

Bachelor Degree Project



Children of Divorce: Long-Term Psychological Effects and Neurological Consequences

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Emmie Olofsson

Supervisor: Joel Parthemore
Examiner: Paavo Pylkkänen

Abstract

This thesis has examined what long-term psychological and neurological effects that are apparent in children and adults who have experienced parental divorce. It was predicted that significantly more children and adult children from divorced families would have increased symptoms of mental disorders than children and adult children from married homes e.g., anxiety, depression, panic disorder, and generalized anxiety disorder. It was further predicted that parental divorce would negatively affect the neurological system in the offspring. The correlation between children of divorce and negative neurological effects was not found to be true. However, *adult* children of divorce have significantly lower baseline cortisol levels compared to adult children of marriage. Dysregulated cortisol levels are highly associated with the development of e.g., anxiety, depression, and brain damage. Parental divorce did not only influence how secretion of the hormone cortisol is regulated within adult children of divorce, but how both children and adult children of divorce psychologically adapt post-divorce. Children of divorce have for instance lower general well-being, more symptoms of anxiety and depression, lower self-esteem, and feel more stress than children of marriage. Adult children of divorce are more likely to experience marital discord, getting divorced themselves, anxiety and depression, lower academic performance, and substance abuse, etc. The result of the thesis suggests that children and adult children from divorced families are negatively affected, both psychologically and neurologically, regardless of age. Parental divorce and supplementary effects make it more likely for children and adult children to experience more symptoms of mental disorders.

Keywords: children of divorce, long-term effects, affective disorders, cortisol, adult children of divorce

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1. Introduction

It is not only the parents who are affected by divorce in numerous ways. *Children of divorce* (CD) and *adult children of divorce* (ACD) are often negatively affected, both psychologically and neurologically.

Studies within the field suggest CD and ACD suffer from long-term consequences of parental divorce. In Sweden, 50.000 children¹ experience parental separation every year (Statistiska centralbyrån, 2013). Approximately 20% of all children in the world have divorced parents (Kraft & Luecken, 2009). In Eastern cultures, divorce is generally more taboo than in Western cultures. In China, for example, around 175 million people are divorced (Dong, Wang, & Ollendick, 2002; The World Bank, 2017); whereas, in the United States, about 60% of all children live in a single-parent household because of divorce or separation. It is estimated that approximately one million children in the USA experience parental divorce every year (Amato & Keith, 1991). In the '80s, a projection was made that, by the beginning of the new century, about 50% of all children would experience a separation or divorce between their parents prior to their turning 18 (Hoyt, Cowen, Pedro-Carroll, & Alpert-Gillis, 1990). Hoyt et al. (1990) report that CD have more problems related to school, such as learning difficulties, and are more often acting out than *children of marriage* (CM). Parental surveys suggest that CD have more behavioral problems and experience more stress than CM (Brodzinsky, Hitt, & Smith, 1993). Behavioral problems can be measured with the *Child Behavior Profile (CBP)*, which measures level of social interaction, aggression, hyperactivity, cruelty, school success, and communicative behavior. When CD grow up and become adults, they show signs of psychological maladjustment at least through their twenties or early thirties (Cherlin, Chase-Lansdale, & McRae, 1998). ACD have more social difficulties, lower academic performance and impaired self-confidence compared to *adult*

¹ Under 18 years old.

children of marriage (ACM) (Amato, 1994). ACD are more prone to leave education early and have lower socioeconomic well-being compared to ACM (Amato, 1988; Amato, 1994). A survey from the USA (Kalter, 1987) shows that more than twice as many ACD as ACM have consulted a mental health professional; the study does not mention for what particular reason though. Raison and Miller (2003) report that ACD additionally show increased risk for substance abuse, and specifically alcohol consumption. Research on ACD has shown that ACD are more likely to engage in uncontrolled and aggressive behaviors (Hoyt et al., 1990). It is more common among female ACD than ACM to give birth prior to marriage (Rodgers, 1994). Giving birth out of wedlock can result in an unstable environment for the child. If a child is raised under such conditions, their perception of relationships is in general altered for the worse (Wu, & Martinson, 1993). Another common effect of premarital birth can be lack of resources to provide for the child.

Within the neurobiological field, researchers have found that ACD have lowered baseline levels of the hormone cortisol (Kraft & Luecken, 2009). The connection between ACD and dysregulated cortisol levels is of importance because of its subsequent effects. Several researchers have found that cortisol highly affects the psychological well-being (Lindfors & Lundberg, 2002). Cortisol is not only responsible for emotional health; it is one of the most essential hormones, in charge of many important brain regions. Comparisons between ACD and ACM, show that ACM have average levels of cortisol while ACD have much lower levels (Kraft & Luecken). The alteration of cortisol baseline levels does not change immediately after a traumatic event. The process often takes years and the baseline lowers gradually. Those who experienced a traumatic divorce as children have often dysregulated cortisol levels as adults. The area is well studied since cortisol is associated with anxiety and depression which is highly topical. Mirza and Jenkins (2004) expect anxiety to increase even more among the general population in the near future, it is projected to become

one of the most common cause for disability globally; CD and ACD are no exception. CD and ACD have more symptoms of anxiety and depression than CM and ACM do (Størksen, Røysamb, Holmen, & Tambs, 2006; Tweed, Schoenbach, George, & Blazer, 1989). Other areas in CD's and ACD's emotional life are affected by divorce. Even though not all CD and ACD develop mental disorders, CD and ACD appear to have lower general well-being than CM and ACM. Obviously, there are individual differences that always are present, affecting how divorce influences CD's and ACD's well-being. Researchers have investigated the possibility of heredity as well, and the discussion about nature vs. nurture is highly relevant. Studies conducted on adopted and biological ACD show that, in terms of psychological effects, adopted and biological ACD are tremendously similar (O'Connor, Caspi, DeFries, & Plomin, 2000). That said, neurological effects on adopted ACD, such as dysregulated cortisol levels, have not been fully investigated yet. Amato and Cheadle (2005) found intergenerational effects from divorce. The results are significant even though the studies were only conducted on biological ACD. Grandchildren of divorce, in comparison to grandchildren of marriage, are e.g., much more likely themselves to divorce. Evidence shows that both adopted and biological ACD are affected negatively by divorce. It suggest that divorce negatively affects generations to come, regardless if the grandchildren are in fact related by blood or not.

The thesis aims to provide the reader with knowledge about how CD and ACD are negatively affected long-term by parental divorce, e.g., lower socioeconomic status, greater marital instability, lowered baseline cortisol levels, more symptoms of anxiety and depression, and impaired social development and self-esteem. The thesis will focus on describing affective disorders: in particular, anxiety and depression. Generalized anxiety disorder (GAD) and panic disorder will be defined and discussed. Diagnostics and symptoms of GAD and panic disorder, treatment methods, possible prevention strategies, and risk

factors will all be addressed. The thesis will present neurological effects on ACD: in particular, ACD's dysregulated cortisol levels. Function, importance, testing, and dysregulation of cortisol levels will be described and the correlation between anxiety and cortisol levels investigated.

The primary research question is, how does parental divorce correlate with CD's and ACD's psychological and neurological well-being? The secondary research question is, does anxiety caused by parental divorce lead to dysregulated cortisol levels or vice versa? The thesis will examine the long-term psychological effects of adult children of divorce, and where possible, examine the neurological consequences. Hypothesis: the thesis expects to find correlations between the negative effects on CD/ACD and parental divorce.

2. Theoretical background

2.1 Individual differences

The effects of divorce on CD and ACD varies depending on such factors as the age at which age the child experienced the divorce, the child's personality, the child's gender and ethnicity, the child's ability to adapt after the divorce, the way the divorce unfolded – whether it was mutually agreed upon, how the parents well-being was influenced post-divorce, which parent who became caretaker post-divorce, and the amount of external support. Even the historical period as the parental divorce take place, might influence how CD adapts (Allison, & Furstenberg, 1989).

