Causes of ocd: genetics or environment?

Obsessive compulsive disorder (OCD) is a type of anxiety disorder that has been affecting about 1 – 2% of the population. Individuals with OCD tend to do repetitive behaviours such as washing and checking in an attempt to cover unwanted thoughts and images to reduce their anxiety. Though OCD is a common anxiety disorder, it is still unknown if OCD is caused by genetic or environmental factors; therefore, this essay studies and evaluates genetic evidences of OCD acquisition from twin, family, and association studies, and researches about OCD causing environmental factors such as rearing practices, obsessive beliefs and parenting. Research evidences from family and association studies shows a significant relationship between genetics and OCD. While, results from twin studies are still lacking. In terms of the environmental factors, the studies show some evidences that could support the idea that OCD is environmentally caused; but, these results are still not strong enough. Also, gene-environment interaction studies shows some evidences that OCD is caused by both factors but further researches should be conducted. Therefore, it was concluded that obsessive-compulsive disorder are mainly caused by genetic factors.

Obsessive-Compulsive Disorder: A Discussion of Whether OCD is Caused by Genetic or Environmental Factors

Obsessive-compulsive disorder (OCD) affects about 1-2% of the general population and is classified, based on the DSM IV, as an anxiety disorder (Leckman et al., 2010). According to Leckman et al. (2010), obsession is an attempt to suppress or neutralize persistent images and thoughts that may cause anxiety, by means of performing other actions such as compulsions. Compulsions are repetitive behaviours or mental acts that serve as a

response to an obsession, to reduce anxiety; but, these are most of the time just excessive rather than helpful (Leckman et al., 2010). People with OCD tend to experience unwanted thoughts such as sexual and violent images; therefore, they develop “ rituals” such as excessive hand washing and hoarding to get it off their minds. Commonly, the symptoms of the disease usually show at an early age (Walitza et al., 2010).

These excessive rituals have affected and are continuing to affect millions of people by means of interfering with their social lives and daily routines. But even though it is one of the most common anxiety disorders, there is still an unclear cause of it. There have been a lot of researches that tried to determine whether OCD is caused by genetic factors or environmental factors; therefore, to determine which of the two is the main cause, genetic evidences from twin, family, and association studies, and researches that involve environmental factors such as rearing practices, obsessive beliefs, and parenting would be evaluated. There would also be an evaluation on evidences that showed that both genetic and environmental factors contribute to the acquisition of OCD.

The most common researches that support the belief that OCD are caused by genetic factors are based on twin studies. In a study by Hudziak et al. (2004) (as cited in Grootheest, Cath, Beekman, & Boomsma, 2005), 4246 twin pairs of the Netherlands Twin Register and 1461 twin pairs from the Missouri Twin Study Sample were examined using an 8-item Obsessive-Compulsive Scale (OCS) from the Child Behaviour Checklist (CBCL). All the participants were examined at age 7; then, 2841 were re-examined at age 10 while 1562 were re-examined at age 12. The results showed some

genetic influences based on the CBCL OCS score that ranges from 45% to 61%. But due to the ages of the participants, the results were based on the parents' reports which could have been influenced by their characters. Moreover, though the population is large enough, the data was only obtained from certain areas; so, the obtained results only represent those areas. Also, one of the main issues about twin studies is that environmental factors are assumed to have no effects on the traits of the twins (Van Grootheest et al., 2005). It is also noticeable that the score obtained was not that high and does not really provide much evidence about the relationship of OCD development and genetics.

In proving that OCD is heritable, family studies are also conducted to determine if OCD traits could be passed among family members. In a study by Fyer, Lipsitz, Manuzza, Aronowitz, and Chapman (2005), 179 first-degree relatives of 72 OCD probands and 112 relatives of 32 never mentally ill (NMI) controls were interviewed by trained clinicians, who were blinded to the participant's group membership. It was found out that the relatives of the OCD probands have a significantly higher risk of acquiring OCD as compared to the relative of the NMI in both the directly interviewed and combined (both interviewed and uninterviewed). Even though the methodology seems to be good, the sample size was small; but, the use of " blind" interviewers had made the results more objective and credible. In conclusion, the results from the research proved the possibility of OCD traits to be genetically transmitted among family members.

