third, and most important, recommendation is that teachers and researchers have to collaborate with one another. If these recommendations are followed, teachers will better understand the capabilities of their students, and researchers in turn will learn how to adjust their research outcomes to the demands of the “real world”. Some practical applications of this general advice could be workshops, discussions between students and their teachers, meetings between teachers and researchers, and so on (Ansari & Coch, 2006). These conclusions also apply to the importance of experience, information and motivation that has been previously discussed.

One example of an effort to accomplish these goals is called “The Real Game”. Stokking (2004) describes and evaluates the results obtained when he used this game at different highschools (VMBO, HAVO and VWO) in his article called “Playing with your future”. The goal of “The Real Game” is to give students more experience with real life by assigning them certain roles. Each participant is randomly assigned a certain job. The student gets information about the job, such as the income, responsibilities and vacation time involved. Each student carries out a number of different assignments and discusses each assignment with other students. In this way, participants gain more insight into “real life” and have a better idea about certain jobs and life circumstances. Based on Stokking’s (2004) evaluation, children do not think spontaneously about their future, and they do not search for information about it. There has to be some motivation for doing this, like being confronted with making a choice (Stokking, 2004). The problem is that by the time such motivation naturally arises, it is often too late for the individual, as important choices have already been made and it is now difficult or impossible to change course. Stokking (2004) recommends that schools should include a program like “The Real Game”: “If we want students to think about their future development and career, schools as well as teachers have to set an example by programming activities with this aim”. (Stokking, 2004). The results that have been obtained from using “The Real Game” have been promising. A program like this could be an important addition to the implementation of a method like the “Tweede Fase”. As things stand at present, the practical and “real” aspects of one’s

career choices are underrepresented within this system.

### Conclusion

Modern society has led to an image of the child that is different from that which prevailed in previous eras. In today's world, the expectations of children are greater in many important respects than they previously were. A child has to make important and difficult decisions early in life, in order to meet the demands of contemporary life (Ten Brinke & Kanters, 2010).

The main question in this article is whether an educational method like the "Tweede Fase" is effective, given the cognitive abilities of children and young adults. The method itself has been described, focusing on two important decisions that have to be made by a child in the present Dutch educational system: choosing first a profile and then an area of concentration in higher education. The importance of these decisions has been shown by demonstrating the limitations and consequences entailed by these choices.

The cognitive abilities of today's adolescents have been outlined, following Claessen's article in this same volume (Claessen, this volume). It has been shown that young people have more difficulty with planning, selecting relevant information and inhibiting their impulses. The adolescent brain is still developing, which contributes to the fact that adolescents have limited cognitive abilities to foresee the consequences of their behaviour and of the choices they make.

The "Tweede Fase" is a method that requires that important decisions be made early in life. These decisions also involve selecting relevant information and foreseeing the consequences of each possible choice. Based on previously discussed findings, it could be argued that a method like the "Tweede Fase" does not work well because of the cognitive abilities and limitations of the child and young adult. But this is just one possibility.

There are also other things that possibly could influence decision-making. Experience, information, an idea of the "real world" and motivation have been discussed here based on Stokking (2004), although there are certainly other factors that have not been discussed that could also be relevant (e.g. peer pressure). Because decision making is necessary in the modern world, we cannot escape this process. Important decisions will increasingly have to be made early in life. Keeping

this in mind, the most important question that emerges is how we can best help children and young adults to make the best possible choices, knowing that they have limited capabilities to foresee the consequences of these choices. Some factors have been shown to be useful in accomplishing this goal. Informing young people about their choices and making this information available early in the decision-making process is one factor. Interventions like "The Real Game" have also yielded promising results.

To what extent does an educational method like the "Tweede Fase" work, keeping in mind the cognitive abilities of adolescents? The answer to this question is difficult and raises several other questions. We have seen that the cognitive abilities of young people are not well suited to the demands for making difficult decisions imposed by the "Tweede Fase". But on the other hand, these decisions cannot be avoided indefinitely – at some point, they will have to be made. The important thing is to help young people with this decision-making process. This could include some changes in a method like the "Tweede Fase", such as allowing the possibility to make important decisions at some later point in one's education, or permitting a greater range of options after a certain profile has initially been chosen. The program should also include the provision by both schools and parents, of the necessary information and experiences that will enable students to make the best decisions possible. Here a component like "The Real Game" could help young people to understand the real-life content of various future career options.

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