Some studies report no gender differences among ACD (Booth & Amato, 1991; Brodzinsky et al., 1993) However, Doherty and Needle (1991) suggest that female CD express more negative effects before the divorce, whereas male CD experience more negative effects after the divorce. A longitudinal study by Rodgers (1994) likewise found gender differences; with female ACD having higher levels of depression. Cummings, Davies and Simpson (1994) suggest that CD, especially females, are more likely to blame themselves for

the parental conflict; their reaction is to internalize the problem. This puts female CD at greater risk for developing depression. Both symptoms of anxiety and depression are more often long-term for female adolescent CD than male adolescent CD (Størksen et al., 2006). Male CD on the other hand, perceived marital conflict as threatening to themselves and their family cohesion, while females expressed more self-blame (Cummings et al., 1994). After the divorce, male CD adjust more poorly at socializing than both females and male CM (Amato, & Keith, 1991). It seems as the adjustment problems for male CD are both more major and goes on for a longer period than it does for females; however, Demo and Acock (1988) provides an explanation for this occurrence. Historically it has been most typical that post-divorce both male and female CD end up with the maternal caregiver. Henceforth, male CD have lost their same-sex role model which means male CD have to adapt to this new arrangement. A study by Santrock and Warshak (1979) report that CD growing up with the opposite gender parent, mother and son or father and daughter, shows more maladjustment in social behavior than CD who lives with same-sex parents. Demo and Acock indicate that gender differences of male CD's inability to adapt properly are because they attempt to act "masculine" but have no same-sex role model to provide them with the necessary guidelines. Naturally, male CD have other male role models, older brother, grandfather, stepfather, uncle, etc., which may guideline male CD (Demo, & Acock). In those cases, severe maladjustment does not apply to them. However, it is getting more common, in at least Western countries, that parents get joint custody. In Sweden, parents usually agree to both of them becoming custodian caretaker. Another important approach to the topic, is how gender is defined. One definition, as explained by Phillips (2005), is that gender and sex is two separate identities; gender is an expected role played to please society's stereotypes of how male or females ought to behave, look, etc. Gender is fluid, and may change from different places, eras and even stages in life. While the sex is the biological body, having specific male or female

reproductive organs.

The age of the child at the time of the divorce is important because of the brain's evolving ability to process a stressful environment. Hoyt et al. (1990) report that different emotions are apparent in CD depending on age; children aged 7-8 most often expressed grieving and sadness. Children aged 9-10 expressed loneliness, anger, and embarrassment more frequently. Amato (2001) found that children aged 5-7 adjust more poorly than teenagers, 16-19. Allison and Furstenberg (1989) interviewed 328 CD and report that younger CD are more traumatized by the divorce than older CD; it is especially traumatizing for CD to experience a family dissolution if they are around 3 to 4 years of age. For adolescents, a study made by Størksen et al. (2006) provide data collected from 8,984 Norwegian CD in the ages of 13 to 19 years old; the researchers investigated the effects of parental divorce in the variables of depression, anxiety, well-being, and school problems. The study reported that adolescent CD expressed, even 8 years post-divorce, more anxiety and depression symptoms, a lower sense of well-being, and higher levels of school problems than the control group (Størksen et al.).

Another factor that determines how CD and ACD are affected by divorce is whether the divorce was unilateral or mutual. Sweden, in particular, was exceptionally "modern" introducing unilateral divorce as early as 1915; whereas other countries, too in Scandinavia, were relatively late, such as Denmark legalizing it in the 1970s (Reinhold, Kneip, & Bauer, 2013). The decade differences of legalizing unilateral divorce in Scandinavia is puzzling. Sweden and Denmark have extremely similar cultures and law systems, which would make one think legalization of something as uncontroversial as letting someone leave an unhappy marriage would be similar in both countries. Prior to the middle of the 1900s' Century (in most countries), unilateral divorce was illegal in many areas unless one could prove infidelity or physical abuse, or if both parties agreed (Gruber, 2004). When divorce laws were

liberalized, divorce rates significantly increased (Johnson, & Mazingo, 2000). Gruber reports that ACD who experienced a *unilateral* divorce tend to be less educated, have higher odds of committing suicide, have lower income, and get married more often only to separate or get divorced. Felner, Ginter, Boike and Cowen (1981) report that people that have tried to commit suicide, a significant percentage of them have experienced parental divorce or death in childhood. Johnson and Mazingo however, argue that indeed fewer years of education and lower wage is correct for female ACD, but not for male ACD. Even though the aspect of unilateral or mutual divorce apparently is relevant for CD's and ACD's socioeconomic status, well-being, etc., one could argue that the specific area has not been fully researched enough, yet.

In many countries, the most common custodial parent after a divorce is the mother. Gruber (2004) reports that children significantly benefit if the mother becomes sole custodian. One benefit for female CD who live in single-mother homes is that the mother-daughter bond grows stronger (Amato, 2000). Even though there is often a lack of money in single-mother homes, CD living in single-father homes often experience a lack of social engagement in school from the fathers. Some research even reports that contact between CD and noncustodial fathers are unrelated to CDs continued well-being and behavior (Amato, 1993). Other studies find that contact between CD and noncustodial-fathers are correlated with CDs academic success (Amato, 2000). Father-child relationships are more often improved post-divorce if the child at the time of the parental divorce was younger than 8 years old; whereas the relationship between fathers and their 9 to 12-year-old children are worse after the divorce (Wallerstein, & Kelly, 1980). There is also significant evidence that CD benefit mostly if parents have joint custody. If the parents cannot agree upon which parent should be primary caretaker (if not both), it is up for the court to decide. The requirements for being a caretaker, at least the USA, is firstly to provide the child with both clothes and food (Neely, 1984);

secondly to protect and keep the child from harm's way. Thirdly, provide the child with appropriate house arrangements. Fourthly, no parental uncontroversial discipline, and fifth, not engaging in immoral behavior that could possibly affect the child in a negative way (Neely).

2.2 Nature/nurture debate

Are the effects of parental divorce due to genetics or social environment? Nature and nurture do not exclude one another; their relationship is far more complex and intertwined (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). Parental divorce affects ACD in so many ways; what causes what is almost impossible to pinpoint. Change in financial and social status, frequent necessity to move, and absence of a parental figure are all variables that should be taken into account when examining psychological effects on ACD. According to O'Connor et al. (2000) biological and adoptive ACD experience equivalent psychological effects from parental divorce as mentioned previously. Many studies have found strong evidence for negative effects of paternal absence. McLanahan, Tach, and Schneider (2013) report that the loss or absence of a father is correlated with worse social and emotional development and a higher tendency to engage in risky activities such as smoking.

Comparisons between parental death and divorce have found that parental absence in conjunction with divorce affects children more greatly than paternal death (McLanahan et al., 2013). The loss or absence of a mother, is even more devastating for children, at least in Western cultures (Bloch, Peleg, Koren, Aner, & Klein, 2007). These children show higher tendencies to develop affective disorders such as anxiety or depression. Research on non-human primates shows that premature maternal separation causes changes in the offspring's mood, behavior, and brain circuitry (Tyrka et al., 2008). In a study, Tomasello, Call and Hare (2003) characterize non-human primates as their natural ability to adapt to their surroundings e.g., some colors of food are considered as probably poisonous and are avoided by non-

human primates even if they do not understand their own reasoning. Non-human primates such as great apes and chimpanzees are the closest living relatives humans have; genetically we are similar. Studies conducted on these primates can therefore, to some extent, be applied to humans as well.

Sometimes children benefit from parental divorce: e.g., if a previously stressful environment is replaced by from economically unstable homes, except one of family harmony (Amato, Loomis, & Booth, 1995). Every family is different, and an acknowledgment of familial variation should be taken into account when discussing psychological effects on CD and ACD. How CD and ACD adapt to and move on from divorce is determined by such factors as level of parenting skills, degree of intimacy in the biological mother-child relationship after the divorce, and quality of relationship with the new stepparents (Amato, 1994; Luecken, Hagan, Wolchik, Sandler, & Tein, 2016). A poor stepparent relationship appears to lower the quality of the relationship to the biological parents. The negative effects of a tense stepparent relationship are most apparent in the relationship between child and stepmother (White, 1994). However, studies have found that if parents to ACD remarry the differences between them and ACM are minimal (no difference in social behavior, IQ, marriage attitudes, etc.) (Ganong, & Coleman, 1984).