Association studies that deal mainly with specific genetic markers such as the serotonin marker, SLC6A4, are also conducted to give biological

evidences of the heritability of OCD. It is the main molecular target of the selective serotonin reuptake inhibitor (SSRI), which is the medication used to treat OCD patients (Voyiaziakis et al., 2011). In a study by Voyiaziakis et al. (2011), 1241 individuals from 278 pedigrees from the OCD Collaborative Genetics Study were genotyped for 13 single-nucleotide polymorphisms. The results were then analysed using the Family-based Association Test; and, it was found that SLC6A4 does have a genetic association with OCD. However, it is noteworthy that SLC6A4 is not solely responsible for the acquisition of OCD traits. Though the research can be considered successful, there have been some inconsistencies with the results such as the lack of association with certain variants of SLC6A4. Therefore, further tests should be conducted. But due to this research, association studies are proven to be an effective way of uncovering the relationship between genetic markers and OCD.

Past researches also showed evidences that OCD is mainly caused by environmental factors; one of these factors is rearing practices. In a study conducted by Smari, Martinsson, and Einarsson (2010), 570 young adults were tested for OCD symptoms by means of using a series of self-report scales; one of these tests is the Obsessive-Compulsive Inventory-Revised, which is an 18-item inventory. In this study, the rearing practice tested was overprotection; it was found that overprotection is weakly related to OCD symptoms; in addition to this, obsession and washing were the only significantly related traits. One of the possible explanation of this result was that parental overprotection mainly focus on cleanliness. The study may not have been that successful due to the use of a non-clinical population; in

addition, the self-report scales, though there is a support for validity, may still have been affected by the informant's subjectivity. However, this research still proved that rearing practices such as overprotection has a contribution to the development of OCD traits even though it is just minimal.

Obsessive beliefs (OB) are also considered as an environmental factor that can cause the development of OCD; these obsessive beliefs may have been taught by parents especially by mothers. In a study by Pietrefesa, Schofield, Whiteside, Sochting and Coles (2010), 28 children with a diagnosis of OCD and their mothers were assessed. The mothers completed a 44-item Obsessive Beliefs Questionnaire while the children answered a youth version to measure the degree of maladaptive OCD-related beliefs. Then, the mothers were also evaluated using an Obsessive Compulsive Inventory to test the frequency of OCD symptoms. Lastly, the children also answered a Leyton Obsessional Inventory-Child Version to determine the severity of OCD symptoms. The results showed a significant but moderate correlation between children and their mother's beliefs about responsibility and threat; however, beliefs such as perfectionism, certainty, importance and control of thoughts were insignificantly or negatively related. These results showed consistency with the findings from previous studies which made it more reliable; but, the population used in the research was too small. To sum it all up, this study just proved that only beliefs involving responsibility and threat can contribute to the development of OCD.

Parenting also plays an important role in the development of OCD especially on children. In a study by Wilcox et al. (2008), 1200 adults from 465 families were examined. The participants were clinically assessed for the diagnosis of

OCD. Then, the results were studied via a diagnostic consensus procedure by two trained diagnosticians. The participants were also asked to answer a Parental Bonding Instrument (PBI) that measures the memory of their parents during their first 16 years of life. The results showed that parental overprotection and care can cause offspring OCD if only both parents are unaffected with OCD; but, paternal care does not show any association. It was also determined that maternal care can cause OCD in both low and high risk families; suggesting that both environment and genetics additively contribute to OCD development, thus implying that genetics still has a role. Therefore, even though this is a good research due to its systematic methodology, large sample size and consistency, and even though it proved that parenting can contribute to OCD development, it still does not fully support the idea that OCD is just caused by environmental factors.

Some evidences also show that the acquisition of OCD also involves a gene-environment interaction. A study by Swedo (2002) (as cited in cited in Grisham, Anderson, & Sachdev, 2008) proposed that children that had streptococcal infection may develop OCD. This group of children was referred to as having “ pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection” (PANDAS). Some researchers said that it was an abnormal immune response to streptococcal infection that caused the changes in the basal ganglia; however, it was also found out that the relatives of the OCD probands have high genetic risks for OCD. This implies that the streptococcal infection may have triggered the manifestation of OCD. However, further studies should be conducted to prove the relationship. In addition, Poulton, Andrews, and Millichamp (2008) said that

gene-environment interaction plays an essential role in the development of anxiety disorders; but in terms of OCD and social phobia, there are still few evidences.

Based on the evidences from past researches, it can be concluded that genetic factors play a more important role in the development of obsessive-compulsive disorder as compared to environmental factors. This conclusion is supported by the family study that gave strong evidences of the heritability of OCD, and the association study that proved that there is a relationship between serotonin marker and the development of OCD. Likewise, researches that dealt with the environmental factors such as rearing practices, obsessive beliefs, and parenting did not really provide strong supportive results. In addition, the study involving parenting noted the role of genetics in OCD development. However, it could also be determined based from other researches that gene-environment interaction could be the more accurate cause of OCD; but, it is important to note that further studies should be conducted before this idea could be accepted.