2.3 Intergenerational effects.

Longitudinal data from the USA suggest intergenerational effects from divorce. A study conducted between 1980 and 2000 by Amato and Cheadle (2005) shows that grandparents' divorce affects grandchildren, even if they were not born at the time of the divorce. The longitudinal study examined direct and indirect effects on 691 adult grandchildren of divorce, controlling for grandparental education. Amato and Cheadle found that adult grandchildren of divorce have increased risk of marital discord and have weaker ties to their parents, compared to adult grandchildren of marriage. When grandchildren of divorce additionally have divorced

parents, they are even likelier to have a low sense of well-being and get divorced themselves. Amato and Cheadle believe that poverty can be inherited, and that marital instability appears to act the same way.

Households with single mothers along with individuals with less than twelve years of education and minorities have a greater risk of experiencing poverty during their lifetime (Rank & Hirschl, 2001); the common belief that an individual can break out of generational poverty has shown to be true, but to a much lower extent than initially believed (Harper, Marcus, & Moore, 2003). Approximately 600 million children worldwide lived in poverty at the beginning of the 21st Century. Children who come from economically stable homes are more likely to not experience poverty as adults. The same framework (cycle) also applies to children from economically unstable homes, except that they are expected to experience poverty as adults. The life cycle continues through generations and Harper et al. (2003) conclude from their study that education level, value systems, attitudes, debts and gender biases are all transferred from parents to their children. Unfortunate events and poor choices can perpetuate themselves through generations.

Some of the most commonly cited reasons for getting divorced (Amato & Previti, 2003) include infidelity, incompatibility, a sense of growing apart, and the use of alcohol or other drugs. Gordh and Söderpalm (2011) report that individuals with a family history of alcoholism are at greater risk of becoming addicts; which suggest that substance abuse contains a genetic component. Family history of anxiety disorders is even correlated with a higher tendency to develop alcoholism (Noyes et al.). In a controlled experiment, children of addicts expressed more positive emotions after drinking alcohol compared to a control group of children with no family history of alcoholism. They asked for more alcohol, more often (Gordh & Söderpalm, 2011). Having a biological father who is an alcoholic is highly correlated with alcoholism in sons, but not so much daughters (Goodwin, 1985). A study by

Cadoret and Gath (1978) reports that even if adoptive children are separated from their biological parents at birth, they are still more likely to develop alcoholism; alcoholism is also more often found in adoptive children with a history of alcoholism in their biological family. Adoptive studies are particularly useful because they can begin to separate environmental factors from genetic components.

3. Affective disorders and children of divorce

When referring to psychological effects of divorce, no subsequent distinction will be made between parental divorce and long-term parental separation. Majority of research within the field have not found significant difference in psychological effects on CD and ACD between divorce and long-term separation. The acronym CM and ACM will include children whose parents are either legally married or otherwise in a long-term relationship.

Unpleasant events such as parental divorce affect CD's and ACD's behavior, thoughts, mood, and psyche. Negative psychological effects cause changes in the mental and emotional state which often generate mental and physical pain. Not only the mood of ACD are affected long after a divorce, but also the perception of oneself, others, and one's social surroundings. Amato (1988) interviewed ACD to find that they experience a higher sense of powerlessness compared to ACM. The survey includes statements such as "*luck is more important than hard work*". A significant amount of ACDs response agreed to the statements that they sincerely believe most things are out of their control. ACD perceive their relationship to their parents, especially fathers, as less positive after the divorce, with no difference between genders (Fine, Moreland, & Schwebel, 1983). Female ACD have better relationships with their mothers than male ACD (Fine et al., 1983). ACD with a distant relationship to their family, in general, are at greater risk of developing low self-esteem. A comparison of ACD and ACM who both were close to their families showed no difference in perceived self-esteem (Holdnack, 1993). Parents' actions post-divorce can reduce the long-term negative effects on ACD: e.g., if

parents respectfully talk to each other with no name-calling, do not use the child as a mediator and do not slander the other parent, etc.

A study conducted by Hoyt et al. (1990) suggests that CD experience higher levels of both depression and anxiety as reported by their parents and teachers, compared to CM; clinical observations of CD found that depression was the most common condition among 12-to-15-year-olds. CD are prone to experience higher levels of isolation and lower general self-esteem, and to be more uncomfortable socially (Hoyt et al., 1990). These negative emotions are possible contributors to, later on, developing depression or anxiety disorders. Parents who get divorced show themselves heightened levels of depression, and their children are therefore more exposed to the condition; children might be inclined to internalize it (Hoyt et al., 1990).

There are numerous scales available to evaluate depressive symptoms. Most commonly used are the self-report measurements, where individuals are asked to rate their own depressive symptoms in order to properly diagnose. The Centre for Epidemiology Studies Depression Scale (CES-D), range from 0 to 60 with 20 items for the individual to answer (Velders et al., 2011). The items provided in the scale are symptoms that one with depression might experience (Radloff, 1991); the CES-D may be used on both children and adolescents. The scale has also been found to properly perform in both home environments and at hospitals. This particular self-rating scale has been shown to have high test-retest reliability and internal consistency (Radloff).

3.1 Heritability of affective disorders

The etiology of affective disorders and its onset are often a mixture between psychological and biological factors. By using twins who live in separate homes, researchers are better able to determine if affective disorders, for example, are in fact derived from environmental factors or genetics. The number of adopted, preferred same-sex, twins are relatively low and are therefore harder to come by, but twins are perhaps the best indicator to separate, to some

degree, nature from nurture.

Anxiety sensitivity (AS) is a term used to describe how likely someone is to develop a variety of anxiety disorders, such as PTSD and panic disorder. AS is nowadays a highly well-replicated phenomenon and a respectable indicator for the potential risk factors someone possesses (Stein, Schork, & Gelernter, 2008); the serotonin transporter gene (SLC6A4) is mainly responsible for regulating serotonin uptake and release which is associated with depression (low levels of serotonin). SLC6A4 have shown to significantly correlate depression to mainly environmental stress. Stein, Schork and Gelernter report that this particular gene, SLC6A4, determines how well an individual copes with stress.

According to Torgersen (1983), panic disorder and agoraphobia seems to be influenced by genetic factors, while GAD is not associated with genetics to such high extent; where it seems as it is most common among women (Noyes, Clancy, Crowe, Hoenk, & Slymen, 1978). On the contrary, a study based on female twins made by Thapar and McGuffin (1995) report that GAD is heritable when the duration is about 1 month. However, as GAD prolongs for more than 6 months, the results diminish and the correlation is lost. What Thapar and McGuffin found from their study was that parent's rating scales indicates a high correlation with heritability. Whereas adult children's self-reports are rather associated with environmental factors. The explanation for this may simply be that the parents answered only for their children who were not of age (less than 18 years old). The adult children answered for themselves, and perhaps this is why the results varied so much from parent to child. Thapar and McGuffin draw the conclusion that genetic and environmental factors seem to influence children differently depending on their age.

Diagnostics of bipolar disorder (or bipolar affective disorder) is categorized into 3 types (Phillips, & Kupfer, 2013); bipolar type I, when patients experience extremely high periods of both manic and depressive episodes. Bipolar type II is summarized as hypomanic

episodes (less than mania), but also periods of extreme depression. The final, bipolar III is the mildest version where the patient experience lower levels of both depression and mania.

Individuals diagnosed with bipolar disorder (regardless of which type) who also have a family history of the disorder, have an earlier onset than bipolar individuals with no previous family history (Johnson, Andersson-Lundman, Åberg-Wistedt, & Mathé, 2000). A study by McGuffin et al. (2003) report that bipolar affective disorder (BPD) is strongly heritable. The study's significant result indicates that experiencing depression and mania are derived from genetics and not the home environment.

3.2 Anxiety

Between 10 and 25% of the population experience an anxiety disorder at least once in their lifetime; it is more common among women, people of lower education and younger individuals² (Tweed et al., 1989). In Sweden around 4.8% of the population has at some point been diagnosed with an anxiety disorder; most cases of anxiety diagnostics have been found in Brazil where 9.3% of the population reported that they at some point have been diagnosed; some of the countries with the lowest amount of anxiety diagnostics are Niger (2.5%), Nigeria (2.7%), and Senegal (2.7%) (World Health Organization [WHO], 2017). The statistics are however a bit deceiving, most poor countries do not have the "luxury" of getting a diagnostic. The unrecorded cases of individuals with anxiety in poor countries are probably millions of people. Anxiety is believed, in the year of 2020, rising almost to the number 1 cause for disability among the population (Mirza, & Jenkins, 2004). According to WHO (2017), the number of anxiety and depression diagnostics increases significantly along with the growth of the population. Anxiety can be described as an intense negative emotional reaction to something as simple as an exam or performance. It can also be described as a strong sense of fear or worry about e.g. relationship or appearance, and sometimes as a reaction to a stressor

² Age is not reported.

so seemingly small it for an outsider is perceived as nothing. Even though anxiety is generally unpleasant, it is not necessarily dangerous or even bad. Craske et al. (2011) describe anxiety as a future-oriented emotion that prepares individuals for possible negative events ahead. That said, anxiety can be a reaction to something happening in the present, or even in the past (something that happened a long time ago that still cause anxiousness). Anxiety disorders are characterized by persistent feelings of uneasiness and dysfunctional behaviors to reduce that feeling. The symptoms can be categorized into three responses. The (Craske et al., 2011) first is the *verbal-subjective* response: worrying out loud. The second is *overt motor acts*: avoiding upsetting events; and the third is *somato-visceral activity*: experiencing involuntary muscle tension. The same system of responses can be applied to depression where the verbal-subjective response is thoughts of failure and loss; the overt motor acts are withdrawing; physically the somato-visceral activity is experiencing loss of energy. Anxiety is a necessary emotion, and humans would have a hard time surviving without it (see Teicher, 1988). Because anxiety is such an unpleasant feeling, it generates adaptation through teaching the brain what to avoid. Avoidance lies within the human evolution, and while the species adapt we learn how to e.g., be afraid of heights since it is dangerous.

3.2.1 Diagnostic of anxiety. When anxiety takes control of the individual's behavior, mood or thoughts, anxiety develops into a clinically diagnosable condition: e.g., panic disorder, GAD, separation anxiety disorder or selective mutism (when a child only talks when alone or with trusted individuals) (American Psychiatric Association, 2013). Both GAD and panic disorder is characterized by the brain and the body's incapacity to regulate levels of anxiety in a healthy way (Teicher, 1988). GAD is when anxiety devolves into a continuous heightened state. It is characterized by insomnia, obsessive worrying, physical and mental discomfort, and poor concentration (American Psychiatric Association, 2013). An individual is diagnosed with GAD when the individual has shown symptoms for more than one month's

duration for example: motor tension, extreme caution, anxiousness, or autonomic hyperactivity; stimulation of the autonomic nervous system which causes the heart to race (Breier, Charney, & Heninger, 1985). The *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V) states that the duration of GAD is usually over six months, and that the symptoms are expressed on most of those days (American Psychiatric Association, 2013). Panic disorder generates severe and often unexpected attacks of high anxiety e.g., the sensation of dying (Teicher, 1988). Even the thought of having a panic attack can itself generate one. About a third of the adult population have experienced a panic attack at least once in their lifetime; it is more commonly reported among women than men (Morrison, 2017, p. 171-193). In order to be diagnosed with a panic disorder, one must have had at least three panic attacks within three weeks, and express at least four out of twelve symptoms: e.g., fear of dying or fear of going crazy, chest pain, or faintness for a duration of more than one month (Breier et al., 1985). Differentiating between anxiety disorders are problematic. Feelings are subjective, and not everybody fits neatly into a clinical diagnosis. It is difficult to describe what level of anxiety one feels, or explain ones' symptoms to a mental health professional. This type of problematic increases the risk of an erroneous diagnose (Breier et al., 1985).

Professionals use different rating scales with the intent to diminish inaccurate diagnoses. The Beck Anxiety Inventory (BAI) is a 21-item scale used to distinguish anxiety disorders from depression; BAI has shown both high internal consistency and test-retest reliability (Beck, Epstein, Brown, & Steer, 1988). Test-retest reliability is rare, and especially within the field of psychology. Research in psychology is often based on observable data (Maxwell, Lau, & Howard, 2015); therefore, it is with the greatest importance that a study shows high test-retest reliability since it indicates that a study regardless of whom is conducting it gets the same end result. Common results from test-retest are that the replication

does not get as significant results as the first study reported (Maxwell, Lau, & Howard).

Another commonly used rating scale is the State-Trait Anxiety Inventory for Children (STAIC) developed by Spielberger 1973, particularly focus on the diagnostic of children's anxiety; and have shown moderate test-retest reliability (Finch, Montgomery, & Deardorff, 1974). The STAIC consist of self-report scales with separate questionnaires for investigating both trait and state anxiety of children from 8-14 years old (Papay & Hedl, 1978). The difference between state and trait anxiety is that state anxiety is an observable response (behavior or cognitive symptoms, etc.); whereas trait anxiety is not directly observable but considered as a somewhat stable personality trait across different situations (Reiss, 1997). Naturally, state – and trait anxiety are intertwined, and individuals who express high symptoms of trait anxiety often react to threatening situations with an increase of state anxiety (Beauchemin, Hutchins, & Patterson, 2008). A study by Wyman, Cowen, Hightower and Pedro-Carroll (1985) used the STAIC scale and reports that CD between the ages 9-12, experience higher levels of anxiety compared to CM. One possible explanation is if the child blame themselves for being the cause of the parental divorce. If a child perceives him – or herself as being the reason for the parental divorce, they are more likely to experience depressive symptoms compared to CM (DeLucia-Waack & Gellman, 2007). In ACD positive correlations were found between divorce and different anxiety disorders: e.g., panic attacks, panic disorders and agoraphobia (an extreme/irrational fear of e.g., crowded places or leaving the home) (Tweed et al., 1989). The same study claims that the associations are not due to socio-demographic variables, such as age, sex, education or ethnicity.

3.2.2 Anxiety treatment. There are various treatment methods intended to reduce or erase anxiety symptoms: e.g., hypnosis, exercise, medication, meditation, relaxation techniques (Bahrke & Morgan, 1978). Some individuals combine talked-based therapy with medication; others entirely pursue or are advised to pursue either one to lower their

discomfort. In many cases, diagnosed individuals suffering from anxiety symptoms do not get the help they need, with severe consequences (Martinsen, 2008). One form of therapy is the intervention *The Stress Reduction and Relaxation Program* (SR&PR) which is based on the reduction of stress, and an increase of mindfulness (Miller, Fletcher, & Kabat-Zinn, 1995). The SR&PR has shown to be sufficient for reducing anxiety symptoms within individuals who are clinically ill (diagnosed). Especially the mindfulness meditation of SR&PR has shown to improve: e.g., emotional and physical discomfort related to stress disorders (Miller et al., 1995). Another therapy treatment is the *Attention Bias Modification* (ABM) and was developed for treating anxiety (Bar-Haim, 2010). In the ABM, individuals diagnosed with an anxiety disorder are asked to try improving their attention ability; a study by Bar-Haim (2010) showed that improvement of the individual's attention is associated with a reduction of anxiety symptoms. The aftereffect of ABM was visible in the individual's mood, four months post completed attention training. Another common treatment method used to reduce anxiety is exercise. Helping patients actively improve their physical health is a good alternative when they wish to abstain medication. Heavy medication can have nasty side-effects, and some individuals might be particularly sensitive to chemical substances. Another reason for abstaining medication is the possibility for it to develop into an addiction. Getting physically fatigued diminishes unwanted symptoms, and a study by Carek, Laibstain and Carek (2011) suggests that physicians should encourage their clients to approximately for 30 minutes per day engage in physical exercises (e.g., speed walking). Another kind of therapy method that has become popular and does not require professional help is meditation. Meditation is now more commonly used among the population and laymen. Even when meditation is used on clinically healthy individuals it has shown significantly good results; stress reduction, self-awareness enhancement, sleep improvement, promotion of emotional health, etc. While meditation focuses on different types (love-kindness-, zen-, or breath awareness meditation,

etc.), mindfulness meditation, in particular, have shown to be very beneficial for reducing anxiety – and depression symptoms (Schreiner & Malcolm, 2008). Beauchemin et al. (2008) report that mindfulness meditation decreases harmful self-focus attention such as competence disbelief or negative thoughts, and therefore anxiety symptoms.

4. Cortisol levels of adult children of divorce

A study conducted by Lindfors and Lundberg (2002), investigated the correlation between cortisol and psychological well-being by using the Ryff's Psychological Well-Being scale (RPWB). RPWB examines levels of positive relationships, self-acceptance, and personal growth. Participants in the study who experienced a high level of well-being had significantly lower levels of total cortisol output compared to participants with low well-being. These findings suggest an inverse correlation between well-being and cortisol levels. Dysregulated cortisol levels – either excessively low or high levels of the hormone – are damaging. When somebody is constantly exposed to stressful situations, such as ACD or *posttraumatic stress disorder* (PTSD) victims, the body responds by secreting the hormone cortisol which causes heightened states of cortisol levels. As this prolongs, the body sometimes has to compensate for the excessively high cortisol levels and lowers the baseline, which over time turns into excessively low cortisol levels. ACD have lower baseline levels of cortisol levels than the general population and ACM, presumably due to situations of chronic stress and anxiousness (Kraft & Luecken, 2009). Early childhood trauma – e.g., sexual abuse, earthquake or war – can alter the neurological state, and indeed, these children have low baseline levels of cortisol just like ACD (King, Mandansky, King, Fletcher, & Brewer, 2001). Low baseline levels of cortisol are often observed in individuals with PTSD (Yehuda et al., 2000). In some cases, ACD might suffer from PTSD due to their chronic exposure of stress. Therefore, both individuals with PTSD and ACD have low baseline levels of cortisol. Dysregulated cortisol levels are linked to physical and mental health issues: e.g., anxiety, depression, cardiovascular

disease and damage to the frontal lobes and immune system; according to Kraft and Luecken (2009), low cortisol levels are also correlated with low family income, which often becomes a problem when a family is separated into two households.

4.1 Cortisol function

Cortisol, which also is a steroid, has for a long time been used to investigate psychological disorders such as anxiety and depression. Cortisol is commonly called the "stress hormone" since it is highly involved in coordinating the body's stress response; the stress response occurs in three stages: reaction, recovery and finally adaptation (Levine, Zagoory-Sharon, Feldman, Lewis, & Weller, 2007; Staufenbiel, Penninx, Spijker, Elzinga, & van Rossum, 2013). Cortisol secretion during the diurnal cycle is usually reported by higher levels of cortisol secretion in the morning; whereas cortisol declines toward the afternoon, which makes up for the total cortisol secretion during the day (Velders et al., 2011). When the body responds to a stressor, two different kinds of biological reactions are activated and enables the brain and body to adapt to the environment: glucocorticoids and catecholamines; cortisol is a glucocorticoid which tasks among others is to support the releasing of catecholamines which are hormones such as adrenaline and dopamine and enables the body to react by the flight-or-fight response (Staufenbiel et al., 2013). Cortisol has many other important tasks to fulfill e.g., regulate both blood pressure and inflammatory response; the hormone is therefore essential for human functioning (Levine et al., 2007), and according to Staufenbiel et al. (2013) out of all glucocorticoids, cortisol is probably the most important hormone and women have higher levels of the hormone than men. When cortisol is heightened and secreted the body reacts with increased – muscle strength, energy, and memory function; as well as the body decrease the ability to feel pain (Staufenbiel et al., 2013). It is for example expected to have elevated cortisol during labor, due to the psychological and physical stress upon the mother's body and brain (Jolivet, Blanchier, & Gautray, 1974). Studies on both humans, birds and other primates

have shown that cortisol affects the maternal behavior and is especially interesting for researchers who investigate the correlation between maternal hormones and development of infants; cortisol and its relationship to stress is alleged to affect both emotional and social regulation of children (Levine et al., 2007).

Once released, cortisol remains active in the body for around 80 minutes, and some diseases actually affect the amount of cortisol of body production: Addison's and Cushing's disease (Levine et al., 2007). Addison's disease or "adrenal insufficiency" or "hypocortisolism" was first mentioned 150 years ago, the mean age is 40 years old, and the disease causes symptoms such as e.g., fatigue, anorexia (obsession with weight and surreal thoughts about one's body), vomiting and muscle weakness (Ten, New, & Maclaren, 2001; Oelkers, 1996). The disease is caused by loss of the adrenal cortex, which means that the remaining adrenal tissue cannot produce sufficient cortisol (Oelkers, 1996). Cushing's disease was firstly mentioned by Harvey Cushing in 1912 where he described a woman presumably having troubles with the adrenal glands, due to her obesity on some body parts, headaches and diabetes; Cushing's disease causes the adrenal cortex to overproduce the hormone cortisol and elevated blood sugar, which can lead to life-threatening symptoms (Cope, & Raker, 1955). Otte et al. (2005) state that elderly in particular have increased cortisol response, which is related to different age-related diseases e.g., hypertension, Alzheimer's, depression and diabetes; age has a stronger effect on cortisol baseline levels in women than men (Otte et al.).

4.2 Cortisol testing

The methods used to measure cortisol levels varies depending on what kind of cortisol that is being investigated (Levine et al., 2007), there are several different ways to measure cortisol levels in humans, either by blood, hair cortisol, saliva or urine.

Cortisol can be examined by plasma – or serum cortisol. Of the total blood volume, plasma makes up about roughly 55% (Richter et al., 1999). Plasma is the liquid part of the

blood and consist of mostly water. Plasma also contains other important proteins which help the body to e.g., not leak blood into other areas than the bloodstream and ultimately clotting of the blood. Blood serum is a body fluid derived from plasma, but without the blood clotting (Adkins et al., 2002). The measuring of hair cortisol can investigate different physical and psychological defects such as e.g., heart disease (cardiovascular risk), anxiety or unhealthy sleep cycles. Manenschijn, Koper, Lamberts and van Rossum (2011) report that the measuring of scalp hair is an efficient method to investigate long-term cortisol levels, the procedure is very simple and the only thing needed from the patient is a hair sample; the cortisol levels might be influenced by hair treatment, age, and gender, etc., but the method has still shown significantly good results. For patients with GAD and panic disorder, hair cortisol is reported to be lower than in the general population; GAD patients showed between 50-60% lower cortisol levels than healthy individuals (Staufenbiel et al., 2013). The waist-to-hip ratio (WHR), is a body measurement used to examine obesity and is positively associated with hair cortisol, which indicates that hair cortisol affects the cortisol at tissue level as well (Manenschijn et al., 2011).

Given its likewise ready availability, saliva is often favored, to examine cortisol levels in physiological and diagnostic cases (Levine et al., 2007). The particular method is highly accepted in clinical environments and in comparison to blood cortisol, saliva entails a stress-free collection both frequently and rapidly and is much cheaper to analyze (Kirschbaum, & Hellhammer, 1994). Another benefit is that the patient can complete the sampling at home without trained help; even if the sample is collected at home or at the hospital there is a risk with saliva that cortisol levels may have been artificially elevated by recent intake of food or drink with low pH (Levine et al., 2007), but on the contrary the levels of cortisol in the saliva is unaffected by the multitude and flow rate of the saliva which gives a good indicator of cortisol concentration (Kirschbaum, & Hellhammer, 1994).

An alternative method used for investigating cortisol levels is *urinary-free cortisol* (UFC), which basically is the evaluation of cortisol concentration in urine. Urinary testing is attractive because the results are not affected by short-term fluctuations in cortisol levels; that is to say, they reflect cortisol levels over longer time periods (Remer, Maser-Gluth, & Wudy, 2008; Hellhammer, Wüst, & Kudielka, 2009). Pitman and Orr (1990) examined UFC in Vietnam veterans who suffered from PTSD and the study report that the veterans have a significantly higher UFC baseline excretion compared to healthy control groups; additionally, UFC has shown to be elevated in individuals with depressive disorders of 24 hours excretion.

The most accurate cortisol measurement is presumably by blood. Blood cortisol consists of two different forms: free cortisol (unbound) or protein-bound cortisol. Most of the cortisol is protein-bound and attached to cortisol-binding globulin (CBG) (Levine et al., 2007), and CBG is in many ways affected by internal and external factors, pregnancy, body temperature, diet, etc. (Port, 1991). The sample of blood cortisol is highly discussed due to its extreme pros and cons. The samples must be taken by trained professionals; they require special handling (in part because, like all blood products, they are biohazards); and they may well be artificially elevated, once again, because of the common fear people have of getting their blood drawn (Levine et al., 2007).

4.3 Cortisol inheritance

A study by Franz et al. (2010) investigated to what extent cortisol concentration is heritable within middle-aged twin males. The participants were either monozygotic (identical) twins or dizygotic (fraternal) twins. What the researchers found was that morning salivary cortisol was significantly heritable when it was sampled in the laboratory; this was found true for both monozygotic and dizygotic twins. However, the result was not significant when the salivary cortisol was measured at home (Franz et al.). The researchers believe that the heritability difference, at home or in the laboratory, is due to logical explanations. The HPA axis is

responsible for adapting to internal and external stressors and regulate cortisol; therefore, when twins experience similar environments and schedules, twins are more likely to have similar salivary cortisol. Franz et al. did additionally examine the levels of self-reported stress, and monozygotic twins reported to experience similar levels of stress. It appears that salivary cortisol in the morning is not only due to the diurnal cycle, but also the environment.

The particular gene FKBP5 has recurrently been associated with major depression, because of its relationship to the HPA axis. Velders et al. (2011) report that the FKBP5 gene is associated with glucocorticoid receptors (GR); if the gene is heightened the body develops an increased resistance to GR. If a GR resistance is built up toward cortisol, it might lead to hypercortisolemia (which modifies the glucocorticoid receptors). Velders et al. suggest that individuals who are carriers to variations in the FKBP5 gene have an increased likeliness to develop depressive symptoms than individuals who are non-carriers. The individuals who are carriers of the gene variation have lower levels of cortisol compared to the control group. As mentioned previously, depression is usually connected with higher cortisol levels, but chronic exposure of low cortisol levels are also correlated with depressive symptoms.

4.4 Dysregulated cortisol levels

The development of panic disorder e.g., is presumably due to the previous dysregulation of the hypothalamic pituitary adrenal (HPA) axis, and the level of cortisol secreted. The HPA axis consists of: (1) the hypothalamus which is located above the brainstem and behind the prefrontal cortex. The hypothalamus is in charge of many different vital functions e.g., regulating body temperature, releasing hormones, and adjust emotional responses. Emotions such as fear and anger seem to, according to studies conducted on animals, regulate the motor actions as by the hypothalamus (Masserman, 1941). (2) The pituitary gland, positioned right under the hypothalamus, is mainly in charge of secreting a variety of hormones; and (3) the adrenal glands, located on top of the kidneys; which also secrete hormones as their main duty.

Affective disorders are a form of maladaptation to both internal and external stressors (Staufenbiel et al., 2013). The body is unable to functionally respond to stressors, and instead, it secretes the hormone at inappropriate times and much more often than a healthy individual. Individuals who have experienced traumatic events such as divorce have shown increased activity of the HPA axis (Bloch, et al., 2007). The HPA axis is mainly in charge of the brain and body's central stress response system (Kirschbaum, Wüst, & Hellhammer, 1992). The activity of the HPA axis is responsible for regulating the organism's hormones to respond to physical or psychological stressors. Individuals with major depression or PTSD have shown dysfunction of the HPA axis; the condition hypercortisolemia is a stress-related disorder and have shown to change the glucocorticoid receptors which in animals have reduced the volume of the hippocampus (Bloch, et al., 2007). The HPA axis system allows the body to respond to stressors and further return to homeostasis; which is when the internal environment is balanced and stable, and the body's state has returned to homeostasis. To achieve homeostasis the HPA axis system and specifically the adrenal glands produces *glucocorticoids* such as cortisol (Davidson, O'Hara, & Beck, 2014). The right amount of cortisol levels during the day are essential for fundamental processes as cardiovascular functions (Kirschbaum et al., 1992). Sapolsky, Krey and McEwen (1986) report that strict regulation of glucocorticoids is of the highest importance since overflow of the hormone might be harmful; extended secretion can lead to e.g., psychological and immune dysfunction, type 2 diabetes, cardiovascular disease and obesity (Jankord, & Herman, 2008; (Manenschijn et al., 2011). The paraventricular nucleus of hypothalamus (PVN) response is activated by physiological changes (stressors) and reacts by releasing the hormone corticotrophin-releasing hormone (CRH) (de Kloet, Karst, & Joëls, 2008; Liberzon, Krstov, & Young, 1997). CRH further signal to the pituitary gland to secrete a hormone called adrenocorticotrophic hormone (ACTH) into the bloodstream (Liberzon et al., 1997). ACTH travels to the adrenal glands where it prompts to secrete the

hormone cortisol; the secretion of glucocorticoids as cortisol is additionally reported to coordinate sleep (de Kloet et al., 2008). Particularly stressed individuals often lack to maintain the natural sleep cycle. The dysfunction of sleep is suggested to increase the risk of e.g., cancer or infectious diseases (Redwine, Hauger, Gillin, & Irwin, 2000); sleep deprivation especially causes individuals with disorders such as alcoholism, depression, and HIV to alter the body's cellular immune function.

5. Method

The first step was to find relevant research. I searched databases including Scopus, Google Scholar and Web of Science to gain as much information as possible, keywords such as “*cortisol levels*”, “*long-term effects*”, “*HPA axis*” and “*children of divorce*” I sorted them into categories of psychology and neuroscience to simplify the process and create a better overview. Some of the high-quality studies I found were derived from references in other studies. My preference would have been to do an empirical study on cortisol levels in ACD using University of Skövde's students and facilities, but for reasons both ethical and financial, that was not feasible.

Mainly I was looking for articles that focused on the psychological and neurological effects of divorce, but I expected to find other relevant topics. I assessed the articles by looking at their methods, conclusions and effect size. When I was left with the most relevant articles, I looked further at their citation rate. From there on, I decided whether the articles were going to make it into the thesis or not.

6. Result

Individual differences are present in the thesis, along with external and internal factors that affects the end-result. CD and ACD suffer from long-term psychological and neurological consequences of divorce. CD show higher levels of isolation, stress, self-esteem, social awkwardness, depression and anxiety, and lower well-being compared to CM. CD have more

behavioral problems, weaker ties to their parents (especially fathers), and more problems related to their school environment. ACD have increased levels of perceived powerlessness, greater marital discord, impaired self-confidence, weaker ties to parents (again, predominantly fathers), and in general more psychological maladjustment than ACM. ACD more often engage in aggressive and uncontrollable behavior, give birth out of wedlock, abuse drugs (in particular alcohol), experience social difficulties, leave education early, and have consulted a mental health professional more often than ACM. In comparison to both CD and ACM, ACD have lower baseline levels of cortisol, which may generate anxiety and depression.

7. Discussion

The thesis has examined the reported correlation between parental divorce and long-term consequences for CD and ACD. It further investigated the relationship between ACD's lowered baseline cortisol levels and experienced anxiety. Most of the studies used in this thesis that have been investigating the correlation between divorce and CD's and ACD's psychological well-being, have frequently been controlling for externalizing factors. If external factors such as years of education or socioeconomic status are uncontrolled, it may affect the result in an unwanted way. The researchers will have a harder time to determine if the negative effects displayed are due to poor household economy or the actual divorce. By carefully monitoring the undesired external factors, researcher can easier show *direct* effects from divorce on CD's and ACD's psychological well-being. The negative consequences of divorce for CD and ACD include such psychological factors as lower well-being, impaired self-confidence and self-esteem, greater levels of isolation, and poorer social behavior (Størksen et al., 2006; Hoyt et al., 1990). The results make it clear that ACD suffer neurological consequences, including dysregulation of cortisol levels which can lead to physical and mental issues such as brain damage or impaired immune system (Bloch et al., 2007).

The number of divorce across the world is not expected to decline anytime soon. If nothing else, the divorce rates will probably increase since the population constantly expands. Therefore, the research focusing on the well-being of specifically CD and ACD are of importance. Studies on CD and ACD should be better considered when researching the general well-being of children and adults. Some of the scientists and researchers who specialize in psychology focus on better understanding specific groups or minorities. CD and ACD are one of those groups that would benefit greatly if further research investigated about the long-term effects. With enhanced knowledge, mental health professionals can prevent or ameliorate the development of mental illness of CD and ACD. If one can acknowledge such groups, it is easier to avoid the most harmful consequences. It lies within human nature to keep on surviving. For many, simply surviving is not enough and they strive to reach higher well-being and subjective success. Parents are not only parents, they are individuals who presumably have the desire to be happy. Unfortunately, parent's decisions most often affect not only themselves, but also their children; even though there obviously is no malice toward their own children. The decision to divorce in an unhealthy marriage often increase parent's long-term well-being. Tragically, it often negatively affects the long-term well-being of CD and ACD as well. Divorce does not only psychologically and neurologically damage one generation down the line but two generations: grandchildren of divorce. Longitudinal data is now available to prove intergenerational effects from divorce (Amato & Cheadle, 2005). The decision made to divorce one another, and its effects, does not only apply one's current living family when one divorces; the probability of one's grandchildren divorcing is much higher than for the general population. More than half of all children in the United States live in a single-parent household. A great percentage of the U.S. children lives under such conditions because of parental divorce (Amato & Keith, 1991). Roughly half of all children in the world are expected to experience parental divorce and some of the negative consequences

mentioned in the thesis. Does this information lead to the conclusion that just the fact of being born with divorced parents, one is more likely to get divorced? Both yes and no. Everybody is brought up under different circumstances and enters the world with certain genes. Some are more likely to seek out unstable relationships merely because of personality traits or family characteristics. Some will tend to divorce because of how they were brought up under difficult conditions; divorce and poor household economy often correlate. Some individuals have the misfortune of being born with divorced parents, which increases the probability of getting divorced oneself (even before being born as well). Sadly, in some family circumstances it seems as one has to choose between the parent's and children's well-being. Naturally, CD and ACD want their parents to be happy and live fulfilled lives. One would want neither of the parents to continue living in a marriage that is toxic. I believe that parents who stay in marriages just because of their children, are not reasonably any good role models. The aim for most parents is that their children in the future are surrounded by happiness and love. If parents cannot offer a decent picture of how a respectful and loving marriage/relationship looks like, their children have no guidelines to follow. If the marriage is toxic for a long period of time, it will affect the whole family and how the children believe marriages/relationships are supposed to look like. Parent's decision to divorce or continue living in a marriage has to be really thought through; both of the choices comes with consequences.

The findings of the thesis offer support for the statements previously made regarding how CD and ACD are negatively affected by divorce, both psychologically and neurologically. Individual differences of CD and ACD have been brought up to explain how CD and ACD are affected differentially by certain circumstances. I presume that internal and external factors play a tremendously important part in how the life of CD and ACD later unfolds. Several factors influence CD's and ACD's well-being beyond than what is reported

in the thesis: ethnicity, culture, and even which decade the divorce occurred, etc. Nonetheless, CD's and ACD's age and gender, as well as unilateral vs. mutual divorce, and which parent becomes caregiver are the most common factors reported. It is difficult for researchers to control for subjective experiences. Negative effects vary widely depending on individual differences as noted. In all psychological studies, the ability to generalize results must be addressed. One wants results that can be generalized. Review articles and meta-reviews review several studies and have the opportunity to combine masses of data from a number of participants. Therefore, review articles and meta-reviews provides information and conclusions that mostly are generalizable. This thesis as itself being a meta-review, contains data from more than 10,000 CD and ACD. The thesis's findings ought to be applied to many different CDs and ACDs, whether one is male or female, child, adolescent, teenager or adult, under maternal or paternal care, etc. Being a CD/ACD does not automatically lead to experiencing negative consequences, it only implies that they are at a higher risk. As previously stated, 12-to-15-year-olds appear to be the most vulnerable of all CD, according to Hoyt et al. (1990) with no significant difference between the genders. These CD, experience far more symptoms of anxiety and depression than the general population, as Hoyt et al. found from clinical observations. Irrespective of experiencing a parental divorce, I firmly believe teenagers are more susceptible to mental health issues than children and adults. Most teenagers experience puberty along with high levels of potent hormones which is a natural part of the teen years. This presumably makes some of them more vulnerable. Exaggerated feelings, behaviors and thoughts teenagers express are often due to high levels of hormones. Teenagers brains are not yet fully developed. Even though humans keep on creating new neuronal pathways in the brain until the end of life, the brain goes under a lot of development during the teenage years. A teenager's life is frequently intense and often fairly insulated. Many teenagers have trouble thinking about something other than themselves outside of their

tiny bubbles. Every emotion feels so much stronger when one is a teenager: falling deeply in love, feeling unbearable shame for seemingly nothing, expressing extreme and often unnecessary anger toward one's parents. The life of a teenager is highly isolating, the tiny bubble in which they enclose themselves increases the possibility of experiencing symptoms of anxiety and depression.

CD is found to have more anxiety and depressive *symptoms* than CM (Hoyt et al., 1990). Simply having divorced parents makes it more likely to develop an actual mental disorder than the peers that do not have divorced parents. The symptoms are near impossible to determine. However, CD experience more e.g., isolation, lower self-esteem, and are socially more uncomfortable than CM (Hoyt et al., 1990). The emotions are particularly at such a young age extremely destructive. The feeling of being isolated combined with being socially uncomfortable damages the self-perception and the surroundings. The probability of seeking out for help decreases when experiencing loneliness. Feeling as if being abandoned and that "*nobody actually cares for me*". The additional loss of external support from friends, coaches, or family members (due to moving circumstances), does not contribute to the possibility of seeking out for help either. Perhaps these specific emotions cause, or at least add to the increased risk of developing a mental disorder. The destructive emotions CD experience might be evidence to why CD later on develop anxiety or depression.

Additionally, CD's parents often express more depressive symptoms than married parents (Hoyt et al., 1990) which might be the origin of CD's anxiety. Having divorced parents who are depressed, increases the risk of developing depression or anxiety oneself. Parent's sadness, worry, and anxiousness possibly influence their children to such an extent that CD themselves develop a mental disorder. As a child being exposed to parental mental illnesses, is presumably overwhelming at first (depending on the age). After a while, the situation and the parental illness is the only normal behavior the child knows of. The origin of CD's anxiety

and depression is most likely also because of genetics; for instance, panic disorder and agoraphobia is found to be significantly hereditary according to Torgersen (1983). Hence another dilemma arises, does CD develop anxiety or depression because of destructive emotions, solely because of the parental divorce, or genetics and the exposure to mental disorders at home? Remember, CD does not have lowered baseline levels of cortisol; only ACD does. The cause cannot be due to dysregulated cortisol levels. CD's baseline cortisol levels have probably not yet heightened enough, to further decrease and later on cause neurological effects from divorce. The transition takes years, hence ACD have it, and CD do not. All the mentioned factors that CD are exposed to, probably leads to the increased risk of developing a mental disorder. Combined with CD post-divorce experiencing destructive emotions, CD also have divorced parents who probably are experiencing negative emotions as well. The hereditary aspect to negative emotions e.g., anxiety, is an important component to CD's anxiety as well. All factors are simply a recipe for having poor prerequisites and developing anxiety or depression. Even though CD and ACD are much alike, and at some point been the other, there are distinctive differences between them. ACD are also more prone to experiencing anxiety or depression than ACM, obviously because of the previously mentioned factors. Support for the statements are collected from both examinations and surveys conducted on ACD. The cause of ACD's anxiety and depression involves more additional factors than for CD. Parental divorce and a variety of anxiety disorders within ACD e.g., agoraphobia and panic disorder are correlated (Tweed et al., 1989). The study found that none of the socioeconomic variables investigated, age, gender, ethnicity, and education was the origin of the disorders. Other positive correlations were found between ACD's well-being and parental divorce; ACD have an increased risk for substance abuse, only due to the fact that ACD have experienced a divorce (Raison & Miller, 2003). What also is mentioned in the study is that substance abuse seems to be hereditary to some extent.

Adoptive studies report that even though children who do not live with their addicted biological parents, they are still at greater risk of becoming an addict (Gordh & Söderpalm, 2011). Simultaneously one of the most common reasons for getting divorced is the use of alcohol and other drugs (Amato & Previti, 2003). ACD are also more likely to experience greater marital discord and getting divorced themselves (Amato & Cheadle, 2005). All which are factors that might contribute to developing anxiety and depression. It is more common for ACD to seek out for a mental health professional than it is for ACM (Kalter, 1987); the reason is however unknown in the study. What actually correlates with the statement by Kalter is that out of all people who have tried to commit suicide a significant percentage of them also have divorced or dead parents (Felner et al., 1981). As life continues, it becomes more complicated. Thus, the additional contributing factors for ACD exist, in contrast to CD. Unlike CD, ACD shows gender differences, in the amount of experienced depressive symptoms; female ACD are more likely to experience depressive symptoms than male ACD (Rodgers, 1994).

7.1 Limitations and critique

Another crucial factor for the consequences of CD and ACD that I have not researched, nor mentioned, is cultural differences. Instead, I have generally focused on studies conducted in the USA. The studies are partially similar to my own home country Sweden. The availability and amount of American studies have been favored due to the large samples and generalizability. American studies can generalize the result to at least Western cultures. The only information given, is that divorce is much more common in Western cultures than in Eastern cultures. Psychological and neurological factors probably do not apply to Eastern CD and ACD in the same way as for Western CD and ACD. The stigma behind divorce in Eastern cultures presumably worsen the consequences for CD and ACD. In a lot of families, neither the mother or the father are allowed to get divorced. Even if so, the family would most likely

be shunned by other relatives. The parent's feelings of shame and guilt might be internalized by the children as well. The negative and often threatening surroundings of divorce in Eastern cultures presumably affect CD and ACD even worse than those effects in Western cultures. It is commonly known that parent's well-being also affects their children's well-being. Due to externalizing factors, divorcing in Eastern cultures might cause worse mental health for parents which is expected to lower CD's and ACD's well-being as well. The mother's worsened ability to provide for the child, the loss of external support from relatives, and the shame that is often brought to the parents. The generalization of psychological maladjustment and neurological impairments in Eastern and Western cultures is problematic. The scales used to investigate CD's and ACD's well-being in Western cultures for example, is presumably different from those used in Eastern cultures. Explanations of emotions, relationships, values, and thoughts are varied across the globe which affects the end-result of the study. During the research process, I could not find many studies that focused on the consequences of CD and ACD from Eastern cultures. Therefore, the thesis in its simplicity is not generalizable to the extent aimed for. The result can excursively be applied to CD and ACD in Western cultures with certainty.

In a majority of the studies, the researchers have mostly investigated the psychological consequences of CD by using surveys. Surveys are most often obtained either from CDs parents, teachers or themselves. It is challenging to determine to what extent CD comprehend the questions in the survey. Questions that might be interpreted differently due to CD's brain development of language and verbal communication. In older CD, the possibility for misunderstanding or confusion is of course smaller. Younger CD however, have a poorer ability to distinguish between what they feel right now and how they feel in general than what older CD does. Young CD are not yet developed enough to mentally determine their own mental state. The surveys are therefore more accurate when completed several times across a

time-span, but in most cases, surveys are conducted only once. Because the amount of time, money and participant attendance, researchers often do not have the opportunity to follow up CD's e.g., well-being unless it is a longitudinal study (which requires much more financial support). It is also possible that when parents attend to surveys they misinterpret CD's behavior, mood or verbal communication for something that it is not. Children, in general, go through many difficult phases e.g., *the terrible twos*. The terrible twos happen for all children and not only CD (the phase occurs when the small child discovers their own strong will, and it can be a challenging time for the parents). Even though it is described that CD have more problems at school and are more often acting out, there might be a reasonable explanation for that; not because of the parental divorce as initially believed. The same reasoning goes for CD's teachers, indeed they can observe CD's behavior in the classroom. However, teachers might be incapable of getting the full picture and connecting the dots; understanding how the home environment affects the behavior at school. On the other hand, clinical observations of CD are also sensitive. When researchers interpret behavior of children they do not have any connection to, it comes with both pros and cons. Researchers are able to objectively observe a child, without preconceptions of how they ought to behave. Nevertheless, researchers do not know the child's characteristics and what for example their baseline levels of emotions are. A mixture between clinical observations of CD and surveys from people in their surroundings are perhaps the most liable data. In regard to ACD, their brains are fully developed at the age of 25, and their ability to understand survey questions and themselves makes the surveys conducted on ACD more accurate than CD surveys. Obviously, the surveys conducted on ACD should also be conducted across a time period and on several occasions.

7.2 Future directions

For all previously mentioned negative effects that CD and ACD suffer from, it does not only cause problems within the individual's life and family situation, but globally as well. The

increased rate of children, teenagers, adolescents, and adults suffering from mental health problems lead to more people forced to report sick from work or school. It is possible that CD's educational development might be impaired due to mental illness; which in the future leads to global problems. These individuals are unable to work and are therefore a "financial burden" to society. Where the nation is unable to help these individuals, I believe that providing help already in early school-ages benefit both CD and CM. Most children in school, at least in Western countries, have the luxury of seeing a counselor if they wish so. However, the shame of meeting a counselor or nurse while other classmates do not have to is contradictory. In the best of worlds, all children should be obligated to talk with a counselor, regardless if they have problems or not. This would decrease the stigmatization of both talking to a mental health professional, but perhaps also asking for help when needed. Researchers ought to investigate what the best possible treatment method for CD is, and how to incorporate its functionally both in school and at home. For some of CD, the school environment is the safest place where they can express their true feelings. I also believe that future research should focus on how adults should talk with children about mental health problems in a suitable way. Perhaps teachers as well should open the discussion in the classroom about mental health. Since mental illnesses is a global and increasing problem, it is important to especially educate children and teenagers about it. Perhaps whole courses, or at least lectures, should be incorporated in PE (physical education) for children and teenagers in school. I cannot remember a single time during any school period that I have been informed about the risks of bad mental health. Provided with more time, resources, and money, I would have liked to carry out studies on CD and ACD on my own. Finding suitable treatment methods for CD and ACD that will help them cope with their feelings of powerlessness and low self-esteem for example. Some of CD's and ACD's negative consequences post-divorce are most likely inevitable. I have a hard time thinking that the damage can be reduced already

pre-divorce by educating parents about the long-term effects of CD and ACD. Perhaps the best way to increase CD's and ACD's well-being, is to reduce the negative effects post-divorce and not trying to prevent them by focusing on the parents. Therefore, I would have liked to invent a talked-based therapy method that is particularly developed for CD's and ACD's needs. The therapy method would only be applicable to CD and ACD since it is based on experiences and feelings derived from divorce. The future goal for the therapy method would have been to make it available for all CD already in school, and offered as treatment method for ACD at mental health professionals.

8. Conclusion

Most people assume that CD and ACD are in some way negatively affected by parental divorce. Stressful and often traumatic events like divorce, tend to cause long-term psychological and neurological damage. Yet, what specific negative effects that are derived from divorce are presumably not common knowledge. The psychological and neurological well-being of CD and ACD have in the thesis been found to positively correlated with parental divorce. It seems as regardless of CD's and ACD's gender and age, which parent become caretaker, and if the divorce was mutual, divorce lead to unwanted effects within CD and ACD. Mostly negative *psychological* effects have been found true for CD and ACD, higher levels of depression and anxiety, worse self-perception, and poorer family relationships, etc. (Hoyt et al.,1990; Wallerstein, & Kelly, 1980). Even though CD might not comprehend why the divorce occurred in the first place, in comparison to ACD's ability to understand, they are both still affected psychologically long-term. The negative effects that first are observed within CD, are expected to directly and indirectly follow them into adulthood as well. CD's personal beliefs such as having low self-esteem, is not expected disappear by itself and hereby show one of the direct effects. When CD have more problems related to school (Størksen et al., 2006), it presumably generate worse grades. Low grades

might lead to ACD dropping out of school earlier, which would explain why ACD have less years of education and lower income than ACM (Amato, 1988; Gruber, 2004). These kinds of circumstances suggests indirect long-term effects from parental divorce. The neurological effects of CD are absent, while ACD have lower baseline levels of cortisol compared to ACM (Kraft & Luecken, 2009). The findings of the thesis' suggest that repetitive stressful fights and heated discussions between CD's and ACD's parents, in the beginning lead to heightened cortisol levels. CD's and ACD's body respond to the continuous stress by secreting cortisol and further adapt to the environment. When the unhealthy home environment do not cease to end, CD's and ACD's body have to compensate for the disproportionately high amounts of cortisol. Over time, the body lowers the baseline which is the reason for ACD having lowered baseline levels of cortisol. The dysregulation of cortisol has not been found within CD since the alternation take time. The cause for ACD's heightened anxiety levels have not been determined, even though dysregulated cortisol levels are associated with anxiety (Bloch et al., 2007). Perhaps the reason why more ACD than ACM experience symptoms of anxiety and depression are because they have neurological impairments specifically derived from divorce. The thesis has not found significant evidence to prove which of anxiety or dysregulated cortisol levels emerges first. There is evidence supporting both sides, and therefore the causation is unestablished. Finally, the thesis' findings can hopefully contribute to improve the knowledge of CD's and ACD's behavior, thoughts, emotional state, and mood.

9. References

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